EVERSOURCE ENERGY

VIA ELECTRONIC FILING

December 15, 2022

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

RE: NSTAR Electric Company
Request for Approval of Updated Depreciation Rates in Appendix D to Attachment F of the ISO New England Inc. Open Access Transmission Tariff
Docket No. ER23- -000

Dear Secretary Bose:

NSTAR Electric Company ("NSTAR" or the "Company") hereby submits for filing, pursuant to Section 205 of the Federal Power Act ("FPA"),[1] Part 35 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission[2] ("FERC" or the "Commission"), and Order No. 618,[3] changes in the general plant depreciation rates affecting NSTAR's cost-based annual transmission revenue requirements for transmission service under Section II of the ISO New England Inc. Transmission, Markets and Services Tariff ("ISO-NE OATT").[4] NSTAR submits this request for authorization as a limited-scope, single-issue Section 205 filing.

As explained in more detail below, through this filing, NSTAR proposes to revise the general plant depreciation rates for NSTAR (East) and NSTAR (West).[5] The depreciation

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[1] 16 U.S.C. § 824d (2006).

[2] 18 C.F.R. Part 35 (2022).

[3] *Depreciation Accounting*, 92 FERC ¶ 61,078 (2000) ("Order No. 618").

[4] NSTAR is making this filing proposing changes to Appendix D-NSTAR Electric Company (East) and Appendix D-NSTAR Electric Company (West) to Attachment F of the ISO-NE OATT in accordance with NSTAR's rights under Section 3.04(a)(i) of the Transmission Operating Agreement among ISO-NE and the New England Participating Transmission Owners ("PTOs") to submit filings under FPA Section 205 to revise an individual PTO's revenue requirements. ISO-NE is submitting this filing through eTariff as a courtesy to NSTAR because only ISO-NE holds the administrative rights to submit filings through eTariff pertaining to the ISO-NE OATT.

[5] Certain schedules and sections of the ISO-NE OATT, including the tariff sheets attached to this filing, delineate the two geographic regions of NSTAR: NSTAR (East) and NSTAR (West). This delineation corresponds to transmission services and rates previously provided separately by NSTAR and Western Massachusetts Electric Company ("WMECO"), respectively. *See* Letter Order issued on December 20, 2017 in Docket No. ER18-132-000; *NSTAR Elec. Co. and W. Mass. Elec. Co.*, 158 FERC ¶ 62,155 (2017) (authorizing an Eversource Energy internal corporate reorganization in which WMECO was proposed to merge with and into NSTAR Electric Company, with NSTAR Electric Company as the surviving corporate entity). Although NSTAR and WMECO have merged, they

changes included in this filing provide for the same depreciation rates that were approved by the Massachusetts Department of Public Utilities ("MDPU") by order issued November 30, 2022 in D.P.U. 22-22.[6] NSTAR respectfully requests an effective date of January 1, 2023, which is the same effective date approved by the MDPU for the implementation of these depreciation rates for NSTAR's distribution rates.

I. BACKGROUND

A. NSTAR

NSTAR is a public utility subsidiary of Eversource Energy, a Massachusetts business trust and public utility holding company under the Public Utility Holding Company Act of 2005.[7] NSTAR owns and operates transmission facilities in the Commonwealth of Massachusetts that are used to provide Regional Network Service under the ISO-NE OATT and Local Service under Schedule 21-ES of the ISO-NE OATT. NSTAR is a Participating Transmission Owner ("PTO") in the New England Regional Transmission Organization ("RTO") under the terms of the Transmission Operating Agreement ("TOA") by and among the New England PTOs and ISO-NE.[8] Effective February 1, 2005, the date on which RTO operations began in New England, NSTAR, among other PTOs,[9] transferred operational control over its transmission facilities to ISO-NE pursuant to the TOA, and ISO-NE provides regional services over such facilities as set forth in the ISO-NE OATT and the TOA.

B. Order No. 618

Order No. 618 requires utilities to use, for accounting purposes, methods of depreciation that "allocate the cost of utility property over its useful life in a systematic and rational manner."[10] Order No. 618 allows utilities to change their depreciation methodology for accounting purposes without making a formal filing with the Commission. However, Order No. 618 also specifies that a utility will first need to make a Section 205 filing in order to change a wholesale jurisdictional rate to reflect a depreciation rate change.[11] For filings to establish or update depreciation rates, single-issue Section 205 filings are appropriate and have been

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continue to maintain separate transmission tariffs and WMECO's revenue requirements are collected through Schedule 21-ES, in which it is referred to as NSTAR (West), as noted herein.

[6] *Petition of NSTAR Electric Company, doing business as Eversource Energy, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of a General Increase in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Plan.*, Mass. D.P.U. 22-22 (Nov. 30, 2022); Exhibit No. NSTAR-5 at p. 2.

[7] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1262, 119 Stat. 594, 972-73 (2005).

[8] The Commission accepted the TOA in *ISO New England, Inc.*, 106 FERC ¶ 61,280, *order on rehearing*, 109 FERC ¶ 61,147 (2004).

[9] NSTAR's public utility affiliates, The Connecticut Light and Power Company and Public Service Company of New Hampshire, are also PTOs under the TOA.

[10] Order No. 618 at 31,694.

[11] *Id.* at 31,695 n.25.

accepted in several cases involving updated transmission rates.[12] Single-issue Section 205 filings narrow the scope of Commission proceedings on those filings, since a broader examination of transmission rate components is not necessary or appropriate when only one component, such as depreciation rates, is being updated.

C. NSTAR's Depreciation Rates and Depreciation Rate Moratorium

NSTAR's depreciation and amortization rates are described in Appendix D to Attachment F of the ISO-NE OATT. These rates were last submitted to FERC on January 27, 2021, as part of a compliance filing[13] to the Formula Rate Settlement and became effective on January 1, 2022.[14] Among other things, the Formula Rate Settlement included a moratorium on changes to certain portions of Attachment F to the ISO-NE OATT. The Formula Rate Settlement also made clear, however, that "[filings] to make changes in general . . . depreciation and amortization rates to align with state regulatory decisions" "shall be permitted during the moratorium period; provided that . . . any such filings shall not open up for review by the Commission any other provisions of this Attachment F during the moratorium period."[15] Thus, the instant filing is permitted by the terms of the Formula Rate Settlement and Attachment F of the ISO-NE OATT.

II. DEPRECIATION STUDY AND PROPOSED DEPRECIATION RATES

A. Description of Depreciation Study

NSTAR engaged Gannett Fleming Valuation and Rate Consultants, LLC ("Gannett Fleming") to conduct a depreciation study calculating annual depreciation accrual rates related to electric plant as of December 31, 2020 ("Depreciation Study").[16] John J. Spanos of Gannett Fleming provided testimony to the MDPU introducing and explaining the Depreciation Study.[17] To calculate the proposed depreciation rates for NSTAR's general plant, Mr. Spanos used the straight-line remaining life method of depreciation, with the average service life procedure.[18] Under this method, "annual depreciation is based on a method of depreciation accounting

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[12] *See, e.g., Arizona Pub. Serv. Co*., Letter Order, Docket No. ER11-4184 (Sept. 26, 2011); *Old Dominion Elec. Coop*., 133 FERC ¶ 61,261 (2010); *Southern Company Servs., Inc*., Letter Order, Docket No. ER11-4284 (Sept. 16, 2011); *ITC Midwest LLC*, Letter Order, Docket No. ER10-2110 (Sept. 2, 2010); *Michigan Elec. Trans. Company, LLC*, Letter Order, Docket No. ER10-185 (Dec. 18, 2009).

[13] *See ISO New England Inc.*, Compliance Filing, Docket No. ER20-2054-001 (filed Jan. 27, 2021); *ISO New England Inc.*, Letter Order accepting Compliance Filing, Docket No. ER20-2054-001 (Feb. 24, 2021).

[14] *See* ISO New England Inc., Offer of Settlement, Docket No. ER20-2054-000 (filed June 15, 2020) ("Formula Rate Settlement"); *ISO New England Inc.*, 173 FERC 61,270 (2020) (order approving Formula Rate Settlement).

[15] *Id.* and ISO-NE OATT, Attachment F at (i)(a) (describing Moratorium Exceptions).

[16] *See* Exhibit No. NSTAR-4.

[17] *Id.*

[18] *Id.* at 9.

that seeks to distribute the unrecovered cost of fixed capital assets over the estimated remaining useful life of each unit, or group of assets, in a systematic and rational manner."[19]

Mr. Spanos determined the recommended annual depreciation and accrual rates in two phases. First, he estimated the service life and net salvage characteristics for each depreciable group, or each plant account or subaccount identified as having similar characteristics.[20] Then, he calculated the composite remaining lives and annual depreciation accrual rates based on the service life and net salvage estimates determined in the first phase.[21] Mr. Spanos' methods of calculating the depreciation rates proposed in this filing are more fully explained and described in his testimony and the Depreciation Study that were submitted to the MDPU in D.P.U. 22-22 and that are included in this filing as Exhibit No. NSTAR-4.

NSTAR submits that the Depreciation Study complies with Order No. 618 since it aims to distribute the unrecovered cost of fixed capital assets over the estimated remaining useful life of each unit or group of assets in a systematic and rational manner.

B. Proposed Depreciation Rates

In the current filing, NSTAR proposes depreciation rates for its annual transmission revenue requirements calculated under the formula rate in Attachment F of the ISO-NE OATT based on the results of Mr. Spanos' Depreciation Study. Specifically, NSTAR proposes to update the depreciation and amortization rates in ISO-NE OATT, Attachment F, Appendix D, NSTAR (East) for general plant account numbers 389, 390, 390.1, 392, 396, and 397, and the depreciation and amortization rates in ISO-NE OATT, Attachment F, Appendix D, NSTAR (West) for General Plant account numbers 389, 390, 392, 396, and 397. The changes to these depreciation rates are shown in redline in Attachment B to this filing.

The depreciation rates proposed herein for NSTAR's formula rates have been reviewed and approved by the MDPU with an effective date of January 1, 2023.[22]

C. Impact on Wholesale Customers

The attached testimony of Karl M. Pacelle (Exhibit No. NSTAR-1) describes the estimated transmission revenue requirement impact of the proposed changes to the general plant depreciation rates for NSTAR (East) and NSTAR (West). The Commission has recognized that a change in depreciation rates "affects the timing of recovery and the costs and does not change the overall amount of recovery" and "does not change the value of the underlying asset, and

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19 *Id.*

20 *Id.* at 9-10.

21 *Id.* at 10.

22 *Supra* n.6.

would not result in any over- or under-recovery of costs."[23] Nonetheless, the estimated impact on the Company's general plant depreciation expense is presented by Mr. Pacelle in the exhibits to his testimony: Exhibit Nos. NSTAR-2 and NSTAR-3. These estimated impacts are based upon actual 2022 plant-in-service balances.

As shown in Exhibit No. NSTAR-2, the proposed update to the general plant depreciation rates for NSTAR (East) results in an estimated annual decrease of approximately $500,681 in NSTAR (East)'s depreciation expense using data as of September 30, 2022, compared to the depreciation expense calculated using NSTAR (East)'s current general plant depreciation rates in Appendix D – NSTAR (East) of Attachment F to the ISO-NE OATT. As shown in Exhibit No. NSTAR-3, the proposed update to the general plant depreciation rates for NSTAR (West) results in an estimated annual increase of approximately $341,481 in NSTAR (West)'s depreciation expense using data as of September 30, 2022, compared to the depreciation expense calculated using NSTAR (West)'s current general plant depreciation rates in Appendix D – NSTAR (West) of Attachment F to the ISO-NE OATT.

The update to general plant depreciation rates for NSTAR proposed in this filing results in a total estimated annual decrease in depreciation expense of $159,200.

NSTAR relies on the approval of the MDPU, which has independently evaluated the Depreciation Study provided herewith as support for the proposed change. The Commission has previously found that it has authority to adopt retail-determined depreciation rates where it is appropriate to do so.[24] The Depreciation Study provided herewith allows the Commission to reasonably review and analyze the underlying assumptions and input data provided to complete the study.[25]

The analysis performed in the Depreciation Study presents a method of depreciation that allocates the service value of depreciable property over the service life of the property in a systematic and rational manner and estimates the useful service lives of depreciable property, supported by engineering, economic, or other depreciation studies.[26] Although NSTAR's formula rate does not require the adoption of retail depreciation rates, NSTAR has historically used general plant depreciation rates approved by the MDPU. Indeed, NSTAR's accounting system is structured to incorporate a single set of depreciation rates once established and approved in each of its jurisdictions – MDPU and FERC. Because NSTAR's Depreciation Study satisfies FERC's requirements, NSTAR respectfully requests that the Commission issue an order accepting the depreciation rates reflected in the Depreciation Study for ratemaking purposes and permit them to become effective as proposed on the grounds that they satisfy the Commission's requirements and are just and reasonable and not unduly discriminatory or preferential.

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23 *Ameren Illinois Co.*, 141 FERC ¶ 61,264, at P 32 (2012).

24 *Entergy Servs. Inc.*, Opinion No. 526, 143 FERC ¶ 61,116 at P 31 (2013).

25 *Id.* P 57.

26 *Id.* P 79.

III. PROPOSED EFFECTIVE DATE AND REQUEST FOR WAIVER

NSTAR respectfully requests that the Commission waive its 60-day prior notice requirements[27] in order to permit the proposed tariff records to become effective as of January 1, 2023 – the same effective date as ordered by the MDPU for implementing the updated depreciation rates in NSTAR's retail rates. Good cause exists for granting such waiver, as this filing proposes a rate decrease, and the Commission has stated that it will "generally grant waiver of the 60-day prior notice requirement" for "filings that reduce rates and charges – such as rate decreases."[28] Further, permitting the requested effective date will promote consistency in the depreciation rates used for federal and state ratemaking purposes, and avoid any discrepancy between NSTAR's state-mandated depreciation rates for retail ratemaking purposes and NSTAR's depreciation rates used for Appendix D to Attachment F of the ISO-NE OATT. NSTAR notes that the Commission has previously granted waiver of its 60-day prior notice requirement in similar circumstances.[29]

To the extent necessary, NSTAR respectfully requests waiver of the full requirements of 18 C.F.R. § 35.13 or any other applicable regulations. Good cause exists for granting this waiver as this is a single-issue FPA Section 205 filing to establish depreciation rates. The Commission generally permits single-issue rate filings for changes in depreciation rates.[30] In addition, the terms of the Formula Rate Settlement included a moratorium on changes to certain portions of Attachment F proposed pursuant to either Section 205 or Section 206 of the Federal Power Act that extends until December 31, 2024, with certain enumerated exceptions.[31] The moratorium language in ISO-NE OATT, Attachment F specifically excludes filings to make changes in general depreciation rates to align with state regulatory decisions, and provides that any such filings during the moratorium period shall be limited to a review of those depreciation rates.[32]

IV. DOCUMENTS SUBMITTED WITH THIS FILING

This filing includes following:

- This transmittal letter;

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[27] *See* 18 C.F.R. § 35.3 and 18 C.F.R. § 35.11.

[28] *Cent. Hudson Gas & Elec. Corp*., 60 FERC ¶ 61,106, *reh'g denied*, 61 FERC ¶ 61,089 (1992).

[29] *See*, *e.g.*, *S.w. Power Pool, Inc.*, 173 FERC ¶ 61,209 at P 8 (2020) (allowing a utility to utilize a retroactive effective date for state-approved depreciation rates that resulted in a rate decrease); *San Diego Gas & Elec. Co.*, Letter Order, Docket No. ER21-450-000 (Jan. 4, 2021); *Pacificorp*, Letter Order, Docket No. ER21-711-001 (Feb. 8, 2021).

[30] *See, e.g., Ameren Illinois Co*. 141 FERC ¶ 61,264 at P 32 (2012) (*citing Xcel Energy Servs., Inc*., 121 FERC ¶ 61,284 (2007) and *Mich. Elec. Transmission Co*., 117 FERC ¶ 61,314 (2006), *order on reh'g*, 118 FERC ¶ 61,139 (2007)).

[31] *See ISO New England Inc*., 173 FERC ¶ 61,270 (2020).

[32] *See* note 15, *supra*.

- Exhibit No. NSTAR-1: Direct Testimony of Karl M. Pacelle;
- Exhibit No. NSTAR-2: Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates for NSTAR (East);
- Exhibit No. NSTAR-3: Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates for NSTAR (West);
- Exhibit No. NSTAR-4: Testimony of John J. Spanos and Depreciation Study as presented to the MDPU in D.P.U. 22-22;
- Exhibit No. NSTAR-5: MDPU order issued November 30, 2022 in D.P.U. 22-22 approving the depreciation rates proposed in this filing effective January 1, 2023;
- Attachment A: Clean Tariff showing updated depreciation rates for inclusion in NSTAR (East)'s and NSTAR (West)'s respective Appendix D to Attachment F of the ISO-NE OATT;
- Attachment B: Marked Tariff showing updated depreciation rates for inclusion in NSTAR (East)'s and NSTAR (West)'s respective Appendix D to Attachment F of the ISO-NE OATT; and
- Attachment C: List of names and addresses of persons to whom a copy of this filing has been posted.

V. POSTING AND SERVICE

A copy of this filing is being sent to the electric utility regulatory agencies for the six New England states and to the New England Conference of Public Utilities Commissioners. Service of this filing has also been sent to the New England Power Pool ("NEPOOL") Participants Committee, which includes customers affected by this filing. The email addresses for these entities are provided in Attachment C to this filing. The filing is also available for public inspection, during regular business hours, in a convenient form and place, at the offices of NSTAR. Additionally, this filing is being posted on ISO-NE's website at http://www.isone.com/participate/filings-orders/pto.

VI. COMMUNICATIONS

All correspondence and communications in this proceeding should be addressed to:

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VII. CONCLUSION

For the foregoing reasons, NSTAR respectfully requests the Commission accept the general plant depreciation rates and tariff revisions proposed herein and grant an effective date of January 1, 2023.

Respectfully submitted,

By: *Mary E. Grover*
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NSTAR Electric Company

UNITED STATES OF AMERICA

BEFORE THE

FEDERAL ENERGY REGULATORY COMMISSION

NSTAR Electric Company **Docket No. ER23-___-000**

PREPARED DIRECT TESTIMONY OF

KARL M. PACELLE

December 15, 2022

EXHIBITS TO DIRECT TESTIMONY OF
KARL M. PACELLE

Exhibit No.	Description
NSTAR-2	Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates for NSTAR (East)
NSTAR-3	Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates for NSTAR (West)

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

NSTAR Electric Company	**)**	**Docket No. ER23-___-000**

PREPARED DIRECT TESTIMONY
OF KARL M. PACELLE

Q. Please state your name and business address.

A. My name is Karl M. Pacelle. My business address is 107 Selden Street, Berlin, Connecticut 06037.

Q. By whom are you employed and in what capacity?

A. I am employed by Eversource Energy Service Company ("Eversource Service") as a Senior Analyst, Transmission Rates and Revenue Requirements. Eversource Service provides centralized services to its parent company, Eversource Energy, and its transmission-owning public utility subsidiaries: The Connecticut Light and Power Company ("CL&P"), NSTAR Electric Company ("NSTAR"), and Public Service Company of New Hampshire ("PSNH").

Q. Please summarize your education and professional experience.

A. I graduated from Central Connecticut University in 2012 with a Bachelor of Science degree in Business Administration, concentrating in accounting. I joined Eversource Service and the Transmission Rates and Revenue Requirements group in 2016. I have held the positions of Associate Analyst, Analyst, and Senior Analyst in the Transmission

Rates and Revenue Requirements group. My current responsibilities include assisting in transmission rate-related FERC proceedings and filings, including the preparation and filing of various documents and exhibits related to transmission revenue requirements, rates and projects. I also assist in the coordination and implementation of transmission revenue requirements and rates for CL&P, NSTAR, and PSNH.

I. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony in this proceeding is to present data to show the estimated transmission revenue requirement impact of the proposed changes to general plant depreciation rates for NSTAR (East) and NSTAR (West). NSTAR seeks approval to update these rates for use in calculating its annual transmission revenue requirements pursuant to Section II of the ISO New England Inc. Transmission, Markets and Services Tariff ("ISO-NE OATT").

Q. How are NSTAR's annual transmission revenue requirements calculated under the ISO-NE OATT?

A. NSTAR calculates its transmission revenue requirements for all transmission services, including Regional Network Service and Local Service,[1] through the use of a single transmission formula rate contained in Attachment F to the ISO-NE OATT. This rate became effective on January 1, 2022, pursuant to a Formula Rate Settlement approved by the Commission in Docket No. ER20-2054.[2]

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[1] Capitalized terms used but not defined in my testimony are intended to have the meaning given to them in the ISO New England Inc. Transmission, Markets and Services Tariff.

[2] *See ISO New England Inc.*, 173 FERC ¶ 61,270 (2020) ("Formula Rate Settlement").

II. SUMMARY OF TESTIMONY

Q. Please summarize your testimony.

A. As stated above, NSTAR seeks approval to update its depreciation rates related to general plant used in calculating its annual transmission revenue requirements pursuant to the ISO-NE OATT. Specifically, NSTAR seeks to implement the depreciation rates calculated by John J. Spanos in the "Depreciation Study" attached to this filing as Exhibit No. NSTAR-4. In this testimony, I discuss the impact on NSTAR's annual transmission revenue requirements as a result of this proposal. I also discuss the proposed tariff revisions to NSTAR's Appendix D to Attachment F of the ISO-NE OATT.

Q. Why is NSTAR updating its depreciation rates?

A. On January 14, 2022, NSTAR filed a retail electric rate case with the Massachusetts Department of Public Utilities ("MDPU") in D.P.U. 22-22 ("State Rate Case"). The Depreciation Study for NSTAR was prepared and presented by Mr. John J. Spanos of Gannett Fleming Valuation and Rate Consultants, LLC, an independent third-party depreciation expert. The MDPU issued an order on November 30, 2022, approving the depreciation rates proposed in the Depreciation Study.[3] As a result of the approval of the general plant depreciation rates by the MDPU, NSTAR is proposing to adjust the depreciation rates for NSTAR (East) and NSTAR (West) to reflect the updates detailed in the Depreciation Study and to implement those depreciation rates for transmission cost recovery purposes.

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[3] *See NSTAR Elec. Co.*, D.P.U. 22-22 (Nov. 30, 2022).

Q. Are you proposing to use this same depreciation witness testimony and associated Depreciation Study and depreciation rates for this proceeding?

A. Yes. NSTAR is submitting Mr. Spanos's Depreciation Study and testimony used in the State Rate Case and seeks approval of the revised general plant depreciation rates that he developed and presented in that proceeding, with one exception. Exhibit No. NSTAR-4 to this filing is Mr. Spanos's testimony and Depreciation Study for NSTAR submitted in the State Rate Case, and the proposed depreciation rates can be found on page 94 of Exhibit No. NSTAR-4. The exception mentioned just above is for Account 389 Land and Land Rights. While Mr. Spanos proposed a depreciation rate of 9.88% for this account,[4] the MDPU made clear that land and land rights should not be depreciated.[5] Therefore, the tariff records that are the subject of this filing use a 0% depreciation rate for Account 389 Land and Land Rights.

Q. What is the estimated effect on transmission-related depreciation expense of the updated depreciation rates?

A. Exhibit No. NSTAR-2 and Exhibit No. NSTAR-3 display this information. Page 1 of each exhibit contains a schedule showing the current depreciation rates in ISO-NE OATT, Attachment F, Appendix D for NSTAR (East) and NSTAR (West), respectively, and the proposed depreciation rates from Mr. Spanos's Depreciation Study for general

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[4] *See* Exhibit No. NSTAR-4 at 94.

[5] *See* Exhibit No. NSTAR-5 at 187 ("The Department has consistently found that the purpose of depreciation is to recover the cost of a capital investment in order to replace a retired asset, and, therefore, there is no need to depreciate an asset that will not be retired. Accordingly, the Department does not permit depreciation of land, land rights, or rights-of-way. In the instant proceeding the Company does not provide a compelling argument to deviate from longstanding Department precedent, but simply presents a definition of 'depreciation' from the Uniform System of Accounts (Exh. DPU 16-3). Therefore, the Department rejects the inclusion of $177,948 in depreciation expense associated with Land and Land Rights. Accordingly, we reduce NSTAR Electric's proposed depreciation expense by $177,948.") (internal citations omitted).

plant to arrive at a depreciation rate variance. This depreciation rate variance is then applied to the associated plant account balances, as of September 30, 2022, on Page 2 of Exhibit Nos. NSTAR-2 and NSTAR-3 to arrive at an estimated impact to depreciation expense. More specifically, Page 2 of Exhibit No. NSTAR-2 demonstrates that the proposed depreciation rates will result in an estimated reduction in depreciation expense for NSTAR (East) of $500,681. Page 2 of Exhibit No. NSTAR-3 demonstrates that the proposed depreciation rates will result in an estimated increase in depreciation expense for NSTAR (West) of $341,481. Taken together, the proposed update to general plant depreciation rates for all NSTAR customers results in a total estimated annual transmission revenue requirement *decrease* of $159,200.

Q. In Exhibit Nos. NSTAR-2 and NSTAR-3, how is the transmission-related general plant depreciation expense derived?

A. For NSTAR (East), depreciation amounts are allocated to transmission based on the ratio of transmission-related wages and salaries to total wages and salaries less administrative and general wages and salaries in accordance with the revenue requirements formula under Attachment F of the ISO-NE OATT. NSTAR (West)'s transmission-related depreciation is directly assigned to transmission, as the Company utilizes segmented accounting records that provide the transmission-related general plant balances separately from the distribution-related general plant balances. For example, in Exhibit No. NSTAR-3, Page 2, the plant balances in Column (A) are already presented at the transmission level, and therefore no further allocation of the depreciation expense is needed in Column (C) of Exhibit No. NSTAR-3.

III. APPLICATION OF PROPOSED DEPRECIATION RATES

Q. What depreciation rates are being proposed for NSTAR?

A. Please refer to Column B on each of Exhibit No. NSTAR-2, Page 1 and Exhibit No. NSTAR-3, Page 1 for the proposed general plant depreciation rates for NSTAR (East) and NSTAR (West), respectively. With the exception of Account 389, the proposed depreciation rates can also be found on page 94 of Exhibit No. NSTAR-4.

Q. When is NSTAR requesting that these changes be reflected in its transmission rates?

A. My understanding from counsel is that NSTAR is requesting an effective date of January 1, 2023, for the updated depreciation rates to align with the effective date of these rates as approved by the MDPU. Alignment of the state-regulated and Commission-regulated depreciation rates will simplify NSTAR's depreciation accounting and create administrative efficiencies within NSTAR's accounting software, while ensuring consistency of charges to each respective set of customers.

Q. Is NSTAR proposing any tariff revisions in connection with the proposal to change depreciation rates for general plant?

A. Yes. NSTAR is proposing tariff revisions to Appendix D to Attachment F of the ISO-NE OATT for each of NSTAR (East) and NSTAR (West) to accommodate this update.

Q. Are you sponsoring any exhibits?

A. Yes, in addition to my testimony, I am sponsoring Exhibit Nos. NSTAR-2 and NSTAR-3 that illustrate the impact of the proposed updates to NSTAR's depreciation rates on NSTAR's transmission revenue requirements described in my testimony above.

IV. CONCLUSION

Q. Does that complete your testimony?

A. Yes it does.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

NSTAR Electric Company	**)**	**Docket No. ER23- -000**

AFFIDAVIT OF KARL M. PACELLE

I, Karl M. Pacelle, under the penalty of perjury, state that the information contained in the Prepared Testimony of Karl M. Pacelle on behalf of NSTAR Electric Company is true, correct, accurate, and complete to the best of my knowledge, information and belief.

Executed this 15th day of December 2022.

Karl Pacelle

Karl M. Pacelle

Exhibit No. NSTAR-2

Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates

NSTAR Electric Company (East)

NSTAR Electric Company (East)
Estimated Change in Annual Transmission-Related Depreciation Expense
Due to Updates to General Plant Depreciation Rates

II. General Plant

Ln	FERC Account Number	FERC Account Description	(A) Current Depreciation Rates (a)		(B) Proposed Depreciation Rates (b)	(C) = (B) - (A) Depreciation Rate Increase/ (Decrease)
1	389	Land and Land Rights	8.11%	(c)	0.00%	-8.11%
2	390	Structures & Improvements	3.10%		2.79%	-0.31%
3	390.1	Hyde Park Service Center	7.55%		6.13%	-1.42%
4	390.1	Mass Ave Garage	21.17%		0.00%	-21.17%
5	390.1	Prudential Center	14.53%		3.59%	-10.94%
6	390.1	Walpole Service Center	16.35%		4.08%	-12.27%
7	390.1	Waltham Service Center	14.52%		4.47%	-10.05%
8	390.1	Other Lease Improvements	4.79%		2.35%	-2.44%
9	391	Office Furniture and Equipment	5.00%		5.00%	0.00%
10	391	Computer Equipment	14.29%		14.29%	0.00%
11	392	Transportation Equipment	4.76%		4.44%	-0.32%
12	392	Class 1 Car	9.22%		4.44%	-4.78%
13	392	Class 2 Light Trucks	11.85%		4.44%	-7.41%
14	392	Class 3 Medium Trucks	6.81%		4.44%	-2.37%
15	392	Class 4 Heavy Trucks	5.82%		4.44%	-1.38%
16	392	Class 5 Rolling Equipment	8.33%		4.44%	-3.89%
17	392	Class 6 Trailers	5.06%		4.44%	-0.62%
18	392	Electric Vehicle Charge Station	20.00%		4.44%	-15.56%
19	392	Fleet Vehicles	33.33%		4.44%	-28.89%
20	393	Stores Equipment	4.00%		4.00%	0.00%
21	394	Tools, Shop & Garage Equipment	4.00%		4.00%	0.00%
22	395	Laboratory Equipment	5.00%		5.00%	0.00%
23	396	Power Operated Equipment	4.65%		1.26%	-3.39%
24	397	Communication Equipment	6.67%		6.67%	0.00%
25	397	Communication Equipment - GPS	20.00%		20.00%	0.00%
26	397	Communication Equipment - Microwave	1.95%		2.89%	0.94%
27	398	Miscellaneous Equipment	5.00%		5.00%	0.00%

Notes:

(a) ISO New England Inc. Open Access Transmission Tariff, Attachment F, Appendix D-NSTAR Electric Company (East)

(b) Source of proposed rate is Exhibit No. NSTAR-4 - Testimony of John J. Spanos and Depreciation Study, Page 94 of 476, Column (9)

(c) MDPU does not permit depreciation of land, land rights, or rights-of-way, therefore NSTAR will utilize a 0% depreciation rate

NSTAR Electric Company (East)
Estimated Annual Change in Transmission-Related Depreciation Expense
Due to Updates to General Plant Depreciation Rates
Balances as of September 30, 2022

II. General Plant

Ln	FERC Account Number	FERC Account Description		(A) Account Balance (a)	(B) Depreciation Rate Variance (b)	(C) = (B)*(A) Estimated Annual Depreciation Expense Increase/(Decrease)
1	389	Land and Land Rights		-	-8.11%	-
2	390	Structures & Improvements		221,587,827	-0.31%	(686,922)
3	390.1	Hyde Park Service Center		592,716	-1.42%	(8,417)
4	390.1	Mass Ave Garage	(c)	-	-21.17%	-
5	390.1	Prudential Center		2,658,742	-10.94%	(290,866)
6	390.1	Walpole Service Center		534,867	-12.27%	(65,628)
7	390.1	Waltham Service Center		1,654,311	-10.05%	(166,258)
8	390.1	Other Lease Improvements		7,482,988	-2.44%	(182,585)
9	391	Office Furniture and Equipment		19,969,234	0.00%	-
10	391	Computer Equipment		9,302,142	0.00%	-
11	392	Transportation Equipment		776,553	-0.32%	(2,485)
12	392	Class 1 Car		1,735,222	-4.78%	(82,944)
13	392	Class 2 Light Trucks		20,287,095	-7.41%	(1,503,274)
14	392	Class 3 Medium Trucks		8,887,115	-2.37%	(210,625)
15	392	Class 4 Heavy Trucks		34,839,039	-1.38%	(480,779)
16	392	Class 5 Rolling Equipment		959,793	-3.89%	(37,336)
17	392	Class 6 Trailers		5,164,377	-0.62%	(32,019)
18	392	Electric Vehicle Charge Station		-	-15.56%	-
19	392	Fleet Vehicles		-	-28.89%	-
20	393	Stores Equipment		3,562,538	0.00%	-
21	394	Tools, Shop & Garage Equipment		27,193,392	0.00%	-
22	395	Laboratory Equipment		8,200,113	0.00%	-
23	396	Power Operated Equipment		-	-3.39%	-
24	397	Communication Equipment		77,607,511	0.00%	-
25	397	Communication Equipment - GPS		385,273	0.00%	-
26	397	Communication Equipment - Microwave		80,546	0.94%	757
27	398	Miscellaneous Equipment		3,269,231	0.00%	-
28		Total (Sum of Lines 1 thru 27)		456,730,624		(3,749,380)
29		Wages & Salaries Allocator				(d) 13.3537%
30		Transmission Related Portion of Depreciation Expense Change				(500,681)

Notes:

(a) Internal Plant Accounting Records

(b) Exhibit No. NSTAR-2, Page 1, Column (C)

(c) Account 390.1, Mass Ave Garage has been fully depreciated

(d) New England Participating Transmission Owners Administrative Committee Regional Network Service Annual Informational Filing under RT04-2, ER20-2054, et al.

Description	Source	Factors
NSTAR (East) PTF Transmission W&S Allocation Factor	Page 620, Line 13 (B)	10.5091%
NSTAR (East) Dispatch Center W&S Allocation Factor	Page 1127, Line 6 (c)	2.8446%
Total NSTAR (East) Transmission W&S Allocation Factor		13.3537%

Exhibit No. NSTAR-3

Summary of Estimated Annual Change in Transmission-Related Depreciation Expense due to Updates to General Plant Depreciation Rates

NSTAR Electric Company (West)

NSTAR Electric Company (West)
Estimated Annual Change in Transmission-Related Depreciation Expense
Due to Updates to General Plant Depreciation Rates

II. General Plant

Ln	FERC Account Number	FERC Account Description	(A) Current Depreciation Rates (a)		(B) Proposed Depreciation Rates (b)	(C) = (B) - (A) Depreciation Rate Increase/ (Decrease)
1	389	Land and Land Rights	8.11%	(c)	0.00%	-8.11%
2	390	Structures & Improvements	3.10%		2.79%	-0.31%
3	391	Office Furniture and Equipment	5.00%		5.00%	0.00%
4	391	Computer Equipment	14.29%		14.29%	0.00%
5	392	Transportation Equipment	4.76%		4.44%	-0.32%
6	392	Class 1 Car	8.26%		4.44%	-3.82%
7	392	Class 2 Light Trucks	7.38%		4.44%	-2.94%
8	392	Class 3 Medium Trucks	3.75%		4.44%	0.69%
9	392	Class 4 Heavy Trucks	3.60%		4.44%	0.84%
10	392	Class 5 Rolling Equipment	8.33%		4.44%	-3.89%
11	392	Class 6 Trailers	4.40%		4.44%	0.04%
12	392	Electric Vehicle Charge Station	20.00%		4.44%	-15.56%
13	392	Fleet Vehicles	33.33%		4.44%	-28.89%
14	393	Stores Equipment	4.00%		4.00%	0.00%
15	394	Tools, Shop & Garage Equipment	4.00%		4.00%	0.00%
16	395	Laboratory Equipment	5.00%		5.00%	0.00%
17	396	Power Operated Equipment	4.65%		1.26%	-3.39%
18	397	Communication Equipment	6.67%		6.67%	0.00%
19	397	Communication Equipment - GPS	20.00%		20.00%	0.00%
20	397	Communication Equipment - Microwave	1.95%		2.89%	0.94%
21	398	Miscellaneous Equipment	5.00%		5.00%	0.00%

Notes:

(a) ISO New England Inc. Open Access Transmission Tariff, Attachment F, Appendix D-NSTAR Electric Company (West)

(b) Source of proposed rate is Exhibit No. NSTAR-4 - Testimony of John J. Spanos and Depreciation Study, Page 94 of 476, Column (9)

(c) MDPU does not permit depreciation of land, land rights, or rights-of-way, therefore NSTAR will utilze a 0% depreciation rate

NSTAR Electric Company (West)
Estimated Annual Change in Transmission-Related Depreciation Expense
Due to Updates to General Plant Depreciation Rates
Balances as of September 30, 2022

II. General Plant

Ln	FERC Account Number	FERC Account Description	(A) Account Balance (a)	(B) Depreciation Rate Variance (b)	(C) = (B) * (A) Estimated Annual Depreciation Expense Increase/(Decrease)
1	389	Land and Land Rights	-	-8.11%	-
2	390	Structures & Improvements	632,793	-0.31%	(1,962)
3	391	Office Furniture and Equipment	69,214	0.00%	-
4	391	Computer Equipment	302,276	0.00%	-
5	392	Transportation Equipment	-	-0.32%	-
6	392	Class 1 Car	-	-3.82%	-
7	392	Class 2 Light Trucks	243,619	-2.94%	(7,162)
8	392	Class 3 Medium Trucks	-	0.69%	-
9	392	Class 4 Heavy Trucks	375,897	0.84%	3,158
10	392	Class 5 Rolling Equipment	102,322	-3.89%	(3,980)
11	392	Class 6 Trailers	91,701	0.04%	37
12	392	Electric Vehicle Charge Station	-	-15.56%	-
13	392	Fleet Vehicles	-	-28.89%	-
14	393	Stores Equipment	-	0.00%	-
15	394	Tools, Shop & Garage Equipment	3,496,494	0.00%	-
16	395	Laboratory Equipment	344,428	0.00%	-
17	396	Power Operated Equipment	-	-3.39%	-
18	397	Communication Equipment	1,916,255	0.00%	-
19	397	Communication Equipment - GPS	3,366	0.00%	-
20	397	Communication Equipment - Microwave	37,382,089	0.94%	351,392
21	398	Miscellaneous Equipment	45,232	0.00%	-
		Total (Sum of Lines 1 thru 21)	45,005,685		341,481

Notes:

(a) Internal Plant Accounting Records

(b) Exhibit No. NSTAR-3, Page 1, Column (C)

Exhibit No. NSTAR-4

John J. Spanos Testimony

and Depreciation Study

in D.P.U. 22-22.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

Petition of NSTAR Electric Company d/b/a Eversource Energy for Approval of a Performance-Based Ratemaking Plan and Increase in Base Distribution Rates for Electric Service Pursuant to G.L. c. 164, § 94 and 220 C.M.R. § 5.00	)	D.P.U. 22-22

DIRECT TESTIMONY OF

JOHN J. SPANOS

Depreciation Study

On behalf of

NSTAR Electric Company d/b/a
Eversource Energy

January 14, 2022

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

DIRECT TESTIMONY OF

JOHN J. SPANOS

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COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

DIRECT TESTIMONY OF

JOHN J. SPANOS

I. INTRODUCTION

Q. Please state your name and address.

A. My name is John J. Spanos. My business address is 207 Senate Avenue, Camp Hill, Pennsylvania 17011.

Q. What is your professional association?

A. I am President, Gannett Fleming Valuation and Rate Consultants, LLC ("Gannett Fleming"). I have been associated with this firm since June 1986.

Q. On whose behalf are you testifying in this case?

A. In this proceeding, I am testifying on behalf of NSTAR Electric Company d/b/a Eversource Energy ("Eversource," "NSTAR Electric," or the "Company").

Q. Please state your qualifications.

A. I have over 35 years of depreciation experience, which includes providing expert testimony in over 380 cases before approximately 41 regulatory commissions, including the Massachusetts Department of Public Utilities ("Department"). These cases included depreciation studies in the electric, gas, water, wastewater and pipeline industries. In addition to cases where I have submitted testimony, I have

also supervised over 700 other depreciation or valuation assignments. Exhibit ES-JJS-1 provides my qualification statement, which includes further information with respect to my work history, case experience and leadership in the Society of Depreciation Professionals.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present the depreciation study performed for Eversource provided herewith as Exhibit ES-JJS-2 (NSTAR - Depreciation Study). The Depreciation Study sets forth the calculated annual depreciation accrual rates by account as of December 31, 2020 for all electric plant.

Q. Have you calculated depreciation accrual rates for the Company based on a different asset mix?

A. Yes. Since the last depreciation study, NSTAR Electric and Western Massachusetts Electric Company ("WMECO") have consolidated into one entity. Previously, a combined weighted accrual rate calculation with individual company life and net salvage parameters were established. In this proceeding, all depreciation rates have been calculated based on a combined asset mix for each account.

Q. What is the Company requesting Department approval of with regard to depreciation rates for the Company?

A. The Company is requesting that the Department review and approve the depreciation rates developed on the basis of the Depreciation Study (Exhibit ES-

JJS-2) in this proceeding.

Q. Please summarize the impact of the Depreciation Study on the Company's depreciation rates.

A. The table below shows a comparison of the current weighted depreciation rates and resultant expense to the proposed depreciation rates and expense, by function, as of December 31, 2020 for the Company.

	Current		Proposed	
Function	Rates	Proforma Expense	Rates	Expense
NSTAR Electric				
Intangible	*	3,268,926	*	2,540,665
Other Production	3.92	7,094,778	4.45	8,042,182
Distribution	2.89	198,863,259	2.77	190,449,465
General	4.92	23,017,324	4.23	19,794,097
General Reserve Amount		214,995		(131,889)
Total NSTAR Electric		$232,459,282		$220,694,520

*Represents individually depreciated assets

Q. Would you explain some of the major factors that caused the change in depreciation rates?

A. Yes. The major components that caused rates to change by function are as follows:

- **Intangible Plant:** Assets are amortized on an individual basis specific to the amortization period established by the Company. Although there has been substantial growth related to assets classified in the 10-year amortization class, the driver of the overall decrease to depreciation expense for Intangible Plant is the reduction of assets classified in the 5-year

subaccount and the reclassification of some 15-year assets. These overall changes decrease depreciation expense.

- **Other Production Plant**: The increased depreciation expense is the addition of new solar facilities in 2018 and the incorporation of the more appropriate life parameters for each account. The proposed rates include a component of interim retirements. The complete life component by account has established an increased depreciation expense.

- **Distribution Plant**: The overall decreased depreciation expense is due to the longer average service lives for many accounts, primarily Account 365, Overhead Conductors and Devices and Account 367, Underground Conductors and Devices. However, the subaccounts of Account 370.00, Meters, has a proposed depreciation expense increase as a result of the Company's plan to replace older technology meters with newer technology. The overall life cycle of new meters is shorter than old meters and the remaining life of the older meters due to the replacement program has been shortened.

- **General Plant**: Depreciation expense has decreased primarily due to the longer life spans for various service centers in Account 390, Structures and Improvements. The extension of the Waltham Service Center life span had the largest impact.

Q. Are the recommended depreciation accrual rates presented in your study reasonable and applicable to the plant in service as of December 31, 2020?

A. Yes, they are. Based on the Depreciation Study, I am recommending depreciation rates using the December 31, 2020 plant and reserve balances for approval.

III. DEPRECIATION STUDY

Q. Please define the concept of depreciation.

A. Depreciation refers to the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation, against which the company is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, obsolescence, changes in the art, changes in demand and the requirements of public authorities.

Q. Please identify the Depreciation Study you performed for NSTAR Electric.

A. The study is a report entitled, "2020 Depreciation Study - Calculated Annual Depreciation Accruals Related to Electric Plant as of December 31, 2020." This report sets forth the results of my depreciation analysis for Eversource. The study was prepared, and the analyses that underlie the study were conducted, under my direction and supervision.

Q. Is Exhibit ES-JJS-2 a true and accurate copy of your Depreciation Study?

A. Yes.

Q. Does Exhibit ES-JJS-2 accurately portray the results of your Depreciation Study as of December 31, 2020?

A. Yes.

Q. What was the purpose of your Depreciation Study?

A. The purpose of the Depreciation Study was to estimate the annual depreciation accruals related to electric plant in service for financial and ratemaking purposes and determine appropriate average service lives and net salvage percentages for each plant account.

Q. Are the methods and procedures of the Depreciation Study consistent with industry practices?

A. Yes, the methods and procedures of this study are generally in accordance with industry standards. Both the existing rates and the rates determined in the Depreciation Study are based on the average service life procedure and the remaining life method.

Q. Please describe the contents of Exhibit ES-JJS-2.

A. My report is presented in nine parts. Part I, Introduction, describes the scope and basis for the Depreciation Study. Part II, Estimation of Survivor Curves, includes descriptions of the methodology of estimating survivor curves. Parts III and IV set forth the analysis for determining life and net salvage estimation. Part V, Calculation of Annual and Accrued Depreciation, includes the concepts of depreciation and amortization using the remaining life method. Part VI, Results of

Study, presents a description of the results and a summary of the depreciation calculations. Parts VII, VIII and IX include graphs and tables that relate to the service life and net salvage analyses, and the detailed depreciation calculations.

The table on pages VI-4 through VI-8 of Exhibit ES-JJS-2 presents the estimated survivor curve, the net salvage percent, the original cost as of December 31, 2020, the book depreciation reserve, and the calculated annual depreciation accrual and rate for each account or subaccount. The section beginning on page VII-2 presents the results of the retirement rate analyses prepared as the historical bases for the service life estimates. The section beginning on page VIII-2 presents the results of the salvage analysis. The section beginning on page IX-2 presents the depreciation calculations related to surviving original cost as of December 31, 2020.

Q. Please explain how you performed your Depreciation Study.

A. I used the straight-line remaining life method of depreciation, with the average service life procedure. The annual depreciation is based on a method of depreciation accounting that seeks to distribute the unrecovered cost of fixed capital assets over the estimated remaining useful life of each unit, or group of assets, in a systematic and rational manner.

Q. How did you determine the recommended annual depreciation accrual rates?

A. I did this in two phases. In the first phase, I estimated the service life and net salvage characteristics for each depreciable group, that is, each plant account or

subaccount identified as having similar characteristics. In the second phase, I calculated the composite remaining lives and annual depreciation accrual rates based on the service life and net salvage estimates determined in the first phase.

Q. Please describe the first phase of the Depreciation Study, in which you estimated the service life and net salvage characteristics for each depreciable group.

A. The service life and net salvage studies consisted of compiling historic data from records related to NSTAR Electric's plant; analyzing these data to obtain historic trends of survivor and net salvage characteristics; obtaining supplementary information from Eversource management personnel and operating personnel concerning practices and plans as they relate to plant operations; and interpreting the above data based on my experience and in reference to estimates used by other electric utilities to form judgments of average service life and net salvage characteristics.

Q. What historical data did you rely on to estimate service life characteristics?

A. I analyzed accounting entries for the Company relating to plant additions, transfers, and retirements recorded through 2020. The records of the Company also included surviving dollar value by year installed for each plant account as of December 31, 2020.

Q. What method did you use to analyze this service life data?

A. I used the retirement rate method for all accounts. This is the most appropriate

method when aged retirement data are available, because this method determines the average rates of retirement actually experienced by the Company during the period of time covered by the study.

Q. Would you explain how you used the retirement rate method to analyze NSTAR Electric's service life data?

A. I applied the retirement rate method to each group of property in the Depreciation Study. For each property group, I used the retirement rate method to form a life table, which, when plotted, shows an original survivor curve for that property group. Each original survivor curve represents the average survivor pattern experienced by the several vintage groups during the experienced band studied. The survivor patterns do not necessarily describe the life characteristics of the property group; therefore, interpretation of the original survivor curves is required in order to use them as valid considerations in estimating service life. The Iowa-type Survivor Curves were used to perform these interpretations.

Q. What is an "Iowa-type Survivor Curve" and how did you use such curves to estimate the service life characteristics for each property group?

A. Iowa-type Survivor Curves are a widely used group of generalized survivor curves that contain the range of survivor characteristics usually experienced by utilities and other industrial companies. The Iowa curves were developed at the Iowa State College Engineering Experiment Station through an extensive process of observing and classifying the ages at which various types of property used by utilities and other industrial companies have been retired.

Iowa-type curves are used to smooth and extrapolate original survivor curves determined by the retirement rate method. The Depreciation Study used Iowa curves and truncated Iowa curves to describe the forecasted rates of retirement based on the observed rates of retirement and the outlook for future retirements.

The estimated survivor curve designations for each depreciable property group indicate the average service life, the family within the Iowa system to which the property group belongs, and the relative height of the mode. For example, the Iowa 52-R0.5 indicates an average service life of 52 years; a right-moded, or R type curve (the mode occurs after average life for right-moded curves); and a low height, 0.5, for the mode (possible modes for R type curves range from 0.5 to 5).

Q. What approach did you use to estimate the lives of significant structures, such as office buildings, service centers and solar facilities?

A. I used the life span technique to estimate the lives of significant facilities for which concurrent retirement of the entire facility is anticipated. In this technique, the survivor characteristics of such facilities are described by the use of interim survivor curves and estimated probable retirement dates. The interim survivor curve describes the rate of retirement related to the replacement of elements of the facility, such as, for a building, the retirements of plumbing, heating, doors, windows, roofs, and similar elements that occur during the life of the facility. The probable retirement date provides the rate of final retirement for each year of installation for the facility by truncating the interim survivor curve for each

installation year at its attained age at the date of probable retirement. The use of interim survivor curves truncated at the date of probable retirement provides a consistent method for estimating the lives of the several years of installation for a particular facility inasmuch as a single concurrent retirement for all years of installation will occur when it is retired.

Q. Has Gannett Fleming used this approach in other proceedings?

A. Yes, my firm has used the life span technique in performing depreciation studies presented to many public utility commissions across the United States and Canada, including in Massachusetts. This technique is currently utilized for NSTAR Electric.

Q. What are the bases for the probable retirement years that you have estimated for each facility?

A. The bases for the probable retirement years are life spans for each facility that are based on judgment, which incorporate consideration of the age, use, size, nature of construction, management outlook and typical life spans experienced and used by other electric utilities for similar facilities. The life spans result in probable retirement years that are far enough in the future that the retirements of these facilities are not yet subject to specific management plans. Such plans would be premature. At the appropriate time, detailed studies of the economics of rehabilitation and continued use or retirement of the facility will be performed and the results incorporated in the estimation of the facility's life span.

Q. Did you physically observe NSTAR Electric's plant and equipment as part of this Depreciation Study?

A. Yes. I made field reviews of NSTAR Electric's property as part of the study during June 2021 to observe representative portions of plant. I also conducted field visits in January and February 2016 as part of the last depreciation studies. Field reviews are conducted to become familiar with operations of the Company and obtain an understanding of the function of the plant and information with respect to the reasons for past retirements and the expected future causes of retirements. This knowledge, as well as information from other discussions with Eversource management, was incorporated in the interpretation and extrapolation of the statistical analyses.

Q. How did your experience in development of other depreciation studies affect your work in this case for NSTAR Electric?

A. Because I customarily conduct field reviews for my depreciation studies, I have had the opportunity to visit scores of similar facilities and meet with management and operations personnel at many other companies. The knowledge I have accumulated from those visits and meetings provides me with useful information to draw upon to confirm or challenge my numerical analyses concerning asset condition and remaining life estimates.

Q. Are the factors considered in your estimates of service life and net salvage percent presented in Exhibit ES-JJS-2?

A. Yes. A discussion of the factors considered in the estimation of service lives and

net salvage percent are presented in Parts III and IV of the study.

Q. Please describe the concept of "net salvage".

A. Net salvage is a component of the service value of capital assets that is recovered through depreciation rates. The service value of an asset is its original cost less its net salvage. Net salvage is the salvage value received for the asset upon retirement less the cost to retire the asset. When the cost to retire the asset exceeds the salvage value, the result is negative net salvage.

Because depreciation expense is the loss in service value of an asset during a defined period (e.g., one year), it must include a ratable portion of both the original cost of the asset and the net salvage. That is, the net salvage related to an asset should be incorporated in the cost of service during the same period as its original cost, so that customers receiving service from the asset pay rates that include a portion of both elements of the asset's service value, the original cost and the net salvage value. For example, the full service value of a $5,000 circuit breaker may also include $1,800 of cost of removal and $50 gross salvage, for a total service value of $6,750.

Q. Please describe how you estimated net salvage percentages.

A. I estimated the net salvage percentages by incorporating each Company's actual historical data through 2020 and considered industry experience of net salvage estimates for other electric companies. The net salvage percentages in the

Depreciation Study are based on a combination of statistical analyses and informed judgment. The statistical analyses consider the cost of removal and gross salvage ratios to the associated retirements during the 29-year period for NSTAR Electric. Trends of these data are also measured based on three-year moving averages and the most recent five-year indications.

Q. Please describe the second phase of the process that you used in the Depreciation Study in which you calculated composite remaining lives and annual depreciation accrual rates.

A. After I estimated the service life and net salvage characteristics for each depreciable property group, I calculated the annual depreciation accrual rates for each group based on the straight-line remaining life method, using remaining lives weighted consistent with the average service life procedure. The calculation of annual depreciation accrual rates was developed as of December 31, 2020.

Q. Please describe the straight-line remaining life method of depreciation.

A. The straight-line remaining life method of depreciation allocates the original cost of the property, less accumulated depreciation, less future net salvage, in equal amounts to each year of remaining service life.

Q. Please describe the average service life procedure for calculating remaining life accrual rates.

A. The average service life procedure defines the group or account for which the remaining life annual accrual is determined. Under this procedure, the annual accrual rate is determined for the entire group or account based on its average

remaining life and the rate is then applied to the surviving balance of the group's cost. The average remaining life of the group is calculated by first dividing the future book accruals (original cost less allocated book reserve less future net salvage) by the average remaining life for each vintage. The average remaining life for each vintage is derived from the area under the survivor curve between the attained age of the vintage and the maximum age. The sum of the future book accruals is then divided by the sum of the annual accruals to determine the average remaining life of the entire group for use in calculating the annual depreciation accrual rate.

Q. Please describe amortization accounting in contrast to depreciation accounting.

A. Amortization accounting is used for accounts with a large number of units, but small asset values. In amortization accounting, units of property are capitalized in the same manner as they are in depreciation accounting. However, depreciation accounting is difficult for these types of assets because depreciation accounting requires periodic inventories to properly reflect plant in service. Consequently, amortization accounting is used for these types of assets, such that retirements are recorded when a vintage is fully amortized rather than as the units are removed from service. That is, there is no dispersion of retirements in amortization accounting. All units are retired when the age of the vintage reaches the amortization period. Each plant account or group of assets is assigned a fixed

period that represents an anticipated life during which the asset will render full benefit. For example, in amortization accounting, assets that have a 25-year amortization period will be fully recovered after 25 years of service and taken off the company's books at that time, but not necessarily removed from service. In contrast, assets that are taken out of service before 25 years remain on the books until the amortization period for that vintage has expired.

Q. Is amortization accounting being utilized for certain plant accounts?

A. Yes. However, amortization accounting is only appropriate for certain General Plant accounts. The NSTAR Electric General Plant accounts are 391.10, 391.20, 393.00, 394.00, 395.00, 397.00 and 398.00. These accounts represent less than two percent of the Company's depreciable plant.

Q. Have you made additional recommendations for these amortization accounts?

A. Yes. In order to achieve a more stable accrual rate for these accounts in the future, I have recommended a five-year amortization to adjust unrecovered reserve. This approach will achieve consistent amortization rates for existing assets as well as future assets.

Q. Please provide an example to illustrate the development of the annual depreciation accrual rate for a particular group of property in your Depreciation Study.

A. I will use the Company's Account 367.00, Underground Conductors and Devices, as an example because it is the largest depreciable group. The retirement rate

method was used to analyze the survivor characteristics of this property group. Aged plant accounting data were compiled from 1901 through 2020 and analyzed to best represent the overall service life of this property. The life tables for the 1901-2020, 1991-2020 and 2001-2020 experience bands are presented on pages VII-59 through VII-67 of Exhibit ES-JJS-2. The life table displays the retirement and surviving ratios of the aged plant data exposed to retirement by age interval. For example, page VII-59 shows $12,796,114 retired during age interval 0.5-1.5 with $2,082,456,050 exposed to retirement at the beginning of the interval. Consequently, the retirement ratio is 0.0061 ($12,796,114/$2,082,456,050) and the surviving ratio is 0.9939 (1-.0061). The percent surviving at age 0.5 of .9979 percent is multiplied by the survivor ratio of 99.39 to derive the percent surviving at age 1.5 of 99.17 percent. This process continues for the remaining age intervals for which plant was exposed to retirement during the period 1901-2020. The resultant life tables, or original survivor curves, are plotted along with the estimated smooth survivor curve, the 52-R0.5 on page VII-58.

The net salvage percent is presented on pages VIII-12 and VIII-13 of Exhibit ES-JJS-2. The percentage is based on the result of annual gross salvage minus the cost to remove plant assets as compared to the original cost of plant retired during the period 1992 through 2020. The 29-year period experienced negative $78,867,267 ($4,692,420 - $83,559,687) in net salvage for $193,893,330 plant retired. The result is negative net salvage of 41 percent ($78,867,267/$193,893,330); and the

most recent five-year average is negative 58 percent. Therefore, based on the statistics for this account, the three-year rolling averages, the trend in recent years, as well as the estimates of other electric companies, the recommended net salvage for underground conductor and devices is negative 40 percent.

My calculation of the annual depreciation related to original cost of Account 367.00, Underground Conductors and Devices as of December 31, 2020, is presented on pages IX-26 through IX-28 of Exhibit ES-JJS-2. The calculation is based on the 52-R0.5 survivor curve, the negative net salvage of 40 percent, the attained age, and the allocated book reserve. The tabulation sets forth the installation year, the original cost, calculated accrued depreciation, allocated book reserve, future accruals, remaining life and annual accrual. These totals are brought forward to the table on page VI-4.

Q. Please compare the proposed depreciation expense to the current pro-forma depreciation expense as of December 31, 2020.

A. Exhibit ES-JJS-3 sets forth the proposed versus current depreciation expense as of December 31, 2020 for the Company. The overall change reflected in the NSTAR Electric Depreciation Study is a decrease of $11.8 million annually.

Q. Have you established any special amortizations within each study?

A. Yes. I have established a 5-year amortization for certain General Plant accounts in order to stabilize the current and future rates for these assets as well as ensure full recovery of the service value of the assets by the time the assets are taken out of

service. The 5-year amortization is $131,889 annually for NSTAR Electric.

Q. Have you addressed the meter replacement program in the Depreciation Study?

A. Yes. The Company has a program in place to replace all assets in Account 370.10, Meters – AMR by the end of 2028. Therefore, all AMR meters will be retired and the remaining book value will be recovered through depreciation by year end, 2028.

Q. Have you developed rates by town for Account 373, Street Lighting and Signal Systems?

A. Yes. Pages VI-4 through VI-6 set forth the depreciation rates for NSTAR Electric as of December 31, 2020 with Account 373, Street Lighting and Signal Systems, assets identified by town. The detailed calculations supporting the depreciation rates and expense by town are set forth in Part IX of Exhibit ES-JJS-2.

Q. In your opinion, are the depreciation rates set forth in Exhibit ES-JJS-2 the appropriate rates for the Department to adopt in this proceeding for NSTAR Electric?

A. Yes. These rates appropriately reflect the rates at which the value of the Company's assets are being consumed over their useful lives. These rates are an appropriate basis for setting electric rates in this matter and for the Company to use for booking depreciation and amortization expense going forward.

Q. Does this conclude your direct testimony?

A. Yes.

Exhibit ES-JJS-1 Appendix A

JOHN SPANOS

DEPRECIATION EXPERIENCE

Q. Please state your name.

A. My name is John J. Spanos.

Q. What is your educational background?

A. I have Bachelor of Science degrees in Industrial Management and Mathematics from Carnegie-Mellon University and a Master of Business Administration from York College.

Q. Do you belong to any professional societies?

A. Yes. I am a member and past President of the Society of Depreciation Professionals and a member of the American Gas Association/Edison Electric Institute Industry Accounting Committee.

Q. Do you hold any special certification as a depreciation expert?

A. Yes. The Society of Depreciation Professionals has established national standards for depreciation professionals. The Society administers an examination to become certified in this field. I passed the certification exam in September 1997 and was recertified in August 2003, February 2008, January 2013 and February 2018.

Q. Please outline your experience in the field of depreciation.

A. In June 1986, I was employed by Gannett Fleming Valuation and Rate Consultants, Inc. as a Depreciation Analyst. During the period from June 1986 through December 1995, I helped prepare numerous depreciation and original cost studies for utility companies in various industries. I helped perform depreciation studies for the following telephone companies: United Telephone of Pennsylvania, United Telephone of New Jersey, and Anchorage Telephone Utility. I helped perform depreciation studies for the following companies in the railroad industry: Union Pacific Railroad, Burlington Northern Railroad,

and Wisconsin Central Transportation Corporation.

I helped perform depreciation studies for the following organizations in the electric utility industry: Chugach Electric Association, The Cincinnati Gas and Electric Company (CG&E), The Union Light, Heat and Power Company (ULH&P), Northwest Territories Power Corporation, and the City of Calgary - Electric System.

I helped perform depreciation studies for the following pipeline companies: TransCanada Pipelines Limited, Trans Mountain Pipe Line Company Ltd., Interprovincial Pipe Line Inc., Nova Gas Transmission Limited and Lakehead Pipeline Company.

I helped perform depreciation studies for the following gas utility companies: Columbia Gas of Pennsylvania, Columbia Gas of Maryland, The Peoples Natural Gas Company, T. W. Phillips Gas & Oil Company, CG&E, ULH&P, Lawrenceburg Gas Company and Penn Fuel Gas, Inc.

I helped perform depreciation studies for the following water utility companies: Indiana-American Water Company, Consumers Pennsylvania Water Company and The York Water Company; and depreciation and original cost studies for Philadelphia Suburban Water Company and Pennsylvania-American Water Company.

In each of the above studies, I assembled and analyzed historical and simulated data, performed field reviews, developed preliminary estimates of service life and net salvage, calculated annual depreciation, and prepared reports for submission to state public utility commissions or federal regulatory agencies. I performed these studies under the general direction of William M. Stout, P.E.

In January 1996, I was assigned to the position of Supervisor of Depreciation Studies. In July 1999, I was promoted to the position of Manager, Depreciation and Valuation Studies. In December 2000, I was promoted to the position as Vice-President of

Gannett Fleming Valuation and Rate Consultants, Inc., in April 2012, I was promoted to the position as Senior Vice President of the Valuation and Rate Division of Gannett Fleming Inc. (now doing business as Gannett Fleming Valuation and Rate Consultants, LLC) and in January of 2019, I was promoted to my present position of President of Gannett Fleming Valuation and Rate Consultants, LLC. In my current position I am responsible for conducting all depreciation, valuation and original cost studies, including the preparation of final exhibits and responses to data requests for submission to the appropriate regulatory bodies.

Since January 1996, I have conducted depreciation studies similar to those previously listed including assignments for Pennsylvania-American Water Company; Aqua Pennsylvania; Kentucky-American Water Company; Virginia-American Water Company; Indiana-American Water Company; Iowa-American Water Company; New Jersey-American Water Company; Hampton Water Works Company; Omaha Public Power District; Enbridge Pipe Line Company; Inc.; Columbia Gas of Virginia, Inc.; Virginia Natural Gas Company National Fuel Gas Distribution Corporation - New York and Pennsylvania Divisions; The City of Bethlehem - Bureau of Water; The City of Coatesville Authority; The City of Lancaster - Bureau of Water; Peoples Energy Corporation; The York Water Company; Public Service Company of Colorado; Enbridge Pipelines; Enbridge Gas Distribution, Inc.; Reliant Energy-HLP; Massachusetts-American Water Company; St. Louis County Water Company; Missouri-American Water Company; Chugach Electric Association; Alliant Energy; Oklahoma Gas & Electric Company; Nevada Power Company; Dominion Virginia Power; NUI-Virginia Gas Companies; Pacific Gas & Electric Company; PSI Energy; NUI - Elizabethtown Gas Company; Cinergy Corporation – CG&E; Cinergy Corporation – ULH&P; Columbia Gas of

Kentucky; South Carolina Electric & Gas Company; Idaho Power Company; El Paso Electric Company; Aqua North Carolina; Aqua Ohio; Aqua Texas, Inc.; Aqua Illinois, Inc.; Ameren Missouri; Central Hudson Gas & Electric; Centennial Pipeline Company; CenterPoint Energy-Arkansas; CenterPoint Energy – Oklahoma; CenterPoint Energy – Entex; CenterPoint Energy - Louisiana; NSTAR – Boston Edison Company; Westar Energy, Inc.; United Water Pennsylvania; PPL Electric Utilities; PPL Gas Utilities; Wisconsin Power & Light Company; TransAlaska Pipeline; Avista Corporation; Northwest Natural Gas; Allegheny Energy Supply, Inc.; Public Service Company of North Carolina; South Jersey Gas Company; Duquesne Light Company; MidAmerican Energy Company; Laclede Gas; Duke Energy Company; E.ON U.S. Services Inc.; Elkton Gas Services; Anchorage Water and Wastewater Utility; Kansas City Power and Light; Duke Energy North Carolina; Duke Energy South Carolina; Monongahela Power Company; Potomac Edison Company; Duke Energy Ohio Gas; Duke Energy Kentucky; Duke Energy Indiana; Duke Energy Progress; Northern Indiana Public Service Company; Tennessee-American Water Company; Columbia Gas of Maryland; Maryland-American Water Company; Bonneville Power Administration; NSTAR Electric and Gas Company; EPCOR Distribution, Inc.; B. C. Gas Utility, Ltd; Entergy Arkansas; Entergy Texas; Entergy Mississippi; Entergy Louisiana; Entergy Gulf States Louisiana; the Borough of Hanover; Louisville Gas and Electric Company; Kentucky Utilities Company; Madison Gas and Electric; Central Maine Power; PEPCO; PacifiCorp; Minnesota Energy Resource Group; Jersey Central Power & Light Company; Cheyenne Light, Fuel and Power Company; United Water Arkansas; Central Vermont Public Service Corporation; Green Mountain Power; Portland General Electric Company; Atlantic City Electric; Nicor Gas Company; Black Hills Power; Black Hills Colorado Gas; Black Hills Kansas Gas; Black Hills Service

Company; Black Hills Utility Holdings; Public Service Company of Oklahoma; City of Dubois; Peoples Gas Light and Coke Company; North Shore Gas Company; Connecticut Light and Power; New York State Electric and Gas Corporation; Rochester Gas and Electric Corporation; Greater Missouri Operations; Tennessee Valley Authority; Omaha Public Power District; Indianapolis Power & Light Company; Vermont Gas Systems, Inc.; Metropolitan Edison; Pennsylvania Electric; West Penn Power; Pennsylvania Power; PHI Service Company - Delmarva Power and Light; Atmos Energy Corporation; Citizens Energy Group; PSE&G Company; Berkshire Gas Company; Alabama Gas Corporation; Mid-Atlantic Interstate Transmission, LLC; SUEZ Water; WEC Energy Group; Rocky Mountain Natural Gas, LLC; Illinois-American Water Company; Northern Illinois Gas Company; Public Service of New Hampshire and Newtown Artesian Water Company.

My additional duties include determining final life and salvage estimates, conducting field reviews, presenting recommended depreciation rates to management for its consideration and supporting such rates before regulatory bodies.

Q. Have you submitted testimony to any state utility commission on the subject of utility plant depreciation?

A. Yes. I have submitted testimony to the Pennsylvania Public Utility Commission; the Commonwealth of Kentucky Public Service Commission; the Public Utilities Commission of Ohio; the Nevada Public Utility Commission; the Public Utilities Board of New Jersey; the Missouri Public Service Commission; the Massachusetts Department of Telecommunications and Energy; the Alberta Energy & Utility Board; the Idaho Public Utility Commission; the Louisiana Public Service Commission; the State Corporation Commission of Kansas; the Oklahoma Corporate Commission; the Public Service Commission of South Carolina; Railroad Commission of Texas – Gas Services Division;

the New York Public Service Commission; Illinois Commerce Commission; the Indiana Utility Regulatory Commission; the California Public Utilities Commission; the Federal Energy Regulatory Commission ("FERC"); the Arkansas Public Service Commission; the Public Utility Commission of Texas; Maryland Public Service Commission; Washington Utilities and Transportation Commission; The Tennessee Regulatory Commission; the Regulatory Commission of Alaska; Minnesota Public Utility Commission; Utah Public Service Commission; District of Columbia Public Service Commission; the Mississippi Public Service Commission; Delaware Public Service Commission; Virginia State Corporation Commission; Colorado Public Utility Commission; Oregon Public Utility Commission; South Dakota Public Utilities Commission; Wisconsin Public Service Commission; Wyoming Public Service Commission; the Public Service Commission of West Virginia; Maine Public Utility Commission; Iowa Utility Board; Connecticut Public Utilities Regulatory Authority; New Mexico Public Regulation Commission; Commonwealth of Massachusetts Department of Public Utilities; Rhode Island Public Utilities Commission and the North Carolina Utilities Commission.

Q. Have you had any additional education relating to utility plant depreciation?

A. Yes. I have completed the following courses conducted by Depreciation Programs, Inc.: "Techniques of Life Analysis," "Techniques of Salvage and Depreciation Analysis," "Forecasting Life and Salvage," "Modeling and Life Analysis Using Simulation," and "Managing a Depreciation Study." I have also completed the "Introduction to Public Utility Accounting" program conducted by the American Gas Association.

Q. Does this conclude your qualification statement?

A. Yes.

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY

	Year	Jurisdiction	Docket No.	Client Utility	Subject
01.	1998	PA PUC	R-00984375	City of Bethlehem – Bureau of Water	Original Cost and Depreciation
02.	1998	PA PUC	R-00984567	City of Lancaster	Original Cost and Depreciation
03.	1999	PA PUC	R-00994605	The York Water Company	Depreciation
04.	2000	D.T.&E.	DTE 00-105	Massachusetts-American Water Company	Depreciation
05.	2001	PA PUC	R-00016114	City of Lancaster	Original Cost and Depreciation
06.	2001	PA PUC	R-00017236	The York Water Company	Depreciation
07.	2001	PA PUC	R-00016339	Pennsylvania-American Water Company	Depreciation
08.	2001	OH PUC	01-1228-GA-AIR	Cinergy Corp – Cincinnati Gas & Elect Company	Depreciation
09.	2001	KY PSC	2001-092	Cinergy Corp – Union Light, Heat & Power Co.	Depreciation
10.	2002	PA PUC	R-00016750	Philadelphia Suburban Water Company	Depreciation
11.	2002	KY PSC	2002-00145	Columbia Gas of Kentucky	Depreciation
12.	2002	NJ BPU	GF02040245	NUI Corporation/Elizabethtown Gas Company	Depreciation
13.	2002	ID PUC	IPC-E-03-7	Idaho Power Company	Depreciation
14.	2003	PA PUC	R-0027975	The York Water Company	Depreciation
15.	2003	IN URC	R-0027975	Cinergy Corp – PSI Energy, Inc.	Depreciation
16.	2003	PA PUC	R-00038304	Pennsylvania-American Water Company	Depreciation
17.	2003	MO PSC	WR-2003-0500	Missouri-American Water Company	Depreciation
18.	2003	FERC	ER03-1274-000	NSTAR-Boston Edison Company	Depreciation
19.	2003	NJ BPU	BPU 03080683	South Jersey Gas Company	Depreciation
20.	2003	NV PUC	03-10001	Nevada Power Company	Depreciation
21.	2003	LA PSC	U-27676	CenterPoint Energy – Arkla	Depreciation
22.	2003	PA PUC	R-00038805	Pennsylvania Suburban Water Company	Depreciation
23.	2004	AB En/Util Bd	1306821	EPCOR Distribution, Inc.	Depreciation
24.	2004	PA PUC	R-00038168	National Fuel Gas Distribution Corp (PA)	Depreciation
25.	2004	PA PUC	R-00049255	PPL Electric Utilities	Depreciation
26.	2004	PA PUC	R-00049165	The York Water Company	Depreciation
27.	2004	OK Corp Cm	PUC 200400187	CenterPoint Energy – Arkla	Depreciation
28.	2004	OH PUC	04-680-El-AIR	Cinergy Corp. – Cincinnati Gas and Electric Company	Depreciation
29.	2004	RR Com of TX	GUD#	CenterPoint Energy – Entex Gas Services Div.	Depreciation
30.	2004	NY PUC	04-G-1047	National Fuel Gas Distribution Gas (NY)	Depreciation
31.	2004	AR PSC	04-121-U	CenterPoint Energy – Arkla	Depreciation
32.	2005	IL CC	05-ICC-06	North Shore Gas Company	Depreciation
33.	2005	IL CC	05-ICC-06	Peoples Gas Light and Coke Company	Depreciation
34.	2005	KY PSC	2005-00042	Union Light Heat & Power	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
35.	2005	IL CC	05-0308	MidAmerican Energy Company	Depreciation
36.	2005	MO PSC	GF-2005	Laclede Gas Company	Depreciation
37.	2005	KS CC	05-WSEE-981-RTS	Westar Energy	Depreciation
38.	2005	RR Com of TX	GUD #	CenterPoint Energy – Entex Gas Services Div.	Depreciation
39.	2005	US District Court	Cause No. 1:99-CV-1693-LJM/VSS	Cinergy Corporation	Accounting
40.	2005	OK CC	PUD 200500151	Oklahoma Gas and Electric Company	Depreciation
41.	2005	MA Dept Tele-com & Ergy	DTE 05-85	NSTAR	Depreciation
42.	2005	NY PUC	05-E-934/05-G-0935	Central Hudson Gas & Electric Company	Depreciation
43.	2005	AK Reg Com	U-04-102	Chugach Electric Association	Depreciation
44.	2005	CA PUC	A05-12-002	Pacific Gas & Electric	Depreciation
45.	2006	PA PUC	R-00051030	Aqua Pennsylvania, Inc.	Depreciation
46.	2006	PA PUC	R-00051178	T.W. Phillips Gas and Oil Company	Depreciation
47.	2006	NC Util Cm.	G-5, Sub522	Pub. Service Company of North Carolina	Depreciation
48.	2006	PA PUC	R-00051167	City of Lancaster	Depreciation
49.	2006	PA PUC	R00061346	Duquesne Light Company	Depreciation
50.	2006	PA PUC	R-00061322	The York Water Company	Depreciation
51.	2006	PA PUC	R-00051298	PPL GAS Utilities	Depreciation
52.	2006	PUC of TX	32093	CenterPoint Energy – Houston Electric	Depreciation
53.	2006	KY PSC	2006-00172	Duke Energy Kentucky	Depreciation
54.	2006	SC PSC		SCANA	Accounting
55.	2006	AK Reg Com	U-06-6	Municipal Light and Power	Depreciation
56.	2006	DE PSC	06-284	Delmarva Power and Light	Depreciation
57.	2006	IN URC	IURC43081	Indiana American Water Company	Depreciation
58.	2006	AK Reg Com	U-06-134	Chugach Electric Association	Depreciation
59.	2006	MO PSC	WR-2007-0216	Missouri American Water Company	Depreciation
60.	2006	FERC	IS05-82-002, et al	TransAlaska Pipeline	Depreciation
61.	2006	PA PUC	R-00061493	National Fuel Gas Distribution Corp. (PA)	Depreciation
62.	2007	NC Util Com.	E-7 SUB 828	Duke Energy Carolinas, LLC	Depreciation
63.	2007	OH PSC	08-709-EL-AIR	Duke Energy Ohio Gas	Depreciation
64.	2007	PA PUC	R-00072155	PPL Electric Utilities Corporation	Depreciation
65.	2007	KY PSC	2007-00143	Kentucky American Water Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
66.	2007	PA PUC	R-00072229	Pennsylvania American Water Company	Depreciation
67.	2007	KY PSC	2007-0008	NiSource – Columbia Gas of Kentucky	Depreciation
68.	2007	NY PSC	07-G-0141	National Fuel Gas Distribution Corp (NY)	Depreciation
69.	2008	AK PSC	U-08-004	Anchorage Water & Wastewater Utility	Depreciation
70.	2008	TN Reg Auth	08-00039	Tennessee-American Water Company	Depreciation
71.	2008	DE PSC	08-96	Artesian Water Company	Depreciation
72.	2008	PA PUC	R-2008-2023067	The York Water Company	Depreciation
73.	2008	KS CC	08-WSEE1-RTS	Westar Energy	Depreciation
74.	2008	IN URC	43526	Northern Indiana Public Service Company	Depreciation
75.	2008	IN URC	43501	Duke Energy Indiana	Depreciation
76.	2008	MD PSC	9159	NiSource – Columbia Gas of Maryland	Depreciation
77.	2008	KY PSC	2008-000251	Kentucky Utilities	Depreciation
78.	2008	KY PSC	2008-000252	Louisville Gas & Electric	Depreciation
79.	2008	PA PUC	2008-20322689	Pennsylvania American Water Co. - Wastewater	Depreciation
80.	2008	NY PSC	08-E887/08-00888	Central Hudson	Depreciation
81.	2008	WV TC	VE-080416/VG-8080417	Avista Corporation	Depreciation
82.	2008	IL CC	ICC-09-166	Peoples Gas, Light and Coke Company	Depreciation
83.	2009	IL CC	ICC-09-167	North Shore Gas Company	Depreciation
84.	2009	DC PSC	1076	Potomac Electric Power Company	Depreciation
85.	2009	KY PSC	2009-00141	NiSource – Columbia Gas of Kentucky	Depreciation
86.	2009	FERC	ER08-1056-002	Entergy Services	Depreciation
87.	2009	PA PUC	R-2009-2097323	Pennsylvania American Water Company	Depreciation
88.	2009	NC Util Cm	E-7, Sub 090	Duke Energy Carolinas, LLC	Depreciation
89.	2009	KY PSC	2009-00202	Duke Energy Kentucky	Depreciation
90.	2009	VA St. CC	PUE-2009-00059	Aqua Virginia, Inc.	Depreciation
91.	2009	PA PUC	2009-2132019	Aqua Pennsylvania, Inc.	Depreciation
92.	2009	MS PSC	Docket No. 2011-UA-183	Entergy Mississippi	Depreciation
93.	2009	AK PSC	09-08-U	Entergy Arkansas	Depreciation
94.	2009	TX PUC	37744	Entergy Texas	Depreciation
95.	2009	TX PUC	37690	El Paso Electric Company	Depreciation
96.	2009	PA PUC	R-2009-2106908	The Borough of Hanover	Depreciation
97.	2009	KS CC	10-KCPE-415-RTS	Kansas City Power & Light	Depreciation
98.	2009	PA PUC	R-2009-	United Water Pennsylvania	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
99.	2009	OH PUC		Aqua Ohio Water Company	Depreciation
100.	2009	WI PSC	3270-DU-103	Madison Gas & Electric Company	Depreciation
101.	2009	MO PSC	WR-2010	Missouri American Water Company	Depreciation
102.	2009	AK Reg Cm	U-09-097	Chugach Electric Association	Depreciation
103.	2010	IN URC	43969	Northern Indiana Public Service Company	Depreciation
104.	2010	WI PSC	6690-DU-104	Wisconsin Public Service Corp.	Depreciation
105.	2010	PA PUC	R-2010-2161694	PPL Electric Utilities Corp.	Depreciation
106.	2010	KY PSC	2010-00036	Kentucky American Water Company	Depreciation
107.	2010	PA PUC	R-2009-2149262	Columbia Gas of Pennsylvania	Depreciation
108.	2010	MO PSC	GR-2010-0171	Laclede Gas Company	Depreciation
109.	2010	SC PSC	2009-489-E	South Carolina Electric & Gas Company	Depreciation
110.	2010	NJ BD OF PU	ER09080664	Atlantic City Electric	Depreciation
111.	2010	VA St. CC	PUE-2010-00001	Virginia American Water Company	Depreciation
112.	2010	PA PUC	R-2010-2157140	The York Water Company	Depreciation
113.	2010	MO PSC	ER-2010-0356	Greater Missouri Operations Company	Depreciation
114.	2010	MO PSC	ER-2010-0355	Kansas City Power and Light	Depreciation
115.	2010	PA PUC	R-2010-2167797	T.W. Phillips Gas and Oil Company	Depreciation
116.	2010	PSC SC	2009-489-E	SCANA – Electric	Depreciation
117.	2010	PA PUC	R-2010-22010702	Peoples Natural Gas, LLC	Depreciation
118.	2010	AK PSC	10-067-U	Oklahoma Gas and Electric Company	Depreciation
119.	2010	IN URC	Cause No. 43894	Northern Indiana Public Serv. Company - NIFL	Depreciation
120.	2010	IN URC	Cause No. 43894	Northern Indiana Public Serv. Co. - Kokomo	Depreciation
121.	2010	PA PUC	R-2010-2166212	Pennsylvania American Water Co. - WW	Depreciation
122.	2010	NC Util Cn.	W-218,SUB310	Aqua North Carolina, Inc.	Depreciation
123.	2011	OH PUC	11-4161-WS-AIR	Ohio American Water Company	Depreciation
124.	2011	MS PSC	EC-123-0082-00	Entergy Mississippi	Depreciation
125.	2011	CO PUC	11AL-387E	Black Hills Colorado	Depreciation
126.	2011	PA PUC	R-2010-2215623	Columbia Gas of Pennsylvania	Depreciation
127.	2011	PA PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Depreciation
128.	2011	IN URC	43114 IGCC 4S	Duke Energy Indiana	Depreciation
129.	2011	FERC	IS11-146-000	Enbridge Pipelines (Southern Lights)	Depreciation
130.	2011	IL CC	11-0217	MidAmerican Energy Corporation	Depreciation
131.	2011	OK CC	201100087	Oklahoma Gas & Electric Company	Depreciation
132.	2011	PA PUC	2011-2232243	Pennsylvania American Water Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
133.	2011	FERC	RP11-___-000	Carolina Gas Transmission	Depreciation
134.	2012	WA UTC	UE-120436/UG-120437	Avista Corporation	Depreciation
135.	2012	AK Reg Cm	U-12-009	Chugach Electric Association	Depreciation
136.	2012	MA PUC	DPU 12-25	Columbia Gas of Massachusetts	Depreciation
137.	2012	TX PUC	40094	El Paso Electric Company	Depreciation
138.	2012	ID PUC	IPC-E-12	Idaho Power Company	Depreciation
139.	2012	PA PUC	R-2012-2290597	PPL Electric Utilities	Depreciation
140.	2012	PA PUC	R-2012-2311725	Borough of Hanover – Bureau of Water	Depreciation
141.	2012	KY PSC	2012-00222	Louisville Gas and Electric Company	Depreciation
142.	2012	KY PSC	2012-00221	Kentucky Utilities Company	Depreciation
143.	2012	PA PUC	R-2012-2285985	Peoples Natural Gas Company	Depreciation
144.	2012	DC PSC	Case 1087	Potomac Electric Power Company	Depreciation
145.	2012	OH PSC	12-1682-EL-AIR	Duke Energy Ohio (Electric)	Depreciation
146.	2012	OH PSC	12-1685-GA-AIR	Duke Energy Ohio (Gas)	Depreciation
147.	2012	PA PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Depreciation
148.	2012	PA PUC	R-2012-2321748	Columbia Gas of Pennsylvania	Depreciation
149.	2012	FERC	ER-12-2681-000	ITC Holdings	Depreciation
150.	2012	MO PSC	ER-2012-0174	Kansas City Power and Light	Depreciation
151.	2012	MO PSC	ER-2012-0175	KCPL Greater Missouri Operations Company	Depreciation
152.	2012	MO PSC	GO-2012-0363	Laclede Gas Company	Depreciation
153.	2012	MN PUC	G007,001/D-12-533	Integrys – MN Energy Resource Group	Depreciation
154.	2012	TX PUC	SOAH 582-14-1051/ TECQ 2013-2007-UCR	Aqua Texas	Depreciation
155.	2012	PA PUC	2012-2336379	York Water Company	Depreciation
156.	2013	NJ BPU	ER12121071	PHI Service Company– Atlantic City Electric	Depreciation
157.	2013	KY PSC	2013-00167	Columbia Gas of Kentucky	Depreciation
158.	2013	VA St CC	2013-00020	Virginia Electric and Power Company	Depreciation
159.	2013	IA Util Bd	2013-0004	MidAmerican Energy Corporation	Depreciation
160.	2013	PA PUC	2013-2355276	Pennsylvania American Water Company	Depreciation
161.	2013	NY PSC	13-E-0030, 13-G-0031, 13-S-0032	Consolidated Edison of New York	Depreciation
162.	2013	PA PUC	2013-2355886	Peoples TWP LLC	Depreciation
163.	2013	TN Reg Auth	12-0504	Tennessee American Water	Depreciation
164.	2013	ME PUC	2013-168	Central Maine Power Company	Depreciation
165.	2013	DC PSC	Case 1103	PHI Service Company – PEPCO	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
166.	2013	WY PSC	2003-ER-13	Cheyenne Light, Fuel and Power Company	Depreciation
167.	2013	FERC	ER13-2428-0000	Kentucky Utilities	Depreciation
168.	2013	FERC	ER13- -0000	MidAmerican Energy Company	Depreciation
169.	2013	FERC	ER13-2410-0000	PPL Utilities	Depreciation
170.	2013	PA PUC	R-2013-2372129	Duquesne Light Company	Depreciation
171.	2013	NJ BPU	ER12111052	Jersey Central Power and Light Company	Depreciation
172.	2013	PA PUC	R-2013-2390244	Bethlehem, City of – Bureau of Water	Depreciation
173.	2013	OK CC	UM 1679	Oklahoma, Public Service Company of	Depreciation
174.	2013	IL CC	13-0500	Nicor Gas Company	Depreciation
175.	2013	WY PSC	20000-427-EA-13	PacifiCorp	Depreciation
176.	2013	UT PSC	13-035-02	PacifiCorp	Depreciation
177.	2013	OR PUC	UM 1647	PacifiCorp	Depreciation
178.	2013	PA PUC	2013-2350509	Dubois, City of	Depreciation
179.	2014	IL CC	14-0224	North Shore Gas Company	Depreciation
180.	2014	FERC	ER14- -0000	Duquesne Light Company	Depreciation
181.	2014	SD PUC	EL14-026	Black Hills Power Company	Depreciation
182.	2014	WY PSC	20002-91-ER-14	Black Hills Power Company	Depreciation
183.	2014	PA PUC	2014-2428304	Borough of Hanover – Municipal Water Works	Depreciation
184.	2014	PA PUC	2014-2406274	Columbia Gas of Pennsylvania	Depreciation
185.	2014	IL CC	14-0225	Peoples Gas Light and Coke Company	Depreciation
186.	2014	MO PSC	ER-2014-0258	Ameren Missouri	Depreciation
187.	2014	KS CC	14-BHCG-502-RTS	Black Hills Service Company	Depreciation
188.	2014	KS CC	14-BHCG-502-RTS	Black Hills Utility Holdings	Depreciation
189.	2014	KS CC	14-BHCG-502-RTS	Black Hills Kansas Gas	Depreciation
190.	2014	PA PUC	2014-2418872	Lancaster, City of – Bureau of Water	Depreciation
191.	2014	WV PSC	14-0701-E-D	First Energy – MonPower/PotomacEdison	Depreciation
192	2014	VA St CC	PUC-2014-00045	Aqua Virginia	Depreciation
193.	2014	VA St CC	PUE-2013	Virginia American Water Company	Depreciation
194.	2014	OK CC	PUD201400229	Oklahoma Gas and Electric Company	Depreciation
195.	2014	OR PUC	UM1679	Portland General Electric	Depreciation
196.	2014	IN URC	Cause No. 44576	Indianapolis Power & Light	Depreciation
197.	2014	MA DPU	DPU. 14-150	NSTAR Gas	Depreciation
198.	2014	CT PURA	14-05-06	Connecticut Light and Power	Depreciation
199.	2014	MO PSC	ER-2014-0370	Kansas City Power & Light	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
200.	2014	KY PSC	2014-00371	Kentucky Utilities Company	Depreciation
201.	2014	KY PSC	2014-00372	Louisville Gas and Electric Company	Depreciation
202.	2015	PA PUC	R-2015-2462723	United Water Pennsylvania Inc.	Depreciation
203.	2015	PA PUC	R-2015-2468056	NiSource - Columbia Gas of Pennsylvania	Depreciation
204.	2015	NY PSC	15-E-0283/15-G-0284	New York State Electric and Gas Corporation	Depreciation
205.	2015	NY PSC	15-E-0285/15-G-0286	Rochester Gas and Electric Corporation	Depreciation
206.	2015	MO PSC	WR-2015-0301/SR-2015-0302	Missouri American Water Company	Depreciation
207.	2015	OK CC	PUD 201500208	Oklahoma, Public Service Company of	Depreciation
208.	2015	WV PSC	15-0676-W-42T	West Virginia American Water Company	Depreciation
209.	2015	PA PUC	2015-2469275	PPL Electric Utilities	Depreciation
210.	2015	IN URC	Cause No. 44688	Northern Indiana Public Service Company	Depreciation
211.	2015	OH PSC	14-1929-EL-RDR	First Energy-Ohio Edison/Cleveland Electric/ Toledo Edison	Depreciation
212.	2015	NM PRC	15-00127-UT	El Paso Electric	Depreciation
213.	2015	TX PUC	PUC-44941; SOAH 473-15-5257	El Paso Electric	Depreciation
214.	2015	WI PSC	3270-DU-104	Madison Gas and Electric Company	Depreciation
215.	2015	OK CC	PUD 201500273	Oklahoma Gas and Electric	Depreciation
216.	2015	KY PSC	Doc. No. 2015-00418	Kentucky American Water Company	Depreciation
217.	2015	NC UC	Doc. No. G-5, Sub 565	Public Service Company of North Carolina	Depreciation
218.	2016	WA UTC	Docket UE-17	Puget Sound Energy	Depreciation
219.	2016	NY PSC	Case No. 16-W-0130	SUEZ Water New York, Inc.	Depreciation
220.	2016	MO PSC	ER-2016-0156	KCPL – Greater Missouri	Depreciation
221.	2016	WI PSC		Wisconsin Public Service Corporation	Depreciation
222.	2016	KY PSC	Case No. 2016-00026	Kentucky Utilities Company	Depreciation
223.	2016	KY PSC	Case No. 2016-00027	Louisville Gas and Electric Company	Depreciation
224.	2016	OH PUC	Case No. 16-0907-WW-AIR	Aqua Ohio	Depreciation
225.	2016	MD PSC	Case 9417	NiSource - Columbia Gas of Maryland	Depreciation
226.	2016	KY PSC	2016-00162	Columbia Gas of Kentucky	Depreciation
227.	2016	DE PSC	16-0649	Delmarva Power and Light Company – Electric	Depreciation
228.	2016	DE PSC	16-0650	Delmarva Power and Light Company – Gas	Depreciation
229.	2016	NY PSC	Case 16-G-0257	National Fuel Gas Distribution Corp – NY Div	Depreciation
230.	2016	PA PUC	R-2016-2537349	Metropolitan Edison Company	Depreciation
231.	2016	PA PUC	R-2016-2537352	Pennsylvania Electric Company	Depreciation
232.	2016	PA PUC	R-2016-2537355	Pennsylvania Power Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
233.	2016	PA PUC	R-2016-2537359	West Penn Power Company	Depreciation
234.	2016	PA PUC	R-2016-2529660	NiSource - Columbia Gas of PA	Depreciation
235.	2016	KY PSC	Case No. 2016-00063	Kentucky Utilities / Louisville Gas & Electric Co	Depreciation
236.	2016	MO PSC	ER-2016-0285	KCPL Missouri	Depreciation
237.	2016	AR PSC	16-052-U	Oklahoma Gas & Electric Co	Depreciation
238.	2016	PSCW	6680-DU-104	Wisconsin Power and Light	Depreciation
239.	2016	ID PUC	IPC-E-16-23	Idaho Power Company	Depreciation
240.	2016	OR PUC	UM1801	Idaho Power Company	Depreciation
241.	2016	ILL CC	16-	MidAmerican Energy Company	Depreciation
242.	2016	KY PSC	Case No. 2016-00370	Kentucky Utilities Company	Depreciation
243.	2016	KY PSC	Case No. 2016-00371	Louisville Gas and Electric Company	Depreciation
244.	2016	IN URC	Cause No. 45029	Indianapolis Power & Light	Depreciation
245.	2016	AL RC	U-16-081	Chugach Electric Association	Depreciation
246.	2017	MA DPU	D.P.U. 17-05	NSTAR Electric Company and Western Massachusetts Electric Company	Depreciation
247.	2017	TX PUC	PUC-26831, SOAH 973-17-2686	El Paso Electric Company	Depreciation
248.	2017	WA UTC	UE-17033 and UG-170034	Puget Sound Energy	Depreciation
249.	2017	OH PUC	Case No. 17-0032-EL-AIR	Duke Energy Ohio	Depreciation
250.	2017	VA SCC	Case No. PUE-2016-00413	Virginia Natural Gas, Inc.	Depreciation
251.	2017	OK CC	Case No. PUD201700151	Public Service Company of Oklahoma	Depreciation
252.	2017	MD PSC	Case No. 9447	Columbia Gas of Maryland	Depreciation
253.	2017	NC UC	Docket No. E-2, Sub 1142	Duke Energy Progress	Depreciation
254.	2017	VA SCC	Case No. PUR-2017-00090	Dominion Virginia Electric and Power Company	Depreciation
255.	2017	FERC	ER17-1162	MidAmerican Energy Company	Depreciation
256.	2017	PA PUC	R-2017-2595853	Pennsylvania American Water Company	Depreciation
257.	2017	OR PUC	UM1809	Portland General Electric	Depreciation
258.	2017	FERC	ER17-217-000	Jersey Central Power & Light	Depreciation
259.	2017	FERC	ER17-211-000	Mid-Atlantic Interstate Transmission, LLC	Depreciation
260.	2017	MN PUC	Docket No. G007/D-17-442	Minnesota Energy Resources Corporation	Depreciation
261.	2017	IL CC	Docket No. 17-0124	Northern Illinois Gas Company	Depreciation
262.	2017	OR PUC	UM1808	Northwest Natural Gas Company	Depreciation
263.	2017	NY PSC	Case No. 17-W-0528	SUEZ Water Owego-Nichols	Depreciation
264.	2017	MO PSC	GR-2017-0215	Laclede Gas Company	Depreciation
265.	2017	MO PSC	GR-2017-0216	Missouri Gas Energy	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
266.	2017	ILL CC	Docket No. 17-0337	Illinois-American Water Company	Depreciation
267.	2017	FERC	Docket No. ER18-22-000	PPL Electric Utilities Corporation	Depreciation
268.	2017	IN URC	Cause No. 44988	Northern Indiana Public Service Company	Depreciation
269.	2017	NJ BPU	BPU Docket No. WR17090985	New Jersey American Water Company, Inc.	Depreciation
270.	2017	RI PUC	Docket No. 4800	SUEZ Water Rhode Island	Depreciation
271.	2017	OK CC	Cause No. PUD 201700496	Oklahoma Gas and Electric Company	Depreciation
272.	2017	NJ BPU	ER18010029 & GR18010030	Public Service Electric and Gas Company	Depreciation
273.	2017	NC Util Com.	Docket No. E-7, SUB 1146	Duke Energy Carolinas, LLC	Depreciation
274.	2017	KY PSC	Case No. 2017-00321	Duke Energy Kentucky, Inc.	Depreciation
275.	2017	MA DPU	D.P.U. 18-40	Berkshire Gas Company	Depreciation
276.	2018	IN IURC	Cause No. 44992	Indiana-American Water Company, Inc.	Depreciation
277.	2018	IN IURC	Cause No. 45029	Indianapolis Power and Light	Depreciation
278.	2018	NC Util Com.	Docket No. W-218, Sub 497	Aqua North Carolina, Inc.	Depreciation
279.	2018	PA PUC	Docket No. R-2018-2647577	NiSource - Columbia Gas of Pennsylvania, Inc.	Depreciation
280.	2018	OR PUC	Docket UM 1933	Avista Corporation	Depreciation
281.	2018	WA UTC	Docket No. UE-108167	Avista Corporation	Depreciation
282.	2018	ID PUC	AVU-E-18-03, AVU-G-18-02	Avista Corporation	Depreciation
283.	2018	IN URC	Cause No. 45039	Citizens Energy Group	Depreciation
284.	2018	FERC	Docket No. ER18-	Duke Energy Progress	Depreciation
285.	2018	PA PUC	Docket No. R-2018-3000124	Duquesne Light Company	Depreciation
286.	2018	MD PSC	Case No. 948	NiSource - Columbia Gas of Maryland	Depreciation
287.	2018	MA DPU	D.P.U. 18-45	NiSource - Columbia Gas of Massachusetts	Depreciation
288.	2018	OH PUC	Case No. 18-0299-GA-ALT	Vectren Energy Delivery of Ohio	Depreciation
289.	2018	PA PUC	Docket No. R-2018-3000834	SUEZ Water Pennsylvania Inc.	Depreciation
290.	2018	MD PSC	Case No. 9847	Maryland-American Water Company	Depreciation
291.	2018	PA PUC	Docket No. R-2018-3000019	The York Water Company	Depreciation
292.	2018	FERC	ER-18-2231-000	Duke Energy Carolinas, LLC	Depreciation
293.	2018	KY PSC	Case No. 2018-00261	Duke Energy Kentucky, Inc.	Depreciation
294.	2018	NJ BPU	BPU Docket No. WR18050593	SUEZ Water New Jersey	Depreciation
295.	2018	WA UTC	Docket No. UE-180778	PacifiCorp	Depreciation
296.	2018	UT PSC	Docket No. 18-035-36	PacifiCorp	Depreciation
297.	2018	OR PUC	Docket No. UM-1968	PacifiCorp	Depreciation
298.	2018	ID PUC	Case No. PAC-E-18-08	PacifiCorp	Depreciation
299.	2018	WY PSC	20000-539-EA-18	PacifiCorp	Depreciation
300.	2018	PA PUC	Docket No. R-2018-3003068	Aqua Pennsylvania, Inc.	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
301.	2018	IL CC	Docket No. 18-1467	Aqua Illinois, Inc.	Depreciation
302.	2018	KY PSC	Case No. 2018-00294	Louisville Gas & Electric Company	Depreciation
303.	2018	KY PSC	Case No. 2018-00295	Kentucky Utilities Company	Depreciation
304.	2018	IN URC	Cause No. 45159	Northern Indiana Public Service Company	Depreciation
305.	2018	VA SCC	Case No. PUR-2019-00175	Virginia American Water Company	Depreciation
306.	2019	PA PUC	Docket No. R-2018-3006818	Peoples Natural Gas Company, LLC	Depreciation
307.	2019	OK CC	Cause No. PUD201800140	Oklahoma Gas and Electric Company	Depreciation
308.	2019	MD PSC	Case No. 9490	FirstEnergy – Potomac Edison	Depreciation
309.	2019	SC PSC	Docket No. 2018-318-E	Duke Energy Progress	Depreciation
310.	2019	SC PSC	Docket No. 2018-319-E	Duke Energy Carolinas	Depreciation
311.	2019	DE PSC	DE 19-057	Public Service of New Hampshire	Depreciation
312.	2019	NY PSC	Case No. 19-W-0168 & 19-W-0269	SUEZ Water New York	Depreciation
313.	2019	PA PUC	Docket No. R-2019-3006904	Newtown Artesian Water Company	Depreciation
314.	2019	MO PSC	ER-2019-0335	Ameren Missouri	Depreciation
315.	2019	MO PSC	EC-2019-0200	KCP&L Greater Missouri Operations Company	Depreciation
316.	2019	MN DOC	G011/D-19-377	Minnesota Energy Resource Corp.	Depreciation
317.	2019	NY PSC	Case 19-E-0378 & 19-G-0379	New York State Electric and Gas Corporation	Depreciation
318.	2019	NY PSC	Case 19-E-0380 & 19-G-0381	Rochester Gas and Electric Corporation	Depreciation
319.	2019	WA UTC	Docket UE-190529 / UG-190530	Puget Sound Energy	Depreciation
320.	2019	PA PUC	Docket No. R-2019-3010955	City of Lancaster	Depreciation
321.	2019	IURC	Cause No. 45253	Duke Energy Indiana	Depreciation
322.	2019	KY PSC	Case No. 2019-00271	Duke Energy Kentucky, Inc.	Depreciation
323.	2019	OH PUC	Case No. 18-1720-GA-AIR	Northeast Ohio Natural Gas Corp	Depreciation
324.	2019	NC Util. Com.	Docket No. E-2, Sub 1219	Duke Energy Carolinas	Depreciation
325.	2019	FERC	Docket No. ER20-277-000	Jersey Central Power & Light Company	Depreciation
326.	2019	MA DPU	D.P.U. 19-120	NSTAR Gas Company	Depreciation
327.	2019	SC PSC	Docket No. 2019-290-WS	Blue Granite Water Company	Depreciation
328.	2019	NC Util. Com.	Docket No. E-2, Sub 1219	Duke Energy Progress	Depreciation
329.	2019	MD PSC	Case No. 9609	NiSource Columbia Gas of Maryland, Inc.	Depreciation
330.	2020	NJ BPU	Docket No. ER20020146	Jersey Central Power & Light Company	Depreciation
331.	2020	PA PUC	Docket No. R-2020-3018835	NiSource - Columbia Gas of Pennsylvania, Inc.	Depreciation
332.	2020	PA PUC	Docket No. R-2020-3019369	Pennsylvania-American Water Company	Depreciation
333.	2020	PA PUC	Docket No. R-2020-3019371	Pennsylvania-American Water Company	Depreciation
334.	2020	MO PSC	GO-2018-0309, GO-2018-0310	Spire Missouri, Inc.	Depreciation
335.	2020	NM PRC	Case No. 20-00104-UT	El Paso Electric Company	Depreciation
336.	2020	MD PSC	Case No. 9644	Columbia Gas of Maryland, Inc.	Depreciation
337.	2020	MO PSC	GO-2018-0309, GO-2018-0310	Spire Missouri, Inc.	Depreciation
338.	2020	VA St CC	Case No. PUR-2020-00095	Virginia Natural Gas Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
339.	2020	SC PSC	Docket No. 2020-125-E	Dominion Energy South Carolina, Inc.	Depreciation
340.	2020	WV PSC	Case No. 20-0745-G-D	Hope Gas, Inc. d/b/a Dominion Energy West Virginia	Depreciation
341.	2020	VA St CC	Case No. PUR-2020-00106	Aqua Virginia, Inc.	Depreciation
342.	2020	PA PUC	Docket No. R-2020-3020256	City of Bethlehem – Bureau of Water	Depreciation
343.	2020	NE PSC	Docket No. NG-109	Black Hills Nebraska	Depreciation
344.	2020	NY PSC	Case No. 20-E-0428 & 20-G-0429	Central Hudson Gas & Electric Corporation	Depreciation
345.	2020	FERC	ER20-598	Duke Energy Indiana	Depreciation
346.	2020	FERC	ER20-855	Northern Indiana Public Service Company	Depreciation
347.	2020	OR PSC	UE 374	Pacificorp	Depreciation
348.	2020	MD PSC	Case No. 9490 Phase II	Potomac Edison – Maryland	Depreciation
349.	2020	IN URC	Case No. 45447	Southern Indiana Gas and Electric Company	Depreciation
350.	2020	IN URC	IURC Cause No. 45468	Indiana Gas Company, Inc. d/b/a Vectren Energy	Depreciation
351.	2020	KY PSC	Case No. 2020-00349	Kentucky Utilities Company	Depreciation
352.	2020	KY PSC	Case No. 2020-00350	Louisville Gas and Electric Company	Depreciation
353.	2020	FERC	Docket No. ER21- 000	South FirstEnergy Operating Companies	Depreciation
354.	2020	OH PUC	Case Nos 20-1651-EL-AIR, 20-1652-EL-AAM & 20-1653-EL-ATA	Dayton Power and Light Company	Depreciation
355.	2020	OR PSC	UG 388	Northwest Natural Gas Company	Depreciation
356.	2020	MO PSC	Case No. GR-2021-0241	Ameren Missouri Gas	Depreciation
357.	2021	KY PSC	Case No. 2021-00103	East Kentucky Power Cooperative	Depreciation
358.	2021	MPUC	Docket No. 2021-00024	Bangor Natural Gas	Depreciation
359.	2021	PA PUC	Docket No. R-2021-3024296	Columbia Gas of Pennsylvania, Inc.	Depreciation
360.	2021	NC Util. Com.	Doc. No. G-5, Sub 632	Public Service of North Carolina	Depreciation
361.	2021	MO PSC	ER-2021-0240	Ameren Missouri	Depreciation
362.	2021	PA PUC	Docket No. R-2021-3024750	Duquesne Light Company	Depreciation
363.	2021	KS PSC	21-BHCG-418-RTS	Black Hills Kansas Gas	Depreciation
364.	2021	KY PSC	Case No. 2021-00190	Duke Energy Kentucky	Depreciation
365.	2021	OR PSC	Docket UM 2152	Portland General Electric	Depreciation
366.	2021	ILL CC	Docket No. 20-0810	North Shore Gas Company	Depreciation
367.	2021	FERC	ER21-1939-000	Duke Energy Progress	Depreciation
368.	2021	FERC	ER21-1940-000	Duke Energy Carolina	Depreciation
369.	2021	KY PSC	Case No. 2021-00183	NiSource Columbia Gas of Kentucky	Depreciation
370.	2021	MD PSC	Case No. 9664	NiSource Columbia Gas of Maryland	Depreciation
371.	2021	OH PUC	Case No. 21-0596-ST-AIR	Aqua Ohio	Depreciation
372.	2021	PA PUC	Docket No. R-2021-3026116	Hanover Borough Municipal Water Works	Depreciation
373.	2021	OR PSC	UM-2180	Idaho Power Company	Depreciation
374.	2021	ID PUC	Case No. IPC-E-21-18	Idaho Power Company	Depreciation
375.	2021	WPSC	6690-DU-104	Wisconsin Public Service Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	Year	Jurisdiction	Docket No.	Client Utility	Subject
376.	2021	PAPUC	Docket No. R-2021-3026116	Borough of Hanover	Depreciation
377.	2021	OH PUC	Case No. 21-637-GA-AIR; Case No. 21-638-GA-ALT; Case No. 21-639-GA-UNC; Case No. 21-640-GA-AAM	NiSource Columbia Gas of Ohio	Depreciation
378.	2021	TX PUC	Texas PUC Docket No. 52195; SOHA Docket No. 473-21-2606	El Paso Electric	Depreciation
379.	2021	MO PSC	Case No. GR.2021-0108	Spire Missouri	Depreciation
380.	2021	WV PSC	Case No. 21-0215-WS-P	West Virginia American Water Company	Depreciation
381.	2021	FERC	ER21-2736	Duke Energy Carolinas	Depreciation
382.	2021	FERC	ER21-2737	Duke Energy Progress	Depreciation

NSTAR ELECTRIC COMPANY

BOSTON, MASSACHUSETTS

2020 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO ELECTRIC PLANT
AS OF DECEMBER 31, 2020

Prepared by:

Gannett Fleming

Excellence Delivered ***As Promised***

NSTAR ELECTRIC COMPANY

Boston, Massachusetts

2020 DEPRECIATION STUDY

CALCULATED ANNUAL DEPRECIATION
ACCRUALS RELATED TO ELECTRIC PLANT
AS OF DECEMBER 31, 2020

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC

Camp Hill, Pennsylvania

Gannett Fleming

*Excellence Delivered **As Promised***

September 13, 2021

NSTAR Electric Company
d/b/a Eversource Energy
247 Station Drive
Westwood, MA 02090

Attention Mr. Douglas P. Horton
Director, Revenue Requirements – Massachusetts

Ladies and Gentlemen:

Pursuant to your request, we have conducted a depreciation study related to the electric plant of NSTAR Electric Company as of December 31, 2020. The attached report presents a description of the methods used in the estimation of depreciation, the summary of annual depreciation accrual rates, the statistical support for the life and net salvage estimates and the detailed tabulations of annual depreciation.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

John J. Spanos

JOHN J. SPANOS
President

JJS:mle

068717.000

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NSTAR ELECTRIC COMPANY

DEPRECIATION STUDY

EXECUTIVE SUMMARY

Pursuant to NSTAR Electric Company's ("Company") request, Gannett Fleming Valuation and Rate Consultants, LLC ("Gannett Fleming") conducted a depreciation study related to the electric plant as of December 31, 2020. The purpose of this study was to determine the annual depreciation accrual rates and amounts for book and ratemaking purposes.

The depreciation rates are based on the straight line method using the average service life ("ASL") procedure and were applied on a remaining life basis. The calculations were based on attained ages and estimated average service life and forecasted net salvage characteristics for each depreciable group of assets.

The Company's accounting policy has not changed since the last depreciation study was prepared; however, this study has combined two predecessor companies. The changes between the two companies have created life parameters and net salvage estimates that are different which has caused the proposed remaining lives for many accounts to fluctuate from those proposed in the previously prepared individual depreciation studies.

Gannett Fleming recommends the calculated annual depreciation accrual rates set forth herein apply specifically to electric plant in service as of December 31, 2020 as summarized by Table 1 of the study. Supporting analysis and calculations are provided within the study.

The study results set forth an annual depreciation expense of $220.7 million when applied to depreciable plant balances as of December 31, 2020. The results are summarized at the functional level as follows:

SUMMARY OF ORIGINAL COST, ACCRUAL RATES AND AMOUNTS

FUNCTION	ORIGINAL COST AS OF DECEMBER 31, 2020	PROPOSED RATE	PROPOSED EXPENSE
ELECTRIC PLANT			
Intangible Plant	$ 70,275,443.85	-	$ 2,540,665
Other Production Plant	180,875,160.25	4.45	8,042,182
Distribution Plant	6,885,038,346.09	2.77	190,449,465
General Plant	467,785,008.77	4.23	19,794,097
General Plant Amortization	-	-	(131,889)
Total Depreciable Electric Plant	**$7,603,973,958.96**		**$220,694,520**

PART I. INTRODUCTION

NSTAR ELECTRIC COMPANY

DEPRECIATION STUDY

PART I. INTRODUCTION

SCOPE

This report sets forth the results of the depreciation study for NSTAR Electric Company ("Company"), as applied to electric plant in service as of December 31, 2020. The rates and amounts are based on the straight line remaining life method of depreciation. This report also describes the concepts, methods and judgments which underlie the recommended annual depreciation accrual rates related to current electric plant in service.

The service life and net salvage estimates resulting from the study were based on informed judgment which incorporated analyses of historical plant retirement data as recorded through 2020, the net salvage analyses of historical plant retirement data recorded through 2020; a review of Company practice and outlook as they relate to plant operation and retirement, and consideration of current practice in the electric industry, including knowledge of service lives and net salvage estimates used for other electric companies.

PLAN OF REPORT

Part I, Introduction, contains statements with respect to the plan of the report, and the basis of the study. Part II, Estimation of Survivor Curves, presents descriptions of the considerations and the methods used in the service life study. Part III, Service Life Considerations, presents the factors and judgment utilized in the average service life analysis. Part IV, Net Salvage Considerations, presents the judgment utilized for the net salvage study. Part V, Calculation of Annual and Accrued Depreciation, describes

the procedures used in the calculation of group depreciation. Part VI, Results of Study, presents a summary by depreciable group of annual depreciation accrual rates and amounts, as well as composite remaining lives. Part VII, Service Life Statistics presents the statistical analysis of service life estimates, Part VIII, Net Salvage Statistics sets forth the statistical indications of net salvage percents, and Part IX, Detailed Depreciation Calculations presents the detailed tabulations of annual depreciation.

BASIS OF THE STUDY

Depreciation

Depreciation, in public utility regulation, is the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of utility plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among causes to be given consideration are wear and tear, deterioration, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and the requirements of public authorities.

Depreciation, as used in accounting, is a method of distributing fixed capital costs, less net salvage, over a period of time by allocating annual amounts to expense. Each annual amount of such depreciation expense is part of that year's total cost of providing electric utility service. Normally, the period of time over which the fixed capital cost is allocated to the cost of service is equal to the period of time over which an item renders service, that is, the item's service life. The most prevalent method of allocation is to distribute an equal amount of cost to each year of service life. This method is known as the straight line method of depreciation.

For most accounts, the annual depreciation was calculated by the straight line method using the average service life procedure and the remaining life basis. The

calculated remaining lives and annual depreciation accrual rates were based on attained ages of plant in service and the estimated service life and net salvage characteristics of each depreciable group. Amortization accounting or vintage pooling is proposed for most general plant accounts.

The straight line method, average service life procedure is a commonly used depreciation calculation procedure that has been widely accepted in jurisdictions throughout North America. Gannett Fleming recommends its continued use.

Service Life and Net Salvage Estimates

The service life and net salvage estimates used in the depreciation calculations were based on informed judgment which incorporated a review of management's plans, policies and outlook, a general knowledge of the electric utility industry, and comparisons of the service life and net salvage estimates from our studies of other electric utilities. The use of survivor curves to reflect the expected dispersion of retirement provides a consistent method of estimating depreciation for utility property. Iowa type survivor curves were used to depict the estimated survivor curves for the plant accounts. For major structures in Account 390, the life span technique was used. In this technique, the date of final retirement was estimated for each building, and the estimated survivor curves applied to each vintage were truncated at ages coinciding with the date of final retirement.

The procedure for estimating service lives consisted of compiling historical data for the plant accounts or depreciable groups, analyzing this history through the use of widely accepted techniques, and forecasting the survivor characteristics for each depreciable group on the basis of interpretations of the historical data analyses and the probable future. The combination of the historical experience and the estimated future yielded estimated survivor curves from which the average service lives were derived.

The estimates of net salvage by account incorporated a review of experienced costs of removal and gross salvage related to plant retirements, and consideration of trends exhibited by the historical data. Each component of net salvage, i.e., cost of removal and gross salvage, was stated in dollars and as a percent of retirement.

An understanding of the function of the plant and information with respect to the reasons for past retirements and the expected causes of future retirements was obtained through discussions with operating and management personnel. The supplemental information obtained in this manner was considered in the interpretation and extrapolation of the statistical analyses.

PART II. ESTIMATION OF SURVIVOR CURVES

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The calculation of annual depreciation based on the straight line method requires the estimation of survivor curves and the selection of group depreciation procedures. The estimation of survivor curves is discussed below and the development of net salvage is discussed in later sections of this report.

SURVIVOR CURVES

The use of an average service life for a property group implies that the various units in the group have different lives. Thus, the average life may be obtained by determining the separate lives of each of the units or by constructing a survivor curve by plotting the number of units which survive at successive ages.

The survivor curve graphically depicts the amount of property existing at each age throughout the life of an original group. From the survivor curve, the average life of the group, the remaining life expectancy, the probable life, and the frequency curve can be calculated. In Figure 1, a typical smooth survivor curve and the derived curves are illustrated. The average life is obtained by calculating the area under the survivor curve, from age zero to the maximum age, and dividing this area by the ordinate at age zero. The remaining life expectancy at any age can be calculated by obtaining the area under the curve, from the observation age to the maximum age, and dividing this area by the percent surviving at the observation age. For example, in Figure 1, the remaining life at age 30 is equal to the crosshatched area under the survivor curve divided by 29.5 percent surviving at age 30. The probable life at any age is developed by adding the age and remaining life. If the probable life of the property is calculated for each year of age, the probable life curve shown in the chart can be developed. The frequency curve presents the number of units retired in each age interval. It is derived by obtaining the differences between the amount of property surviving at the beginning and at the end of each interval.

This study has incorporated the use of Iowa curves developed from a retirement rate analysis of historical retirement history. A discussion of the concepts of survivor curves and of the development of survivor curves using the retirement rate method is presented below.

Iowa Type Curves

The range of survivor characteristics usually experienced by utility and industrial properties is encompassed by a system of generalized survivor curves known as the Iowa type curves. There are four families in the Iowa system, labeled in accordance with the location of the modes of the retirements (or the portion of the frequency curve with the highest level of retirements) in relationship to the average life and the relative height of the modes. The left moded curves, presented in Figure 2, are those in which the greatest frequency of retirement occurs to the left of, or prior to, average service life. The symmetrical moded curves, presented in Figure 3, are those in which the greatest frequency of retirement occurs at average service life. The right moded curves, presented in Figure 4, are those in which the greatest frequency occurs to the right of, or after, average service life. The origin moded curves, presented in Figure 5, are those in which the greatest frequency of retirement occurs at the origin, or immediately after age zero. The letter designation of each family of curves (L, S, R or O) represents the location of the mode of the associated frequency curve with respect to the average service life. The numbers represent the relative heights of the modes of the frequency curves within each family. A higher number designates a higher mode curve.

The Iowa curves were developed at the Iowa State College Engineering Experiment Station through an extensive process of observation and classification of the ages at which industrial property had been retired. A report of the study which resulted in the classification of property survivor characteristics into 18 type curves, which constitute three of the four families, was published in 1935 in the form of the Experiment Station's Bulletin 125.

FIGURE 1. TYPICAL SURVIVOR CURVE AND DERIVED CURVES

FIGURE 2. LEFT MODAL OR "L" IOWA TYPE SURVIVOR CURVES

FIGURE 3. SYMMETRICAL OR "S" IOWA TYPE SURVIVOR CURVES

FIGURE 4. RIGHT MODAL OR "R" IOWA TYPE SURVIVOR CURVES

FIGURE 5. ORIGIN MODAL OR "O" IOWA TYPE SURVIVOR CURVES

These curve types have also been presented in subsequent Experiment Station bulletins and in the text, "Engineering Valuation and Depreciation."[1] In 1957, Frank V. B. Couch, Jr., an Iowa State College graduate student, submitted a thesis presenting his development of the fourth family consisting of the four O type survivor curves.

Retirement Rate Method of Analysis

The retirement rate method is an actuarial method of deriving survivor curves using the average rates at which property of each age group is retired. The method relates to property groups for which aged accounting experience is available and is the method used to develop the original stub survivor curves in this study. The method (also known as the annual rate method) is illustrated through the use of an example in the following text and is also explained in several publications including "Statistical Analyses of Industrial Property Retirements,"[2] "Engineering Valuation and Depreciation,"[3] and "Depreciation Systems."[4]

The average rate of retirement used in the calculation of the percent surviving for the survivor curve (life table) requires two sets of data: first, the property retired during a period of observation, identified by the property's age at retirement; and second, the property exposed to retirement at the beginning of the age intervals during the same period. The period of observation is referred to as the experience band. The band of years which represent the installation dates of the property exposed to retirement during the experience band is referred to as the placement band. An example of the calculations used in the development of a life table follows. The example includes schedules of annual aged property transactions, a schedule of plant exposed to retirement, a life table and illustrations of smoothing the stub survivor curve.

[1]Marston, Anson, Robley Winfrey and Jean C. Hempstead. Engineering Valuation and Depreciation, 2nd Edition. New York, McGraw-Hill Book Company. 1953.
[2]Winfrey, Robley, Statistical Analyses of Industrial Property Retirements. Iowa State College, Engineering Experiment Station, Bulletin 125. 1935.
[3]Marston, Anson, Robley Winfrey, and Jean C. Hempstead, Supra Note 1.
[4]Wolf, Frank K. and W. Chester Fitch. Depreciation Systems. Iowa State University Press. 1994.

Schedules of Annual Transactions in Plant Records

The property group used to illustrate the retirement rate method is observed for the experience band 2011-2020 for which there were placements during the years 2006-2020. In order to illustrate the summation of the aged data by age interval, the data were compiled in the manner presented in Schedules 1 and 2 on pages II-11 and II-12. In Schedule 1, the year of installation (year placed) and the year of retirement are shown. The age interval during which a retirement occurred is determined from this information. In the example which follows, $10,000 of the dollars invested in 2006 were retired in 2011. The $10,000 retirement occurred during the age interval between 4½ and 5½ years on the basis that approximately one-half of the amount of property was installed prior to and subsequent to July 1 of each year. That is, on the average, property installed during a year is placed in service at the midpoint of the year for the purpose of the analysis. All retirements also are stated as occurring at the midpoint of a one-year age interval of time, except the first age interval which encompasses only one-half year.

The total retirements occurring in each age interval in a band are determined by summing the amounts for each transaction year-installation year combination for that age interval. For example, the total of $143,000 retired for age interval 4½-5½ is the sum of the retirements entered on Schedule 1 immediately above the stair step line drawn on the table beginning with the 2011 retirements of 2006 installations and ending with the 2020 retirements of the 2015 installations. Thus, the total amount of 143 for age interval 4½-5½ equals the sum of:

10 + 12 + 13 + 11 + 13 + 13 + 15 + 17 + 19 + 20.

SCHEDULE 1. RETIREMENTS FOR EACH YEAR 2011-2020
SUMMARIZED BY AGE INTERVAL

Experience Band 2011-2020 | Placement Band 2006-2020

Year Placed	Retirements, Thousands of Dollars During Year										Total During Age Interval	Age Interval
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2006	10	11	12	13	14	16	23	24	25	26	26	13½-14½
2007	11	12	13	15	16	18	20	21	22	19	44	12½-13½
2008	11	12	13	14	16	17	19	21	22	18	64	11½-12½
2009	8	9	10	11	11	13	14	15	16	17	83	10½-11½
2010	9	10	11	12	13	14	16	17	19	20	93	9½-10½
2011	4	9	10	11	12	13	14	15	16	20	105	8½-9½
2012		5	11	12	13	14	15	16	18	20	113	7½-8½
2013			6	12	13	15	16	17	19	19	124	6½-7½
2014				6	13	15	16	17	19	19	131	5½-6½
2015					7	14	16	17	19	20	143	4½-5½
2016						8	18	20	22	23	146	3½-4½
2017							9	20	22	25	150	2½-3½
2018								11	23	25	151	1½-2½
2019									11	24	153	½-1½
2020										13	80	0-½
Total	53	68	86	106	128	157	196	231	273	308	1,606	

SCHEDULE 2. OTHER TRANSACTIONS FOR EACH YEAR 2011-2020
SUMMARIZED BY AGE INTERVAL

Experience Band 2011-2020 Placement Band 2006-2020

	Acquisitions, Transfers and Sales, Thousands of Dollars During Year											
Year Placed	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total During Age Interval	Age Interval
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2006	-	-	-	-	-	-	60[a]	-	-	-	-	13½-14½
2007	-	-	-	-	-	-	-	-	-	-	-	12½-13½
2008	-	-	-	-	-	-	-	-	-	-	-	11½-12½
2009	-	-	-	-	-	-	-	(5)[b]	-	-	60	10½-11½
2010	-	-	-	-	-	-	-	6[a]	-	-	-	9½-10½
2011	-	-	-	-	-	-	-	-	-	-	(5)	8½-9½
2012		-	-	-	-	-	-	-	-	-	6	7½-8½
2013			-	-	-	-	-	-	-	-	-	6½-7½
2014				-	-	-	-	(12)[b]	-	-	-	5½-6½
2015					-	-	-	-	22[a]	-	-	4½-5½
2016						-	-	(19)[b]	-	-	10	3½-4½
2017							-	-	-	-	-	2½-3½
2018								-	-	(102)[c]	(121)	1½-2½
2019									-	-	-	½-1½
2020											-	0-½
Total	-	-	-	-	-	-	60	(30)	22	(102)	(50)	

[a] Transfer Affecting Exposures at Beginning of Year
[b] Transfer Affecting Exposures at End of Year
[c] Sale with Continued Use
Parentheses Denote Credit Amount.

In Schedule 2, other transactions which affect the group are recorded in a similar manner. The entries illustrated include transfers and sales. The entries which are credits to the plant account are shown in parentheses. The items recorded on this schedule are not totaled with the retirements, but are used in developing the exposures at the beginning of each age interval.

Schedule of Plant Exposed to Retirement

The development of the amount of plant exposed to retirement at the beginning of each age interval is illustrated in Schedule 3 on page II-14. The surviving plant at the beginning of each year from 2011 through 2020 is recorded by year in the portion of the table headed "Annual Survivors at the Beginning of the Year." The last amount entered in each column is the amount of new plant added to the group during the year. The amounts entered in Schedule 3 for each successive year following the beginning balance or addition are obtained by adding or subtracting the net entries shown on Schedules 1 and 2. For the purpose of determining the plant exposed to retirement, transfers-in are considered as being exposed to retirement in this group at the beginning of the year in which they occurred, and the sales and transfers-out are considered to be removed from the plant exposed to retirement at the beginning of the following year. Thus, the amounts of plant shown at the beginning of each year are the amounts of plant from each placement year considered to be exposed to retirement at the beginning of each successive transaction year. For example, the exposures for the installation year 2016 are calculated in the following manner:

Exposures at age 0	= amount of addition	= $750,000
Exposures at age ½	= $750,000 - $ 8,000	= $742,000
Exposures at age 1½	= $742,000 - $18,000	= $724,000
Exposures at age 2½	= $724,000 - $20,000 - $19,000	= $685,000
Exposures at age 3½	= $685,000 - $22,000	= $663,000

SCHEDULE 3. PLANT EXPOSED TO RETIREMENT
JANUARY 1 OF EACH YEAR 2011-2020
SUMMARIZED BY AGE INTERVAL

Experience Band 2011-2020 | Placement Band 2006-2020

Year Placed	Exposures, Thousands of Dollars — Annual Survivors at the Beginning of the Year										Total at Beginning of Age Interval	Age Interval
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2006	255	245	234	222	209	195	239	216	192	167	167	13½-14½
2007	279	268	256	243	228	212	194	174	153	131	323	12½-13½
2008	307	296	284	271	257	241	224	205	184	162	531	11½-12½
2009	338	330	321	311	300	289	276	262	242	226	823	10½-11½
2010	376	367	357	346	334	321	307	297	280	261	1,097	9½-10½
2011	420[a]	416	407	397	386	374	361	347	332	316	1,503	8½-9½
2012		460[a]	455	444	432	419	405	390	374	356	1,952	7½-8½
2013			510[a]	504	492	479	464	448	431	412	2,463	6½-7½
2014				580[a]	574	561	546	530	501	482	3,057	5½-6½
2015					660[a]	653	639	623	628	609	3,789	4½-5½
2016						750[a]	742	724	685	663	4,332	3½-4½
2017							850[a]	841	821	799	4,955	2½-3½
2018								960[a]	949	926	5,719	1½-2½
2019									1,080[a]	1,069	6,579	½-1½
2020										1,220[a]	7,490	0-½
Total	1,975	2,382	2,824	3,318	3,872	4,494	5,247	6,017	6,852	7,799	44,780	

[a]Additions during the year

For the entire experience band 2011-2020, the total exposures at the beginning of an age interval are obtained by summing diagonally in a manner similar to the summing of the retirements during an age interval (Schedule 1). For example, the figure of 3,789, shown as the total exposures at the beginning of age interval 4½-5½, is obtained by summing:

255 + 268 + 284 + 311 + 334 + 374 + 405 + 448 + 501 + 609.

Original Life Table

The original life table, illustrated in Schedule 4 on page II-16, is developed from the totals shown on the schedules of retirements and exposures, Schedules 1 and 3, respectively. The exposures at the beginning of the age interval are obtained from the corresponding age interval of the exposure schedule, and the retirements during the age interval are obtained from the corresponding age interval of the retirement schedule. The retirement ratio is the result of dividing the retirements during the age interval by the exposures at the beginning of the age interval. The percent surviving at the beginning of each age interval is derived from survivor ratios, each of which equals one minus the retirement ratio. The percent surviving is developed by starting with 100% at age zero and successively multiplying the percent surviving at the beginning of each interval by the survivor ratio, i.e., one minus the retirement ratio for that age interval. The calculations necessary to determine the percent surviving at age 5½ are as follows:

Percent surviving at age 4½	=	88.15				
Exposures at age 4½	=	3,789,000				
Retirements from age 4½ to 5½	=	143,000				
Retirement Ratio	=	143,000	÷	3,789,000	=	0.0377
Survivor Ratio	=	1.000	-	0.0377	=	0.9623
Percent surviving at age 5½	=	(88.15)	x	(0.9623)	=	84.83

The totals of the exposures and retirements (columns 2 and 3) are shown for the purpose of checking with the respective totals in Schedules 1 and 3. The ratio of the total retirements to the total exposures, other than for each age interval, is meaningless.

SCHEDULE 4. ORIGINAL LIFE TABLE
CALCULATED BY THE RETIREMENT RATE METHOD

Experience Band 2011-2020 Placement Band 2006-2020

(Exposure and Retirement Amounts are in Thousands of Dollars)

Age at Beginning of Interval	Exposures at Beginning of Age Interval	Retirements During Age Interval	Retirement Ratio	Survivor Ratio	Percent Surviving at Beginning of Age Interval
(1)	(2)	(3)	(4)	(5)	(6)
0.0	7,490	80	0.0107	0.9893	100.00
0.5	6,579	153	0.0233	0.9767	98.93
1.5	5,719	151	0.0264	0.9736	96.62
2.5	4,955	150	0.0303	0.9697	94.07
3.5	4,332	146	0.0337	0.9663	91.22
4.5	3,789	143	0.0377	0.9623	88.15
5.5	3,057	131	0.0429	0.9571	84.83
6.5	2,463	124	0.0503	0.9497	81.19
7.5	1,952	113	0.0579	0.9421	77.11
8.5	1,503	105	0.0699	0.9301	72.65
9.5	1,097	93	0.0848	0.9152	67.57
10.5	823	83	0.1009	0.8991	61.84
11.5	531	64	0.1205	0.8795	55.60
12.5	323	44	0.1362	0.8638	48.90
13.5	167	26	0.1557	0.8443	42.24
					35.66
Total	44,780	1,606			

Column 2 from Schedule 3, Column 12, Plant Exposed to Retirement.
Column 3 from Schedule 1, Column 12, Retirements for Each Year.
Column 4 = Column 3 Divided by Column 2.
Column 5 = 1.0000 Minus Column 4.
Column 6 = Column 5 Multiplied by Column 6 as of the Preceding Age Interval.

The original survivor curve is plotted from the original life table (column 6, Schedule 4). When the curve terminates at a percent surviving greater than zero, it is called a stub survivor curve. Survivor curves developed from retirement rate studies generally are stub curves.

Smoothing the Original Survivor Curve

The smoothing of the original survivor curve eliminates any irregularities and serves as the basis for the preliminary extrapolation to zero percent surviving of the original stub curve. Even if the original survivor curve is complete from 100% to zero percent, it is desirable to eliminate any irregularities, as there is still an extrapolation for the vintages which have not yet lived to the age at which the curve reaches zero percent. In this study, the smoothing of the original curve with established type curves was used to eliminate irregularities in the original curve.

The Iowa type curves are used in this study to smooth those original stub curves which are expressed as percents surviving at ages in years. Each original survivor curve was compared to the Iowa curves using visual and mathematical matching in order to determine the better fitting smooth curves. In Figures 6, 7, and 8, the original curve developed in Schedule 4 is compared with the L, S, and R Iowa type curves which most nearly fit the original survivor curve. In Figure 6, the L1 curve with an average life between 12 and 13 years appears to be the best fit. In Figure 7, the S0 type curve with a 12-year average life appears to be the best fit and appears to be better than the L1 fitting. In Figure 8, the R1 type curve with a 12-year average life appears to be the best fit and appears to be better than either the L1 or the S0.

In Figure 9, the three fittings, 12-L1, 12-S0 and 12-R1 are drawn for comparison purposes. It is probable that the 12-R1 Iowa curve would be selected as the most representative of the plotted survivor characteristics of the group.

FIGURE 6. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN L1 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

FIGURE 7. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN S0 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

FIGURE 8. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN R1 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

FIGURE 9. ILLUSTRATION OF THE MATCHING OF AN ORIGINAL SURVIVOR CURVE WITH AN L1, S0 AND R1 IOWA TYPE CURVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

PART III. SERVICE LIFE CONSIDERATIONS

PART III. SERVICE LIFE CONSIDERATIONS

FIELD TRIPS

In order to be familiar with the operation of the Company and observe representative portions of the plant, field trips have been conducted. A general understanding of the function of the plant and information with respect to the reasons for past retirements and the expected future causes of retirements are obtained during field trips. This knowledge and information were incorporated in the interpretation and extrapolation of the statistical analyses.

The following is a list of the locations visited during the recent field trip.

June 17, 2021
- Hyde Park Avenue
- Substation #496
- Substation #110 and #374
- Waltham Service Center
- Homer Street 17 Substation
- Substation #252
- East Springfield Service Center
- Hampden Solar Interconnection
- Franconia 22H Substation
- Hadley Area Service Center
- Amherst 17K Substation
- Podick 186 Substation

February 24, 2016
- Dewar Street Substation
- Dorchester Avenue Substation
- Scotia Street Substation
- South Boston Service Center

January 12, 2016
- Springfield Service Center
- Breckwood Substation
- Southwick Substation
- Silver Street Substation
- Agawam Substation

SERVICE LIFE ANALYSIS

The service life estimates were based on judgment which considered a number of factors. The primary factors were the statistical analyses of data, current Company policies and outlook as determined during conversations with management; and the survivor curve estimates from previous studies of this company and other electric utility companies.

For 15 plant accounts and subaccounts for which survivor curves were estimated, the statistical analyses using the retirement rate method resulted in good to excellent indications of the survivor patterns experienced. These accounts represent 70 percent of depreciable plant. Generally, the information external to the statistics led to minimal or no significant departure from the indicated survivor curves for the accounts listed below. The statistical support for the service life estimates is presented in the section beginning on page VII-2.

ELECTRIC PLANT

361.00	Structures and Improvements
362.00	Station Equipment
362.10	Station Equipment - Solar
364.00	Poles, Towers and Fixtures
367.00	Underground Conductors and Devices
368.00	Line Transformers
369.10	Services - Overhead
369.20	Services - Underground
370.10	Meters (AMR)
370.30	Metering Equipment
373.00	Street Lighting and Signal Systems

GENERAL PLANT

390.00	Structures and Improvements – Major
390.00	Structures and Improvements - Minor
390.30	Structures and Improvements - Hadley
392.00	Transportation Equipment

Electric Plant Account 362.00, Station Equipment, is used to illustrate the manner in which the study was conducted for the group in the preceding list. Aged retirement

and other plant accounting data were compiled for the years 1923 through 2020. These data were coded in the course of the Company's normal recordkeeping according to plant account or property group, type of transaction, year in which the transaction took place, and year in which the electric plant was placed in service. The data were analyzed by the retirement rate method of life analysis. The survivor curve chart for the account is presented on page VII-22 and the life tables for the experience bands, 1923-2020 and 2001-2020 are plotted on the pages that follow.

Typical service lives for station equipment of other electric companies range from 45 to 55 years. The Iowa 62-R2.5 survivor curve is estimated to represent the future, inasmuch as it is a reasonable interpretation of the significant portion of the stub survivor curve through age 70, reflects the outlook of management. The 62 year average life is above the typical range of lives for this account.

Account 364.00, Poles, Tower and Fixtures, is another account which is analyzed based on the 1901-2020, 1991-2020 and 2001-2020 experience bands. The Iowa 62-R1.5 survivor curve is a very good fit to the plotted experience through age 80 and is consistent with the Company's outlook for distribution poles for the foreseeable future. The 62-year average is a longer average service life than the current estimate but reflects the industry trend to a longer average service life and is still within the range of 45 to 65 years used by other electric companies.

The largest account is Account 367.00, Underground Conductors and Devices. The estimate of survivor characteristics is based on the 1901-2020, 1991-2020, and 2001-2020 experience bands. As the survivor curve chart illustrates, the experience band represents similar life characteristics and supports the 52-R0.5 survivor curve. The 52-year average life is within the range of lives used by others in the industry. Most other electric companies estimate lives between 45 and 55 years.

Life Span Estimates

Inasmuch as production facilities and buildings consist of large structures, the life span technique was employed in conjunction with the use of interim survivor curves which reflect interim retirements that occur prior to the ultimate retirement of the major structure. An interim survivor curve was estimated for solar facilities or each large building, inasmuch as the rate of interim retirements differs from account to account. The interim survivor curves estimated for major structures were based on judgment and on the retirement rate method of life analysis which incorporated experienced aged retirements for the period 1924 through 2020 for structures in Account 390. The life span of the eleven major structures is 60 and 70 years. The interim survivor curves for solar facilities was also based on judgment and transactional data from 2010 through 2020

Similar studies were performed for the remaining plant accounts. Each of the judgments represented a consideration of statistical analyses of aged plant activity, management's outlook for the future, and the typical range of lives used by other electric companies.

The selected amortization periods for other General Plant accounts are described in the section "Calculated Annual and Accrued Amortization."

PART IV. NET SALVAGE CONSIDERATIONS

PART IV. NET SALVAGE CONSIDERATIONS

NET SALVAGE ANALYSIS

The estimates of net salvage by account were based in part on historical data compiled through 2020. Cost of removal and gross salvage were expressed as percents of the original cost of plant retired, both on annual and three-year moving average bases. The most recent five-year average also was calculated for consideration. The net salvage estimates by account are expressed as a percent of the original cost of plant retired.

Net Salvage Considerations

The estimates of future net salvage are expressed as percentages of surviving plant in service, i.e., all future retirements. In cases in which removal costs are expected to exceed salvage receipts, a negative net salvage percentage is estimated. The net salvage estimates were based on judgment which incorporated analyses of historical cost of removal and gross salvage data, expectations with respect to future removal requirements and markets for retired equipment and materials.

The analyses of historical cost of removal and gross salvage data are presented in the section titled “Net Salvage Statistics” for the plant accounts for which the net salvage estimate relied partially on those analyses.

Statistical analyses of historical data for the period, 1992 through 2020 by plant account were analyzed. The analyses contributed significantly toward the net salvage estimates for 19 plant accounts, representing 94 percent of the depreciable plant, as follows:

ELECTRIC PLANT

Distribution Plant

361.00	Structures and Improvements
362.00	Station Equipment
364.00	Poles, Towers and Fixtures
365.00	Overhead Conductors and Devices
366.00	Underground Conduit
367.00	Underground Conductors and Devices
368.00	Line Transformers
369.10	Services - Overhead
369.20	Services - Underground
370.10	Meters (AMR)
370.20	Meters (Non-AMR)
370.30	Metering Equipment
371.00	Installations on Customers' Premises
373.00	Street Lighting and Signal Systems

General Plant

390.00	Structures and Improvements
390.30	Structures and Improvements - Hadley
392.00	Transportation Equipment
396.00	Power Operated Equipment
397.20	Communication Equipment - Microwave

Electric Plant Account 362.00, Station Equipment, is used to illustrate the manner in which the study was conducted for the groups in the preceding list. Net salvage data for the period 1992 through 2020 were analyzed for this account. The data include cost of removal, gross salvage and net salvage amounts and each of these amounts is expressed as a percent of the original cost of regular retirements. Three-year moving averages for the 1992-1994 through 2018-2020 periods were computed to smooth the annual amounts.

Cost of removal has been relatively consistent during the twenty-nine year period with a trend upward since 2006. The primary cause during the recent period of cost of removal relates to the effort needed to replace control equipment within substations. Cost of removal for the most recent five years averaged negative 71 percent.

Gross salvage has been low throughout the period with the exception to a few years in the early 1990s, however, the trend has been to zero in recent years. The most recent five-year average of 0 percent gross salvage reflects the recent trend and the overall value for station equipment into the future.

The net salvage percent based on the overall period 1992 through 2020 is 34 percent negative net salvage and based on the most recent five-year period is 71 percent. Generally, the range of estimates made by other electric companies for Station Equipment is negative 5 to negative 25 percent. The net salvage estimate for station equipment of negative 35 percent, is above the upper end of the range of other estimates but reflects the trend toward a more negative net salvage and the increased age of station equipment being retired.

Another large Electric Plant Account is Account 365.00, Overhead Conductors and Devices. The period 1992 through 2020 sets forth the net salvage data analyzed. The range of estimates made by other electric utility companies is negative 20 percent to negative 80 percent. The overall net salvage for the period is negative 50 percent, and the most recent 5-year average of net salvage is calculated to be negative 68 percent. The net salvage estimate for overhead conductors and devices is negative 50 percent and is within the range estimated by other electric utility companies. The negative 50 percent estimated is reflective of the Company's historical experience and the costs required to remove overhead conductor in the near future.

The net salvage percents for the remaining accounts were based on judgment incorporating estimates of previous studies of this and other electric utilities.

Generally, the net salvage estimates for the remaining general plant accounts were zero percent, consistent with amortization accounting.

PART V. CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

PART V. CALCULATION OF ANNUAL AND ACCRUED DEPRECIATION

GROUP DEPRECIATION PROCEDURES

A group procedure for depreciation is appropriate when considering more than a single item of property. Normally the items within a group do not have identical service lives, but have lives that are dispersed over a range of time. There are two primary group procedures, namely, average service life and equal life group. In the average service life procedure, the rate of annual depreciation is based on the average life or average remaining life of the group, and this rate is applied to the surviving balances of the group's cost. A characteristic of this procedure is that the cost of plant retired prior to average life is not fully recouped at the time of retirement, whereas the cost of plant retired subsequent to average life is more than fully recouped. Over the entire life cycle, the portion of cost not recouped prior to average life is balanced by the cost recouped subsequent to average life.

Single Unit of Property

The calculation of straight line depreciation for a single unit of property is straightforward. For example, if a $1,000 unit of property attains an age of four years and has a life expectancy of six years, the annual accrual over the total life is:

$$\frac{\$1{,}000}{(4 + 6)} = \$100 \text{ per year.}$$

The accrued depreciation is:

$$\$1{,}000\left(1 - \frac{6}{10}\right) = \$400.$$

Remaining Life Annual Accruals

For the purpose of calculating remaining life accruals as of December 31, 2020, the depreciation reserve for each plant account is allocated among vintages in proportion to the calculated accrued depreciation for the account. Explanations of remaining life accruals and calculated accrued depreciation follow. The detailed calculations as of December 31, 2020, are set forth in the Results of Study section of the report.

Average Service Life Procedure

In the average service life procedure, the remaining life annual accrual for each vintage is determined by dividing future book accruals (original cost less book reserve) by the average remaining life of the vintage. The average remaining life is a directly weighted average derived from the estimated future survivor curve in accordance with the average service life procedure.

The calculated accrued depreciation for each depreciable property group represents that portion of the depreciable cost of the group which would not be allocated to expense through future depreciation accruals if current forecasts of life characteristics are used as the basis for such accruals. The accrued depreciation calculation consists of applying an appropriate ratio to the surviving original cost of each vintage of each account based upon the attained age and service life. The straight line accrued depreciation ratios are calculated as follows for the average service life procedure:

$$Ratio = 1 - \frac{Average\ Remaining\ Life}{Average\ Service\ Life}.$$

CALCULATION OF ANNUAL AND ACCRUED AMORTIZATION

Amortization, as defined in the Uniform System of Accounts, is the gradual extinguishment of an amount in an account by distributing such amount over a fixed period, over the life of the asset or liability to which it applies, or over the period during which it is anticipated the benefit will be realized. Normally, the distribution of the amount is in equal amounts to each year of the amortization period.

The calculation of annual and accrued amortization requires the selection of an amortization period. The amortization periods used in this report were based on judgment which incorporated a consideration of the period during which the assets will render most of their service, the amortization periods and service lives used by other utilities, and the service life estimates previously used for the asset under depreciation accounting.

Amortization accounting is appropriate for certain General Plant accounts that represent numerous units of property, but a very small portion of total depreciable electric plant in service. The accounts and their amortization periods are as follows:

Account	Amortization Period, Years
ELECTRIC PLANT	
391.00, Office Furniture and Equipment	
Furniture and Equipment	20
Computer Equipment	7
393.00, Stores Equipment	25
394.00, Tools, Shop and Garage Equipment	25
395.00, Laboratory Equipment	20
397.00, Communication Equipment	15
397.10, Communication Equipment - GPS	5
398.00, Miscellaneous Equipment	20

For the purpose of calculating annual amortization amounts as of December 31, 2020, the book depreciation reserve for each plant account or subaccount is assigned or allocated to vintages. The book reserve assigned to vintages with an age greater than the amortization period is equal to the vintage's original cost. The remaining book reserve is allocated among vintages with an age less than the amortization period in proportion to the calculated accrued amortization. The calculated accrued amortization is equal to the original cost multiplied by the ratio of the vintage's age to its amortization period. The annual amortization amount is determined by dividing the future amortizations (original cost less allocated book reserve) by the remaining period of amortization for the vintage.

PART VI. RESULTS OF STUDY

PART VI. RESULTS OF STUDY

QUALIFICATION OF RESULTS

The calculated annual and accrued depreciation are the principal results of the study. Continued surveillance and periodic revisions are normally required to maintain continued use of appropriate annual depreciation accrual rates. An assumption that accrual rates can remain unchanged over a long period of time implies a disregard for the inherent variability in service lives and net salvage and for the change of the composition of property in service. The annual accrual rates were calculated in accordance with the straight line remaining life method of depreciation, using the average service life procedure based on estimates which reflect considerations of current historical evidence and expected future conditions.

The annual depreciation accrual rates are applicable specifically to the electric plant in service as of December 31, 2020. For most plant accounts, the application of such rates to future balances that reflect additions subsequent to December 31, 2020, is reasonable for a period of three to five years.

DESCRIPTION OF STATISTICAL SUPPORT

The service life and net salvage estimates were based on judgment which incorporated statistical analyses of retirement data, discussions with management and consideration of estimates made for other electric utility companies. The results of the statistical analyses of service life are presented in the section titled "Service Life Statistics".

The estimated survivor curves for each account are presented in graphical form. The charts depict the estimated smooth survivor curve and original survivor curve(s),

when applicable, related to each specific group. For groups where the original survivor curve was plotted, the calculation of the original life table is also presented.

The analyses of net salvage data are presented in the section titled, "Net Salvage Statistics". The tabulations present annual cost of removal and gross salvage data, three-year moving averages and the most recent five-year average. Data are shown in dollars and as percentages of original costs retired.

DESCRIPTION OF DEPRECIATION TABULATIONS

A summary of the results of the study, as applied to the original cost of electric plant as of December 31, 2020, is presented on pages VI-4 through VI-8 of this report. The schedule sets forth the original cost, the book depreciation reserve, future accruals, the calculated annual depreciation rate and amount, and the composite remaining life related to electric plant.

The tables of the calculated annual depreciation accruals are presented in account sequence in the section titled "Detailed Depreciation Calculations." The tables indicate the estimated survivor curve and net salvage percent for the account and set forth, for each installation year, the original cost, the calculated accrued depreciation, the allocated book depreciation reserve, future accruals, the remaining life and the calculated annual accrual amount.

Gannett Fleming

NSTAR ELECTRIC COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVE, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2020

	ACCOUNT	PROBABLE RETIREMENT DATE		SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINALCOST AS OF DECEMBER 31, 2020	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)=(7)/(8)
	ELECTRIC PLANT										
	INTANGIBLE PLANT										
303.10	MISCELLANEOUS INTANGIBLE PLANT - 5 YEAR			5-SQ	0	4,162,555.18	4,162,555	0	0	*	
303.20	MISCELLANEOUS INTANGIBLE PLANT - 10 YEAR			10-SQ	0	51,636,880.49	37,832,624	13,804,256	1,849,201	*	
303.30	MISCELLANEOUS INTANGIBLE PLANT - 15 YEAR			15-SQ	0	14,476,008.18	7,907,099	6,568,909	691,464	*	
	TOTAL INTANGIBLE PLANT					**70,275,443.85**	**49,902,278**	**20,373,165**	**2,540,665**		
	OTHER PRODUCTION PLANT										
340.10	LAND RIGHTS - SOLAR	06-2043	**	50-R4	0	3,505,709.94	0	3,505,710	156,749	4.47	22.4
341.10	STRUCTURES AND IMPROVEMENTS - SOLAR	06-2043	**	35-R3	0	41,850,820.57	4,226,192	37,624,629	1,753,302	4.19	21.5
344.10	STATION EQUIPMENT - SOLAR	06-2043	**	25-S2.5	0	127,698,860.28	17,565,566	110,133,294	5,816,020	4.55	18.9
345.10	POLES, TOWERS AND FIXTURES - SOLAR	06-2043	**	30-S1.5	0	7,819,769.46	1,589,164	6,230,605	316,111	4.04	19.7
	TOTAL OTHER PRODUCTION PLANT					**180,875,160.25**	**23,380,922**	**157,494,238**	**8,042,182**	**4.45**	
	DISTRIBUTION PLANT										
360.20	LAND RIGHTS			75-R3	0	1,022,779.96	0	1,022,780	37,240	3.64	27.5
361.00	STRUCTURES AND IMPROVEMENTS			75-R3	(20)	138,996,464.40	47,435,149	119,360,608	2,154,348	1.55	55.4
362.00	STATION EQUIPMENT			62-R2.5	(35)	1,075,305,838.61	344,875,025	1,106,787,857	22,536,443	2.10	49.1
362.10	STATION EQUIPMENT - SOLAR			25-R2.5	(10)	13,744,526.74	1,536,439	13,582,540	610,337	4.44	22.3
364.00	POLES, TOWERS AND FIXTURES			62-R1.5	(100)	494,887,277.19	177,556,775	812,217,779	16,839,221	3.40	48.2
365.00	OVERHEAD CONDUCTORS AND DEVICES			60-R0.5	(50)	980,625,301.49	233,016,805	1,237,921,147	25,498,761	2.60	48.5
366.00	UNDERGROUND CONDUIT			75-R3	(60)	801,827,306.55	293,068,204	989,855,486	16,874,597	2.10	58.7
367.00	UNDERGROUND CONDUCTORS AND DEVICES			52-R0.5	(40)	1,817,665,973.84	671,377,853	1,873,354,510	43,814,087	2.41	42.8
368.00	LINE TRANSFORMERS			37-R1	(15)	723,797,136.25	242,689,447	589,677,260	21,898,997	3.03	26.9
369.10	SERVICES - OVERHEAD			65-R1	(75)	131,126,077.08	65,613,121	163,857,514	3,361,307	2.56	48.7
369.20	SERVICES - UNDERGROUND			65-R1	(75)	308,709,209.08	113,710,381	426,530,735	8,026,061	2.60	53.1
369.30	SERVICES - ELECTRIC VEHICLE CHARGIING			25-R2.5	0	20,046,328.06	580,900	19,465,428	811,327	4.05	24.0
370.10	METERS (AMR)	12-2028	**	24-S0.5	0	211,713,647.95	85,751,638	125,962,010	18,241,681	8.62	6.9
370.20	METERS (NON-AMR)			15-S2.5	0	73,832,834.43	5,801,162	68,031,672	5,110,773	6.92	13.3
370.30	METERING EQUIPMENT			24-S0.5	0	40,092,562.20	14,106,256	25,986,306	2,558,519	6.38	10.2
371.00	INSTALLATIONS ON CUSTOMERS' PREMISES			28-L0	(40)	11,364,366.46	4,075,569	11,834,544	666,457	5.86	17.8
371.10	INSTALLATIONS ON CUSTOMERS' PREMISES - ELECTRIC VEHICLE CHARGING			10-S3	0	145,268.73	1,961	143,308	19,108	13.15	7.5
373.00	STREET LIGHTING AND SIGNAL SYSTEMS										
	AGAWAM			22-L0	(10)	571,478.25	346,997	281,629	19,150	3.35	14.7
	AMHERST			22-L0	(10)	134,368.16	108,446	39,359	2,786	2.07	14.1
	ASHFIELD			22-L0	(10)	11,541.10	8,015	4,680	303	2.63	15.4
	BECKET			22-L0	(10)	26,882.54	12,501	17,070	1,019	3.79	16.8
	BERNARDSTON			22-L0	(10)	15,961.54	7,591	9,967	625	3.92	15.9
	BLANDFORD			22-L0	(10)	10,926.57	5,442	6,577	358	3.28	18.4
	BUCKLAND			22-L0	(10)	35,066.91	14,316	24,258	1,429	4.08	17.0
	CHESHIRE			22-L0	(10)	1,550.08	968	737	52	3.35	14.2
	CHESTERFIELD			22-L0	(10)	5,724.50	2,384	3,913	220	3.84	17.8
	COLRAIN			22-L0	(10)	11,517.96	6,686	5,984	398	3.46	15.0
	CONWAY			22-L0	(10)	12,996.44	7,015	7,281	433	3.33	16.8
	CUMMINGTON			22-L0	(10)	460.38	413	93	7	1.52	13.3
	DALTON			22-L0	(10)	66,051.91	48,759	23,898	1,815	2.75	13.2
	DEERFIELD			22-L0	(10)	112,662.90	54,353	69,576	4,122	3.66	16.9
	EASTHAMPTON			22-L0	(10)	37,143.12	28,437	12,420	1,042	2.81	11.9
	ERVING			22-L0	(10)	9,070.93	6,980	2,998	245	2.70	12.2
	GILL			22-L0	(10)	8,878.35	6,198	3,568	271	3.05	13.2
	GRANVILLE			22-L0	(10)	26,038.35	7,535	21,107	1,106	4.25	19.1
	GREENFIELD			22-L0	(10)	79,126.54	62,959	24,080	1,657	2.09	14.5
	HADLEY			22-L0	(10)	27,728.63	13,818	16,683	977	3.52	17.1
	HANCOCK			22-L0	(10)	1,307.33	1,406	32	4	0.31	8.0
	HATFIELD			22-L0	(10)	34,003.71	18,061	19,343	1,245	3.66	15.5
	HINSDALE			22-L0	(10)	76,733.93	33,151	51,256	3,063	3.99	16.7
	HUNTINGTON			22-L0	(10)	39,578.40	21,734	21,802	1,357	3.43	16.1
	LANESBOROUGH			22-L0	(10)	131,131.00	74,937	69,307	4,462	3.40	15.5
	LEE			22-L0	(10)	260,849.61	148,182	138,753	8,960	3.43	15.5
	LENOX			22-L0	(10)	15,274.20	9,213	7,589	504	3.30	15.1
	LEVERETT			22-L0	(10)	11,097.42	5,508	6,699	430	3.87	15.6
	LEYDEN			22-L0	(10)	1,929.37	718	1,404	72	3.73	19.5

NSTAR ELECTRIC COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVE, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2020

ACCOUNT	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINALCOST AS OF DECEMBER 31, 2020	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)=(7)/(8)
LONGMEADOW		22-L0	(10)	514,540.97	328,783	237,212	15,888	3.09	14.9
LUDLOW		22-L0	(10)	1,132,971.89	507,840	738,429	44,873	3.96	16.5
MIDDLEFIELD		22-L0	(10)	2,720.83	1,593	1,400	97	3.57	14.4
MONTAGUE		22-L0	(10)	215,796.08	121,556	115,820	7,414	3.44	15.6
MONTGOMERY		22-L0	(10)	1,243.53	162	1,206	58	4.66	20.8
NORTHFIELD		22-L0	(10)	59,965.11	24,344	41,618	2,520	4.20	16.5
OTIS		22-L0	(10)	32,143.91	19,485	15,873	949	2.95	16.7
PELHAM		22-L0	(10)	306.21	307	30	4	1.31	7.5
PERU		22-L0	(10)	2,650.53	411	2,505	124	4.68	20.2
PITTSFIELD		22-L0	(10)	31,421.08	30,249	4,314	323	1.03	13.4
PLAINFIELD		22-L0	(10)	1,833.89	975	1,042	69	3.76	15.1
RICHMOND		22-L0	(10)	4,460.69	2,208	2,699	168	3.77	16.1
RUSSELL		22-L0	(10)	50,792.79	26,079	29,793	1,848	3.64	16.1
SANDISFIELD		22-L0	(10)	10,374.85	6,001	5,411	322	3.10	16.8
SAVOY		22-L0	(10)	4,663.96	2,499	2,631	179	3.84	14.7
SHELBURNE		22-L0	(10)	45,314.29	19,023	30,823	1,876	4.14	16.4
SOUTHAMPTON		22-L0	(10)	57,812.97	36,150	27,444	1,751	3.03	15.7
SOUTHWICK		22-L0	(10)	128,365.96	59,669	81,534	4,894	3.81	16.7
SPRINGFIELD		22-L0	(10)	12,933,179.45	6,113,049	8,113,448	484,501	3.75	16.7
SUNDERLAND		22-L0	(10)	4,873.33	3,162	2,199	112	2.30	19.6
TOLLAND		22-L0	(10)	10,362.26	4,267	7,131	439	4.24	16.2
TYRINGHAM		22-L0	(10)	3,035.06	2,662	677	63	2.08	10.7
WASHINGTON		22-L0	(10)	2,032.96	1,220	1,016	70	3.44	14.5
WESTHAMPTON		22-L0	(10)	749.81	260	565	32	4.27	17.7
WEST SPRINGFIELD		22-L0	(10)	904,335.46	452,495	542,274	33,450	3.70	16.2
WHATELY		22-L0	(10)	5,072.26	4,440	1,139	76	1.50	15.0
WINDSOR		22-L0	(10)	2,873.65	1,809	1,352	93	3.24	14.5
WORTHINGTON		22-L0	(10)	798.06	665	213	15	1.88	14.2
ACTON		22-L0	(10)	258,059.42	62,831	221,034	11,322	4.39	19.5
ACUSHNET		22-L0	(10)	224,141.95	154,742	91,814	7,103	3.17	12.9
AQUINNAH		22-L0	(10)	137,010.65	4,325	146,387	6,793	4.96	21.5
ARLINGTON		22-L0	(10)	144,270.38	105,102	53,595	3,969	2.75	13.5
ASHLAND		22-L0	(10)	91,873.48	23,487	77,574	3,920	4.27	19.8
BARNSTABLE		22-L0	(10)	951,893.69	543,773	503,310	33,499	3.52	15.0
BEDFORD		22-L0	(10)	33,976.32	22,479	14,895	1,100	3.24	13.5
BELLINGHAM		22-L0	(10)	49,652.39	42,144	12,474	1,096	2.21	11.4
BOSTON		22-L0	(10)	5,190,099.93	2,883,217	2,825,893	174,102	3.35	16.2
BOURNE		22-L0	(10)	160,057.27	96,064	79,999	5,582	3.49	14.3
BREWSTER		22-L0	(10)	30,312.04	19,895	13,448	989	3.26	13.6
BROOKLINE		22-L0	(10)	824,274.65	738,312	168,390	13,072	1.59	12.9
BURLINGTON		22-L0	(10)	279,091.03	50,777	256,223	12,720	4.56	20.1
CAMBRIDGE		22-L0	(10)	919,887.47	560,300	451,576	31,482	3.42	14.3
CANTON		22-L0	(10)	112,318.41	74,047	49,503	3,688	3.28	13.4
CARLISLE		22-L0	(10)	28,067.16	20,328	10,546	897	3.20	11.8
CARVER		22-L0	(10)	34,358.41	16,260	21,534	1,363	3.97	15.8
CHATHAM		22-L0	(10)	29,683.45	18,398	14,254	997	3.36	14.3
CHELSEA		22-L0	(10)	264,629.85	194,987	96,106	6,997	2.64	13.7
CHILMARK		22-L0	(10)	524.08	337	239	19	3.63	12.6
DARTMOUTH		22-L0	(10)	116,242.36	76,264	51,603	4,007	3.45	12.9
DEDHAM		22-L0	(10)	130,795.82	86,728	57,147	3,568	2.73	16.0
DENNIS		22-L0	(10)	101,363.88	55,629	55,871	3,789	3.74	14.7
DOVER		22-L0	(10)	3,221.48	1,568	1,976	118	3.66	16.7
DUXBURY		22-L0	(10)	122,534.66	70,698	64,090	4,393	3.59	14.6
EASTHAM		22-L0	(10)	43,151.75	26,226	21,241	1,526	3.54	13.9
EASTON		22-L0	(10)	34,086.55	28,384	9,111	925	2.71	9.8
EDGARTOWN		22-L0	(10)	4,303.93	2,551	2,183	147	3.42	14.9
EVERETT		22-L0	(10)	655.51	513	208	20	3.05	10.4
FAIRHAVEN		22-L0	(10)	53,495.44	32,005	26,840	1,934	3.62	13.9
FALMOUTH		22-L0	(10)	246,695.10	163,758	107,607	8,071	3.27	13.3
FOXBORO		22-L0	(10)	24,885.94	19,034	8,341	769	3.09	10.8
FRAMINGHAM		22-L0	(10)	459,580.72	125,693	379,846	19,660	4.28	19.3
FRANKLIN		22-L0	(10)	1,651.09	1,419	397	41	2.48	9.7
FREETOWN		22-L0	(10)	105,473.32	66,608	49,413	3,634	3.45	13.6
HARWICH		22-L0	(10)	55,639.26	30,615	30,588	2,120	3.81	14.4
HOLLISTON		22-L0	(10)	605,835.94	364,312	302,108	21,905	3.62	13.8
HOPKINTON		22-L0	(10)	80,372.87	20,215	68,195	3,422	4.26	19.9
KINGSTON		22-L0	(10)	187,510.20	103,639	102,622	6,937	3.70	14.8

NSTAR ELECTRIC COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVE, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2020

ACCOUNT	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINALCOST AS OF DECEMBER 31, 2020	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)=(7)/(8)
LAKEVILLE		22-L0	(10)	4,467.25	3,197	1,717	144	3.22	11.9
LEXINGTON		22-L0	(10)	226,585.14	181,458	67,786	5,532	2.44	12.3
LINCOLN		22-L0	(10)	59,488.50	39,866	25,571	1,608	2.70	15.9
MANSFIELD		22-L0	(10)	798.84	724	155	17	2.13	9.1
MARION		22-L0	(10)	168,948.74	69,673	116,171	6,627	3.92	17.5
MASHFIELD		22-L0	(10)	339,231.41	176,889	196,266	12,835	3.78	15.3
MASHPEE		22-L0	(10)	114,570.57	53,853	72,175	4,268	3.73	16.9
MATTAPOISETT		22-L0	(10)	126,654.95	89,208	50,112	3,938	3.11	12.7
MAYNARD		22-L0	(10)	59,850.49	53,185	12,651	1,304	2.18	9.7
MEDFIELD		22-L0	(10)	99,934.31	76,792	33,136	2,815	2.82	11.8
MEDWAY		22-L0	(10)	9,991.87	8,808	2,183	223	2.23	9.8
MILLIS		22-L0	(10)	129,335.10	98,230	44,039	3,796	2.94	11.6
MILTON		22-L0	(10)	554,615.20	309,104	300,973	18,378	3.31	16.4
NATICK		22-L0	(10)	331,983.58	225,566	139,616	11,375	3.43	12.3
NEEDHAM		22-L0	(10)	33,045.42	18,625	17,725	1,209	3.66	14.7
BEDFORD		22-L0	(10)	1,222,805.49	959,317	385,769	32,348	2.65	11.9
NEWTON		22-L0	(10)	1,106,689.98	885,358	332,001	28,635	2.59	11.6
NORFOLK		22-L0	(10)	75,697.22	53,827	29,440	2,407	3.18	12.2
OAK BLUFFS		22-L0	(10)	155,467.63	58,921	112,093	6,669	4.29	16.8
ORLEANS		22-L0	(10)	45,960.74	31,731	18,826	1,508	3.28	12.5
PEMBROKE		22-L0	(10)	1,634.19	1,046	752	55	3.37	13.7
PLYMOUTH		22-L0	(10)	1,083,707.44	555,873	636,205	40,496	3.74	15.7
PLYMTON		22-L0	(10)	33,345.93	20,158	16,523	1,153	3.46	14.3
PROVINCETOWN		22-L0	(10)	36,667.69	24,391	15,943	1,232	3.36	12.9
READING		22-L0	(10)	464.10	328	183	14	3.02	13.1
ROCHESTER		22-L0	(10)	29,517.49	19,948	12,521	978	3.31	12.8
SANDWICH		22-L0	(10)	83,573.25	42,259	49,672	3,317	3.97	15.0
SCITUATE		22-L0	(10)	33,287.35	17,255	19,361	1,276	3.83	15.2
SHARON		22-L0	(10)	121,574.99	107,897	25,835	2,629	2.16	9.8
SHERBORN		22-L0	(10)	40,268.49	28,743	15,552	1,262	3.13	12.3
SOMERVILLE		22-L0	(10)	196,042.67	154,611	61,036	4,805	2.45	12.7
STONEHAM		22-L0	(10)	348,115.76	302,941	79,986	7,919	2.27	10.1
STOUGHTON		22-L0	(10)	785.77	725	139	16	2.04	8.7
SUDBURY		22-L0	(10)	30,344.70	21,615	11,764	934	3.08	12.6
TAUNTON		22-L0	(10)	9,029.77	2,038	7,895	422	4.67	18.7
TISBURY		22-L0	(10)	157,293.30	79,405	93,618	5,907	3.76	15.8
TRURO		22-L0	(10)	21,131.10	13,280	9,964	738	3.49	13.5
SPECIAL TAX DISTRICT		22-L0	(10)	15,340.87	11,477	5,398	484	3.15	11.2
WAKEFIELD		22-L0	(10)	617.54	670	9	1	0.16	9.0
WALPOLE		22-L0	(10)	1,048,017.25	574,278	578,541	39,089	3.73	14.8
WALTHAM		22-L0	(10)	506,664.94	237,376	319,955	18,319	3.62	17.5
WAREHAM		22-L0	(10)	248,606.39	154,752	118,715	8,406	3.38	14.1
WATERTOWN		22-L0	(10)	117,294.96	79,620	49,404	3,609	3.08	13.7
WAYLAND		22-L0	(10)	138,444.88	112,538	39,751	2,926	2.11	13.6
WELLFLEET		22-L0	(10)	19,680.93	12,986	8,663	643	3.27	13.5
TISBURY		22-L0	(10)	6,603.76	2,425	4,839	270	4.09	17.9
WESTON		22-L0	(10)	24,401.95	20,061	6,781	590	2.42	11.5
WESTPORT		22-L0	(10)	86,170.66	55,269	39,519	2,933	3.40	13.5
WESTWOOD		22-L0	(10)	159,120.70	36,287	138,746	7,104	4.46	19.5
WILMINGTON		22-L0	(10)	4,306.02	844	3,893	203	4.71	19.2
WINCHESTER		22-L0	(10)	173,397.77	137,773	52,965	3,980	2.30	13.3
WOBURN		22-L0	(10)	223,823.81	147,515	98,691	7,165	3.20	13.8
YARMOUTH		22-L0	(10)	186,598.40	71,342	133,916	7,674	4.11	17.5
TOTAL ACCOUNT 373				40,135,447.07	22,183,808	21,965,182	1,390,201	**3.46**	**15.8**
TOTAL DISTRIBUTION PLANT				**6,885,038,346.09**	**2,323,380,493**	**7,607,556,666**	**190,449,465**	**2.77**	

NSTAR ELECTRIC COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVE, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2020

	ACCOUNT	PROBABLE RETIREMENT DATE		SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINALCOST AS OF DECEMBER 31, 2020	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)=(7)/(8)
	GENERAL PLANT										
389.20	LAND RIGHTS			70-R4	0	394.58	0	395	39	9.88	10.1
390.00	STRUCTURES AND IMPROVEMENTS										
	EAST SPRINGFIELD SERVICE CENTER	06-2044	**	70-R1.5	(10)	11,509,414.62	3,919,841	8,740,515	397,344	3.45	22.0
	GREENFIELD SERVICE CENTER	06-2027	**	70-R1.5	(10)	2,224,775.22	1,725,371	721,882	113,666	5.11	6.4
	PITTSFIELD SERVICE CENTER	06-2037	**	70-R1.5	(10)	6,281,759.67	3,145,608	3,764,328	240,023	3.82	15.7
	DOTY ROAD - VEHICLE REPAIR SHOP	06-2034	**	70-R1.5	(10)	1,362,370.08	858,913	639,694	49,637	3.64	12.9
	NEW BEDFORD FACILITY	06-2057	**	70-R1.5	(10)	27,682,327.56	3,226,237	27,224,323	809,259	2.92	33.6
	PLYMOUTH SERVICE CENTER	06-2042	**	70-R1.5	(10)	6,180,882.95	2,103,099	4,695,872	229,512	3.71	20.5
	YARMOUTH SERVICE CENTER	06-2039	**	70-R1.5	(10)	7,704,158.94	2,893,612	5,580,963	315,213	4.09	17.7
	SUMMIT OFFICE BUILDING	06-2072	**	70-R1.5	(10)	43,657,599.66	9,456,062	38,567,298	890,803	2.04	43.3
	1165 MASS. AVE. SERVICE CENTER	06-2056	**	70-R1.5	(10)	64,911,552.88	14,633,645	56,769,063	1,757,935	2.71	32.3
	SOMERVILLE SERVICE CENTER	06-2037	**	70-R1.5	(10)	5,256,906.57	2,746,588	3,036,009	193,902	3.69	15.7
	OTHER MINOR STRUCTURES			45-R1	(10)	27,124,021.62	5,478,355	24,358,069	684,022	2.52	35.6
	TOTAL ACCOUNT 390					203,895,769.77	50,187,331	174,098,016	5,681,316	2.79	30.6
390.10	STRUCTURES AND IMPROVEMENTS - LEASEHOLDS										
	BOSTON SERVICE CENTER (HYDE PARK. AVE.)	06-2033	**	35-R2.5	0	8,930,797.04	2,362,486	6,568,311	547,437	6.13	12.0
	WALTHAM SERVICE CENTER	08-2041	**	35-R2.5	0	11,352,219.88	1,675,677	9,676,543	507,331	4.47	19.1
	WALPOLE SERVICE CENTER	03-2043	**	35-R2.5	0	2,435,789.88	555,191	1,880,599	99,285	4.08	18.9
	PRUDENTIAL BUILDING	11-2022	**	35-R2.5	0	2,867,558.96	2,671,971	195,588	102,972	3.59	1.9
	OTHER MINOR STRUCTURES			35-R2.5	0	2,614,937.33	1,242,047	1,372,890	61,390	2.35	22.4
	TOTAL ACCOUNT 390.1					28,201,303.09	8,507,372	19,693,931	1,318,415	4.68	14.9
390.30	STRUCTURES AND IMPROVEMENTS - HADLEY	06-2048	**	70-R1.5	(10)	6,457,047.44	2,739,716	4,363,036	166,968	2.59	26.1
	TOTAL STRUCTURES AND IMPROVEMENTS					238,554,120.30	61,434,419	198,154,983	7,166,699	3.00	27.6
391.10	OFFICE FURNITURE AND EQUIPMENT			20-SQ	0	16,845,305.11	8,518,870	8,326,435	841,831	5.00	9.9
391.20	COMPUTER EQUIPMENT										
	FULLY ACCRUED			FULLY ACCRUED		1,179,987.20	1,179,987	0	0	-	-
	AMORTIZED			7-SQ	0	10,264,189.56	5,399,885	4,864,305	1,466,821	14.29	3.3
	TOTAL COMPUTER EQUIPMENT					11,444,176.76	6,579,872	4,864,305	1,466,821	12.82	3.3
	TOTAL ACCOUNT 391.00					28,289,481.87	15,098,742	13,190,740	2,308,652	8.16	5.7
392.00	TRANSPORTATION EQUIPMENT			16-L2	15	88,521,701.25	22,287,412	52,956,034	3,929,340	4.44	13.5
393.00	STORES EQUIPMENT			25-SQ	0	4,489,741.31	661,370	3,828,371	179,438	4.00	21.3
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT			25-SQ	0	19,372,329.97	5,052,385	14,319,945	774,458	4.00	18.5
395.00	LABORATORY EQUIPMENT			20-SQ	0	8,899,523.10	404,655	8,494,868	445,246	5.00	19.1
396.00	POWER OPERATED EQUIPMENT			20-L3	0	228,102.62	202,329	25,774	2,881	1.26	8.9
397.00	COMMUNICATION EQUIPMENT			15-SQ	0	68,462,740.80	32,676,750	35,785,991	4,563,589	6.67	7.8
397.10	COMMUNICATION EQUIPMENT - GPS										
	FULLY ACCRUED			FULLY ACCRUED		385,273.46	385,273	0	0	-	-
	AMORTIZED			5-SQ	0	241,495.64	174,860	66,636	48,300	20.00	1.4
	TOTAL COMMUNICATION EQUIPMENT - GPS					626,769.10	560,133	66,636	48,300	7.71	1.4
397.20	COMMUNICATION EQUIPMENT - MICROWAVE			40-S1	(5)	6,721,653.30	2,241,657	4,816,079	194,532	2.89	24.8
	TOTAL ACCOUNT 397.00					75,811,163.20	35,478,540	40,668,706	4,806,421	6.34	8.5
398.00	MISCELLANEOUS EQUIPMENT			20-SQ	0	3,618,450.57	1,612,245	2,006,206	180,923	5.00	11.1
	TOTAL GENERAL PLANT					**467,785,008.77**	**142,232,097**	**333,646,022**	**19,794,097**	**4.23**	

NSTAR ELECTRIC COMPANY

TABLE 1. SUMMARY OF ESTIMATED SURVIVOR CURVE, NET SALVAGE PERCENT, ORIGINAL COST, BOOK DEPRECIATION RESERVE AND CALCULATED ANNUAL DEPRECIATION ACCRUALS RELATED TO ELECTRIC PLANT AS OF DECEMBER 31, 2020

	ACCOUNT	PROBABLE RETIREMENT DATE	SURVIVOR CURVE	NET SALVAGE PERCENT	ORIGINALCOST AS OF DECEMBER 31, 2020	BOOK DEPRECIATION RESERVE	FUTURE ACCRUALS	CALCULATED ANNUAL ACCRUAL AMOUNT	CALCULATED ANNUAL ACCRUAL RATE	COMPOSITE REMAINING LIFE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)=(8)/(5)	(10)=(7)/(8)
	UNRECOVERED RESERVE FOR AMORTIZATION									
391.10	OFFICE FURNITURE AND EQUIPMENT					2,318,667		(463,733) ***		
391.20	COMPUTER EQUIPMENT					1,901,885		(380,377) ***		
393.00	STORES EQUIPMENT					11,141		(2,228) ***		
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT					694,675		(138,935) ***		
395.00	LABORATORY EQUIPMENT					(436,529)		87,306 ***		
397.00	COMMUNICATION EQUIPMENT					(3,947,671)		789,534 ***		
397.10	COMMUNICATION EQUIPMENT - GPS					(68,311)		13,662 ***		
398.00	MISCELLANEOUS EQUIPMENT					185,591		(37,118) ***		
	TOTAL UNRECOVERED RESERVE FOR AMORTIZATION					**659,448**		**(131,889)**		
	TOTAL DEPRECIABLE PLANT				**7,603,973,958.96**	**2,539,555,238**	**8,119,070,091**	**220,694,520**	**2.90**	
	NONDEPRECIABLE PLANT AND ACCOUNTS NOT STUDIED									
340.00	LAND				2,571,139.52					
360.10	LAND				14,786,558.46					
389.10	LAND				14,087,402.67					
	TOTAL NONDEPRECIABLE PLANT AND ACCOUNTS NOT STUDIED				**31,445,100.65**					
	TOTAL ELECTRIC PLANT				**7,635,419,059.61**	**2,539,555,238**	**8,119,070,091**	**220,694,520**		

* ASSETS IN THESE LOCATIONS ARE INDIVIDUALLY DEPRECIATED
** LIFE SPAN PROCEDURE IS USED. SURVIVOR CURVE SHOWN IS INTERIM CURVE.
*** 5-YEAR AMORTIZATION OF UNRECOVERED RESERVE RELATED TO UTILIZATION OF AMORTIZATION ACCOUNTING.

PART VII. SERVICE LIFE STATISTICS

NSTAR ELECTRIC COMPANY
ACCOUNT 340.10 LAND RIGHTS - SOLAR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 340.10 LAND RIGHTS - SOLAR

ORIGINAL LIFE TABLE

PLACEMENT BAND 2010-2018 EXPERIENCE BAND 2010-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	3,505,710		0.0000	1.0000	100.00
0.5	3,505,710		0.0000	1.0000	100.00
1.5	3,505,710		0.0000	1.0000	100.00
2.5	915,154		0.0000	1.0000	100.00
3.5	915,154		0.0000	1.0000	100.00
4.5	915,154		0.0000	1.0000	100.00
5.5	915,154		0.0000	1.0000	100.00
6.5	157,818		0.0000	1.0000	100.00
7.5	157,818		0.0000	1.0000	100.00
8.5	157,818		0.0000	1.0000	100.00
9.5	157,818		0.0000	1.0000	100.00
10.5					100.00

NSTAR ELECTRIC COMPANY
ACCOUNT 341.10 STRUCTURES AND IMPROVEMENTS - SOLAR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 341.10 STRUCTURES AND IMPROVEMENTS - SOLAR

ORIGINAL LIFE TABLE

PLACEMENT BAND 2010-2019 EXPERIENCE BAND 2010-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	41,850,821		0.0000	1.0000	100.00
0.5	41,850,821		0.0000	1.0000	100.00
1.5	34,458,356		0.0000	1.0000	100.00
2.5	2,646,569		0.0000	1.0000	100.00
3.5	2,646,569		0.0000	1.0000	100.00
4.5	2,646,569		0.0000	1.0000	100.00
5.5	2,643,309		0.0000	1.0000	100.00
6.5	2,451,902		0.0000	1.0000	100.00
7.5	2,451,902		0.0000	1.0000	100.00
8.5	2,444,791		0.0000	1.0000	100.00
9.5	590,693		0.0000	1.0000	100.00
10.5					100.00

NSTAR ELECTRIC COMPANY
ACCOUNT 344.10 GENERATORS - SOLAR
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE ■ 2010-2020 EXPERIENCE
2010-2020 PLACEMENTS
IOWA 25-S2.5
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
AGE IN YEARS

NSTAR ELECTRIC COMPANY

ACCOUNT 344.10 GENERATORS - SOLAR

ORIGINAL LIFE TABLE

PLACEMENT BAND 2010-2020 EXPERIENCE BAND 2010-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	127,747,203		0.0000	1.0000	100.00
0.5	127,730,432	1,611	0.0000	1.0000	100.00
1.5	111,614,535	35,470	0.0003	0.9997	100.00
2.5	27,174,964		0.0000	1.0000	99.97
3.5	27,162,983	3,039	0.0001	0.9999	99.97
4.5	27,159,944	1,602	0.0001	0.9999	99.96
5.5	27,157,728	1,013	0.0000	1.0000	99.95
6.5	16,221,839		0.0000	1.0000	99.95
7.5	16,220,363	5,607	0.0003	0.9997	99.95
8.5	16,205,893		0.0000	1.0000	99.91
9.5	7,560,781		0.0000	1.0000	99.91
10.5					99.91

NSTAR ELECTRIC COMPANY
ACCOUNT 345.10 ACCESSORY ELECTRIC EQUIPMENT - SOLAR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 345.10 ACCESSORY ELECTRIC EQUIPMENT - SOLAR

ORIGINAL LIFE TABLE

PLACEMENT BAND 2010-2019 EXPERIENCE BAND 2010-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	7,872,407		0.0000	1.0000	100.00
0.5	7,872,407		0.0000	1.0000	100.00
1.5	6,958,336		0.0000	1.0000	100.00
2.5	2,515,788		0.0000	1.0000	100.00
3.5	2,515,788		0.0000	1.0000	100.00
4.5	2,515,788	28,617	0.0114	0.9886	100.00
5.5	2,487,171	24,021	0.0097	0.9903	98.86
6.5	1,397,178		0.0000	1.0000	97.91
7.5	1,397,178		0.0000	1.0000	97.91
8.5	1,397,178		0.0000	1.0000	97.91
9.5	548,299		0.0000	1.0000	97.91
10.5					97.91

NSTAR ELECTRIC COMPANY
ACCOUNT 360.20 LAND RIGHTS
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE ■ 1997-2020 EXPERIENCE
1888-2011 PLACEMENTS
IOWA 75-R3
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160
AGE IN YEARS

NSTAR ELECTRIC COMPANY

ACCOUNT 360.20 LAND RIGHTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1888-2011 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	127,490		0.0000	1.0000	100.00
0.5	127,490		0.0000	1.0000	100.00
1.5	160,956		0.0000	1.0000	100.00
2.5	160,956		0.0000	1.0000	100.00
3.5	160,956		0.0000	1.0000	100.00
4.5	160,956		0.0000	1.0000	100.00
5.5	160,956		0.0000	1.0000	100.00
6.5	160,956		0.0000	1.0000	100.00
7.5	160,956		0.0000	1.0000	100.00
8.5	160,956		0.0000	1.0000	100.00
9.5	159,881		0.0000	1.0000	100.00
10.5	159,881		0.0000	1.0000	100.00
11.5	160,206		0.0000	1.0000	100.00
12.5	160,206		0.0000	1.0000	100.00
13.5	160,206		0.0000	1.0000	100.00
14.5	160,206		0.0000	1.0000	100.00
15.5	158,791		0.0000	1.0000	100.00
16.5	158,791		0.0000	1.0000	100.00
17.5	161,865		0.0000	1.0000	100.00
18.5	36,865		0.0000	1.0000	100.00
19.5	37,560		0.0000	1.0000	100.00
20.5	37,560		0.0000	1.0000	100.00
21.5	45,521		0.0000	1.0000	100.00
22.5	45,521		0.0000	1.0000	100.00
23.5	45,521		0.0000	1.0000	100.00
24.5	45,582		0.0000	1.0000	100.00
25.5	14,651		0.0000	1.0000	100.00
26.5	22,990		0.0000	1.0000	100.00
27.5	24,491		0.0000	1.0000	100.00
28.5	28,376		0.0000	1.0000	100.00
29.5	28,376		0.0000	1.0000	100.00
30.5	30,004		0.0000	1.0000	100.00
31.5	30,312		0.0000	1.0000	100.00
32.5	31,722		0.0000	1.0000	100.00
33.5	849,303		0.0000	1.0000	100.00
34.5	849,303		0.0000	1.0000	100.00
35.5	850,880		0.0000	1.0000	100.00
36.5	850,880		0.0000	1.0000	100.00
37.5	850,880		0.0000	1.0000	100.00
38.5	850,880		0.0000	1.0000	100.00

NSTAR ELECTRIC COMPANY

ACCOUNT 360.20 LAND RIGHTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1888-2011 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	850,881		0.0000	1.0000	100.00
40.5	850,881		0.0000	1.0000	100.00
41.5	847,807		0.0000	1.0000	100.00
42.5	847,807		0.0000	1.0000	100.00
43.5	847,112		0.0000	1.0000	100.00
44.5	847,112		0.0000	1.0000	100.00
45.5	839,151		0.0000	1.0000	100.00
46.5	839,151		0.0000	1.0000	100.00
47.5	839,151		0.0000	1.0000	100.00
48.5	839,090		0.0000	1.0000	100.00
49.5	836,555		0.0000	1.0000	100.00
50.5	828,216		0.0000	1.0000	100.00
51.5	826,715		0.0000	1.0000	100.00
52.5	822,841		0.0000	1.0000	100.00
53.5	822,841		0.0000	1.0000	100.00
54.5	821,213		0.0000	1.0000	100.00
55.5	820,906		0.0000	1.0000	100.00
56.5	819,495		0.0000	1.0000	100.00
57.5	1,915		0.0000	1.0000	100.00
58.5	1,915		0.0000	1.0000	100.00
59.5	12		0.0000	1.0000	100.00
60.5	12		0.0000	1.0000	100.00
61.5	12		0.0000	1.0000	100.00
62.5	12		0.0000	1.0000	100.00
63.5	352		0.0000	1.0000	100.00
64.5	352		0.0000	1.0000	100.00
65.5	858		0.0000	1.0000	100.00
66.5	985		0.0000	1.0000	100.00
67.5	2,107		0.0000	1.0000	100.00
68.5	2,107		0.0000	1.0000	100.00
69.5	2,448		0.0000	1.0000	100.00
70.5	2,448	11	0.0046	0.9954	100.00
71.5	2,437		0.0000	1.0000	99.54
72.5	2,562		0.0000	1.0000	99.54
73.5	2,562		0.0000	1.0000	99.54
74.5	2,562		0.0000	1.0000	99.54
75.5	2,562		0.0000	1.0000	99.54
76.5	2,862		0.0000	1.0000	99.54
77.5	3,062		0.0000	1.0000	99.54
78.5	2,862		0.0000	1.0000	99.54

NSTAR ELECTRIC COMPANY

ACCOUNT 360.20 LAND RIGHTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1888-2011 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	2,862		0.0000	1.0000	99.54
80.5	2,862		0.0000	1.0000	99.54
81.5	3,120		0.0000	1.0000	99.54
82.5	3,120		0.0000	1.0000	99.54
83.5	4,120		0.0000	1.0000	99.54
84.5	4,120		0.0000	1.0000	99.54
85.5	4,120		0.0000	1.0000	99.54
86.5	7,020		0.0000	1.0000	99.54
87.5	6,680		0.0000	1.0000	99.54
88.5	6,680		0.0000	1.0000	99.54
89.5	6,173		0.0000	1.0000	99.54
90.5	6,047		0.0000	1.0000	99.54
91.5	5,298		0.0000	1.0000	99.54
92.5	5,298		0.0000	1.0000	99.54
93.5	2,057		0.0000	1.0000	99.54
94.5	2,057		0.0000	1.0000	99.54
95.5	2,057		0.0000	1.0000	99.54
96.5	1,932		0.0000	1.0000	99.54
97.5	1,559		0.0000	1.0000	99.54
98.5	1,559		0.0000	1.0000	99.54
99.5	1,559	259	0.1660	0.8340	99.54
100.5	1,000		0.0000	1.0000	83.01
101.5	1,000		0.0000	1.0000	83.01
102.5	1,000		0.0000	1.0000	83.01
103.5	1,000		0.0000	1.0000	83.01
104.5	1,000		0.0000	1.0000	83.01
105.5	1,000		0.0000	1.0000	83.01
106.5	1,000		0.0000	1.0000	83.01
107.5					83.01
108.5	6,383		0.0000		
109.5	6,383		0.0000		
110.5	6,383		0.0000		
111.5	6,383		0.0000		
112.5	6,383		0.0000		
113.5	6,383		0.0000		
114.5	6,383		0.0000		
115.5	6,383		0.0000		
116.5	6,383		0.0000		
117.5	6,383		0.0000		
118.5	6,383		0.0000		

NSTAR ELECTRIC COMPANY

ACCOUNT 360.20 LAND RIGHTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1888-2011 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
119.5	6,383		0.0000		
120.5	6,383		0.0000		
121.5	6,383		0.0000		
122.5	6,383		0.0000		
123.5	6,383		0.0000		
124.5	6,383		0.0000		
125.5	6,383		0.0000		
126.5	6,383		0.0000		
127.5	6,383		0.0000		
128.5	6,383		0.0000		
129.5	6,383		0.0000		
130.5	6,383		0.0000		
131.5	6,383		0.0000		
132.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 75-R3
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
AGE IN YEARS

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	138,671,507		0.0000	1.0000	100.00
0.5	138,496,996		0.0000	1.0000	100.00
1.5	138,004,958	2,598	0.0000	1.0000	100.00
2.5	134,525,379		0.0000	1.0000	100.00
3.5	121,604,012		0.0000	1.0000	100.00
4.5	110,656,445	40,711	0.0004	0.9996	100.00
5.5	108,005,343	45,181	0.0004	0.9996	99.96
6.5	107,350,415	8,424	0.0001	0.9999	99.92
7.5	105,386,015	109,949	0.0010	0.9990	99.91
8.5	103,830,525	273,905	0.0026	0.9974	99.81
9.5	100,870,061	52,597	0.0005	0.9995	99.54
10.5	100,007,273	688	0.0000	1.0000	99.49
11.5	98,048,671	248,920	0.0025	0.9975	99.49
12.5	97,466,207	5,115	0.0001	0.9999	99.24
13.5	95,909,910	221,911	0.0023	0.9977	99.23
14.5	95,405,525	286,539	0.0030	0.9970	99.00
15.5	79,570,611	24,671	0.0003	0.9997	98.71
16.5	78,986,128		0.0000	1.0000	98.68
17.5	77,104,220	22,462	0.0003	0.9997	98.68
18.5	75,675,645	52,923	0.0007	0.9993	98.65
19.5	74,924,549	169,261	0.0023	0.9977	98.58
20.5	74,394,614	131,562	0.0018	0.9982	98.36
21.5	71,971,719	15,907	0.0002	0.9998	98.18
22.5	67,528,334	43,781	0.0006	0.9994	98.16
23.5	66,625,408	210,352	0.0032	0.9968	98.10
24.5	64,597,518	309,624	0.0048	0.9952	97.79
25.5	39,465,852	248,387	0.0063	0.9937	97.32
26.5	34,216,531	12,409	0.0004	0.9996	96.71
27.5	33,655,831	32,107	0.0010	0.9990	96.67
28.5	33,284,840	35,855	0.0011	0.9989	96.58
29.5	33,583,179	28,158	0.0008	0.9992	96.47
30.5	21,116,724	119,615	0.0057	0.9943	96.39
31.5	19,406,361	12,520	0.0006	0.9994	95.85
32.5	18,992,884	8,030	0.0004	0.9996	95.79
33.5	18,855,651	32,664	0.0017	0.9983	95.75
34.5	18,999,588	31,498	0.0017	0.9983	95.58
35.5	18,875,710	107,301	0.0057	0.9943	95.42
36.5	18,544,566	12,888	0.0007	0.9993	94.88
37.5	18,399,263	53,815	0.0029	0.9971	94.81
38.5	18,114,704	51,258	0.0028	0.9972	94.54

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	17,956,150	51,569	0.0029	0.9971	94.27
40.5	17,851,544	58,371	0.0033	0.9967	94.00
41.5	16,734,914	28,678	0.0017	0.9983	93.69
42.5	15,924,400	35,694	0.0022	0.9978	93.53
43.5	12,503,178	23,747	0.0019	0.9981	93.32
44.5	12,435,490	81,127	0.0065	0.9935	93.14
45.5	9,963,976	20,388	0.0020	0.9980	92.53
46.5	9,959,240	66,879	0.0067	0.9933	92.35
47.5	9,002,996	12,350	0.0014	0.9986	91.72
48.5	8,157,168	46,124	0.0057	0.9943	91.60
49.5	7,794,636	31,436	0.0040	0.9960	91.08
50.5	7,016,946	20,795	0.0030	0.9970	90.71
51.5	6,630,103	8,720	0.0013	0.9987	90.44
52.5	6,399,154	10,201	0.0016	0.9984	90.33
53.5	5,861,218	30,370	0.0052	0.9948	90.18
54.5	5,616,353	2,299	0.0004	0.9996	89.71
55.5	5,531,920	9,114	0.0016	0.9984	89.68
56.5	5,209,203	17,594	0.0034	0.9966	89.53
57.5	4,930,381	2,041	0.0004	0.9996	89.23
58.5	4,713,503	151,705	0.0322	0.9678	89.19
59.5	4,539,797	11,500	0.0025	0.9975	86.32
60.5	4,383,383	2,317	0.0005	0.9995	86.10
61.5	4,062,235	70,482	0.0174	0.9826	86.06
62.5	3,632,338	36,606	0.0101	0.9899	84.56
63.5	3,334,435	2,585	0.0008	0.9992	83.71
64.5	3,003,673	8,628	0.0029	0.9971	83.65
65.5	2,262,007	4,710	0.0021	0.9979	83.41
66.5	1,694,402	327	0.0002	0.9998	83.23
67.5	1,583,885		0.0000	1.0000	83.22
68.5	1,514,688	37,394	0.0247	0.9753	83.22
69.5	1,402,457		0.0000	1.0000	81.16
70.5	710,648		0.0000	1.0000	81.16
71.5	568,874		0.0000	1.0000	81.16
72.5	564,943	39,198	0.0694	0.9306	81.16
73.5	466,328	41	0.0001	0.9999	75.53
74.5	492,970	2,423	0.0049	0.9951	75.52
75.5	490,186	139	0.0003	0.9997	75.15
76.5	638,262	2,504	0.0039	0.9961	75.13
77.5	635,366	319	0.0005	0.9995	74.84
78.5	634,895	1,256	0.0020	0.9980	74.80

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	632,032	203,596	0.3221	0.6779	74.65
80.5	373,278		0.0000	1.0000	50.60
81.5	371,273		0.0000	1.0000	50.60
82.5	358,595		0.0000	1.0000	50.60
83.5	383,156	368	0.0010	0.9990	50.60
84.5	373,268	7,495	0.0201	0.9799	50.55
85.5	367,293		0.0000	1.0000	49.54
86.5	381,021		0.0000	1.0000	49.54
87.5	381,265	2,458	0.0064	0.9936	49.54
88.5	377,886	3,700	0.0098	0.9902	49.22
89.5	370,205	1,066	0.0029	0.9971	48.74
90.5	228,179		0.0000	1.0000	48.60
91.5	213,656	785	0.0037	0.9963	48.60
92.5	142,091		0.0000	1.0000	48.42
93.5	136,100		0.0000	1.0000	48.42
94.5	118,519		0.0000	1.0000	48.42
95.5	116,648		0.0000	1.0000	48.42
96.5	62,591		0.0000	1.0000	48.42
97.5	79,312		0.0000	1.0000	48.42
98.5	79,312		0.0000	1.0000	48.42
99.5	42,044		0.0000	1.0000	48.42
100.5	41,121		0.0000	1.0000	48.42
101.5	37,655		0.0000	1.0000	48.42
102.5	24,208		0.0000	1.0000	48.42
103.5	23,563		0.0000	1.0000	48.42
104.5	23,563		0.0000	1.0000	48.42
105.5	23,563		0.0000	1.0000	48.42
106.5	23,563		0.0000	1.0000	48.42
107.5	22,643		0.0000	1.0000	48.42
108.5	22,643		0.0000	1.0000	48.42
109.5	22,643		0.0000	1.0000	48.42
110.5	22,643		0.0000	1.0000	48.42
111.5	22,643		0.0000	1.0000	48.42
112.5	22,643		0.0000	1.0000	48.42
113.5	5,183		0.0000	1.0000	48.42
114.5	5,183		0.0000	1.0000	48.42
115.5	5,183		0.0000	1.0000	48.42
116.5	5,183		0.0000	1.0000	48.42
117.5	5,183		0.0000	1.0000	48.42
118.5	5,183		0.0000	1.0000	48.42
119.5					48.42

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	63,968,497		0.0000	1.0000	100.00
0.5	64,058,136		0.0000	1.0000	100.00
1.5	65,408,184	2,598	0.0000	1.0000	100.00
2.5	66,341,831		0.0000	1.0000	100.00
3.5	54,251,776		0.0000	1.0000	100.00
4.5	45,067,067	40,711	0.0009	0.9991	100.00
5.5	67,275,630	45,181	0.0007	0.9993	99.91
6.5	72,575,005	8,424	0.0001	0.9999	99.84
7.5	71,450,457	109,949	0.0015	0.9985	99.83
8.5	70,309,300	273,905	0.0039	0.9961	99.67
9.5	67,791,047	41,339	0.0006	0.9994	99.29
10.5	79,527,269	688	0.0000	1.0000	99.22
11.5	79,225,339	248,920	0.0031	0.9969	99.22
12.5	79,068,707	5,115	0.0001	0.9999	98.91
13.5	77,627,685	221,911	0.0029	0.9971	98.91
14.5	77,324,540	286,539	0.0037	0.9963	98.62
15.5	61,563,468	24,671	0.0004	0.9996	98.26
16.5	61,182,724		0.0000	1.0000	98.22
17.5	59,479,276	22,462	0.0004	0.9996	98.22
18.5	58,344,254	52,923	0.0009	0.9991	98.18
19.5	57,722,001	168,314	0.0029	0.9971	98.09
20.5	57,262,492	126,762	0.0022	0.9978	97.81
21.5	55,960,293	15,907	0.0003	0.9997	97.59
22.5	52,398,451	37,581	0.0007	0.9993	97.56
23.5	54,917,837	210,352	0.0038	0.9962	97.49
24.5	52,920,439	305,124	0.0058	0.9942	97.12
25.5	29,703,609	248,387	0.0084	0.9916	96.56
26.5	24,624,654	12,409	0.0005	0.9995	95.75
27.5	24,969,743	28,967	0.0012	0.9988	95.70
28.5	25,503,997	35,855	0.0014	0.9986	95.59
29.5	26,123,763	28,158	0.0011	0.9989	95.46
30.5	14,058,699	119,615	0.0085	0.9915	95.35
31.5	12,729,714	12,520	0.0010	0.9990	94.54
32.5	12,588,327	8,030	0.0006	0.9994	94.45
33.5	13,014,488	32,664	0.0025	0.9975	94.39
34.5	13,393,721	31,498	0.0024	0.9976	94.15
35.5	13,359,135	107,301	0.0080	0.9920	93.93
36.5	13,388,648	12,888	0.0010	0.9990	93.18
37.5	13,516,365	51,442	0.0038	0.9962	93.09
38.5	13,458,946	51,258	0.0038	0.9962	92.73

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	13,327,511	49,198	0.0037	0.9963	92.38
40.5	13,381,155	56,481	0.0042	0.9958	92.04
41.5	12,600,396	26,515	0.0021	0.9979	91.65
42.5	12,097,771	34,616	0.0029	0.9971	91.46
43.5	8,944,062	23,747	0.0027	0.9973	91.20
44.5	9,215,448	81,127	0.0088	0.9912	90.95
45.5	7,620,702	20,388	0.0027	0.9973	90.15
46.5	8,185,200	66,879	0.0082	0.9918	89.91
47.5	7,364,973	12,350	0.0017	0.9983	89.18
48.5	6,597,012	45,691	0.0069	0.9931	89.03
49.5	6,301,251	31,436	0.0050	0.9950	88.41
50.5	6,224,858	20,795	0.0033	0.9967	87.97
51.5	5,989,504	8,720	0.0015	0.9985	87.68
52.5	5,760,563	10,201	0.0018	0.9982	87.55
53.5	5,289,022	30,370	0.0057	0.9943	87.39
54.5	5,044,995	2,299	0.0005	0.9995	86.89
55.5	4,960,922	9,114	0.0018	0.9982	86.85
56.5	4,638,205	17,594	0.0038	0.9962	86.69
57.5	4,360,854	2,041	0.0005	0.9995	86.36
58.5	4,146,631	151,705	0.0366	0.9634	86.32
59.5	4,015,902	11,500	0.0029	0.9971	83.16
60.5	3,882,687	2,317	0.0006	0.9994	82.93
61.5	3,564,988	70,482	0.0198	0.9802	82.88
62.5	3,145,268	36,606	0.0116	0.9884	81.24
63.5	2,850,610	2,585	0.0009	0.9991	80.29
64.5	2,566,761	8,628	0.0034	0.9966	80.22
65.5	1,826,566	4,710	0.0026	0.9974	79.95
66.5	1,259,465	327	0.0003	0.9997	79.74
67.5	1,148,947		0.0000	1.0000	79.72
68.5	1,080,694	37,394	0.0346	0.9654	79.72
69.5	969,543		0.0000	1.0000	76.97
70.5	431,445		0.0000	1.0000	76.97
71.5	305,155		0.0000	1.0000	76.97
72.5	301,315	39,198	0.1301	0.8699	76.97
73.5	207,612	41	0.0002	0.9998	66.95
74.5	253,556	2,423	0.0096	0.9904	66.94
75.5	251,023	139	0.0006	0.9994	66.30
76.5	410,760	2,504	0.0061	0.9939	66.26
77.5	611,460	319	0.0005	0.9995	65.86
78.5	610,989	1,256	0.0021	0.9979	65.82

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	623,068	203,596	0.3268	0.6732	65.69
80.5	365,238		0.0000	1.0000	44.22
81.5	363,232		0.0000	1.0000	44.22
82.5	350,555		0.0000	1.0000	44.22
83.5	375,515	368	0.0010	0.9990	44.22
84.5	365,628	7,495	0.0205	0.9795	44.18
85.5	362,110		0.0000	1.0000	43.28
86.5	375,838		0.0000	1.0000	43.28
87.5	376,083	2,458	0.0065	0.9935	43.28
88.5	372,703	3,700	0.0099	0.9901	42.99
89.5	365,023	1,066	0.0029	0.9971	42.57
90.5	222,996		0.0000	1.0000	42.44
91.5	208,473	785	0.0038	0.9962	42.44
92.5	136,909		0.0000	1.0000	42.28
93.5	130,917		0.0000	1.0000	42.28
94.5	113,337		0.0000	1.0000	42.28
95.5	111,465		0.0000	1.0000	42.28
96.5	57,409		0.0000	1.0000	42.28
97.5	74,130		0.0000	1.0000	42.28
98.5	74,130		0.0000	1.0000	42.28
99.5	42,044		0.0000	1.0000	42.28
100.5	41,121		0.0000	1.0000	42.28
101.5	37,655		0.0000	1.0000	42.28
102.5	24,208		0.0000	1.0000	42.28
103.5	23,563		0.0000	1.0000	42.28
104.5	23,563		0.0000	1.0000	42.28
105.5	23,563		0.0000	1.0000	42.28
106.5	23,563		0.0000	1.0000	42.28
107.5	22,643		0.0000	1.0000	42.28
108.5	22,643		0.0000	1.0000	42.28
109.5	22,643		0.0000	1.0000	42.28
110.5	22,643		0.0000	1.0000	42.28
111.5	22,643		0.0000	1.0000	42.28
112.5	22,643		0.0000	1.0000	42.28
113.5	5,183		0.0000	1.0000	42.28
114.5	5,183		0.0000	1.0000	42.28
115.5	5,183		0.0000	1.0000	42.28
116.5	5,183		0.0000	1.0000	42.28
117.5	5,183		0.0000	1.0000	42.28
118.5	5,183		0.0000	1.0000	42.28
119.5					42.28

NSTAR ELECTRIC COMPANY
ACCOUNT 362.00 STATION EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1923-2020 EXPERIENCE
1900-2020 PLACEMENTS
2001-2020 EXPERIENCE
1900-2020 PLACEMENTS
IOWA 62-R2.5
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 1923-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,131,544,662	97,959	0.0001	0.9999	100.00
0.5	1,047,060,103	490,023	0.0005	0.9995	99.99
1.5	997,872,493	1,389,980	0.0014	0.9986	99.94
2.5	961,303,094	815,439	0.0008	0.9992	99.81
3.5	915,462,876	1,114,166	0.0012	0.9988	99.72
4.5	840,616,199	881,739	0.0010	0.9990	99.60
5.5	801,946,212	524,997	0.0007	0.9993	99.49
6.5	752,997,780	1,218,199	0.0016	0.9984	99.43
7.5	696,379,187	1,297,221	0.0019	0.9981	99.27
8.5	654,264,701	861,992	0.0013	0.9987	99.08
9.5	630,917,827	1,109,484	0.0018	0.9982	98.95
10.5	602,950,892	3,317,399	0.0055	0.9945	98.78
11.5	550,489,745	2,275,119	0.0041	0.9959	98.24
12.5	508,973,707	3,452,216	0.0068	0.9932	97.83
13.5	473,363,758	1,139,798	0.0024	0.9976	97.17
14.5	449,907,605	1,778,041	0.0040	0.9960	96.93
15.5	407,702,453	1,338,178	0.0033	0.9967	96.55
16.5	373,460,490	1,586,564	0.0042	0.9958	96.23
17.5	336,994,111	782,771	0.0023	0.9977	95.82
18.5	318,154,066	737,609	0.0023	0.9977	95.60
19.5	307,234,000	983,857	0.0032	0.9968	95.38
20.5	302,663,025	341,190	0.0011	0.9989	95.07
21.5	294,581,858	520,754	0.0018	0.9982	94.97
22.5	274,470,729	798,658	0.0029	0.9971	94.80
23.5	262,640,448	861,150	0.0033	0.9967	94.52
24.5	252,662,151	1,523,681	0.0060	0.9940	94.21
25.5	232,049,309	1,259,692	0.0054	0.9946	93.64
26.5	216,064,494	1,167,257	0.0054	0.9946	93.14
27.5	205,049,230	597,976	0.0029	0.9971	92.63
28.5	199,478,108	1,355,685	0.0068	0.9932	92.36
29.5	193,223,797	444,547	0.0023	0.9977	91.74
30.5	170,884,718	1,877,869	0.0110	0.9890	91.52
31.5	155,217,473	1,067,729	0.0069	0.9931	90.52
32.5	147,140,229	2,895,353	0.0197	0.9803	89.90
33.5	132,887,286	409,042	0.0031	0.9969	88.13
34.5	121,782,341	816,109	0.0067	0.9933	87.86
35.5	116,258,506	1,286,962	0.0111	0.9889	87.27
36.5	110,313,974	449,905	0.0041	0.9959	86.30
37.5	107,903,810	856,880	0.0079	0.9921	85.95
38.5	104,981,338	842,296	0.0080	0.9920	85.27

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 1923-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	101,520,528	641,289	0.0063	0.9937	84.58
40.5	99,516,357	1,072,121	0.0108	0.9892	84.05
41.5	92,209,664	544,140	0.0059	0.9941	83.14
42.5	89,703,505	489,207	0.0055	0.9945	82.65
43.5	84,652,351	377,434	0.0045	0.9955	82.20
44.5	83,131,824	1,291,592	0.0155	0.9845	81.83
45.5	73,153,619	872,326	0.0119	0.9881	80.56
46.5	70,542,531	1,664,802	0.0236	0.9764	79.60
47.5	62,030,228	369,412	0.0060	0.9940	77.72
48.5	52,708,444	631,644	0.0120	0.9880	77.26
49.5	48,929,425	1,105,986	0.0226	0.9774	76.34
50.5	41,660,687	202,721	0.0049	0.9951	74.61
51.5	39,320,477	488,274	0.0124	0.9876	74.25
52.5	36,672,044	558,470	0.0152	0.9848	73.32
53.5	34,274,045	703,048	0.0205	0.9795	72.21
54.5	31,308,417	253,122	0.0081	0.9919	70.73
55.5	29,898,476	348,589	0.0117	0.9883	70.16
56.5	28,473,587	314,593	0.0110	0.9890	69.34
57.5	26,786,860	303,914	0.0113	0.9887	68.57
58.5	24,281,160	184,282	0.0076	0.9924	67.79
59.5	23,215,909	443,547	0.0191	0.9809	67.28
60.5	21,453,211	306,308	0.0143	0.9857	65.99
61.5	18,138,338	149,013	0.0082	0.9918	65.05
62.5	14,529,970	279,274	0.0192	0.9808	64.52
63.5	12,369,395	180,379	0.0146	0.9854	63.28
64.5	10,209,344	80,120	0.0078	0.9922	62.35
65.5	7,799,606	163,797	0.0210	0.9790	61.86
66.5	6,226,010	41,043	0.0066	0.9934	60.57
67.5	5,811,294	39,378	0.0068	0.9932	60.17
68.5	4,692,698	25,816	0.0055	0.9945	59.76
69.5	3,824,632	6,928	0.0018	0.9982	59.43
70.5	3,484,443	8,230	0.0024	0.9976	59.32
71.5	2,990,317	8,301	0.0028	0.9972	59.18
72.5	2,905,514	242,396	0.0834	0.9166	59.02
73.5	2,300,764	22,675	0.0099	0.9901	54.09
74.5	2,225,250	260,872	0.1172	0.8828	53.56
75.5	1,957,877	1,546	0.0008	0.9992	47.28
76.5	1,995,321		0.0000	1.0000	47.24
77.5	1,949,178	95,760	0.0491	0.9509	47.24
78.5	1,841,567	17,790	0.0097	0.9903	44.92

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 1923-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,789,176	251	0.0001	0.9999	44.49
80.5	1,738,973	70,973	0.0408	0.9592	44.48
81.5	1,664,625	12	0.0000	1.0000	42.67
82.5	1,664,047	201	0.0001	0.9999	42.67
83.5	1,660,649	5,652	0.0034	0.9966	42.66
84.5	1,649,545	182	0.0001	0.9999	42.52
85.5	1,648,927	4,984	0.0030	0.9970	42.51
86.5	1,642,982		0.0000	1.0000	42.38
87.5	1,638,345	2,444	0.0015	0.9985	42.38
88.5	1,627,556		0.0000	1.0000	42.32
89.5	1,627,142	98,282	0.0604	0.9396	42.32
90.5	22,435		0.0000	1.0000	39.76
91.5	15,405		0.0000	1.0000	39.76
92.5	9,883		0.0000	1.0000	39.76
93.5	9,571		0.0000	1.0000	39.76
94.5	9,571		0.0000	1.0000	39.76
95.5	7,531	30	0.0040	0.9960	39.76
96.5	7,227		0.0000	1.0000	39.61
97.5	7,054		0.0000	1.0000	39.61
98.5	2,162		0.0000	1.0000	39.61
99.5	1,071		0.0000	1.0000	39.61
100.5	1,071		0.0000	1.0000	39.61
101.5					39.61
102.5					
103.5					
104.5					
105.5					
106.5					
107.5					
108.5					
109.5					
110.5					
111.5					
112.5					
113.5					
114.5					
115.5					
116.5					
117.5					
118.5	56,072		0.0000		
119.5	56,072		0.0000		
120.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	816,139,162	40,519	0.0000	1.0000	100.00
0.5	736,542,057	490,021	0.0007	0.9993	100.00
1.5	698,129,482	1,389,980	0.0020	0.9980	99.93
2.5	681,011,287	815,439	0.0012	0.9988	99.73
3.5	647,250,637	1,112,430	0.0017	0.9983	99.61
4.5	583,481,840	881,739	0.0015	0.9985	99.44
5.5	564,763,276	441,115	0.0008	0.9992	99.29
6.5	530,874,593	1,218,199	0.0023	0.9977	99.21
7.5	484,938,814	1,095,574	0.0023	0.9977	98.98
8.5	449,691,050	853,878	0.0019	0.9981	98.76
9.5	433,998,502	1,109,484	0.0026	0.9974	98.57
10.5	427,227,417	3,033,435	0.0071	0.9929	98.32
11.5	389,603,577	2,271,429	0.0058	0.9942	97.62
12.5	356,491,040	3,452,216	0.0097	0.9903	97.05
13.5	333,356,530	1,128,038	0.0034	0.9966	96.11
14.5	321,505,667	1,763,336	0.0055	0.9945	95.79
15.5	284,133,150	1,328,001	0.0047	0.9953	95.26
16.5	253,639,050	1,566,391	0.0062	0.9938	94.82
17.5	219,194,748	769,560	0.0035	0.9965	94.23
18.5	202,266,744	548,843	0.0027	0.9973	93.90
19.5	194,189,171	917,631	0.0047	0.9953	93.65
20.5	191,070,055	341,190	0.0018	0.9982	93.20
21.5	190,872,751	483,231	0.0025	0.9975	93.04
22.5	173,648,609	794,511	0.0046	0.9954	92.80
23.5	166,782,405	813,653	0.0049	0.9951	92.38
24.5	157,782,870	1,500,284	0.0095	0.9905	91.93
25.5	146,925,726	1,167,893	0.0079	0.9921	91.05
26.5	134,679,493	1,084,516	0.0081	0.9919	90.33
27.5	130,700,761	588,114	0.0045	0.9955	89.60
28.5	140,660,023	1,340,451	0.0095	0.9905	89.20
29.5	138,323,496	444,353	0.0032	0.9968	88.35
30.5	123,090,973	1,868,717	0.0152	0.9848	88.06
31.5	110,023,003	1,058,333	0.0096	0.9904	86.73
32.5	105,430,728	2,890,142	0.0274	0.9726	85.89
33.5	93,861,874	393,716	0.0042	0.9958	83.54
34.5	85,534,443	812,592	0.0095	0.9905	83.19
35.5	81,750,240	1,284,362	0.0157	0.9843	82.40
36.5	77,284,986	438,946	0.0057	0.9943	81.10
37.5	76,276,792	749,221	0.0098	0.9902	80.64
38.5	76,211,966	686,806	0.0090	0.9910	79.85

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	73,854,143	543,927	0.0074	0.9926	79.13
40.5	73,446,503	957,459	0.0130	0.9870	78.55
41.5	70,010,725	534,429	0.0076	0.9924	77.52
42.5	71,992,676	465,942	0.0065	0.9935	76.93
43.5	69,623,590	359,942	0.0052	0.9948	76.43
44.5	70,568,340	1,278,456	0.0181	0.9819	76.04
45.5	63,496,144	707,392	0.0111	0.9889	74.66
46.5	63,371,873	1,657,947	0.0262	0.9738	73.83
47.5	55,686,232	345,302	0.0062	0.9938	71.90
48.5	47,444,322	594,508	0.0125	0.9875	71.45
49.5	44,593,434	1,086,542	0.0244	0.9756	70.56
50.5	37,744,168	199,867	0.0053	0.9947	68.84
51.5	36,112,629	488,162	0.0135	0.9865	68.47
52.5	33,603,746	558,382	0.0166	0.9834	67.55
53.5	31,605,022	703,048	0.0222	0.9778	66.43
54.5	28,721,123	253,122	0.0088	0.9912	64.95
55.5	27,318,353	348,560	0.0128	0.9872	64.38
56.5	25,895,517	309,767	0.0120	0.9880	63.55
57.5	24,262,467	303,914	0.0125	0.9875	62.79
58.5	21,772,136	183,969	0.0084	0.9916	62.01
59.5	20,765,438	443,243	0.0213	0.9787	61.48
60.5	19,066,330	305,925	0.0160	0.9840	60.17
61.5	15,759,999	148,822	0.0094	0.9906	59.21
62.5	12,159,933	279,274	0.0230	0.9770	58.65
63.5	10,018,645	180,379	0.0180	0.9820	57.30
64.5	7,864,244	68,747	0.0087	0.9913	56.27
65.5	5,467,365	163,797	0.0300	0.9700	55.78
66.5	3,900,635	12,506	0.0032	0.9968	54.10
67.5	3,534,157	10,151	0.0029	0.9971	53.93
68.5	2,446,124	25,816	0.0106	0.9894	53.78
69.5	1,578,246	6,928	0.0044	0.9956	53.21
70.5	3,466,812	8,230	0.0024	0.9976	52.98
71.5	2,978,547	8,301	0.0028	0.9972	52.85
72.5	2,893,830	242,396	0.0838	0.9162	52.70
73.5	2,289,205	22,106	0.0097	0.9903	48.29
74.5	2,214,272	260,872	0.1178	0.8822	47.82
75.5	1,947,250	1,546	0.0008	0.9992	42.19
76.5	1,984,968		0.0000	1.0000	42.15
77.5	1,939,205	95,760	0.0494	0.9506	42.15
78.5	1,836,486	17,790	0.0097	0.9903	40.07

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1900-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,784,095		0.0000	1.0000	39.68
80.5	1,734,143	70,973	0.0409	0.9591	39.68
81.5	1,659,794	12	0.0000	1.0000	38.06
82.5	1,659,217	201	0.0001	0.9999	38.06
83.5	1,655,819	5,652	0.0034	0.9966	38.06
84.5	1,644,715	182	0.0001	0.9999	37.93
85.5	1,644,096	154	0.0001	0.9999	37.92
86.5	1,642,982		0.0000	1.0000	37.92
87.5	1,638,345	2,444	0.0015	0.9985	37.92
88.5	1,627,556		0.0000	1.0000	37.86
89.5	1,627,142	98,282	0.0604	0.9396	37.86
90.5	22,435		0.0000	1.0000	35.57
91.5	15,405		0.0000	1.0000	35.57
92.5	9,883		0.0000	1.0000	35.57
93.5	9,571		0.0000	1.0000	35.57
94.5	9,571		0.0000	1.0000	35.57
95.5	7,531	30	0.0040	0.9960	35.57
96.5	7,227		0.0000	1.0000	35.43
97.5	7,054		0.0000	1.0000	35.43
98.5	2,162		0.0000	1.0000	35.43
99.5	1,071		0.0000	1.0000	35.43
100.5	1,071		0.0000	1.0000	35.43
101.5					35.43
102.5					
103.5					
104.5					
105.5					
106.5					
107.5					
108.5					
109.5					
110.5					
111.5					
112.5					
113.5					
114.5					
115.5					
116.5					
117.5					
118.5	56,072		0.0000		
119.5	56,072		0.0000		
120.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 362.10 STATION EQUIPMENT - SOLAR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 362.10 STATION EQUIPMENT - SOLAR

ORIGINAL LIFE TABLE

PLACEMENT BAND 2010-2019 EXPERIENCE BAND 2011-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	13,253,039		0.0000	1.0000	100.00
0.5	13,268,030		0.0000	1.0000	100.00
1.5	10,144,920		0.0000	1.0000	100.00
2.5	1,659,379	59,094	0.0356	0.9644	100.00
3.5	1,600,286		0.0000	1.0000	96.44
4.5	1,600,286		0.0000	1.0000	96.44
5.5	1,600,286		0.0000	1.0000	96.44
6.5	833,185		0.0000	1.0000	96.44
7.5	824,740		0.0000	1.0000	96.44
8.5	797,317		0.0000	1.0000	96.44
9.5	464,064		0.0000	1.0000	96.44
10.5					96.44

NSTAR ELECTRIC COMPANY
ACCOUNT 364.00 POLES, TOWERS AND FIXTURES
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
1991-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 62-R1.5
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	531,969,495	603,400	0.0011	0.9989	100.00
0.5	512,058,811	1,267,820	0.0025	0.9975	99.89
1.5	484,530,712	962,609	0.0020	0.9980	99.64
2.5	459,547,528	934,419	0.0020	0.9980	99.44
3.5	446,025,082	1,029,764	0.0023	0.9977	99.24
4.5	433,206,886	1,045,419	0.0024	0.9976	99.01
5.5	416,455,295	925,950	0.0022	0.9978	98.77
6.5	403,341,350	1,162,485	0.0029	0.9971	98.55
7.5	390,676,224	1,481,960	0.0038	0.9962	98.27
8.5	377,819,337	1,538,104	0.0041	0.9959	97.89
9.5	363,241,567	1,371,699	0.0038	0.9962	97.50
10.5	345,887,097	1,477,911	0.0043	0.9957	97.13
11.5	327,284,228	1,344,616	0.0041	0.9959	96.71
12.5	305,054,517	1,310,446	0.0043	0.9957	96.32
13.5	279,848,203	1,164,458	0.0042	0.9958	95.90
14.5	257,247,928	1,138,954	0.0044	0.9956	95.50
15.5	244,180,063	1,215,643	0.0050	0.9950	95.08
16.5	225,418,438	1,056,795	0.0047	0.9953	94.61
17.5	211,266,951	971,975	0.0046	0.9954	94.16
18.5	199,711,702	969,780	0.0049	0.9951	93.73
19.5	190,115,463	1,038,888	0.0055	0.9945	93.27
20.5	185,849,438	959,862	0.0052	0.9948	92.77
21.5	173,052,638	968,586	0.0056	0.9944	92.29
22.5	165,573,371	995,516	0.0060	0.9940	91.77
23.5	159,037,601	1,009,643	0.0063	0.9937	91.22
24.5	153,786,386	1,294,284	0.0084	0.9916	90.64
25.5	143,918,337	1,431,481	0.0099	0.9901	89.88
26.5	135,141,324	1,125,801	0.0083	0.9917	88.98
27.5	127,350,080	1,228,277	0.0096	0.9904	88.24
28.5	118,803,726	1,510,870	0.0127	0.9873	87.39
29.5	103,990,034	1,236,928	0.0119	0.9881	86.28
30.5	90,498,412	818,653	0.0090	0.9910	85.25
31.5	82,720,989	697,415	0.0084	0.9916	84.48
32.5	76,791,107	681,174	0.0089	0.9911	83.77
33.5	70,244,188	680,887	0.0097	0.9903	83.03
34.5	64,316,954	603,346	0.0094	0.9906	82.22
35.5	59,296,130	632,218	0.0107	0.9893	81.45
36.5	54,415,627	620,559	0.0114	0.9886	80.58
37.5	50,364,266	744,334	0.0148	0.9852	79.66
38.5	46,458,211	677,374	0.0146	0.9854	78.48

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	42,885,014	564,645	0.0132	0.9868	77.34
40.5	39,388,153	530,678	0.0135	0.9865	76.32
41.5	36,370,841	489,242	0.0135	0.9865	75.29
42.5	33,565,882	528,007	0.0157	0.9843	74.28
43.5	30,493,333	437,679	0.0144	0.9856	73.11
44.5	27,729,813	373,769	0.0135	0.9865	72.06
45.5	25,193,768	320,871	0.0127	0.9873	71.09
46.5	23,050,103	334,389	0.0145	0.9855	70.19
47.5	20,502,254	323,460	0.0158	0.9842	69.17
48.5	18,175,403	275,260	0.0151	0.9849	68.08
49.5	16,253,181	249,478	0.0153	0.9847	67.05
50.5	13,970,991	203,353	0.0146	0.9854	66.02
51.5	11,846,933	209,051	0.0176	0.9824	65.06
52.5	10,550,070	193,220	0.0183	0.9817	63.91
53.5	9,372,211	160,211	0.0171	0.9829	62.74
54.5	8,232,557	129,636	0.0157	0.9843	61.66
55.5	5,173,195	103,486	0.0200	0.9800	60.69
56.5	4,732,249	105,493	0.0223	0.9777	59.48
57.5	4,346,487	113,531	0.0261	0.9739	58.15
58.5	3,970,962	113,678	0.0286	0.9714	56.63
59.5	3,569,026	96,010	0.0269	0.9731	55.01
60.5	3,104,506	80,144	0.0258	0.9742	53.53
61.5	2,723,735	65,298	0.0240	0.9760	52.15
62.5	2,382,044	81,904	0.0344	0.9656	50.90
63.5	2,054,035	106,990	0.0521	0.9479	49.15
64.5	1,736,157	59,929	0.0345	0.9655	46.59
65.5	869,221	24,739	0.0285	0.9715	44.98
66.5	763,567	14,004	0.0183	0.9817	43.70
67.5	675,121	21,080	0.0312	0.9688	42.90
68.5	608,110	14,674	0.0241	0.9759	41.56
69.5	556,443	12,587	0.0226	0.9774	40.56
70.5	492,702	13,558	0.0275	0.9725	39.64
71.5	442,594	12,649	0.0286	0.9714	38.55
72.5	405,218	11,264	0.0278	0.9722	37.45
73.5	367,311	9,533	0.0260	0.9740	36.41
74.5	338,964	8,470	0.0250	0.9750	35.46
75.5	304,366	10,519	0.0346	0.9654	34.58
76.5	264,524	4,045	0.0153	0.9847	33.38
77.5	244,233	7,937	0.0325	0.9675	32.87
78.5	211,002	7,357	0.0349	0.9651	31.80

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	180,803	4,573	0.0253	0.9747	30.69
80.5	146,887	3,091	0.0210	0.9790	29.92
81.5	123,009	2,710	0.0220	0.9780	29.29
82.5	107,498	3,142	0.0292	0.9708	28.64
83.5	90,906	1,680	0.0185	0.9815	27.81
84.5	73,398	1,454	0.0198	0.9802	27.29
85.5	62,163	1,247	0.0201	0.9799	26.75
86.5	54,106	909	0.0168	0.9832	26.21
87.5	50,135	436	0.0087	0.9913	25.77
88.5	44,452	896	0.0202	0.9798	25.55
89.5	39,430	545	0.0138	0.9862	25.03
90.5	37,181	816	0.0219	0.9781	24.69
91.5	21,104	491	0.0233	0.9767	24.15
92.5	14,969	200	0.0134	0.9866	23.59
93.5	11,377	526	0.0463	0.9537	23.27
94.5	5,104	209	0.0409	0.9591	22.19
95.5	2,897	172	0.0594	0.9406	21.29
96.5	2,032	485	0.2387	0.7613	20.02
97.5	788	144	0.1823	0.8177	15.24
98.5	244		0.0000	1.0000	12.46
99.5	244	159	0.6495	0.3505	12.46
100.5	86	8	0.0917	0.9083	4.37
101.5	78		0.0000	1.0000	3.97
102.5	78	2	0.0246	0.9754	3.97
103.5	76	4	0.0527	0.9473	3.87
104.5	72	49	0.6858	0.3142	3.67
105.5	23	14	0.6079	0.3921	1.15
106.5	9		0.0000	1.0000	0.45
107.5	9		0.0000	1.0000	0.45
108.5	9		0.0000	1.0000	0.45
109.5	9		0.0000	1.0000	0.45
110.5	9		0.0000	1.0000	0.45
111.5	9		0.0000	1.0000	0.45
112.5	9	8	0.8870	0.1130	0.45
113.5	1		0.0000	1.0000	0.05
114.5	1	1	1.0000		0.05
115.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	408,149,684	523,683	0.0013	0.9987	100.00
0.5	402,105,353	800,177	0.0020	0.9980	99.87
1.5	382,870,455	586,400	0.0015	0.9985	99.67
2.5	364,323,455	473,175	0.0013	0.9987	99.52
3.5	357,747,559	430,727	0.0012	0.9988	99.39
4.5	351,374,167	483,282	0.0014	0.9986	99.27
5.5	340,200,616	523,282	0.0015	0.9985	99.13
6.5	332,286,866	726,953	0.0022	0.9978	98.98
7.5	323,970,761	1,020,734	0.0032	0.9968	98.77
8.5	315,215,479	1,055,602	0.0033	0.9967	98.45
9.5	304,539,065	913,515	0.0030	0.9970	98.12
10.5	291,142,969	1,019,739	0.0035	0.9965	97.83
11.5	275,964,477	889,185	0.0032	0.9968	97.49
12.5	257,022,383	912,786	0.0036	0.9964	97.17
13.5	235,313,161	833,713	0.0035	0.9965	96.83
14.5	216,039,518	782,899	0.0036	0.9964	96.49
15.5	206,230,141	868,882	0.0042	0.9958	96.14
16.5	190,259,312	660,261	0.0035	0.9965	95.73
17.5	179,487,928	610,031	0.0034	0.9966	95.40
18.5	171,055,182	592,064	0.0035	0.9965	95.07
19.5	164,119,992	707,065	0.0043	0.9957	94.75
20.5	163,299,449	718,876	0.0044	0.9956	94.34
21.5	153,634,599	720,794	0.0047	0.9953	93.92
22.5	148,207,702	783,334	0.0053	0.9947	93.48
23.5	143,598,653	772,457	0.0054	0.9946	92.99
24.5	140,233,316	943,019	0.0067	0.9933	92.49
25.5	137,110,721	1,431,481	0.0104	0.9896	91.87
26.5	128,839,262	1,125,801	0.0087	0.9913	90.91
27.5	121,462,891	1,228,277	0.0101	0.9899	90.11
28.5	113,347,267	1,510,870	0.0133	0.9867	89.20
29.5	99,009,214	1,236,928	0.0125	0.9875	88.01
30.5	86,129,693	818,653	0.0095	0.9905	86.91
31.5	78,882,821	697,415	0.0088	0.9912	86.09
32.5	73,434,385	681,174	0.0093	0.9907	85.32
33.5	67,312,284	680,887	0.0101	0.9899	84.53
34.5	61,765,465	603,346	0.0098	0.9902	83.68
35.5	58,177,365	632,218	0.0109	0.9891	82.86
36.5	53,442,685	620,559	0.0116	0.9884	81.96
37.5	49,515,978	744,334	0.0150	0.9850	81.01
38.5	45,696,621	677,374	0.0148	0.9852	79.79

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	42,185,789	564,645	0.0134	0.9866	78.61
40.5	38,767,055	530,678	0.0137	0.9863	77.56
41.5	35,815,375	489,242	0.0137	0.9863	76.49
42.5	33,058,783	528,007	0.0160	0.9840	75.45
43.5	30,034,488	437,679	0.0146	0.9854	74.24
44.5	27,304,963	373,769	0.0137	0.9863	73.16
45.5	24,812,115	320,871	0.0129	0.9871	72.16
46.5	22,715,270	334,389	0.0147	0.9853	71.23
47.5	20,195,524	323,460	0.0160	0.9840	70.18
48.5	17,909,314	275,260	0.0154	0.9846	69.06
49.5	16,021,004	249,478	0.0156	0.9844	67.99
50.5	13,779,780	203,353	0.0148	0.9852	66.93
51.5	11,685,215	209,051	0.0179	0.9821	65.95
52.5	10,407,466	193,220	0.0186	0.9814	64.77
53.5	9,248,453	160,211	0.0173	0.9827	63.56
54.5	8,132,987	129,636	0.0159	0.9841	62.46
55.5	5,090,975	103,486	0.0203	0.9797	61.47
56.5	4,661,487	105,493	0.0226	0.9774	60.22
57.5	4,280,649	113,531	0.0265	0.9735	58.86
58.5	3,914,723	113,678	0.0290	0.9710	57.29
59.5	3,520,919	96,010	0.0273	0.9727	55.63
60.5	3,059,942	80,144	0.0262	0.9738	54.11
61.5	2,695,932	65,298	0.0242	0.9758	52.70
62.5	2,361,723	81,904	0.0347	0.9653	51.42
63.5	2,038,469	106,990	0.0525	0.9475	49.64
64.5	1,727,163	59,929	0.0347	0.9653	47.03
65.5	863,835	24,739	0.0286	0.9714	45.40
66.5	759,790	14,004	0.0184	0.9816	44.10
67.5	673,257	21,080	0.0313	0.9687	43.29
68.5	606,971	14,674	0.0242	0.9758	41.93
69.5	555,340	12,587	0.0227	0.9773	40.92
70.5	492,309	13,558	0.0275	0.9725	39.99
71.5	442,202	12,649	0.0286	0.9714	38.89
72.5	404,826	11,264	0.0278	0.9722	37.78
73.5	366,937	9,533	0.0260	0.9740	36.73
74.5	338,675	8,470	0.0250	0.9750	35.77
75.5	304,081	10,519	0.0346	0.9654	34.88
76.5	264,265	4,045	0.0153	0.9847	33.67
77.5	244,005	7,937	0.0325	0.9675	33.16
78.5	210,774	7,357	0.0349	0.9651	32.08

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	180,612	4,573	0.0253	0.9747	30.96
80.5	146,752	3,091	0.0211	0.9789	30.17
81.5	122,874	2,710	0.0221	0.9779	29.54
82.5	107,363	3,142	0.0293	0.9707	28.89
83.5	90,772	1,680	0.0185	0.9815	28.04
84.5	73,337	1,454	0.0198	0.9802	27.52
85.5	62,101	1,247	0.0201	0.9799	26.98
86.5	54,045	909	0.0168	0.9832	26.43
87.5	50,074	436	0.0087	0.9913	25.99
88.5	44,395	896	0.0202	0.9798	25.76
89.5	39,430	545	0.0138	0.9862	25.24
90.5	37,181	816	0.0219	0.9781	24.89
91.5	21,104	491	0.0233	0.9767	24.35
92.5	14,969	200	0.0134	0.9866	23.78
93.5	11,377	526	0.0463	0.9537	23.46
94.5	5,104	209	0.0409	0.9591	22.38
95.5	2,897	172	0.0594	0.9406	21.46
96.5	2,032	485	0.2387	0.7613	20.19
97.5	788	144	0.1823	0.8177	15.37
98.5	244		0.0000	1.0000	12.57
99.5	244	159	0.6495	0.3505	12.57
100.5	86	8	0.0917	0.9083	4.41
101.5	78		0.0000	1.0000	4.00
102.5	78	2	0.0246	0.9754	4.00
103.5	76	4	0.0527	0.9473	3.90
104.5	72	49	0.6858	0.3142	3.70
105.5	23	14	0.6079	0.3921	1.16
106.5	9		0.0000	1.0000	0.46
107.5	9		0.0000	1.0000	0.46
108.5	9		0.0000	1.0000	0.46
109.5	9		0.0000	1.0000	0.46
110.5	9		0.0000	1.0000	0.46
111.5	9		0.0000	1.0000	0.46
112.5	9	8	0.8870	0.1130	0.46
113.5	1		0.0000	1.0000	0.05
114.5	1	1	1.0000		0.05
115.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	327,112,976	505,159	0.0015	0.9985	100.00
0.5	310,869,840	786,706	0.0025	0.9975	99.85
1.5	296,464,831	564,794	0.0019	0.9981	99.59
2.5	278,783,695	446,323	0.0016	0.9984	99.40
3.5	271,693,815	415,259	0.0015	0.9985	99.24
4.5	264,115,580	452,677	0.0017	0.9983	99.09
5.5	257,015,388	488,783	0.0019	0.9981	98.92
6.5	252,176,609	690,660	0.0027	0.9973	98.73
7.5	247,254,890	969,984	0.0039	0.9961	98.46
8.5	242,964,282	980,785	0.0040	0.9960	98.08
9.5	243,808,200	797,392	0.0033	0.9967	97.68
10.5	240,722,626	966,056	0.0040	0.9960	97.36
11.5	230,390,298	857,779	0.0037	0.9963	96.97
12.5	214,630,226	883,669	0.0041	0.9959	96.61
13.5	196,307,326	799,989	0.0041	0.9959	96.21
14.5	179,894,961	737,693	0.0041	0.9959	95.82
15.5	172,214,273	833,680	0.0048	0.9952	95.43
16.5	158,601,219	616,070	0.0039	0.9961	94.97
17.5	148,760,413	550,009	0.0037	0.9963	94.60
18.5	141,246,723	499,451	0.0035	0.9965	94.25
19.5	135,503,104	612,382	0.0045	0.9955	93.91
20.5	135,118,391	610,031	0.0045	0.9955	93.49
21.5	125,613,586	602,551	0.0048	0.9952	93.07
22.5	121,299,932	631,225	0.0052	0.9948	92.62
23.5	118,190,628	626,546	0.0053	0.9947	92.14
24.5	116,251,692	751,016	0.0065	0.9935	91.65
25.5	109,744,530	676,224	0.0062	0.9938	91.06
26.5	104,102,276	698,794	0.0067	0.9933	90.50
27.5	99,597,673	736,200	0.0074	0.9926	89.89
28.5	94,173,592	778,445	0.0083	0.9917	89.23
29.5	82,285,065	778,427	0.0095	0.9905	88.49
30.5	72,161,617	719,703	0.0100	0.9900	87.65
31.5	67,165,218	644,255	0.0096	0.9904	86.78
32.5	62,891,290	636,205	0.0101	0.9899	85.94
33.5	57,902,183	614,778	0.0106	0.9894	85.07
34.5	53,469,066	575,903	0.0108	0.9892	84.17
35.5	52,496,706	621,440	0.0118	0.9882	83.26
36.5	48,123,203	612,289	0.0127	0.9873	82.28
37.5	44,488,833	732,946	0.0165	0.9835	81.23
38.5	41,015,122	660,745	0.0161	0.9839	79.89

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	37,922,997	542,576	0.0143	0.9857	78.61
40.5	35,041,238	519,473	0.0148	0.9852	77.48
41.5	32,546,930	479,529	0.0147	0.9853	76.33
42.5	30,220,012	449,822	0.0149	0.9851	75.21
43.5	27,643,040	401,047	0.0145	0.9855	74.09
44.5	25,285,954	373,301	0.0148	0.9852	73.01
45.5	24,075,123	320,193	0.0133	0.9867	71.94
46.5	22,077,242	333,204	0.0151	0.9849	70.98
47.5	19,654,045	322,595	0.0164	0.9836	69.91
48.5	17,413,944	274,602	0.0158	0.9842	68.76
49.5	15,554,299	249,204	0.0160	0.9840	67.68
50.5	13,349,951	200,871	0.0150	0.9850	66.59
51.5	11,291,489	208,786	0.0185	0.9815	65.59
52.5	10,043,035	192,919	0.0192	0.9808	64.38
53.5	8,913,457	159,981	0.0179	0.9821	63.14
54.5	7,807,828	129,218	0.0165	0.9835	62.01
55.5	4,791,542	103,307	0.0216	0.9784	60.98
56.5	4,397,418	105,361	0.0240	0.9760	59.67
57.5	4,039,759	113,233	0.0280	0.9720	58.24
58.5	3,704,938	113,528	0.0306	0.9694	56.60
59.5	3,336,931	95,889	0.0287	0.9713	54.87
60.5	2,913,295	80,060	0.0275	0.9725	53.29
61.5	2,562,054	65,229	0.0255	0.9745	51.83
62.5	2,239,440	81,794	0.0365	0.9635	50.51
63.5	1,930,292	106,963	0.0554	0.9446	48.66
64.5	1,636,603	59,803	0.0365	0.9635	45.97
65.5	787,031	24,653	0.0313	0.9687	44.29
66.5	692,856	13,970	0.0202	0.9798	42.90
67.5	609,297	21,042	0.0345	0.9655	42.04
68.5	551,871	14,553	0.0264	0.9736	40.58
69.5	508,336	12,587	0.0248	0.9752	39.51
70.5	448,138	13,558	0.0303	0.9697	38.54
71.5	414,791	12,649	0.0305	0.9695	37.37
72.5	384,897	11,264	0.0293	0.9707	36.23
73.5	351,745	9,533	0.0271	0.9729	35.17
74.5	329,970	8,442	0.0256	0.9744	34.22
75.5	298,980	10,519	0.0352	0.9648	33.34
76.5	260,746	4,045	0.0155	0.9845	32.17
77.5	242,369	7,937	0.0327	0.9673	31.67
78.5	209,863	7,357	0.0351	0.9649	30.63

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	179,700	4,573	0.0254	0.9746	29.56
80.5	146,494	3,091	0.0211	0.9789	28.81
81.5	122,617	2,710	0.0221	0.9779	28.20
82.5	107,106	3,142	0.0293	0.9707	27.58
83.5	90,533	1,680	0.0186	0.9814	26.77
84.5	73,110	1,454	0.0199	0.9801	26.27
85.5	61,878	1,247	0.0202	0.9798	25.75
86.5	53,847	909	0.0169	0.9831	25.23
87.5	49,907	436	0.0087	0.9913	24.80
88.5	44,224	846	0.0191	0.9809	24.59
89.5	39,289	545	0.0139	0.9861	24.12
90.5	37,046	816	0.0220	0.9780	23.78
91.5	20,970	491	0.0234	0.9766	23.26
92.5	14,834	200	0.0135	0.9865	22.71
93.5	11,242	504	0.0448	0.9552	22.41
94.5	5,043	209	0.0414	0.9586	21.40
95.5	2,836	172	0.0606	0.9394	20.52
96.5	1,971	485	0.2461	0.7539	19.27
97.5	727	144	0.1976	0.8024	14.53
98.5	187		0.0000	1.0000	11.66
99.5	244	159	0.6495	0.3505	11.66
100.5	86	8	0.0917	0.9083	4.09
101.5	78		0.0000	1.0000	3.71
102.5	78	2	0.0246	0.9754	3.71
103.5	76	4	0.0527	0.9473	3.62
104.5	72	49	0.6858	0.3142	3.43
105.5	23	14	0.6079	0.3921	1.08
106.5	9		0.0000	1.0000	0.42
107.5	9		0.0000	1.0000	0.42
108.5	9		0.0000	1.0000	0.42
109.5	9		0.0000	1.0000	0.42
110.5	9		0.0000	1.0000	0.42
111.5	9		0.0000	1.0000	0.42
112.5	9	8	0.8870	0.1130	0.42
113.5	1		0.0000	1.0000	0.05
114.5	1	1	1.0000		0.05
115.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
1991-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 60-R0.5
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,190,746,112	6,877,632	0.0058	0.9942	100.00
0.5	1,132,927,103	9,900,080	0.0087	0.9913	99.42
1.5	1,055,516,309	8,876,185	0.0084	0.9916	98.55
2.5	1,009,323,034	9,502,413	0.0094	0.9906	97.72
3.5	969,928,083	9,471,018	0.0098	0.9902	96.80
4.5	931,070,448	10,692,655	0.0115	0.9885	95.86
5.5	895,859,353	9,625,535	0.0107	0.9893	94.76
6.5	861,862,810	9,050,195	0.0105	0.9895	93.74
7.5	828,829,205	10,297,597	0.0124	0.9876	92.76
8.5	791,844,980	10,539,427	0.0133	0.9867	91.60
9.5	733,398,184	8,557,866	0.0117	0.9883	90.38
10.5	697,041,978	8,481,338	0.0122	0.9878	89.33
11.5	653,314,059	7,946,139	0.0122	0.9878	88.24
12.5	621,219,798	8,469,952	0.0136	0.9864	87.17
13.5	584,218,003	8,008,005	0.0137	0.9863	85.98
14.5	548,279,139	7,396,133	0.0135	0.9865	84.80
15.5	520,949,942	6,668,221	0.0128	0.9872	83.66
16.5	487,563,734	6,236,035	0.0128	0.9872	82.59
17.5	461,210,272	5,542,961	0.0120	0.9880	81.53
18.5	437,106,694	5,192,064	0.0119	0.9881	80.55
19.5	417,768,863	4,223,865	0.0101	0.9899	79.59
20.5	406,212,986	4,385,127	0.0108	0.9892	78.79
21.5	377,868,978	3,573,700	0.0095	0.9905	77.94
22.5	350,949,216	3,679,534	0.0105	0.9895	77.20
23.5	333,293,377	3,564,283	0.0107	0.9893	76.39
24.5	321,552,844	4,566,604	0.0142	0.9858	75.58
25.5	305,221,448	3,762,001	0.0123	0.9877	74.50
26.5	291,562,051	3,122,438	0.0107	0.9893	73.58
27.5	277,364,706	2,892,467	0.0104	0.9896	72.80
28.5	261,422,447	2,272,643	0.0087	0.9913	72.04
29.5	235,175,879	1,856,745	0.0079	0.9921	71.41
30.5	201,365,518	1,751,781	0.0087	0.9913	70.85
31.5	184,611,173	1,398,270	0.0076	0.9924	70.23
32.5	172,864,641	981,655	0.0057	0.9943	69.70
33.5	161,118,447	1,210,862	0.0075	0.9925	69.30
34.5	152,494,730	942,430	0.0062	0.9938	68.78
35.5	145,086,740	866,333	0.0060	0.9940	68.36
36.5	138,135,885	833,310	0.0060	0.9940	67.95
37.5	131,867,599	1,066,909	0.0081	0.9919	67.54
38.5	125,647,556	1,073,902	0.0085	0.9915	66.99

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	118,963,325	638,648	0.0054	0.9946	66.42
40.5	113,857,016	562,310	0.0049	0.9951	66.06
41.5	108,747,973	434,883	0.0040	0.9960	65.74
42.5	102,199,713	527,576	0.0052	0.9948	65.47
43.5	95,632,810	430,093	0.0045	0.9955	65.14
44.5	88,669,081	394,926	0.0045	0.9955	64.84
45.5	80,050,288	350,921	0.0044	0.9956	64.55
46.5	72,787,346	375,539	0.0052	0.9948	64.27
47.5	61,891,937	255,985	0.0041	0.9959	63.94
48.5	53,745,773	337,280	0.0063	0.9937	63.68
49.5	48,275,497	266,089	0.0055	0.9945	63.28
50.5	40,715,732	200,611	0.0049	0.9951	62.93
51.5	35,715,878	176,212	0.0049	0.9951	62.62
52.5	32,007,722	148,769	0.0046	0.9954	62.31
53.5	28,483,357	181,656	0.0064	0.9936	62.02
54.5	25,497,006	109,533	0.0043	0.9957	61.62
55.5	17,034,214	56,078	0.0033	0.9967	61.36
56.5	15,988,873	105,646	0.0066	0.9934	61.16
57.5	15,151,206	59,183	0.0039	0.9961	60.75
58.5	14,332,903	52,823	0.0037	0.9963	60.51
59.5	13,427,403	48,592	0.0036	0.9964	60.29
60.5	12,518,601	41,383	0.0033	0.9967	60.07
61.5	11,625,050	43,446	0.0037	0.9963	59.88
62.5	10,898,179	76,805	0.0070	0.9930	59.65
63.5	10,178,350	55,079	0.0054	0.9946	59.23
64.5	9,252,953	63,399	0.0069	0.9931	58.91
65.5	4,812,810	15,424	0.0032	0.9968	58.51
66.5	4,493,509	13,520	0.0030	0.9970	58.32
67.5	4,291,591	10,360	0.0024	0.9976	58.14
68.5	4,146,313	12,566	0.0030	0.9970	58.00
69.5	3,950,013	9,812	0.0025	0.9975	57.83
70.5	3,553,568	10,839	0.0031	0.9969	57.68
71.5	3,245,120	3,978	0.0012	0.9988	57.51
72.5	3,157,537	6,233	0.0020	0.9980	57.44
73.5	2,941,241	6,188	0.0021	0.9979	57.32
74.5	2,897,306	7,189	0.0025	0.9975	57.20
75.5	2,880,414	4,647	0.0016	0.9984	57.06
76.5	2,864,970	7,920	0.0028	0.9972	56.97
77.5	2,674,816	16,975	0.0063	0.9937	56.81
78.5	1,204,220	4,056	0.0034	0.9966	56.45

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,168,891	3,603	0.0031	0.9969	56.26
80.5	1,145,300	1,994	0.0017	0.9983	56.09
81.5	1,092,236	2,172	0.0020	0.9980	55.99
82.5	1,049,934	3,388	0.0032	0.9968	55.88
83.5	898,687	2,965	0.0033	0.9967	55.70
84.5	877,038	1,698	0.0019	0.9981	55.51
85.5	863,129	3,543	0.0041	0.9959	55.41
86.5	853,599	3,789	0.0044	0.9956	55.18
87.5	845,633	6,018	0.0071	0.9929	54.94
88.5	837,340	6,696	0.0080	0.9920	54.54
89.5	822,291	6,878	0.0084	0.9916	54.11
90.5	792,351	3,395	0.0043	0.9957	53.66
91.5	700,525	5,025	0.0072	0.9928	53.43
92.5	419,807	2,151	0.0051	0.9949	53.04
93.5	317,310	4,067	0.0128	0.9872	52.77
94.5	307,641	2,259	0.0073	0.9927	52.09
95.5	286,004	510	0.0018	0.9982	51.71
96.5	179,461	736	0.0041	0.9959	51.62
97.5	146,529	753	0.0051	0.9949	51.41
98.5	112,866	342	0.0030	0.9970	51.14
99.5	110,769	665	0.0060	0.9940	50.99
100.5	59,206	194	0.0033	0.9967	50.68
101.5	50,430	45,860	0.9094	0.0906	50.52
102.5	4,205	74	0.0175	0.9825	4.58
103.5	3,851	29	0.0077	0.9923	4.50
104.5	3,812	62	0.0163	0.9837	4.46
105.5	3,066	109	0.0355	0.9645	4.39
106.5	3,053	175	0.0572	0.9428	4.23
107.5	2,763	175	0.0632	0.9368	3.99
108.5	1,941	193	0.0997	0.9003	3.74
109.5	1,738	76	0.0438	0.9562	3.37
110.5	1,544	235	0.1520	0.8480	3.22
111.5	1,302	237	0.1817	0.8183	2.73
112.5	703	127	0.1810	0.8190	2.23
113.5	476	74	0.1563	0.8437	1.83
114.5	279	43	0.1544	0.8456	1.54
115.5	118	20	0.1689	0.8311	1.31
116.5	92	4	0.0427	0.9573	1.09
117.5	24	2	0.1043	0.8957	1.04
118.5	21	5	0.2222	0.7778	0.93
119.5					0.72

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	886,427,987	3,816,579	0.0043	0.9957	100.00
0.5	874,608,730	8,454,863	0.0097	0.9903	99.57
1.5	819,490,638	6,998,242	0.0085	0.9915	98.61
2.5	789,638,400	7,359,440	0.0093	0.9907	97.76
3.5	765,891,890	7,372,008	0.0096	0.9904	96.85
4.5	738,546,564	8,226,238	0.0111	0.9889	95.92
5.5	713,788,092	7,893,241	0.0111	0.9889	94.85
6.5	689,110,040	7,914,245	0.0115	0.9885	93.80
7.5	664,369,958	8,514,198	0.0128	0.9872	92.73
8.5	635,909,056	9,459,809	0.0149	0.9851	91.54
9.5	585,446,360	7,480,965	0.0128	0.9872	90.18
10.5	555,742,751	7,249,195	0.0130	0.9870	89.02
11.5	518,812,825	6,823,443	0.0132	0.9868	87.86
12.5	495,285,648	7,269,753	0.0147	0.9853	86.71
13.5	467,244,474	7,153,855	0.0153	0.9847	85.43
14.5	440,393,370	6,530,773	0.0148	0.9852	84.13
15.5	423,421,260	5,924,366	0.0140	0.9860	82.88
16.5	398,690,685	5,082,233	0.0127	0.9873	81.72
17.5	385,640,754	4,989,164	0.0129	0.9871	80.68
18.5	371,118,223	4,706,337	0.0127	0.9873	79.63
19.5	358,013,258	3,719,005	0.0104	0.9896	78.62
20.5	355,511,164	4,098,983	0.0115	0.9885	77.81
21.5	333,324,506	3,331,518	0.0100	0.9900	76.91
22.5	311,130,363	3,237,845	0.0104	0.9896	76.14
23.5	297,965,167	3,229,209	0.0108	0.9892	75.35
24.5	289,857,577	3,593,966	0.0124	0.9876	74.53
25.5	287,034,000	3,762,001	0.0131	0.9869	73.61
26.5	274,482,323	3,122,438	0.0114	0.9886	72.64
27.5	261,100,317	2,892,467	0.0111	0.9889	71.82
28.5	246,023,721	2,272,643	0.0092	0.9908	71.02
29.5	220,743,666	1,856,745	0.0084	0.9916	70.37
30.5	187,951,643	1,751,781	0.0093	0.9907	69.77
31.5	172,202,066	1,398,270	0.0081	0.9919	69.12
32.5	161,250,099	981,655	0.0061	0.9939	68.56
33.5	150,228,062	1,210,862	0.0081	0.9919	68.14
34.5	142,575,506	942,430	0.0066	0.9934	67.60
35.5	139,917,500	866,333	0.0062	0.9938	67.15
36.5	133,322,159	833,310	0.0063	0.9937	66.73
37.5	127,296,481	1,066,909	0.0084	0.9916	66.32
38.5	121,239,221	1,073,902	0.0089	0.9911	65.76

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	114,769,741	638,648	0.0056	0.9944	65.18
40.5	110,114,106	562,310	0.0051	0.9949	64.82
41.5	105,369,871	434,883	0.0041	0.9959	64.48
42.5	98,925,748	527,576	0.0053	0.9947	64.22
43.5	92,603,483	430,093	0.0046	0.9954	63.88
44.5	85,686,728	394,926	0.0046	0.9954	63.58
45.5	77,082,815	350,921	0.0046	0.9954	63.29
46.5	69,832,890	375,539	0.0054	0.9946	63.00
47.5	59,126,070	255,985	0.0043	0.9957	62.66
48.5	52,501,867	337,280	0.0064	0.9936	62.39
49.5	47,068,250	266,089	0.0057	0.9943	61.99
50.5	39,533,394	200,611	0.0051	0.9949	61.64
51.5	34,593,864	176,212	0.0051	0.9949	61.32
52.5	30,931,304	148,769	0.0048	0.9952	61.01
53.5	27,561,088	181,656	0.0066	0.9934	60.72
54.5	24,598,524	109,533	0.0045	0.9955	60.32
55.5	16,150,035	56,078	0.0035	0.9965	60.05
56.5	15,113,028	105,646	0.0070	0.9930	59.84
57.5	14,279,943	59,183	0.0041	0.9959	59.42
58.5	13,465,353	52,823	0.0039	0.9961	59.18
59.5	12,570,563	48,592	0.0039	0.9961	58.94
60.5	11,687,231	41,383	0.0035	0.9965	58.72
61.5	10,885,994	43,446	0.0040	0.9960	58.51
62.5	10,450,024	76,805	0.0073	0.9927	58.27
63.5	9,840,831	55,079	0.0056	0.9944	57.85
64.5	8,922,680	63,399	0.0071	0.9929	57.52
65.5	4,505,566	15,424	0.0034	0.9966	57.11
66.5	4,298,984	13,520	0.0031	0.9969	56.92
67.5	4,134,390	10,360	0.0025	0.9975	56.74
68.5	4,023,972	12,566	0.0031	0.9969	56.60
69.5	3,830,866	9,812	0.0026	0.9974	56.42
70.5	3,489,688	10,839	0.0031	0.9969	56.28
71.5	3,192,529	3,978	0.0012	0.9988	56.10
72.5	3,105,484	6,233	0.0020	0.9980	56.03
73.5	2,889,591	6,188	0.0021	0.9979	55.92
74.5	2,845,688	7,189	0.0025	0.9975	55.80
75.5	2,829,616	4,647	0.0016	0.9984	55.66
76.5	2,814,354	7,920	0.0028	0.9972	55.57
77.5	2,624,504	16,975	0.0065	0.9935	55.41
78.5	1,201,148	4,056	0.0034	0.9966	55.05

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,165,868	3,603	0.0031	0.9969	54.87
80.5	1,142,485	1,994	0.0017	0.9983	54.70
81.5	1,089,464	2,172	0.0020	0.9980	54.60
82.5	1,047,877	3,388	0.0032	0.9968	54.49
83.5	897,293	2,965	0.0033	0.9967	54.32
84.5	876,006	1,698	0.0019	0.9981	54.14
85.5	862,674	3,543	0.0041	0.9959	54.03
86.5	853,229	3,789	0.0044	0.9956	53.81
87.5	845,354	6,018	0.0071	0.9929	53.57
88.5	837,083	6,696	0.0080	0.9920	53.19
89.5	822,291	6,878	0.0084	0.9916	52.76
90.5	792,351	3,395	0.0043	0.9957	52.32
91.5	700,525	5,025	0.0072	0.9928	52.10
92.5	419,807	2,151	0.0051	0.9949	51.72
93.5	317,310	4,067	0.0128	0.9872	51.46
94.5	307,641	2,259	0.0073	0.9927	50.80
95.5	286,004	510	0.0018	0.9982	50.43
96.5	179,461	736	0.0041	0.9959	50.34
97.5	146,529	753	0.0051	0.9949	50.13
98.5	112,866	342	0.0030	0.9970	49.87
99.5	110,769	665	0.0060	0.9940	49.72
100.5	59,206	194	0.0033	0.9967	49.42
101.5	50,430	45,860	0.9094	0.0906	49.26
102.5	4,205	74	0.0175	0.9825	4.46
103.5	3,851	29	0.0077	0.9923	4.39
104.5	3,812	62	0.0163	0.9837	4.35
105.5	3,066	109	0.0355	0.9645	4.28
106.5	3,053	175	0.0572	0.9428	4.13
107.5	2,763	175	0.0632	0.9368	3.89
108.5	1,941	193	0.0997	0.9003	3.65
109.5	1,738	76	0.0438	0.9562	3.28
110.5	1,544	235	0.1520	0.8480	3.14
111.5	1,302	237	0.1817	0.8183	2.66
112.5	703	127	0.1810	0.8190	2.18
113.5	476	74	0.1563	0.8437	1.78
114.5	279	43	0.1544	0.8456	1.51
115.5	118	20	0.1689	0.8311	1.27
116.5	92	4	0.0427	0.9573	1.06
117.5	24	2	0.1043	0.8957	1.01
118.5	21	5	0.2222	0.7778	0.91
119.5					0.71

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	683,704,062	1,383,927	0.0020	0.9980	100.00
0.5	641,811,982	8,096,106	0.0126	0.9874	99.80
1.5	596,682,008	6,791,289	0.0114	0.9886	98.54
2.5	583,628,720	6,987,399	0.0120	0.9880	97.42
3.5	565,291,747	6,906,595	0.0122	0.9878	96.25
4.5	539,736,082	7,303,939	0.0135	0.9865	95.07
5.5	525,695,159	7,197,393	0.0137	0.9863	93.79
6.5	508,075,420	7,009,574	0.0138	0.9862	92.50
7.5	492,946,792	7,661,461	0.0155	0.9845	91.23
8.5	476,155,714	8,002,564	0.0168	0.9832	89.81
9.5	450,812,882	6,347,384	0.0141	0.9859	88.30
10.5	457,842,555	6,869,291	0.0150	0.9850	87.06
11.5	435,825,827	6,522,436	0.0150	0.9850	85.75
12.5	418,706,584	6,806,738	0.0163	0.9837	84.47
13.5	396,305,967	6,706,140	0.0169	0.9831	83.09
14.5	370,631,113	6,039,298	0.0163	0.9837	81.69
15.5	352,307,293	5,467,777	0.0155	0.9845	80.36
16.5	327,338,524	4,527,881	0.0138	0.9862	79.11
17.5	309,556,687	4,404,645	0.0142	0.9858	78.02
18.5	293,017,466	3,909,559	0.0133	0.9867	76.91
19.5	281,556,901	3,204,260	0.0114	0.9886	75.88
20.5	276,326,689	3,595,018	0.0130	0.9870	75.02
21.5	254,116,929	2,905,891	0.0114	0.9886	74.04
22.5	234,902,411	2,636,226	0.0112	0.9888	73.19
23.5	225,477,901	2,835,033	0.0126	0.9874	72.37
24.5	221,968,056	3,245,368	0.0146	0.9854	71.46
25.5	215,984,147	2,816,097	0.0130	0.9870	70.42
26.5	210,821,623	2,589,476	0.0123	0.9877	69.50
27.5	208,594,361	2,202,567	0.0106	0.9894	68.65
28.5	201,906,731	1,917,268	0.0095	0.9905	67.92
29.5	181,591,541	1,579,620	0.0087	0.9913	67.28
30.5	156,124,514	1,447,090	0.0093	0.9907	66.69
31.5	145,090,773	1,284,361	0.0089	0.9911	66.07
32.5	137,445,950	922,059	0.0067	0.9933	65.49
33.5	129,459,264	1,022,117	0.0079	0.9921	65.05
34.5	124,141,157	893,681	0.0072	0.9928	64.53
35.5	126,906,656	857,721	0.0068	0.9932	64.07
36.5	121,064,418	826,987	0.0068	0.9932	63.64
37.5	115,611,846	1,056,459	0.0091	0.9909	63.20
38.5	110,257,598	1,064,738	0.0097	0.9903	62.62

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	104,543,052	631,234	0.0060	0.9940	62.02
40.5	100,453,761	554,217	0.0055	0.9945	61.65
41.5	96,347,813	426,423	0.0044	0.9956	61.31
42.5	90,595,771	474,580	0.0052	0.9948	61.03
43.5	84,799,734	396,085	0.0047	0.9953	60.71
44.5	78,831,230	394,399	0.0050	0.9950	60.43
45.5	74,881,048	350,354	0.0047	0.9953	60.13
46.5	67,973,646	371,926	0.0055	0.9945	59.85
47.5	57,320,844	255,733	0.0045	0.9955	59.52
48.5	49,337,440	336,791	0.0068	0.9932	59.25
49.5	44,081,915	265,742	0.0060	0.9940	58.85
50.5	36,972,821	200,070	0.0054	0.9946	58.50
51.5	32,337,776	175,980	0.0054	0.9946	58.18
52.5	28,733,757	147,606	0.0051	0.9949	57.86
53.5	25,454,030	181,550	0.0071	0.9929	57.56
54.5	22,514,653	109,440	0.0049	0.9951	57.15
55.5	14,066,741	56,025	0.0040	0.9960	56.88
56.5	13,034,417	105,262	0.0081	0.9919	56.65
57.5	12,385,340	58,896	0.0048	0.9952	56.19
58.5	13,088,997	52,755	0.0040	0.9960	55.93
59.5	12,220,156	48,592	0.0040	0.9960	55.70
60.5	11,336,263	41,139	0.0036	0.9964	55.48
61.5	10,503,037	43,391	0.0041	0.9959	55.28
62.5	9,821,762	76,805	0.0078	0.9922	55.05
63.5	9,256,082	54,562	0.0059	0.9941	54.62
64.5	8,354,471	63,399	0.0076	0.9924	54.30
65.5	3,928,631	15,386	0.0039	0.9961	53.88
66.5	3,617,664	13,520	0.0037	0.9963	53.67
67.5	3,420,327	10,360	0.0030	0.9970	53.47
68.5	3,278,763	12,566	0.0038	0.9962	53.31
69.5	3,093,173	9,704	0.0031	0.9969	53.11
70.5	2,722,198	10,646	0.0039	0.9961	52.94
71.5	2,506,064	3,946	0.0016	0.9984	52.73
72.5	2,709,382	6,091	0.0022	0.9978	52.65
73.5	2,603,721	6,188	0.0024	0.9976	52.53
74.5	2,567,033	7,175	0.0028	0.9972	52.41
75.5	2,573,170	4,647	0.0018	0.9982	52.26
76.5	2,670,445	7,885	0.0030	0.9970	52.17
77.5	2,517,616	16,968	0.0067	0.9933	52.01
78.5	1,081,878	4,056	0.0037	0.9963	51.66

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,049,744	3,603	0.0034	0.9966	51.47
80.5	1,081,420	1,914	0.0018	0.9982	51.29
81.5	1,039,644	2,172	0.0021	0.9979	51.20
82.5	997,881	3,358	0.0034	0.9966	51.09
83.5	847,037	2,965	0.0035	0.9965	50.92
84.5	825,420	1,698	0.0021	0.9979	50.74
85.5	812,331	3,543	0.0044	0.9956	50.64
86.5	802,982	3,789	0.0047	0.9953	50.42
87.5	795,321	6,018	0.0076	0.9924	50.18
88.5	834,268	6,696	0.0080	0.9920	49.80
89.5	819,268	6,878	0.0084	0.9916	49.40
90.5	789,536	3,395	0.0043	0.9957	48.99
91.5	697,753	5,025	0.0072	0.9928	48.77
92.5	417,749	2,151	0.0051	0.9949	48.42
93.5	315,915	4,022	0.0127	0.9873	48.17
94.5	306,654	2,259	0.0074	0.9926	47.56
95.5	285,549	510	0.0018	0.9982	47.21
96.5	179,091	736	0.0041	0.9959	47.13
97.5	146,250	753	0.0051	0.9949	46.93
98.5	112,609	342	0.0030	0.9970	46.69
99.5	110,769	665	0.0060	0.9940	46.55
100.5	59,206	194	0.0033	0.9967	46.27
101.5	50,430	45,860	0.9094	0.0906	46.12
102.5	4,205	74	0.0175	0.9825	4.18
103.5	3,851	29	0.0077	0.9923	4.11
104.5	3,812	62	0.0163	0.9837	4.07
105.5	3,066	109	0.0355	0.9645	4.01
106.5	3,053	175	0.0572	0.9428	3.87
107.5	2,763	175	0.0632	0.9368	3.65
108.5	1,941	193	0.0997	0.9003	3.41
109.5	1,738	76	0.0438	0.9562	3.07
110.5	1,544	235	0.1520	0.8480	2.94
111.5	1,302	237	0.1817	0.8183	2.49
112.5	703	127	0.1810	0.8190	2.04
113.5	476	74	0.1563	0.8437	1.67
114.5	279	43	0.1544	0.8456	1.41
115.5	118	20	0.1689	0.8311	1.19
116.5	92	4	0.0427	0.9573	0.99
117.5	24	2	0.1043	0.8957	0.95
118.5	21	5	0.2222	0.7778	0.85
119.5					0.66

NSTAR ELECTRIC COMPANY
ACCOUNT 366.00 UNDERGROUND CONDUIT
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 75-R3
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
AGE IN YEARS

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	816,127,295	471,716	0.0006	0.9994	100.00
0.5	766,008,052	895,114	0.0012	0.9988	99.94
1.5	737,444,587	700,276	0.0009	0.9991	99.83
2.5	699,237,592	212,625	0.0003	0.9997	99.73
3.5	682,371,781	213,249	0.0003	0.9997	99.70
4.5	666,032,007	414,949	0.0006	0.9994	99.67
5.5	651,739,865	252,275	0.0004	0.9996	99.61
6.5	633,339,617	316,403	0.0005	0.9995	99.57
7.5	602,925,824	316,892	0.0005	0.9995	99.52
8.5	573,518,714	285,126	0.0005	0.9995	99.47
9.5	541,369,566	288,184	0.0005	0.9995	99.42
10.5	503,613,680	379,070	0.0008	0.9992	99.36
11.5	479,874,149	238,303	0.0005	0.9995	99.29
12.5	453,214,906	242,376	0.0005	0.9995	99.24
13.5	417,388,769	400,444	0.0010	0.9990	99.19
14.5	395,575,602	398,246	0.0010	0.9990	99.09
15.5	379,125,912	437,733	0.0012	0.9988	98.99
16.5	343,508,017	628,531	0.0018	0.9982	98.88
17.5	316,405,037	323,755	0.0010	0.9990	98.70
18.5	272,801,309	278,807	0.0010	0.9990	98.60
19.5	253,944,039	418,277	0.0016	0.9984	98.50
20.5	246,177,990	514,054	0.0021	0.9979	98.33
21.5	218,381,629	254,198	0.0012	0.9988	98.13
22.5	204,377,773	250,147	0.0012	0.9988	98.01
23.5	187,568,474	252,657	0.0013	0.9987	97.89
24.5	180,104,329	318,251	0.0018	0.9982	97.76
25.5	173,877,355	369,364	0.0021	0.9979	97.59
26.5	167,459,575	272,139	0.0016	0.9984	97.38
27.5	161,310,869	239,570	0.0015	0.9985	97.22
28.5	151,585,371	115,900	0.0008	0.9992	97.08
29.5	139,681,687	102,810	0.0007	0.9993	97.00
30.5	125,710,279	148,216	0.0012	0.9988	96.93
31.5	115,249,800	187,694	0.0016	0.9984	96.82
32.5	107,489,825	637,157	0.0059	0.9941	96.66
33.5	100,450,345	223,020	0.0022	0.9978	96.09
34.5	94,111,702	128,513	0.0014	0.9986	95.87
35.5	89,644,269	172,162	0.0019	0.9981	95.74
36.5	85,271,011	366,597	0.0043	0.9957	95.56
37.5	81,937,772	204,955	0.0025	0.9975	95.15
38.5	79,294,162	132,109	0.0017	0.9983	94.91

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	76,513,417	246,903	0.0032	0.9968	94.75
40.5	74,678,017	76,359	0.0010	0.9990	94.45
41.5	73,050,838	396,235	0.0054	0.9946	94.35
42.5	71,195,577	112,847	0.0016	0.9984	93.84
43.5	68,986,167	105,245	0.0015	0.9985	93.69
44.5	65,511,310	103,231	0.0016	0.9984	93.55
45.5	62,000,027	91,910	0.0015	0.9985	93.40
46.5	58,333,855	84,410	0.0014	0.9986	93.26
47.5	54,305,663	73,375	0.0014	0.9986	93.13
48.5	49,494,279	58,714	0.0012	0.9988	93.00
49.5	47,744,663	43,071	0.0009	0.9991	92.89
50.5	44,796,789	56,340	0.0013	0.9987	92.81
51.5	42,780,343	72,715	0.0017	0.9983	92.69
52.5	40,583,638	66,812	0.0016	0.9984	92.53
53.5	39,080,283	48,821	0.0012	0.9988	92.38
54.5	37,364,306	68,557	0.0018	0.9982	92.26
55.5	14,126,511	21,585	0.0015	0.9985	92.10
56.5	13,082,160	60,235	0.0046	0.9954	91.95
57.5	12,838,967	42,880	0.0033	0.9967	91.53
58.5	12,379,505	70,495	0.0057	0.9943	91.23
59.5	11,859,051	42,735	0.0036	0.9964	90.71
60.5	11,430,307	67,140	0.0059	0.9941	90.38
61.5	10,934,380	32,933	0.0030	0.9970	89.85
62.5	10,537,684	76,666	0.0073	0.9927	89.58
63.5	9,846,651	76,791	0.0078	0.9922	88.93
64.5	9,442,830	17,237	0.0018	0.9982	88.23
65.5	3,630,679	393	0.0001	0.9999	88.07
66.5	3,481,081	3,222	0.0009	0.9991	88.06
67.5	3,321,082	938	0.0003	0.9997	87.98
68.5	3,134,373	2,301	0.0007	0.9993	87.96
69.5	3,073,039	340	0.0001	0.9999	87.89
70.5	2,588,037	151	0.0001	0.9999	87.88
71.5	2,554,890	456	0.0002	0.9998	87.88
72.5	2,401,072	6,413	0.0027	0.9973	87.86
73.5	2,319,374	185	0.0001	0.9999	87.63
74.5	2,295,438	336	0.0001	0.9999	87.62
75.5	2,294,946	1,135	0.0005	0.9995	87.61
76.5	1,279,675	69	0.0001	0.9999	87.56
77.5	1,256,600	93	0.0001	0.9999	87.56
78.5	1,256,494	115	0.0001	0.9999	87.55

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,205,855	2,180	0.0018	0.9982	87.54
80.5	1,112,384	455	0.0004	0.9996	87.38
81.5	1,082,121	133	0.0001	0.9999	87.35
82.5	1,078,434	1,877	0.0017	0.9983	87.34
83.5	1,060,178	988	0.0009	0.9991	87.19
84.5	1,050,618	1,876	0.0018	0.9982	87.11
85.5	1,045,883	49	0.0000	1.0000	86.95
86.5	1,045,833	6,576	0.0063	0.9937	86.95
87.5	1,028,757	107	0.0001	0.9999	86.40
88.5	1,028,649	920	0.0009	0.9991	86.39
89.5	1,011,693	2,388	0.0024	0.9976	86.31
90.5	918,084	679	0.0007	0.9993	86.11
91.5	873,227	805	0.0009	0.9991	86.05
92.5	872,422	24,718	0.0283	0.9717	85.97
93.5	746,178	117	0.0002	0.9998	83.53
94.5	688,813	154	0.0002	0.9998	83.52
95.5	626,009	70	0.0001	0.9999	83.50
96.5	582,243	33	0.0001	0.9999	83.49
97.5	565,208	47	0.0001	0.9999	83.48
98.5	523,942	6	0.0000	1.0000	83.48
99.5	497,057	1	0.0000	1.0000	83.48
100.5	365,707	5	0.0000	1.0000	83.48
101.5	307,451	1	0.0000	1.0000	83.48
102.5	307,451		0.0000	1.0000	83.48
103.5	238,562		0.0000	1.0000	83.48
104.5	121,702		0.0000	1.0000	83.48
105.5	116,076	41	0.0004	0.9996	83.48
106.5	109,797	23	0.0002	0.9998	83.45
107.5	82,070	173	0.0021	0.9979	83.43
108.5	75,726	3	0.0000	1.0000	83.25
109.5	75,723	67	0.0009	0.9991	83.25
110.5	75,656		0.0000	1.0000	83.18
111.5	75,656		0.0000	1.0000	83.18
112.5	75,656	13	0.0002	0.9998	83.18
113.5	75,643		0.0000	1.0000	83.16
114.5	75,643		0.0000	1.0000	83.16
115.5	75,643		0.0000	1.0000	83.16
116.5	75,643		0.0000	1.0000	83.16
117.5	75,643	1	0.0000	1.0000	83.16
118.5	72,071		0.0000	1.0000	83.16
119.5					83.16

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	557,103,170	444,875	0.0008	0.9992	100.00
0.5	514,553,677	484,482	0.0009	0.9991	99.92
1.5	513,941,176	588,507	0.0011	0.9989	99.83
2.5	489,637,452	90,163	0.0002	0.9998	99.71
3.5	489,559,634	149,129	0.0003	0.9997	99.69
4.5	480,626,365	263,638	0.0005	0.9995	99.66
5.5	472,455,943	129,679	0.0003	0.9997	99.61
6.5	460,330,691	143,389	0.0003	0.9997	99.58
7.5	436,076,068	49,055	0.0001	0.9999	99.55
8.5	416,702,954	100,876	0.0002	0.9998	99.54
9.5	396,764,872	131,903	0.0003	0.9997	99.51
10.5	373,210,349	89,069	0.0002	0.9998	99.48
11.5	360,527,348	105,487	0.0003	0.9997	99.46
12.5	342,095,863	172,335	0.0005	0.9995	99.43
13.5	312,814,775	247,894	0.0008	0.9992	99.38
14.5	297,426,164	167,124	0.0006	0.9994	99.30
15.5	285,814,777	340,950	0.0012	0.9988	99.24
16.5	254,612,709	217,001	0.0009	0.9991	99.13
17.5	231,013,255	160,185	0.0007	0.9993	99.04
18.5	189,986,019	55,618	0.0003	0.9997	98.97
19.5	174,032,341	165,912	0.0010	0.9990	98.94
20.5	168,152,618	404,946	0.0024	0.9976	98.85
21.5	142,047,090	186,382	0.0013	0.9987	98.61
22.5	129,635,286	199,630	0.0015	0.9985	98.48
23.5	115,097,104	186,238	0.0016	0.9984	98.33
24.5	111,167,442	215,007	0.0019	0.9981	98.17
25.5	108,896,507	106,870	0.0010	0.9990	97.98
26.5	106,610,377	131,134	0.0012	0.9988	97.89
27.5	104,665,202	225,832	0.0022	0.9978	97.76
28.5	99,918,491	73,245	0.0007	0.9993	97.55
29.5	89,953,449	87,727	0.0010	0.9990	97.48
30.5	79,086,317	138,841	0.0018	0.9982	97.39
31.5	70,827,592	180,436	0.0025	0.9975	97.22
32.5	65,321,276	173,119	0.0027	0.9973	96.97
33.5	60,269,794	218,440	0.0036	0.9964	96.71
34.5	55,717,209	125,400	0.0023	0.9977	96.36
35.5	75,171,852	172,162	0.0023	0.9977	96.14
36.5	71,846,924	357,678	0.0050	0.9950	95.92
37.5	68,707,441	204,955	0.0030	0.9970	95.45
38.5	66,493,757	132,109	0.0020	0.9980	95.16

NSTAR ELECTRIC COMPANY

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ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	64,173,757	237,510	0.0037	0.9963	94.97
40.5	62,743,388	76,359	0.0012	0.9988	94.62
41.5	61,607,404	396,235	0.0064	0.9936	94.51
42.5	60,156,574	100,992	0.0017	0.9983	93.90
43.5	58,623,247	101,562	0.0017	0.9983	93.74
44.5	55,523,630	96,602	0.0017	0.9983	93.58
45.5	58,291,155	91,910	0.0016	0.9984	93.42
46.5	54,786,126	84,410	0.0015	0.9985	93.27
47.5	50,916,304	72,623	0.0014	0.9986	93.12
48.5	46,299,138	58,714	0.0013	0.9987	92.99
49.5	44,613,051	43,071	0.0010	0.9990	92.87
50.5	42,198,450	56,340	0.0013	0.9987	92.78
51.5	40,214,997	72,715	0.0018	0.9982	92.66
52.5	38,172,822	66,812	0.0018	0.9982	92.49
53.5	36,744,885	48,821	0.0013	0.9987	92.33
54.5	35,052,731	68,557	0.0020	0.9980	92.21
55.5	11,815,187	21,576	0.0018	0.9982	92.03
56.5	11,792,851	60,235	0.0051	0.9949	91.86
57.5	11,572,742	42,880	0.0037	0.9963	91.39
58.5	11,113,375	70,495	0.0063	0.9937	91.05
59.5	10,643,729	42,735	0.0040	0.9960	90.47
60.5	10,307,464	67,140	0.0065	0.9935	90.11
61.5	9,841,452	32,933	0.0033	0.9967	89.52
62.5	9,448,345	76,666	0.0081	0.9919	89.22
63.5	8,760,457	76,791	0.0088	0.9912	88.50
64.5	8,367,191	17,237	0.0021	0.9979	87.72
65.5	2,557,900	393	0.0002	0.9998	87.54
66.5	2,408,302	3,222	0.0013	0.9987	87.53
67.5	2,260,409	188	0.0001	0.9999	87.41
68.5	2,074,450	358	0.0002	0.9998	87.41
69.5	2,031,109	340	0.0002	0.9998	87.39
70.5	1,655,070	151	0.0001	0.9999	87.38
71.5	1,666,286	456	0.0003	0.9997	87.37
72.5	1,512,984	6,413	0.0042	0.9958	87.34
73.5	1,557,302	185	0.0001	0.9999	86.97
74.5	1,590,700	235	0.0001	0.9999	86.96
75.5	1,653,141	1,135	0.0007	0.9993	86.95
76.5	694,959	69	0.0001	0.9999	86.89
77.5	688,918	93	0.0001	0.9999	86.88
78.5	730,122	115	0.0002	0.9998	86.87

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	706,437	2,180	0.0031	0.9969	86.86
80.5	744,804	455	0.0006	0.9994	86.59
81.5	773,017	133	0.0002	0.9998	86.54
82.5	769,329	1,877	0.0024	0.9976	86.52
83.5	820,260	988	0.0012	0.9988	86.31
84.5	928,056	1,876	0.0020	0.9980	86.21
85.5	929,354	49	0.0001	0.9999	86.03
86.5	935,634	6,576	0.0070	0.9930	86.03
87.5	946,361	107	0.0001	0.9999	85.42
88.5	952,686	920	0.0010	0.9990	85.41
89.5	935,730	2,388	0.0026	0.9974	85.33
90.5	842,121	679	0.0008	0.9992	85.11
91.5	797,264	805	0.0010	0.9990	85.04
92.5	796,459	24,718	0.0310	0.9690	84.96
93.5	670,216	117	0.0002	0.9998	82.32
94.5	612,851	154	0.0003	0.9997	82.31
95.5	550,047	70	0.0001	0.9999	82.29
96.5	506,280	33	0.0001	0.9999	82.28
97.5	489,245	47	0.0001	0.9999	82.27
98.5	451,562	6	0.0000	1.0000	82.26
99.5	497,057	1	0.0000	1.0000	82.26
100.5	365,707	5	0.0000	1.0000	82.26
101.5	307,451	1	0.0000	1.0000	82.26
102.5	307,451		0.0000	1.0000	82.26
103.5	238,562		0.0000	1.0000	82.26
104.5	121,702		0.0000	1.0000	82.26
105.5	116,076	41	0.0004	0.9996	82.26
106.5	109,797	23	0.0002	0.9998	82.23
107.5	82,070	173	0.0021	0.9979	82.21
108.5	75,726	3	0.0000	1.0000	82.04
109.5	75,723	67	0.0009	0.9991	82.04
110.5	75,656		0.0000	1.0000	81.97
111.5	75,656		0.0000	1.0000	81.97
112.5	75,656	13	0.0002	0.9998	81.97
113.5	75,643		0.0000	1.0000	81.95
114.5	75,643		0.0000	1.0000	81.95
115.5	75,643		0.0000	1.0000	81.95
116.5	75,643		0.0000	1.0000	81.95
117.5	75,643	1	0.0000	1.0000	81.95
118.5	72,071		0.0000	1.0000	81.95
119.5					81.95

NSTAR ELECTRIC COMPANY
ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	2,143,097,263	4,606,768	0.0021	0.9979	100.00
0.5	2,082,456,050	12,796,114	0.0061	0.9939	99.79
1.5	2,000,744,107	13,192,730	0.0066	0.9934	99.17
2.5	1,924,724,071	12,807,385	0.0067	0.9933	98.52
3.5	1,861,969,424	15,658,093	0.0084	0.9916	97.86
4.5	1,784,772,662	20,065,863	0.0112	0.9888	97.04
5.5	1,701,866,317	14,095,474	0.0083	0.9917	95.95
6.5	1,592,210,435	14,289,341	0.0090	0.9910	95.15
7.5	1,514,983,894	13,308,802	0.0088	0.9912	94.30
8.5	1,438,716,886	12,211,400	0.0085	0.9915	93.47
9.5	1,364,669,408	11,057,817	0.0081	0.9919	92.68
10.5	1,303,725,851	12,535,799	0.0096	0.9904	91.93
11.5	1,233,521,863	12,831,394	0.0104	0.9896	91.04
12.5	1,154,171,290	10,862,220	0.0094	0.9906	90.10
13.5	1,069,132,678	9,395,421	0.0088	0.9912	89.25
14.5	1,000,139,201	8,572,970	0.0086	0.9914	88.46
15.5	927,016,786	8,355,372	0.0090	0.9910	87.71
16.5	869,349,112	9,152,296	0.0105	0.9895	86.92
17.5	817,378,698	6,970,485	0.0085	0.9915	86.00
18.5	755,944,650	6,987,401	0.0092	0.9908	85.27
19.5	720,032,198	6,582,618	0.0091	0.9909	84.48
20.5	695,341,138	6,588,123	0.0095	0.9905	83.71
21.5	646,977,792	6,052,849	0.0094	0.9906	82.91
22.5	553,036,503	4,726,112	0.0085	0.9915	82.14
23.5	514,326,696	4,804,634	0.0093	0.9907	81.44
24.5	484,337,830	5,664,618	0.0117	0.9883	80.67
25.5	445,774,390	9,730,960	0.0218	0.9782	79.73
26.5	414,040,746	4,184,229	0.0101	0.9899	77.99
27.5	386,202,720	3,582,155	0.0093	0.9907	77.20
28.5	345,467,218	3,489,044	0.0101	0.9899	76.49
29.5	299,750,021	3,449,527	0.0115	0.9885	75.71
30.5	256,115,732	5,137,816	0.0201	0.9799	74.84
31.5	229,616,311	2,740,727	0.0119	0.9881	73.34
32.5	208,949,480	2,783,692	0.0133	0.9867	72.47
33.5	192,360,793	2,902,042	0.0151	0.9849	71.50
34.5	175,090,804	2,588,551	0.0148	0.9852	70.42
35.5	161,439,318	2,644,126	0.0164	0.9836	69.38
36.5	144,442,036	2,345,161	0.0162	0.9838	68.24
37.5	127,838,120	2,582,859	0.0202	0.9798	67.14
38.5	115,246,057	1,755,321	0.0152	0.9848	65.78

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	104,979,925	1,678,280	0.0160	0.9840	64.78
40.5	95,767,933	1,696,294	0.0177	0.9823	63.74
41.5	86,128,005	1,961,111	0.0228	0.9772	62.61
42.5	76,154,401	1,377,109	0.0181	0.9819	61.19
43.5	68,163,339	1,308,669	0.0192	0.9808	60.08
44.5	59,075,715	762,521	0.0129	0.9871	58.93
45.5	48,458,626	513,599	0.0106	0.9894	58.17
46.5	41,335,246	418,908	0.0101	0.9899	57.55
47.5	35,610,638	367,095	0.0103	0.9897	56.97
48.5	30,082,498	469,534	0.0156	0.9844	56.38
49.5	27,170,369	266,690	0.0098	0.9902	55.50
50.5	22,777,228	228,291	0.0100	0.9900	54.96
51.5	20,194,275	182,942	0.0091	0.9909	54.40
52.5	18,188,077	209,019	0.0115	0.9885	53.91
53.5	16,615,327	133,834	0.0081	0.9919	53.29
54.5	15,364,444	169,308	0.0110	0.9890	52.86
55.5	7,018,011	162,199	0.0231	0.9769	52.28
56.5	6,476,270	61,228	0.0095	0.9905	51.07
57.5	5,884,696	70,481	0.0120	0.9880	50.59
58.5	5,425,321	44,348	0.0082	0.9918	49.98
59.5	5,156,494	67,605	0.0131	0.9869	49.57
60.5	4,682,934	54,034	0.0115	0.9885	48.92
61.5	4,330,247	47,455	0.0110	0.9890	48.36
62.5	3,925,232	135,109	0.0344	0.9656	47.83
63.5	3,543,566	83,789	0.0236	0.9764	46.18
64.5	3,258,510	56,145	0.0172	0.9828	45.09
65.5	1,117,833	21,419	0.0192	0.9808	44.31
66.5	1,026,880	21,266	0.0207	0.9793	43.47
67.5	962,907	14,832	0.0154	0.9846	42.57
68.5	917,317	19,426	0.0212	0.9788	41.91
69.5	835,716	13,645	0.0163	0.9837	41.02
70.5	795,789	9,825	0.0123	0.9877	40.35
71.5	773,281	3,564	0.0046	0.9954	39.85
72.5	707,279	4,916	0.0070	0.9930	39.67
73.5	685,643	8,107	0.0118	0.9882	39.40
74.5	666,285	5,093	0.0076	0.9924	38.93
75.5	658,546	6,865	0.0104	0.9896	38.63
76.5	490,853	1,130	0.0023	0.9977	38.23
77.5	484,846	1,123	0.0023	0.9977	38.14
78.5	483,695	1,113	0.0023	0.9977	38.05

NSTAR ELECTRIC COMPANY

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ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	464,576	163,590	0.3521	0.6479	37.97
80.5	251,859	7,498	0.0298	0.9702	24.60
81.5	243,196	1,219	0.0050	0.9950	23.86
82.5	239,363	1,622	0.0068	0.9932	23.74
83.5	237,616	6,154	0.0259	0.9741	23.58
84.5	230,062	5,491	0.0239	0.9761	22.97
85.5	224,571	1,439	0.0064	0.9936	22.42
86.5	223,132	1,482	0.0066	0.9934	22.28
87.5	221,384	2,490	0.0112	0.9888	22.13
88.5	218,894	6,338	0.0290	0.9710	21.88
89.5	212,556	13,428	0.0632	0.9368	21.25
90.5	184,877	2,062	0.0112	0.9888	19.91
91.5	181,323	6,139	0.0339	0.9661	19.69
92.5	169,896	15,501	0.0912	0.9088	19.02
93.5	153,908	4,138	0.0269	0.9731	17.28
94.5	147,811	1,550	0.0105	0.9895	16.82
95.5	134,924	1,463	0.0108	0.9892	16.64
96.5	127,219	1,704	0.0134	0.9866	16.46
97.5	123,868	2,879	0.0232	0.9768	16.24
98.5	118,757	1,193	0.0100	0.9900	15.86
99.5	115,465	1,071	0.0093	0.9907	15.71
100.5	105,813	3,462	0.0327	0.9673	15.56
101.5	94,312	1,234	0.0131	0.9869	15.05
102.5	92,897	407	0.0044	0.9956	14.85
103.5	90,500	415	0.0046	0.9954	14.79
104.5	19,820	119	0.0060	0.9940	14.72
105.5	14,136	4,523	0.3200	0.6800	14.63
106.5	9,196	988	0.1074	0.8926	9.95
107.5	8,208	2,969	0.3617	0.6383	8.88
108.5	5,239	307	0.0585	0.9415	5.67
109.5	4,933	28	0.0057	0.9943	5.34
110.5	4,307	15	0.0035	0.9965	5.31
111.5	4,292	133	0.0309	0.9691	5.29
112.5	4,159	129	0.0310	0.9690	5.13
113.5	4,030	72	0.0179	0.9821	4.97
114.5	3,958	12	0.0031	0.9969	4.88
115.5	3,946	714	0.1808	0.8192	4.86
116.5	3,232	300	0.0927	0.9073	3.98
117.5	2,933	79	0.0271	0.9729	3.61
118.5	2,853	107	0.0375	0.9625	3.52
119.5					3.38

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ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,720,446,421	3,491,035	0.0020	0.9980	100.00
0.5	1,709,721,518	10,748,013	0.0063	0.9937	99.80
1.5	1,655,216,382	10,966,512	0.0066	0.9934	99.17
2.5	1,604,015,840	10,995,895	0.0069	0.9931	98.51
3.5	1,559,697,800	14,134,044	0.0091	0.9909	97.84
4.5	1,502,289,770	17,319,634	0.0115	0.9885	96.95
5.5	1,435,906,069	12,339,652	0.0086	0.9914	95.83
6.5	1,346,444,093	11,897,796	0.0088	0.9912	95.01
7.5	1,289,398,585	9,921,320	0.0077	0.9923	94.17
8.5	1,229,334,950	9,564,659	0.0078	0.9922	93.45
9.5	1,169,194,541	8,648,713	0.0074	0.9926	92.72
10.5	1,120,701,492	8,577,672	0.0077	0.9923	92.03
11.5	1,065,334,596	9,855,342	0.0093	0.9907	91.33
12.5	1,000,347,892	8,302,505	0.0083	0.9917	90.48
13.5	927,268,996	5,896,677	0.0064	0.9936	89.73
14.5	873,255,353	5,350,397	0.0061	0.9939	89.16
15.5	819,873,153	4,701,297	0.0057	0.9943	88.62
16.5	778,033,033	6,680,927	0.0086	0.9914	88.11
17.5	738,540,317	4,253,742	0.0058	0.9942	87.35
18.5	692,657,036	5,375,450	0.0078	0.9922	86.85
19.5	662,326,907	5,108,008	0.0077	0.9923	86.17
20.5	646,220,204	5,426,240	0.0084	0.9916	85.51
21.5	602,898,799	5,241,666	0.0087	0.9913	84.79
22.5	513,010,614	3,659,208	0.0071	0.9929	84.05
23.5	477,585,978	3,725,756	0.0078	0.9922	83.45
24.5	451,140,756	4,125,808	0.0091	0.9909	82.80
25.5	437,526,257	9,730,960	0.0222	0.9778	82.05
26.5	406,367,159	4,184,229	0.0103	0.9897	80.22
27.5	379,160,568	3,582,155	0.0094	0.9906	79.40
28.5	338,891,283	3,489,044	0.0103	0.9897	78.64
29.5	293,455,118	3,449,527	0.0118	0.9882	77.84
30.5	250,323,219	5,137,816	0.0205	0.9795	76.92
31.5	224,285,327	2,740,727	0.0122	0.9878	75.34
32.5	204,098,898	2,783,692	0.0136	0.9864	74.42
33.5	187,837,072	2,902,042	0.0154	0.9846	73.41
34.5	170,864,005	2,588,551	0.0151	0.9849	72.27
35.5	159,882,955	2,644,126	0.0165	0.9835	71.18
36.5	143,000,428	2,345,161	0.0164	0.9836	70.00
37.5	126,463,049	2,582,859	0.0204	0.9796	68.85
38.5	113,938,991	1,755,321	0.0154	0.9846	67.45

NSTAR ELECTRIC COMPANY

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AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	103,779,048	1,678,280	0.0162	0.9838	66.41
40.5	94,608,234	1,696,294	0.0179	0.9821	65.33
41.5	84,988,489	1,961,111	0.0231	0.9769	64.16
42.5	75,136,670	1,377,109	0.0183	0.9817	62.68
43.5	67,176,919	1,308,669	0.0195	0.9805	61.53
44.5	58,114,098	762,521	0.0131	0.9869	60.33
45.5	47,501,131	513,599	0.0108	0.9892	59.54
46.5	40,819,840	418,908	0.0103	0.9897	58.90
47.5	35,100,152	367,095	0.0105	0.9895	58.29
48.5	29,572,073	469,534	0.0159	0.9841	57.68
49.5	26,682,644	266,690	0.0100	0.9900	56.77
50.5	22,509,998	228,291	0.0101	0.9899	56.20
51.5	19,933,643	182,942	0.0092	0.9908	55.63
52.5	17,933,187	209,019	0.0117	0.9883	55.12
53.5	16,361,629	133,834	0.0082	0.9918	54.48
54.5	15,113,112	169,308	0.0112	0.9888	54.03
55.5	6,769,130	162,199	0.0240	0.9760	53.43
56.5	6,227,390	61,228	0.0098	0.9902	52.15
57.5	5,636,119	70,481	0.0125	0.9875	51.63
58.5	5,176,743	44,348	0.0086	0.9914	50.99
59.5	4,910,159	67,605	0.0138	0.9862	50.55
60.5	4,454,320	54,034	0.0121	0.9879	49.86
61.5	4,104,515	47,455	0.0116	0.9884	49.25
62.5	3,715,124	135,109	0.0364	0.9636	48.68
63.5	3,336,283	83,789	0.0251	0.9749	46.91
64.5	3,054,990	56,145	0.0184	0.9816	45.73
65.5	935,629	21,419	0.0229	0.9771	44.89
66.5	853,780	21,266	0.0249	0.9751	43.86
67.5	793,063	14,832	0.0187	0.9813	42.77
68.5	751,781	19,426	0.0258	0.9742	41.97
69.5	674,595	13,645	0.0202	0.9798	40.89
70.5	648,623	9,825	0.0151	0.9849	40.06
71.5	644,135	3,564	0.0055	0.9945	39.45
72.5	578,673	4,916	0.0085	0.9915	39.24
73.5	569,822	8,107	0.0142	0.9858	38.90
74.5	643,587	5,093	0.0079	0.9921	38.35
75.5	641,608	6,865	0.0107	0.9893	38.04
76.5	474,663	1,130	0.0024	0.9976	37.64
77.5	470,857	1,123	0.0024	0.9976	37.55
78.5	469,706	1,113	0.0024	0.9976	37.46

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AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	450,588	163,590	0.3631	0.6369	37.37
80.5	238,619	7,498	0.0314	0.9686	23.80
81.5	229,956	1,219	0.0053	0.9947	23.05
82.5	226,124	1,622	0.0072	0.9928	22.93
83.5	224,376	6,154	0.0274	0.9726	22.77
84.5	216,822	5,491	0.0253	0.9747	22.14
85.5	211,331	1,439	0.0068	0.9932	21.58
86.5	209,892	1,482	0.0071	0.9929	21.44
87.5	208,144	2,490	0.0120	0.9880	21.28
88.5	205,654	6,338	0.0308	0.9692	21.03
89.5	212,556	13,428	0.0632	0.9368	20.38
90.5	184,877	2,062	0.0112	0.9888	19.09
91.5	181,323	6,139	0.0339	0.9661	18.88
92.5	169,896	15,501	0.0912	0.9088	18.24
93.5	153,908	4,138	0.0269	0.9731	16.58
94.5	147,811	1,550	0.0105	0.9895	16.13
95.5	134,924	1,463	0.0108	0.9892	15.96
96.5	127,219	1,704	0.0134	0.9866	15.79
97.5	123,868	2,879	0.0232	0.9768	15.58
98.5	118,757	1,193	0.0100	0.9900	15.22
99.5	115,465	1,071	0.0093	0.9907	15.06
100.5	105,813	3,462	0.0327	0.9673	14.92
101.5	94,312	1,234	0.0131	0.9869	14.43
102.5	92,897	407	0.0044	0.9956	14.25
103.5	90,500	415	0.0046	0.9954	14.18
104.5	19,820	119	0.0060	0.9940	14.12
105.5	14,136	4,523	0.3200	0.6800	14.03
106.5	9,196	988	0.1074	0.8926	9.54
107.5	8,208	2,969	0.3617	0.6383	8.52
108.5	5,239	307	0.0585	0.9415	5.44
109.5	4,933	28	0.0057	0.9943	5.12
110.5	4,307	15	0.0035	0.9965	5.09
111.5	4,292	133	0.0309	0.9691	5.07
112.5	4,159	129	0.0310	0.9690	4.92
113.5	4,030	72	0.0179	0.9821	4.76
114.5	3,958	12	0.0031	0.9969	4.68
115.5	3,946	714	0.1808	0.8192	4.66
116.5	3,232	300	0.0927	0.9073	3.82
117.5	2,933	79	0.0271	0.9729	3.47
118.5	2,853	107	0.0375	0.9625	3.37
119.5					3.25

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AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	1,256,114,003	1,456,691	0.0012	0.9988	100.00
0.5	1,222,112,002	8,295,784	0.0068	0.9932	99.88
1.5	1,201,099,795	8,976,112	0.0075	0.9925	99.21
2.5	1,239,619,829	8,169,559	0.0066	0.9934	98.46
3.5	1,222,451,846	11,231,766	0.0092	0.9908	97.82
4.5	1,180,308,562	15,902,963	0.0135	0.9865	96.92
5.5	1,139,268,021	10,995,685	0.0097	0.9903	95.61
6.5	1,058,185,433	10,700,847	0.0101	0.9899	94.69
7.5	1,012,992,126	9,097,886	0.0090	0.9910	93.73
8.5	985,270,311	8,682,363	0.0088	0.9912	92.89
9.5	966,300,296	8,049,930	0.0083	0.9917	92.07
10.5	955,765,116	8,131,027	0.0085	0.9915	91.30
11.5	914,674,540	9,274,339	0.0101	0.9899	90.53
12.5	860,837,204	7,829,708	0.0091	0.9909	89.61
13.5	795,182,616	5,473,321	0.0069	0.9931	88.79
14.5	747,769,854	4,959,806	0.0066	0.9934	88.18
15.5	691,539,556	4,156,832	0.0060	0.9940	87.60
16.5	655,890,285	4,813,500	0.0073	0.9927	87.07
17.5	625,722,024	3,614,292	0.0058	0.9942	86.43
18.5	580,083,220	4,301,157	0.0074	0.9926	85.93
19.5	557,869,999	4,088,357	0.0073	0.9927	85.30
20.5	545,376,059	3,598,731	0.0066	0.9934	84.67
21.5	510,459,141	3,537,312	0.0069	0.9931	84.11
22.5	430,018,339	2,930,200	0.0068	0.9932	83.53
23.5	402,165,195	3,228,429	0.0080	0.9920	82.96
24.5	384,860,252	3,387,661	0.0088	0.9912	82.29
25.5	363,736,360	2,998,629	0.0082	0.9918	81.57
26.5	348,681,327	3,032,266	0.0087	0.9913	80.90
27.5	330,211,371	3,328,774	0.0101	0.9899	80.19
28.5	299,394,502	3,014,480	0.0101	0.9899	79.39
29.5	257,652,680	2,948,748	0.0114	0.9886	78.59
30.5	220,704,589	4,729,552	0.0214	0.9786	77.69
31.5	198,092,221	2,464,766	0.0124	0.9876	76.02
32.5	180,701,807	2,620,948	0.0145	0.9855	75.08
33.5	166,167,147	2,591,547	0.0156	0.9844	73.99
34.5	151,213,806	2,365,727	0.0156	0.9844	72.83
35.5	153,209,053	2,564,146	0.0167	0.9833	71.69
36.5	136,770,275	2,344,366	0.0171	0.9829	70.49
37.5	120,796,314	2,571,464	0.0213	0.9787	69.29
38.5	108,670,208	1,740,861	0.0160	0.9840	67.81

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AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	98,699,353	1,677,344	0.0170	0.9830	66.72
40.5	89,990,374	1,694,241	0.0188	0.9812	65.59
41.5	80,798,467	1,957,311	0.0242	0.9758	64.36
42.5	71,305,927	1,326,784	0.0186	0.9814	62.80
43.5	63,686,599	1,257,877	0.0198	0.9802	61.63
44.5	54,942,275	666,731	0.0121	0.9879	60.41
45.5	46,902,262	513,490	0.0109	0.9891	59.68
46.5	39,893,639	418,908	0.0105	0.9895	59.02
47.5	34,235,567	356,379	0.0104	0.9896	58.40
48.5	28,775,432	468,639	0.0163	0.9837	57.80
49.5	25,969,491	265,346	0.0102	0.9898	56.86
50.5	21,617,529	228,291	0.0106	0.9894	56.27
51.5	19,054,758	181,898	0.0095	0.9905	55.68
52.5	17,170,347	209,019	0.0122	0.9878	55.15
53.5	15,628,908	133,834	0.0086	0.9914	54.48
54.5	14,402,827	169,308	0.0118	0.9882	54.01
55.5	6,060,516	154,151	0.0254	0.9746	53.38
56.5	5,960,864	61,228	0.0103	0.9897	52.02
57.5	5,374,210	70,481	0.0131	0.9869	51.48
58.5	4,914,895	44,348	0.0090	0.9910	50.81
59.5	4,668,770	67,605	0.0145	0.9855	50.35
60.5	4,415,704	54,034	0.0122	0.9878	49.62
61.5	4,069,616	47,455	0.0117	0.9883	49.01
62.5	3,670,343	135,109	0.0368	0.9632	48.44
63.5	3,289,868	83,789	0.0255	0.9745	46.66
64.5	3,007,178	56,145	0.0187	0.9813	45.47
65.5	868,952	21,419	0.0246	0.9754	44.62
66.5	778,000	21,266	0.0273	0.9727	43.52
67.5	714,330	14,832	0.0208	0.9792	42.33
68.5	668,740	19,426	0.0290	0.9710	41.45
69.5	589,381	13,645	0.0232	0.9768	40.25
70.5	567,176	9,825	0.0173	0.9827	39.32
71.5	547,550	3,564	0.0065	0.9935	38.64
72.5	497,171	4,916	0.0099	0.9901	38.38
73.5	478,360	8,107	0.0169	0.9831	38.01
74.5	462,766	5,093	0.0110	0.9890	37.36
75.5	476,342	6,865	0.0144	0.9856	36.95
76.5	317,754	1,130	0.0036	0.9964	36.42
77.5	315,002	1,123	0.0036	0.9964	36.29
78.5	318,158	1,113	0.0035	0.9965	36.16

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	303,455	163,364	0.5383	0.4617	36.03
80.5	104,693	7,498	0.0716	0.9284	16.63
81.5	114,051	1,219	0.0107	0.9893	15.44
82.5	110,757	1,622	0.0146	0.9854	15.28
83.5	121,794	6,154	0.0505	0.9495	15.05
84.5	207,364	5,491	0.0265	0.9735	14.29
85.5	207,634	1,439	0.0069	0.9931	13.92
86.5	206,941	1,482	0.0072	0.9928	13.82
87.5	207,396	2,490	0.0120	0.9880	13.72
88.5	204,905	6,338	0.0309	0.9691	13.55
89.5	198,568	13,428	0.0676	0.9324	13.14
90.5	171,637	2,062	0.0120	0.9880	12.25
91.5	168,083	6,139	0.0365	0.9635	12.10
92.5	156,656	15,501	0.0990	0.9010	11.66
93.5	140,668	4,138	0.0294	0.9706	10.50
94.5	134,571	1,550	0.0115	0.9885	10.20
95.5	121,684	1,463	0.0120	0.9880	10.08
96.5	113,980	1,704	0.0150	0.9850	9.96
97.5	110,628	2,879	0.0260	0.9740	9.81
98.5	105,517	1,193	0.0113	0.9887	9.55
99.5	115,465	1,071	0.0093	0.9907	9.44
100.5	105,813	3,462	0.0327	0.9673	9.36
101.5	94,312	1,234	0.0131	0.9869	9.05
102.5	92,897	407	0.0044	0.9956	8.93
103.5	90,500	415	0.0046	0.9954	8.89
104.5	19,820	119	0.0060	0.9940	8.85
105.5	14,136	4,523	0.3200	0.6800	8.80
106.5	9,196	988	0.1074	0.8926	5.98
107.5	8,208	2,969	0.3617	0.6383	5.34
108.5	5,239	307	0.0585	0.9415	3.41
109.5	4,933	28	0.0057	0.9943	3.21
110.5	4,307	15	0.0035	0.9965	3.19
111.5	4,292	133	0.0309	0.9691	3.18
112.5	4,159	129	0.0310	0.9690	3.08
113.5	4,030	72	0.0179	0.9821	2.99
114.5	3,958	12	0.0031	0.9969	2.93
115.5	3,946	714	0.1808	0.8192	2.92
116.5	3,232	300	0.0927	0.9073	2.40
117.5	2,933	79	0.0271	0.9729	2.17
118.5	2,853	107	0.0375	0.9625	2.11
119.5					2.04

NSTAR ELECTRIC COMPANY
ACCOUNT 368.00 LINE TRANSFORMERS
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1902-2020 PLACEMENTS
IOWA 37-R1
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	907,103,051	893,442	0.0010	0.9990	100.00
0.5	868,552,102	3,382,472	0.0039	0.9961	99.90
1.5	837,953,580	2,965,570	0.0035	0.9965	99.51
2.5	807,491,851	5,126,333	0.0063	0.9937	99.16
3.5	793,703,293	24,221,101	0.0305	0.9695	98.53
4.5	719,343,014	4,029,364	0.0056	0.9944	95.52
5.5	703,222,994	3,246,464	0.0046	0.9954	94.99
6.5	679,575,983	4,044,970	0.0060	0.9940	94.55
7.5	653,510,635	4,712,042	0.0072	0.9928	93.99
8.5	633,154,789	3,968,715	0.0063	0.9937	93.31
9.5	587,711,459	3,945,824	0.0067	0.9933	92.72
10.5	554,559,081	3,789,040	0.0068	0.9932	92.10
11.5	511,775,789	6,985,170	0.0136	0.9864	91.47
12.5	485,800,601	6,640,936	0.0137	0.9863	90.22
13.5	465,123,425	4,141,057	0.0089	0.9911	88.99
14.5	438,238,827	4,143,955	0.0095	0.9905	88.20
15.5	411,613,898	3,333,326	0.0081	0.9919	87.36
16.5	390,487,145	5,374,078	0.0138	0.9862	86.66
17.5	360,108,693	3,402,818	0.0094	0.9906	85.46
18.5	316,629,961	2,439,901	0.0077	0.9923	84.66
19.5	297,478,404	3,855,072	0.0130	0.9870	84.00
20.5	281,165,451	3,474,283	0.0124	0.9876	82.92
21.5	268,322,379	3,133,516	0.0117	0.9883	81.89
22.5	207,622,414	3,215,862	0.0155	0.9845	80.94
23.5	171,494,498	2,233,599	0.0130	0.9870	79.68
24.5	161,846,857	2,431,199	0.0150	0.9850	78.64
25.5	153,650,551	2,409,749	0.0157	0.9843	77.46
26.5	143,077,885	2,262,572	0.0158	0.9842	76.25
27.5	136,809,258	2,669,754	0.0195	0.9805	75.04
28.5	125,642,517	2,141,159	0.0170	0.9830	73.58
29.5	115,695,299	10,001,781	0.0864	0.9136	72.32
30.5	96,571,609	7,543,661	0.0781	0.9219	66.07
31.5	85,180,598	3,054,987	0.0359	0.9641	60.91
32.5	74,173,759	2,766,801	0.0373	0.9627	58.73
33.5	63,673,920	2,503,595	0.0393	0.9607	56.54
34.5	56,200,420	2,142,859	0.0381	0.9619	54.31
35.5	50,726,675	1,950,677	0.0385	0.9615	52.24
36.5	44,155,074	1,931,442	0.0437	0.9563	50.23
37.5	38,188,730	1,739,857	0.0456	0.9544	48.04
38.5	34,881,202	1,648,701	0.0473	0.9527	45.85

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	32,323,207	1,556,734	0.0482	0.9518	43.68
40.5	30,022,708	1,545,476	0.0515	0.9485	41.58
41.5	27,587,498	1,696,710	0.0615	0.9385	39.44
42.5	24,906,168	1,696,534	0.0681	0.9319	37.01
43.5	22,036,327	1,377,838	0.0625	0.9375	34.49
44.5	19,806,350	1,540,666	0.0778	0.9222	32.33
45.5	16,435,790	924,747	0.0563	0.9437	29.82
46.5	14,525,061	775,305	0.0534	0.9466	28.14
47.5	13,115,462	531,178	0.0405	0.9595	26.64
48.5	11,761,809	592,661	0.0504	0.9496	25.56
49.5	10,425,344	533,026	0.0511	0.9489	24.27
50.5	9,343,861	432,965	0.0463	0.9537	23.03
51.5	8,281,360	416,773	0.0503	0.9497	21.96
52.5	7,210,172	267,580	0.0371	0.9629	20.86
53.5	6,533,724	318,365	0.0487	0.9513	20.08
54.5	5,508,543	283,344	0.0514	0.9486	19.11
55.5	4,683,158	188,497	0.0403	0.9597	18.12
56.5	4,299,920	224,786	0.0523	0.9477	17.39
57.5	3,868,796	265,665	0.0687	0.9313	16.48
58.5	3,375,952	131,341	0.0389	0.9611	15.35
59.5	3,082,203	193,004	0.0626	0.9374	14.75
60.5	2,631,137	111,638	0.0424	0.9576	13.83
61.5	2,322,382	112,317	0.0484	0.9516	13.24
62.5	2,025,511	106,190	0.0524	0.9476	12.60
63.5	1,654,488	53,191	0.0321	0.9679	11.94
64.5	1,507,791	36,861	0.0244	0.9756	11.56
65.5	1,194,348	51,965	0.0435	0.9565	11.28
66.5	1,048,482	49,779	0.0475	0.9525	10.79
67.5	872,698	51,173	0.0586	0.9414	10.27
68.5	711,568	36,599	0.0514	0.9486	9.67
69.5	620,776	22,871	0.0368	0.9632	9.17
70.5	530,761	17,895	0.0337	0.9663	8.84
71.5	492,693	21,008	0.0426	0.9574	8.54
72.5	420,083	83,996	0.2000	0.8000	8.17
73.5	301,845	6,696	0.0222	0.9778	6.54
74.5	293,555	12,959	0.0441	0.9559	6.39
75.5	280,286	30,046	0.1072	0.8928	6.11
76.5	250,203	36,971	0.1478	0.8522	5.46
77.5	213,077	35,074	0.1646	0.8354	4.65
78.5	102,496	10,443	0.1019	0.8981	3.89

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	89,623	6,228	0.0695	0.9305	3.49
80.5	83,396	3,603	0.0432	0.9568	3.25
81.5	79,793	6,813	0.0854	0.9146	3.11
82.5	72,980	2,812	0.0385	0.9615	2.84
83.5	83,481	6,893	0.0826	0.9174	2.73
84.5	76,588	1,530	0.0200	0.9800	2.51
85.5	75,058	16,976	0.2262	0.7738	2.46
86.5	58,082	1,805	0.0311	0.9689	1.90
87.5	56,278	43	0.0008	0.9992	1.84
88.5	56,235	1	0.0000	1.0000	1.84
89.5	56,234		0.0000	1.0000	1.84
90.5	29,747	8,841	0.2972	0.7028	1.84
91.5	20,906	17,568	0.8403	0.1597	1.29
92.5	3,339		0.0000	1.0000	0.21
93.5	3,409	250	0.0732	0.9268	0.21
94.5	1,784		0.0000	1.0000	0.19
95.5	1,784	70	0.0392	0.9608	0.19
96.5	1,714		0.0000	1.0000	0.18
97.5	1,714	8	0.0047	0.9953	0.18
98.5	1,706		0.0000	1.0000	0.18
99.5	1,706		0.0000	1.0000	0.18
100.5	1,706	569	0.3333	0.6667	0.18
101.5	1,137	569	0.5000	0.5000	0.12
102.5	569	569	1.0000		0.06
103.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1902-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	524,756,041	491,582	0.0009	0.9991	100.00
0.5	503,200,846	1,595,602	0.0032	0.9968	99.91
1.5	500,288,513	2,482,466	0.0050	0.9950	99.59
2.5	570,076,892	4,870,574	0.0085	0.9915	99.10
3.5	578,512,866	24,082,407	0.0416	0.9584	98.25
4.5	513,703,660	3,877,832	0.0075	0.9925	94.16
5.5	512,117,960	2,897,156	0.0057	0.9943	93.45
6.5	501,752,303	3,818,368	0.0076	0.9924	92.92
7.5	484,160,446	4,451,074	0.0092	0.9908	92.21
8.5	475,438,988	3,728,878	0.0078	0.9922	91.36
9.5	439,916,598	3,544,401	0.0081	0.9919	90.65
10.5	420,432,675	3,571,574	0.0085	0.9915	89.92
11.5	387,725,539	6,617,675	0.0171	0.9829	89.15
12.5	376,842,510	6,254,957	0.0166	0.9834	87.63
13.5	371,372,800	3,698,601	0.0100	0.9900	86.18
14.5	356,569,870	3,802,287	0.0107	0.9893	85.32
15.5	338,755,050	3,151,570	0.0093	0.9907	84.41
16.5	326,594,239	5,174,736	0.0158	0.9842	83.62
17.5	303,112,199	3,206,576	0.0106	0.9894	82.30
18.5	264,274,141	2,312,064	0.0087	0.9913	81.43
19.5	248,565,442	3,728,912	0.0150	0.9850	80.72
20.5	234,810,272	3,333,299	0.0142	0.9858	79.51
21.5	224,640,035	3,016,334	0.0134	0.9866	78.38
22.5	166,504,285	3,099,205	0.0186	0.9814	77.32
23.5	133,006,971	2,150,693	0.0162	0.9838	75.88
24.5	125,881,405	2,362,413	0.0188	0.9812	74.66
25.5	121,739,943	2,308,153	0.0190	0.9810	73.26
26.5	114,522,725	2,168,544	0.0189	0.9811	71.87
27.5	110,947,345	2,533,945	0.0228	0.9772	70.51
28.5	102,359,919	2,076,350	0.0203	0.9797	68.90
29.5	95,009,933	9,867,622	0.1039	0.8961	67.50
30.5	78,597,663	7,446,973	0.0947	0.9053	60.49
31.5	69,373,147	3,010,127	0.0434	0.9566	54.76
32.5	60,519,701	2,694,630	0.0445	0.9555	52.38
33.5	51,534,409	2,458,528	0.0477	0.9523	50.05
34.5	45,789,012	2,083,344	0.0455	0.9545	47.66
35.5	41,695,809	1,864,834	0.0447	0.9553	45.49
36.5	35,724,810	1,896,045	0.0531	0.9469	43.46
37.5	30,440,933	1,707,083	0.0561	0.9439	41.15
38.5	27,852,046	1,604,278	0.0576	0.9424	38.84

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1902-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	26,031,259	1,500,585	0.0576	0.9424	36.61
40.5	24,588,716	1,511,821	0.0615	0.9385	34.50
41.5	22,851,016	1,649,602	0.0722	0.9278	32.38
42.5	20,841,051	1,637,793	0.0786	0.9214	30.04
43.5	18,761,016	1,341,250	0.0715	0.9285	27.68
44.5	16,966,211	1,524,772	0.0899	0.9101	25.70
45.5	14,075,752	909,687	0.0646	0.9354	23.39
46.5	12,433,574	753,662	0.0606	0.9394	21.88
47.5	11,340,913	523,022	0.0461	0.9539	20.55
48.5	10,319,871	585,408	0.0567	0.9433	19.60
49.5	9,131,068	530,053	0.0580	0.9420	18.49
50.5	8,433,342	429,670	0.0509	0.9491	17.42
51.5	7,511,589	412,297	0.0549	0.9451	16.53
52.5	6,604,301	264,973	0.0401	0.9599	15.62
53.5	6,057,313	317,577	0.0524	0.9476	15.00
54.5	5,052,190	283,280	0.0561	0.9439	14.21
55.5	4,238,769	186,684	0.0440	0.9560	13.41
56.5	3,863,166	221,809	0.0574	0.9426	12.82
57.5	3,439,487	260,529	0.0757	0.9243	12.09
58.5	3,215,611	131,172	0.0408	0.9592	11.17
59.5	2,931,875	193,004	0.0658	0.9342	10.72
60.5	2,486,980	111,638	0.0449	0.9551	10.01
61.5	2,185,282	112,036	0.0513	0.9487	9.56
62.5	1,894,804	105,910	0.0559	0.9441	9.07
63.5	1,530,730	53,191	0.0347	0.9653	8.56
64.5	1,385,883	36,861	0.0266	0.9734	8.27
65.5	1,072,900	51,965	0.0484	0.9516	8.05
66.5	929,733	49,443	0.0532	0.9468	7.66
67.5	757,870	51,173	0.0675	0.9325	7.25
68.5	599,827	36,591	0.0610	0.9390	6.76
69.5	518,428	22,871	0.0441	0.9559	6.35
70.5	467,556	17,895	0.0383	0.9617	6.07
71.5	433,954	21,008	0.0484	0.9516	5.84
72.5	369,664	83,996	0.2272	0.7728	5.55
73.5	254,274	6,664	0.0262	0.9738	4.29
74.5	277,162	12,959	0.0468	0.9532	4.18
75.5	266,287	30,046	0.1128	0.8872	3.98
76.5	240,610	36,971	0.1537	0.8463	3.53
77.5	206,648	35,066	0.1697	0.8303	2.99
78.5	98,072	10,443	0.1065	0.8935	2.48

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1902-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	86,935	6,228	0.0716	0.9284	2.22
80.5	80,708	3,603	0.0446	0.9554	2.06
81.5	77,105	6,813	0.0884	0.9116	1.97
82.5	70,960	2,812	0.0396	0.9604	1.79
83.5	81,461	6,893	0.0846	0.9154	1.72
84.5	74,568	1,530	0.0205	0.9795	1.58
85.5	73,038	16,976	0.2324	0.7676	1.54
86.5	56,119	1,805	0.0322	0.9678	1.19
87.5	54,314	43	0.0008	0.9992	1.15
88.5	54,272	1	0.0000	1.0000	1.15
89.5	54,520		0.0000	1.0000	1.15
90.5	28,033	8,841	0.3154	0.6846	1.15
91.5	19,192	17,568	0.9154	0.0846	0.79
92.5	1,624		0.0000	1.0000	0.07
93.5	1,694	250	0.1472	0.8528	0.07
94.5	70		0.0000	1.0000	0.06
95.5	70	70	1.0000		0.06
96.5	569		0.0000	1.0000	
97.5	1,137		0.0000		
98.5	1,706		0.0000		
99.5	1,706		0.0000		
100.5	1,706	569	0.3333		
101.5	1,137	569	0.5000		
102.5	569	569	1.0000		
103.5					

NSTAR ELECTRIC COMPANY
ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1901-2020 EXPERIENCE
1901-2020 PLACEMENTS
1991-2020 EXPERIENCE
1901-2020 PLACEMENTS
2001-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 65-R1
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	505,752,920	3,599,458	0.0071	0.9929	100.00
0.5	476,504,011	11,817,889	0.0248	0.9752	99.29
1.5	442,112,621	5,549,013	0.0126	0.9874	96.83
2.5	416,934,521	2,649,844	0.0064	0.9936	95.61
3.5	400,074,218	1,433,455	0.0036	0.9964	95.00
4.5	388,695,150	1,494,600	0.0038	0.9962	94.66
5.5	378,827,219	1,077,350	0.0028	0.9972	94.30
6.5	365,273,914	1,219,065	0.0033	0.9967	94.03
7.5	352,303,959	1,167,640	0.0033	0.9967	93.72
8.5	339,452,746	1,196,211	0.0035	0.9965	93.41
9.5	323,388,062	944,206	0.0029	0.9971	93.08
10.5	311,083,843	1,203,549	0.0039	0.9961	92.80
11.5	297,769,646	1,050,740	0.0035	0.9965	92.45
12.5	286,220,606	834,124	0.0029	0.9971	92.12
13.5	275,364,769	833,989	0.0030	0.9970	91.85
14.5	263,002,696	652,967	0.0025	0.9975	91.57
15.5	253,382,356	993,936	0.0039	0.9961	91.35
16.5	242,003,971	1,216,650	0.0050	0.9950	90.99
17.5	228,895,201	876,415	0.0038	0.9962	90.53
18.5	214,137,949	862,977	0.0040	0.9960	90.18
19.5	205,852,064	819,344	0.0040	0.9960	89.82
20.5	201,781,339	933,047	0.0046	0.9954	89.46
21.5	186,068,837	795,175	0.0043	0.9957	89.05
22.5	178,522,033	799,129	0.0045	0.9955	88.67
23.5	171,370,546	698,672	0.0041	0.9959	88.27
24.5	164,759,929	851,151	0.0052	0.9948	87.91
25.5	156,001,702	975,472	0.0063	0.9937	87.46
26.5	147,993,395	810,914	0.0055	0.9945	86.91
27.5	140,369,974	653,261	0.0047	0.9953	86.43
28.5	132,725,747	743,173	0.0056	0.9944	86.03
29.5	119,512,336	761,079	0.0064	0.9936	85.55
30.5	108,479,803	741,693	0.0068	0.9932	85.01
31.5	100,592,736	748,616	0.0074	0.9926	84.42
32.5	93,613,021	599,515	0.0064	0.9936	83.80
33.5	86,375,681	586,436	0.0068	0.9932	83.26
34.5	79,252,609	541,138	0.0068	0.9932	82.69
35.5	72,556,587	531,327	0.0073	0.9927	82.13
36.5	65,989,853	577,671	0.0088	0.9912	81.53
37.5	60,593,031	563,594	0.0093	0.9907	80.81
38.5	55,577,091	420,836	0.0076	0.9924	80.06

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	51,346,562	397,279	0.0077	0.9923	79.46
40.5	47,878,558	360,610	0.0075	0.9925	78.84
41.5	44,677,077	326,832	0.0073	0.9927	78.25
42.5	41,639,374	335,001	0.0080	0.9920	77.68
43.5	38,291,619	293,261	0.0077	0.9923	77.05
44.5	35,007,496	288,597	0.0082	0.9918	76.46
45.5	31,909,584	296,532	0.0093	0.9907	75.83
46.5	29,098,606	290,345	0.0100	0.9900	75.13
47.5	25,762,096	293,284	0.0114	0.9886	74.38
48.5	23,053,977	249,500	0.0108	0.9892	73.53
49.5	21,057,886	1,646,300	0.0782	0.9218	72.73
50.5	17,430,644	194,050	0.0111	0.9889	67.05
51.5	15,452,628	304,108	0.0197	0.9803	66.30
52.5	13,677,867	164,272	0.0120	0.9880	65.00
53.5	12,112,290	361,444	0.0298	0.9702	64.22
54.5	10,621,978	109,818	0.0103	0.9897	62.30
55.5	5,605,270	106,922	0.0191	0.9809	61.65
56.5	5,032,465	89,770	0.0178	0.9822	60.48
57.5	4,548,134	68,592	0.0151	0.9849	59.40
58.5	4,135,160	41,645	0.0101	0.9899	58.50
59.5	3,744,894	44,683	0.0119	0.9881	57.91
60.5	3,304,000	41,913	0.0127	0.9873	57.22
61.5	2,926,741	28,635	0.0098	0.9902	56.50
62.5	2,573,488	40,946	0.0159	0.9841	55.95
63.5	2,244,083	29,684	0.0132	0.9868	55.06
64.5	1,899,260	21,799	0.0115	0.9885	54.33
65.5	545,386	7,321	0.0134	0.9866	53.70
66.5	475,790	5,651	0.0119	0.9881	52.98
67.5	417,620	3,646	0.0087	0.9913	52.35
68.5	374,512	3,493	0.0093	0.9907	51.90
69.5	338,467	6,497	0.0192	0.9808	51.41
70.5	296,428	1,876	0.0063	0.9937	50.42
71.5	269,743	1,368	0.0051	0.9949	50.11
72.5	253,617	1,420	0.0056	0.9944	49.85
73.5	242,274	1,314	0.0054	0.9946	49.57
74.5	235,017	1,941	0.0083	0.9917	49.30
75.5	225,535	1,551	0.0069	0.9931	48.90
76.5	106,629	2,423	0.0227	0.9773	48.56
77.5	99,961	3,169	0.0317	0.9683	47.46
78.5	90,525	1,750	0.0193	0.9807	45.95

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	87,378	3,241	0.0371	0.9629	45.06
80.5	82,251	2,419	0.0294	0.9706	43.39
81.5	77,888	3,130	0.0402	0.9598	42.12
82.5	73,181	1,163	0.0159	0.9841	40.42
83.5	69,883	996	0.0143	0.9857	39.78
84.5	67,678	1,318	0.0195	0.9805	39.21
85.5	65,471	748	0.0114	0.9886	38.45
86.5	64,113	994	0.0155	0.9845	38.01
87.5	62,724	1,063	0.0169	0.9831	37.42
88.5	61,115	556	0.0091	0.9909	36.79
89.5	59,324	959	0.0162	0.9838	36.45
90.5	54,993	823	0.0150	0.9850	35.86
91.5	49,881	764	0.0153	0.9847	35.33
92.5	45,050	636	0.0141	0.9859	34.79
93.5	34,717	986	0.0284	0.9716	34.29
94.5	31,401	575	0.0183	0.9817	33.32
95.5	27,129	367	0.0135	0.9865	32.71
96.5	24,004	262	0.0109	0.9891	32.27
97.5	20,526	284	0.0138	0.9862	31.92
98.5	18,290	193	0.0106	0.9894	31.48
99.5	17,405	173	0.0099	0.9901	31.14
100.5	14,827	645	0.0435	0.9565	30.83
101.5	14,083	63	0.0044	0.9956	29.49
102.5	14,004	260	0.0185	0.9815	29.36
103.5	13,667	154	0.0112	0.9888	28.82
104.5	12,911		0.0000	1.0000	28.49
105.5	12,192		0.0000	1.0000	28.49
106.5	11,450		0.0000	1.0000	28.49
107.5	7,840	86	0.0109	0.9891	28.49
108.5	7,498	172	0.0229	0.9771	28.18
109.5	7,326		0.0000	1.0000	27.53
110.5	7,326		0.0000	1.0000	27.53
111.5	7,326	94	0.0128	0.9872	27.53
112.5	7,232	1	0.0001	0.9999	27.18
113.5	7,231		0.0000	1.0000	27.18
114.5	7,231		0.0000	1.0000	27.18
115.5	7,231		0.0000	1.0000	27.18
116.5	7,145		0.0000	1.0000	27.18
117.5	7,145		0.0000	1.0000	27.18
118.5	7,078		0.0000	1.0000	27.18
119.5					27.18

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	367,530,957	3,595,713	0.0098	0.9902	100.00
0.5	349,508,342	11,333,131	0.0324	0.9676	99.02
1.5	323,673,067	5,128,257	0.0158	0.9842	95.81
2.5	305,756,376	2,246,222	0.0073	0.9927	94.29
3.5	296,540,764	1,073,766	0.0036	0.9964	93.60
4.5	292,638,743	1,082,814	0.0037	0.9963	93.26
5.5	289,902,549	706,441	0.0024	0.9976	92.92
6.5	283,308,645	629,087	0.0022	0.9978	92.69
7.5	276,271,067	736,952	0.0027	0.9973	92.48
8.5	268,802,198	739,639	0.0028	0.9972	92.24
9.5	257,522,443	482,561	0.0019	0.9981	91.98
10.5	249,153,685	570,029	0.0023	0.9977	91.81
11.5	239,767,430	571,040	0.0024	0.9976	91.60
12.5	231,899,258	497,460	0.0021	0.9979	91.38
13.5	224,948,321	545,695	0.0024	0.9976	91.19
14.5	216,390,374	383,939	0.0018	0.9982	90.97
15.5	210,308,750	511,583	0.0024	0.9976	90.80
16.5	202,381,756	473,277	0.0023	0.9977	90.58
17.5	193,839,232	526,760	0.0027	0.9973	90.37
18.5	182,522,532	570,134	0.0031	0.9969	90.13
19.5	176,847,006	535,260	0.0030	0.9970	89.84
20.5	175,962,111	635,973	0.0036	0.9964	89.57
21.5	163,129,472	402,781	0.0025	0.9975	89.25
22.5	158,056,912	520,883	0.0033	0.9967	89.03
23.5	153,076,776	463,058	0.0030	0.9970	88.73
24.5	148,196,800	525,073	0.0035	0.9965	88.47
25.5	148,439,900	975,472	0.0066	0.9934	88.15
26.5	141,038,974	810,914	0.0057	0.9943	87.57
27.5	133,948,882	653,261	0.0049	0.9951	87.07
28.5	126,783,504	743,173	0.0059	0.9941	86.65
29.5	114,067,751	761,079	0.0067	0.9933	86.14
30.5	103,574,225	741,693	0.0072	0.9928	85.56
31.5	96,149,769	748,616	0.0078	0.9922	84.95
32.5	89,638,065	599,515	0.0067	0.9933	84.29
33.5	82,805,346	586,436	0.0071	0.9929	83.73
34.5	76,126,528	541,138	0.0071	0.9929	83.13
35.5	71,890,473	531,327	0.0074	0.9926	82.54
36.5	65,414,379	577,671	0.0088	0.9912	81.93
37.5	60,094,141	563,594	0.0094	0.9906	81.21
38.5	55,136,111	420,836	0.0076	0.9924	80.45

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	50,953,624	397,279	0.0078	0.9922	79.83
40.5	47,538,965	360,610	0.0076	0.9924	79.21
41.5	44,376,381	326,832	0.0074	0.9926	78.61
42.5	41,358,988	335,001	0.0081	0.9919	78.03
43.5	38,024,924	293,261	0.0077	0.9923	77.40
44.5	34,749,386	288,597	0.0083	0.9917	76.80
45.5	31,662,253	296,532	0.0094	0.9906	76.16
46.5	28,971,929	290,345	0.0100	0.9900	75.45
47.5	25,644,961	293,284	0.0114	0.9886	74.69
48.5	22,948,973	249,500	0.0109	0.9891	73.84
49.5	20,955,020	1,646,300	0.0786	0.9214	73.04
50.5	17,330,925	194,050	0.0112	0.9888	67.30
51.5	15,355,988	304,108	0.0198	0.9802	66.54
52.5	13,583,817	164,272	0.0121	0.9879	65.23
53.5	12,021,677	361,444	0.0301	0.9699	64.44
54.5	10,533,542	109,818	0.0104	0.9896	62.50
55.5	5,518,671	106,922	0.0194	0.9806	61.85
56.5	4,946,629	89,770	0.0181	0.9819	60.65
57.5	4,463,090	68,592	0.0154	0.9846	59.55
58.5	4,051,273	41,645	0.0103	0.9897	58.64
59.5	3,663,075	44,683	0.0122	0.9878	58.03
60.5	3,228,814	41,913	0.0130	0.9870	57.32
61.5	2,858,399	28,635	0.0100	0.9900	56.58
62.5	2,512,919	40,946	0.0163	0.9837	56.01
63.5	2,196,993	29,684	0.0135	0.9865	55.10
64.5	1,856,264	21,799	0.0117	0.9883	54.36
65.5	509,942	7,321	0.0144	0.9856	53.72
66.5	444,779	5,651	0.0127	0.9873	52.95
67.5	393,894	3,646	0.0093	0.9907	52.27
68.5	353,582	3,493	0.0099	0.9901	51.79
69.5	318,322	6,497	0.0204	0.9796	51.28
70.5	280,946	1,876	0.0067	0.9933	50.23
71.5	254,427	1,368	0.0054	0.9946	49.90
72.5	238,361	1,420	0.0060	0.9940	49.63
73.5	227,104	1,314	0.0058	0.9942	49.33
74.5	220,449	1,941	0.0088	0.9912	49.05
75.5	211,905	1,551	0.0073	0.9927	48.62
76.5	93,745	2,423	0.0258	0.9742	48.26
77.5	91,603	3,169	0.0346	0.9654	47.01
78.5	82,531	1,750	0.0212	0.9788	45.39

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1991-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	79,727	3,241	0.0406	0.9594	44.42
80.5	74,686	2,419	0.0324	0.9676	42.62
81.5	70,322	3,130	0.0445	0.9555	41.24
82.5	65,616	1,163	0.0177	0.9823	39.40
83.5	62,318	996	0.0160	0.9840	38.70
84.5	60,112	1,318	0.0219	0.9781	38.08
85.5	57,906	748	0.0129	0.9871	37.25
86.5	56,633	994	0.0176	0.9824	36.77
87.5	55,245	1,063	0.0192	0.9808	36.12
88.5	53,883	556	0.0103	0.9897	35.43
89.5	59,324	959	0.0162	0.9838	35.06
90.5	54,993	823	0.0150	0.9850	34.50
91.5	49,881	764	0.0153	0.9847	33.98
92.5	45,050	636	0.0141	0.9859	33.46
93.5	34,717	986	0.0284	0.9716	32.99
94.5	31,401	575	0.0183	0.9817	32.05
95.5	27,129	367	0.0135	0.9865	31.46
96.5	24,004	262	0.0109	0.9891	31.04
97.5	20,526	284	0.0138	0.9862	30.70
98.5	18,290	193	0.0106	0.9894	30.27
99.5	17,405	173	0.0099	0.9901	29.95
100.5	14,827	645	0.0435	0.9565	29.66
101.5	14,083	63	0.0044	0.9956	28.37
102.5	14,004	260	0.0185	0.9815	28.24
103.5	13,667	154	0.0112	0.9888	27.72
104.5	12,911		0.0000	1.0000	27.40
105.5	12,192		0.0000	1.0000	27.40
106.5	11,450		0.0000	1.0000	27.40
107.5	7,840	86	0.0109	0.9891	27.40
108.5	7,498	172	0.0229	0.9771	27.10
109.5	7,326		0.0000	1.0000	26.48
110.5	7,326		0.0000	1.0000	26.48
111.5	7,326	94	0.0128	0.9872	26.48
112.5	7,232	1	0.0001	0.9999	26.15
113.5	7,231		0.0000	1.0000	26.14
114.5	7,231		0.0000	1.0000	26.14
115.5	7,231		0.0000	1.0000	26.14
116.5	7,145		0.0000	1.0000	26.14
117.5	7,145		0.0000	1.0000	26.14
118.5	7,078		0.0000	1.0000	26.14
119.5					26.14

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	285,373,446	3,562,401	0.0125	0.9875	100.00
0.5	259,621,383	11,268,614	0.0434	0.9566	98.75
1.5	240,998,254	5,111,091	0.0212	0.9788	94.47
2.5	223,261,837	2,218,141	0.0099	0.9901	92.46
3.5	213,478,689	1,047,030	0.0049	0.9951	91.54
4.5	208,670,506	1,065,991	0.0051	0.9949	91.09
5.5	207,484,248	685,738	0.0033	0.9967	90.63
6.5	201,968,761	605,215	0.0030	0.9970	90.33
7.5	196,625,377	700,968	0.0036	0.9964	90.06
8.5	191,513,821	512,981	0.0027	0.9973	89.74
9.5	189,258,525	385,701	0.0020	0.9980	89.50
10.5	188,560,991	473,775	0.0025	0.9975	89.32
11.5	183,949,248	542,952	0.0030	0.9970	89.09
12.5	179,698,450	467,862	0.0026	0.9974	88.83
13.5	176,419,104	489,084	0.0028	0.9972	88.60
14.5	171,490,967	341,912	0.0020	0.9980	88.35
15.5	168,842,528	449,249	0.0027	0.9973	88.17
16.5	164,549,729	434,876	0.0026	0.9974	87.94
17.5	157,509,369	434,004	0.0028	0.9972	87.71
18.5	148,093,934	501,430	0.0034	0.9966	87.47
19.5	144,439,627	484,118	0.0034	0.9966	87.17
20.5	144,111,831	587,535	0.0041	0.9959	86.88
21.5	131,989,616	340,658	0.0026	0.9974	86.52
22.5	128,050,593	450,299	0.0035	0.9965	86.30
23.5	124,757,707	354,185	0.0028	0.9972	86.00
24.5	121,965,134	469,438	0.0038	0.9962	85.75
25.5	116,804,504	408,332	0.0035	0.9965	85.42
26.5	112,291,049	503,620	0.0045	0.9955	85.12
27.5	108,706,549	420,658	0.0039	0.9961	84.74
28.5	104,341,179	479,921	0.0046	0.9954	84.41
29.5	93,664,152	450,216	0.0048	0.9952	84.03
30.5	85,709,085	582,891	0.0068	0.9932	83.62
31.5	80,435,673	646,206	0.0080	0.9920	83.05
32.5	75,510,592	561,660	0.0074	0.9926	82.39
33.5	70,130,538	539,871	0.0077	0.9923	81.77
34.5	64,485,611	523,588	0.0081	0.9919	81.14
35.5	64,999,129	525,541	0.0081	0.9919	80.48
36.5	59,039,735	573,596	0.0097	0.9903	79.83
37.5	54,174,959	556,494	0.0103	0.9897	79.06
38.5	49,640,406	416,221	0.0084	0.9916	78.25

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	45,906,529	391,075	0.0085	0.9915	77.59
40.5	42,975,886	352,751	0.0082	0.9918	76.93
41.5	40,239,414	320,947	0.0080	0.9920	76.30
42.5	37,667,246	295,793	0.0079	0.9921	75.69
43.5	34,759,952	267,756	0.0077	0.9923	75.09
44.5	31,940,557	274,340	0.0086	0.9914	74.52
45.5	31,243,471	294,193	0.0094	0.9906	73.88
46.5	28,523,132	289,785	0.0102	0.9898	73.18
47.5	25,263,206	293,070	0.0116	0.9884	72.44
48.5	22,612,997	248,617	0.0110	0.9890	71.60
49.5	20,664,948	1,645,888	0.0796	0.9204	70.81
50.5	17,091,051	193,655	0.0113	0.9887	65.17
51.5	15,151,931	303,935	0.0201	0.9799	64.43
52.5	13,397,481	164,181	0.0123	0.9877	63.14
53.5	11,845,595	361,350	0.0305	0.9695	62.37
54.5	10,363,868	109,773	0.0106	0.9894	60.46
55.5	5,357,939	106,615	0.0199	0.9801	59.82
56.5	4,905,788	89,623	0.0183	0.9817	58.63
57.5	4,430,999	68,581	0.0155	0.9845	57.56
58.5	4,030,156	41,593	0.0103	0.9897	56.67
59.5	3,642,028	44,683	0.0123	0.9877	56.09
60.5	3,204,281	41,913	0.0131	0.9869	55.40
61.5	2,830,102	28,635	0.0101	0.9899	54.67
62.5	2,479,438	40,922	0.0165	0.9835	54.12
63.5	2,153,470	29,648	0.0138	0.9862	53.23
64.5	1,810,825	21,799	0.0120	0.9880	52.49
65.5	458,787	7,321	0.0160	0.9840	51.86
66.5	389,953	5,651	0.0145	0.9855	51.03
67.5	332,576	3,612	0.0109	0.9891	50.29
68.5	290,625	3,343	0.0115	0.9885	49.75
69.5	256,649	6,423	0.0250	0.9750	49.18
70.5	221,242	1,876	0.0085	0.9915	47.94
71.5	201,401	1,330	0.0066	0.9934	47.54
72.5	193,049	1,210	0.0063	0.9937	47.22
73.5	195,185	1,314	0.0067	0.9933	46.93
74.5	192,021	1,830	0.0095	0.9905	46.61
75.5	190,092	1,525	0.0080	0.9920	46.17
76.5	75,618	2,392	0.0316	0.9684	45.80
77.5	76,235	3,169	0.0416	0.9584	44.35
78.5	69,595	1,750	0.0251	0.9749	42.51

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	67,234	3,241	0.0482	0.9518	41.44
80.5	66,770	2,419	0.0362	0.9638	39.44
81.5	62,571	3,130	0.0500	0.9500	38.01
82.5	57,925	1,163	0.0201	0.9799	36.11
83.5	54,712	996	0.0182	0.9818	35.38
84.5	53,110	1,318	0.0248	0.9752	34.74
85.5	51,841	748	0.0144	0.9856	33.88
86.5	51,230	994	0.0194	0.9806	33.39
87.5	54,366	1,063	0.0195	0.9805	32.74
88.5	53,121	556	0.0105	0.9895	32.10
89.5	51,673	959	0.0186	0.9814	31.77
90.5	47,427	823	0.0174	0.9826	31.18
91.5	42,316	764	0.0181	0.9819	30.63
92.5	37,485	636	0.0170	0.9830	30.08
93.5	27,152	986	0.0363	0.9637	29.57
94.5	23,836	575	0.0241	0.9759	28.50
95.5	19,564	367	0.0188	0.9812	27.81
96.5	16,525	262	0.0158	0.9842	27.29
97.5	13,046	284	0.0217	0.9783	26.86
98.5	11,058	193	0.0175	0.9825	26.27
99.5	17,405	173	0.0099	0.9901	25.81
100.5	14,827	645	0.0435	0.9565	25.56
101.5	14,083	63	0.0044	0.9956	24.44
102.5	14,004	260	0.0185	0.9815	24.33
103.5	13,667	154	0.0112	0.9888	23.88
104.5	12,911		0.0000	1.0000	23.62
105.5	12,192		0.0000	1.0000	23.62
106.5	11,450		0.0000	1.0000	23.62
107.5	7,840	86	0.0109	0.9891	23.62
108.5	7,498	172	0.0229	0.9771	23.36
109.5	7,326		0.0000	1.0000	22.82
110.5	7,326		0.0000	1.0000	22.82
111.5	7,326	94	0.0128	0.9872	22.82
112.5	7,232	1	0.0001	0.9999	22.53
113.5	7,231		0.0000	1.0000	22.53
114.5	7,231		0.0000	1.0000	22.53
115.5	7,231		0.0000	1.0000	22.53
116.5	7,145		0.0000	1.0000	22.53
117.5	7,145		0.0000	1.0000	22.53
118.5	7,078		0.0000	1.0000	22.53
119.5					22.53

NSTAR ELECTRIC COMPANY
ACCOUNT 369.30 SERVICES - ELECTRIC VEHICLE CHARGING
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 369.30 SERVICES - ELECTRIC VEHICLE CHARGING

ORIGINAL LIFE TABLE

PLACEMENT BAND 2018-2020 EXPERIENCE BAND 2018-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	20,046,328		0.0000	1.0000	100.00
0.5	10,268,839		0.0000	1.0000	100.00
1.5	1,133,237		0.0000	1.0000	100.00
2.5					100.00

NSTAR ELECTRIC COMPANY
ACCOUNTS 370.10 AND 370.30 METERS (AMR) AND METERING EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNTS 370.10 AND 370.30 METERS (AMR) AND METERING EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	380,416,460	1,061,004	0.0028	0.9972	100.00
0.5	375,335,522	3,973,912	0.0106	0.9894	99.72
1.5	368,256,158	1,437,646	0.0039	0.9961	98.67
2.5	340,840,084	1,608,380	0.0047	0.9953	98.28
3.5	335,140,878	4,207,722	0.0126	0.9874	97.82
4.5	321,368,838	6,017,350	0.0187	0.9813	96.59
5.5	306,022,369	8,217,945	0.0269	0.9731	94.78
6.5	258,216,294	3,187,073	0.0123	0.9877	92.23
7.5	253,394,440	5,068,050	0.0200	0.9800	91.10
8.5	244,662,763	3,380,813	0.0138	0.9862	89.27
9.5	239,998,821	3,114,980	0.0130	0.9870	88.04
10.5	232,275,154	3,527,774	0.0152	0.9848	86.90
11.5	220,898,104	4,641,812	0.0210	0.9790	85.58
12.5	214,343,035	5,150,801	0.0240	0.9760	83.78
13.5	199,143,519	4,169,653	0.0209	0.9791	81.77
14.5	184,843,529	6,505,385	0.0352	0.9648	80.05
15.5	156,138,555	3,699,473	0.0237	0.9763	77.24
16.5	122,718,016	3,900,656	0.0318	0.9682	75.41
17.5	110,398,753	4,079,441	0.0370	0.9630	73.01
18.5	102,550,262	5,998,755	0.0585	0.9415	70.31
19.5	92,400,771	3,633,454	0.0393	0.9607	66.20
20.5	86,777,039	3,971,560	0.0458	0.9542	63.60
21.5	74,694,530	3,428,110	0.0459	0.9541	60.69
22.5	60,958,081	3,280,294	0.0538	0.9462	57.90
23.5	57,330,073	4,940,795	0.0862	0.9138	54.78
24.5	31,535,135	2,198,140	0.0697	0.9303	50.06
25.5	25,301,195	1,643,202	0.0649	0.9351	46.57
26.5	22,567,144	1,963,427	0.0870	0.9130	43.55
27.5	17,137,781	1,505,484	0.0878	0.9122	39.76
28.5	15,667,466	1,471,252	0.0939	0.9061	36.27
29.5	14,188,688	1,056,505	0.0745	0.9255	32.86
30.5	13,409,305	1,281,856	0.0956	0.9044	30.41
31.5	12,423,588	1,281,783	0.1032	0.8968	27.51
32.5	11,283,376	1,072,379	0.0950	0.9050	24.67
33.5	10,167,558	998,954	0.0982	0.9018	22.32
34.5	9,123,424	1,034,315	0.1134	0.8866	20.13
35.5	7,256,162	1,085,031	0.1495	0.8505	17.85
36.5	6,470,547	1,030,925	0.1593	0.8407	15.18
37.5	5,571,434	805,633	0.1446	0.8554	12.76
38.5	5,018,522	864,353	0.1722	0.8278	10.92

NSTAR ELECTRIC COMPANY

ACCOUNTS 370.10 AND 370.30 METERS (AMR) AND METERING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	4,362,290	705,937	0.1618	0.8382	9.04
40.5	3,922,047	686,465	0.1750	0.8250	7.57
41.5	3,553,226	539,254	0.1518	0.8482	6.25
42.5	3,250,393	470,725	0.1448	0.8552	5.30
43.5	2,959,093	478,006	0.1615	0.8385	4.53
44.5	2,681,866	496,630	0.1852	0.8148	3.80
45.5	2,402,338	500,510	0.2083	0.7917	3.10
46.5	2,073,521	374,852	0.1808	0.8192	2.45
47.5	1,871,482	399,733	0.2136	0.7864	2.01
48.5	1,678,152	463,171	0.2760	0.7240	1.58
49.5	1,385,516	398,200	0.2874	0.7126	1.14
50.5	1,143,990	411,471	0.3597	0.6403	0.81
51.5	882,326	297,987	0.3377	0.6623	0.52
52.5	705,146	272,424	0.3863	0.6137	0.35
53.5	546,989	157,316	0.2876	0.7124	0.21
54.5	503,736	141,642	0.2812	0.7188	0.15
55.5	446,669	123,586	0.2767	0.7233	0.11
56.5	394,335	92,699	0.2351	0.7649	0.08
57.5	352,230	65,086	0.1848	0.8152	0.06
58.5	308,192	35,170	0.1141	0.8859	0.05
59.5	259,293	15,413	0.0594	0.9406	0.04
60.5	220,847	8,704	0.0394	0.9606	0.04
61.5	205,986	12,028	0.0584	0.9416	0.04
62.5	182,297	10,852	0.0595	0.9405	0.04
63.5	163,075	11,090	0.0680	0.9320	0.03
64.5	143,045	5,943	0.0415	0.9585	0.03
65.5	134,588	8,956	0.0665	0.9335	0.03
66.5	119,324	3,355	0.0281	0.9719	0.03
67.5	109,081	3,812	0.0349	0.9651	0.03
68.5	102,630	1,749	0.0170	0.9830	0.03
69.5	95,340	1,878	0.0197	0.9803	0.03
70.5	82,782	1,262	0.0152	0.9848	0.03
71.5	72,431	1,794	0.0248	0.9752	0.03
72.5	68,033	1,743	0.0256	0.9744	0.03
73.5	63,014	1,760	0.0279	0.9721	0.02
74.5	60,387	704	0.0117	0.9883	0.02
75.5	59,192	531	0.0090	0.9910	0.02
76.5	58,527	382	0.0065	0.9935	0.02
77.5	57,994	1,090	0.0188	0.9812	0.02
78.5	47,084	252	0.0053	0.9947	0.02

NSTAR ELECTRIC COMPANY

ACCOUNTS 370.10 AND 370.30 METERS (AMR) AND METERING EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	44,130	186	0.0042	0.9958	0.02
80.5	43,933	762	0.0174	0.9826	0.02
81.5	42,882	2,346	0.0547	0.9453	0.02
82.5	40,585	177	0.0044	0.9956	0.02
83.5	40,501	142	0.0035	0.9965	0.02
84.5	40,365	138	0.0034	0.9966	0.02
85.5	40,386	155	0.0038	0.9962	0.02
86.5	40,276	265	0.0066	0.9934	0.02
87.5	39,979	158	0.0039	0.9961	0.02
88.5	39,876	106	0.0027	0.9973	0.02
89.5	39,759	128	0.0032	0.9968	0.02
90.5	39,578	14	0.0004	0.9996	0.02
91.5	39,552	2,231	0.0564	0.9436	0.02
92.5	37,297	118	0.0032	0.9968	0.02
93.5	37,147	2,857	0.0769	0.9231	0.02
94.5	34,288	5,145	0.1500	0.8500	0.02
95.5	29,233	3,688	0.1262	0.8738	0.01
96.5	25,672	1,654	0.0644	0.9356	0.01
97.5	24,212	3,624	0.1497	0.8503	0.01
98.5	20,588	3,688	0.1791	0.8209	0.01
99.5	17,093	1,791	0.1048	0.8952	0.01
100.5	16,727	787	0.0471	0.9529	0.01
101.5	16,328	2,425	0.1485	0.8515	0.01
102.5	14,098	345	0.0245	0.9755	0.01
103.5	14,790	2,427	0.1641	0.8359	0.01
104.5	12,363	2,558	0.2069	0.7931	0.01
105.5	9,805	2,167	0.2210	0.7790	0.00
106.5	7,639	2,578	0.3375	0.6625	0.00
107.5	5,060	2,372	0.4687	0.5313	0.00
108.5	2,689	2,179	0.8103	0.1897	0.00
109.5	510	155	0.3035	0.6965	0.00
110.5	355		0.0000	1.0000	0.00
111.5	198	13	0.0667	0.9333	0.00
112.5	185	53	0.2857	0.7143	0.00
113.5	132	40	0.3000	0.7000	0.00
114.5	92	26	0.2857	0.7143	0.00
115.5	66	26	0.4001	0.5999	0.00
116.5	26	13	0.5000	0.5000	0.00
117.5	13		0.0000	1.0000	0.00
118.5	13		0.0000	1.0000	0.00
119.5					0.00

NSTAR ELECTRIC COMPANY
ACCOUNT 370.20 METERS (NON-AMR)
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE ■ 2017-2020 EXPERIENCE
2017-2020 PLACEMENTS
IOWA 15-S2.5
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
AGE IN YEARS
0
5
10
15
20
25
30
35
40

NSTAR ELECTRIC COMPANY

ACCOUNT 370.20 METERS (NON-AMR)

ORIGINAL LIFE TABLE

PLACEMENT BAND 2017-2020 EXPERIENCE BAND 2017-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	73,832,834		0.0000	1.0000	100.00
0.5	47,727,896		0.0000	1.0000	100.00
1.5	22,711,623		0.0000	1.0000	100.00
2.5	15,338,974		0.0000	1.0000	100.00
3.5					100.00

NSTAR ELECTRIC COMPANY
ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE ■ 1997-2020 EXPERIENCE
1901-2020 PLACEMENTS
IOWA 28-L0
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
70
80
90
100

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	8,656,942	37,793	0.0044	0.9956	100.00
0.5	8,593,506	171,322	0.0199	0.9801	99.56
1.5	8,243,251	190,002	0.0230	0.9770	97.58
2.5	7,887,401	168,725	0.0214	0.9786	95.33
3.5	7,651,119	157,203	0.0205	0.9795	93.29
4.5	7,351,550	182,657	0.0248	0.9752	91.37
5.5	7,152,651	150,757	0.0211	0.9789	89.10
6.5	6,945,145	142,035	0.0205	0.9795	87.23
7.5	6,871,554	144,481	0.0210	0.9790	85.44
8.5	6,532,716	157,450	0.0241	0.9759	83.64
9.5	6,383,011	145,309	0.0228	0.9772	81.63
10.5	6,154,282	170,339	0.0277	0.9723	79.77
11.5	5,999,247	155,298	0.0259	0.9741	77.56
12.5	5,731,602	163,158	0.0285	0.9715	75.55
13.5	5,398,713	117,267	0.0217	0.9783	73.40
14.5	5,014,010	144,632	0.0288	0.9712	71.81
15.5	4,509,898	161,719	0.0359	0.9641	69.74
16.5	4,232,272	121,871	0.0288	0.9712	67.24
17.5	3,847,635	134,711	0.0350	0.9650	65.30
18.5	3,533,930	128,172	0.0363	0.9637	63.02
19.5	3,278,355	116,054	0.0354	0.9646	60.73
20.5	3,084,554	69,206	0.0224	0.9776	58.58
21.5	3,084,205	88,179	0.0286	0.9714	57.27
22.5	3,079,314	71,819	0.0233	0.9767	55.63
23.5	3,426,119	98,478	0.0287	0.9713	54.33
24.5	3,544,604	76,502	0.0216	0.9784	52.77
25.5	3,725,293	86,942	0.0233	0.9767	51.63
26.5	4,280,244	59,273	0.0138	0.9862	50.43
27.5	4,219,660	54,833	0.0130	0.9870	49.73
28.5	4,427,034	41,428	0.0094	0.9906	49.08
29.5	4,342,865	60,788	0.0140	0.9860	48.62
30.5	4,228,091	26,846	0.0063	0.9937	47.94
31.5	4,081,132	44,526	0.0109	0.9891	47.64
32.5	4,048,171	25,823	0.0064	0.9936	47.12
33.5	3,929,977	27,165	0.0069	0.9931	46.82
34.5	3,847,512	22,355	0.0058	0.9942	46.49
35.5	3,751,346	43,849	0.0117	0.9883	46.22
36.5	3,677,864	32,868	0.0089	0.9911	45.68
37.5	3,606,174	28,405	0.0079	0.9921	45.27
38.5	3,536,890	21,551	0.0061	0.9939	44.92

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	3,486,232	22,725	0.0065	0.9935	44.64
40.5	3,370,204	23,442	0.0070	0.9930	44.35
41.5	3,313,698	21,645	0.0065	0.9935	44.04
42.5	3,245,122	35,987	0.0111	0.9889	43.76
43.5	3,179,515	47,880	0.0151	0.9849	43.27
44.5	3,089,560	20,362	0.0066	0.9934	42.62
45.5	2,911,696	57,560	0.0198	0.9802	42.34
46.5	2,730,034	52,460	0.0192	0.9808	41.50
47.5	2,204,954	41,009	0.0186	0.9814	40.70
48.5	1,913,965	248,577	0.1299	0.8701	39.95
49.5	1,575,862	6,710	0.0043	0.9957	34.76
50.5	837,589	6,192	0.0074	0.9926	34.61
51.5	685,593	3,812	0.0056	0.9944	34.36
52.5	337,184	1,365	0.0040	0.9960	34.16
53.5	286,912	519	0.0018	0.9982	34.03
54.5	257,023	1,242	0.0048	0.9952	33.96
55.5	237,388	2,847	0.0120	0.9880	33.80
56.5	176,231	8,438	0.0479	0.9521	33.39
57.5	79,255	5	0.0001	0.9999	31.80
58.5	54,518	5	0.0001	0.9999	31.79
59.5	54,038	45	0.0008	0.9992	31.79
60.5	54,145		0.0000	1.0000	31.76
61.5	52,389	89	0.0017	0.9983	31.76
62.5	52,271	54	0.0010	0.9990	31.71
63.5	51,977	51	0.0010	0.9990	31.68
64.5	49,512	16	0.0003	0.9997	31.65
65.5	43,526		0.0000	1.0000	31.64
66.5	43,526		0.0000	1.0000	31.64
67.5	13,906		0.0000	1.0000	31.64
68.5	13,906		0.0000	1.0000	31.64
69.5	13,906		0.0000	1.0000	31.64
70.5	12,253		0.0000	1.0000	31.64
71.5	12,363		0.0000	1.0000	31.64
72.5	8,901		0.0000	1.0000	31.64
73.5	4,936		0.0000	1.0000	31.64
74.5	4,936		0.0000	1.0000	31.64
75.5	2,331		0.0000	1.0000	31.64
76.5	2,331		0.0000	1.0000	31.64
77.5	2,338		0.0000	1.0000	31.64
78.5	2,338		0.0000	1.0000	31.64

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	1,128		0.0000	1.0000	31.64
80.5	1,040	7	0.0065	0.9935	31.64
81.5	1,034		0.0000	1.0000	31.43
82.5	1,034		0.0000	1.0000	31.43
83.5	1,034	151	0.1464	0.8536	31.43
84.5	110		0.0000	1.0000	26.83
85.5	173		0.0000	1.0000	26.83
86.5	173		0.0000	1.0000	26.83
87.5	173	63	0.3644	0.6356	26.83
88.5	110		0.0000	1.0000	17.06
89.5	171		0.0000	1.0000	17.06
90.5	171		0.0000	1.0000	17.06
91.5	234		0.0000	1.0000	17.06
92.5	234		0.0000	1.0000	17.06
93.5	234		0.0000	1.0000	17.06
94.5	234	61	0.2605	0.7395	17.06
95.5	68		0.0000	1.0000	12.61
96.5	68		0.0000	1.0000	12.61
97.5	68	64	0.9353	0.0647	12.61
98.5	4	4	1.0000		0.82
99.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 371.10 INSTALLATIONS ON CUSTOMERS' PREMISES - ELECTRIC VEHICLE CHARGING
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 371.10 INSTALLATIONS ON CUSTOMERS' PREMISES - ELECTRIC VEHICLE CHARGING

ORIGINAL LIFE TABLE

PLACEMENT BAND 2018-2018 EXPERIENCE BAND 2018-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	145,269		0.0000	1.0000	100.00
0.5	145,269		0.0000	1.0000	100.00
1.5	145,269		0.0000	1.0000	100.00
2.5					100.00

NSTAR ELECTRIC COMPANY
ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	142,327,071	2,022,729	0.0142	0.9858	100.00
0.5	137,018,124	2,545,657	0.0186	0.9814	98.58
1.5	132,939,597	2,042,846	0.0154	0.9846	96.75
2.5	129,498,354	2,316,492	0.0179	0.9821	95.26
3.5	125,378,492	2,539,297	0.0203	0.9797	93.56
4.5	121,382,831	3,355,353	0.0276	0.9724	91.66
5.5	117,175,607	3,661,188	0.0312	0.9688	89.13
6.5	112,252,744	3,774,811	0.0336	0.9664	86.34
7.5	104,117,929	3,560,084	0.0342	0.9658	83.44
8.5	99,157,356	3,729,631	0.0376	0.9624	80.59
9.5	94,308,356	3,523,002	0.0374	0.9626	77.56
10.5	90,027,265	3,517,378	0.0391	0.9609	74.66
11.5	85,281,207	4,245,823	0.0498	0.9502	71.74
12.5	80,083,107	4,369,383	0.0546	0.9454	68.17
13.5	74,653,810	3,912,026	0.0524	0.9476	64.45
14.5	69,691,337	3,859,721	0.0554	0.9446	61.07
15.5	64,888,669	3,384,628	0.0522	0.9478	57.69
16.5	60,695,248	3,098,016	0.0510	0.9490	54.68
17.5	56,817,421	2,424,906	0.0427	0.9573	51.89
18.5	52,872,674	2,523,946	0.0477	0.9523	49.68
19.5	48,726,820	2,494,866	0.0512	0.9488	47.30
20.5	45,552,181	2,553,636	0.0561	0.9439	44.88
21.5	42,039,229	1,470,540	0.0350	0.9650	42.37
22.5	39,579,904	1,530,015	0.0387	0.9613	40.88
23.5	36,774,936	1,058,805	0.0288	0.9712	39.30
24.5	34,746,800	1,186,322	0.0341	0.9659	38.17
25.5	32,640,623	1,596,456	0.0489	0.9511	36.87
26.5	29,652,337	1,151,291	0.0388	0.9612	35.07
27.5	27,663,313	1,261,141	0.0456	0.9544	33.70
28.5	25,670,235	1,043,370	0.0406	0.9594	32.17
29.5	23,473,300	997,888	0.0425	0.9575	30.86
30.5	21,297,648	678,100	0.0318	0.9682	29.55
31.5	19,534,909	637,137	0.0326	0.9674	28.61
32.5	18,144,222	643,879	0.0355	0.9645	27.67
33.5	16,864,058	501,140	0.0297	0.9703	26.69
34.5	15,374,582	636,153	0.0414	0.9586	25.90
35.5	13,837,029	554,618	0.0401	0.9599	24.83
36.5	12,565,999	640,512	0.0510	0.9490	23.83
37.5	11,176,642	566,304	0.0507	0.9493	22.62
38.5	9,932,903	329,688	0.0332	0.9668	21.47

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	8,045,316	299,753	0.0373	0.9627	20.76
40.5	7,246,829	334,529	0.0462	0.9538	19.99
41.5	6,582,418	221,588	0.0337	0.9663	19.06
42.5	6,032,744	221,283	0.0367	0.9633	18.42
43.5	5,516,704	120,844	0.0219	0.9781	17.75
44.5	4,958,727	123,643	0.0249	0.9751	17.36
45.5	4,511,230	67,999	0.0151	0.9849	16.92
46.5	4,201,199	97,953	0.0233	0.9767	16.67
47.5	3,602,076	52,902	0.0147	0.9853	16.28
48.5	3,057,376	90,797	0.0297	0.9703	16.04
49.5	2,782,155	30,248	0.0109	0.9891	15.56
50.5	2,494,552	39,224	0.0157	0.9843	15.40
51.5	2,313,943	48,903	0.0211	0.9789	15.15
52.5	2,128,145	26,741	0.0126	0.9874	14.83
53.5	1,982,684	37,607	0.0190	0.9810	14.65
54.5	1,806,721	22,629	0.0125	0.9875	14.37
55.5	1,138,597	22,335	0.0196	0.9804	14.19
56.5	1,003,312	29,846	0.0297	0.9703	13.91
57.5	855,296	30,545	0.0357	0.9643	13.50
58.5	788,185	8,361	0.0106	0.9894	13.01
59.5	726,536	6,583	0.0091	0.9909	12.88
60.5	650,348	52,815	0.0812	0.9188	12.76
61.5	542,415	3,906	0.0072	0.9928	11.72
62.5	484,195	4,020	0.0083	0.9917	11.64
63.5	433,209	1,865	0.0043	0.9957	11.54
64.5	367,033	3,421	0.0093	0.9907	11.49
65.5	93,702	1,700	0.0181	0.9819	11.39
66.5	90,631	133	0.0015	0.9985	11.18
67.5	88,395	582	0.0066	0.9934	11.16
68.5	87,585	2,822	0.0322	0.9678	11.09
69.5	83,534	938	0.0112	0.9888	10.73
70.5	80,803	1,810	0.0224	0.9776	10.61
71.5	78,552	6,644	0.0846	0.9154	10.37
72.5	71,668	4,268	0.0596	0.9404	9.50
73.5	66,316	2,970	0.0448	0.9552	8.93
74.5	63,073	5,290	0.0839	0.9161	8.53
75.5	57,675	8,596	0.1490	0.8510	7.82
76.5	35,591	4,519	0.1270	0.8730	6.65
77.5	31,072	3,060	0.0985	0.9015	5.81
78.5	26,901	2,481	0.0922	0.9078	5.23

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 1901-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	23,671	5,787	0.2445	0.7555	4.75
80.5	17,884	2,274	0.1272	0.8728	3.59
81.5	15,603	5,605	0.3592	0.6408	3.13
82.5	9,992	2,911	0.2913	0.7087	2.01
83.5	7,057	0	0.0001	0.9999	1.42
84.5	7,055	508	0.0720	0.9280	1.42
85.5	6,478	1,692	0.2611	0.7389	1.32
86.5	4,741	146	0.0307	0.9693	0.98
87.5	4,592	109	0.0238	0.9762	0.95
88.5	4,483	947	0.2112	0.7888	0.92
89.5	3,477	187	0.0537	0.9463	0.73
90.5	3,280		0.0000	1.0000	0.69
91.5	3,277		0.0000	1.0000	0.69
92.5	3,093		0.0000	1.0000	0.69
93.5	2,947	17	0.0058	0.9942	0.69
94.5	2,760	144	0.0522	0.9478	0.69
95.5	2,590	142	0.0547	0.9453	0.65
96.5	2,359	6	0.0024	0.9976	0.61
97.5	2,338	54	0.0230	0.9770	0.61
98.5	2,254		0.0000	1.0000	0.60
99.5	2,119	157	0.0743	0.9257	0.60
100.5	1,961	1,584	0.8078	0.1922	0.55
101.5	373	19	0.0515	0.9485	0.11
102.5	353	81	0.2292	0.7708	0.10
103.5	272		0.0000	1.0000	0.08
104.5	272		0.0000	1.0000	0.08
105.5	267		0.0000	1.0000	0.08
106.5	93		0.0000	1.0000	0.08
107.5	77		0.0000	1.0000	0.08
108.5	54		0.0000	1.0000	0.08
109.5	54	27	0.5000	0.5000	0.08
110.5	27		0.0000	1.0000	0.04
111.5	27		0.0000	1.0000	0.04
112.5	27		0.0000	1.0000	0.04
113.5	27	27	1.0000		0.04
114.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	31,199,424	265,585	0.0085	0.9915	100.00
0.5	28,584,676	1,227,088	0.0429	0.9571	99.15
1.5	26,913,682	1,153,001	0.0428	0.9572	94.89
2.5	26,071,668	1,100,562	0.0422	0.9578	90.83
3.5	25,592,261	1,154,742	0.0451	0.9549	86.99
4.5	25,467,778	1,643,113	0.0645	0.9355	83.07
5.5	28,723,815	1,955,496	0.0681	0.9319	77.71
6.5	28,352,933	1,830,226	0.0646	0.9354	72.42
7.5	24,783,271	1,671,094	0.0674	0.9326	67.74
8.5	24,159,437	1,830,417	0.0758	0.9242	63.18
9.5	25,238,147	1,813,570	0.0719	0.9281	58.39
10.5	25,877,808	2,144,957	0.0829	0.9171	54.19
11.5	26,430,192	2,264,605	0.0857	0.9143	49.70
12.5	26,282,501	2,808,847	0.1069	0.8931	45.44
13.5	24,253,544	2,418,530	0.0997	0.9003	40.59
14.5	23,082,720	1,315,554	0.0570	0.9430	36.54
15.5	23,378,372	1,331,970	0.0570	0.9430	34.46
16.5	23,375,813	1,267,251	0.0542	0.9458	32.49
17.5	24,169,848	1,128,789	0.0467	0.9533	30.73
18.5	23,758,729	1,331,678	0.0561	0.9439	29.30
19.5	23,024,181	1,163,091	0.0505	0.9495	27.65
20.5	22,958,758	1,372,074	0.0598	0.9402	26.26
21.5	22,097,858	975,170	0.0441	0.9559	24.69
22.5	21,260,496	1,000,738	0.0471	0.9529	23.60
23.5	20,256,917	688,017	0.0340	0.9660	22.49
24.5	19,689,576	963,558	0.0489	0.9511	21.72
25.5	18,948,946	794,830	0.0419	0.9581	20.66
26.5	17,735,152	714,674	0.0403	0.9597	19.79
27.5	17,376,169	956,327	0.0550	0.9450	19.00
28.5	17,115,630	829,418	0.0485	0.9515	17.95
29.5	15,795,076	760,340	0.0481	0.9519	17.08
30.5	14,699,664	631,678	0.0430	0.9570	16.26
31.5	13,562,332	516,344	0.0381	0.9619	15.56
32.5	12,766,097	627,755	0.0492	0.9508	14.97
33.5	11,889,785	490,426	0.0412	0.9588	14.23
34.5	10,852,808	621,739	0.0573	0.9427	13.65
35.5	12,100,144	534,989	0.0442	0.9558	12.86
36.5	11,023,270	630,889	0.0572	0.9428	12.29
37.5	9,851,654	565,975	0.0574	0.9426	11.59
38.5	8,719,595	329,249	0.0378	0.9622	10.93

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	6,917,120	297,932	0.0431	0.9569	10.51
40.5	6,229,946	331,357	0.0532	0.9468	10.06
41.5	5,648,914	219,887	0.0389	0.9611	9.52
42.5	5,190,831	213,134	0.0411	0.9589	9.15
43.5	4,767,795	110,599	0.0232	0.9768	8.78
44.5	4,302,554	108,342	0.0252	0.9748	8.57
45.5	4,233,064	67,999	0.0161	0.9839	8.36
46.5	3,939,368	97,916	0.0249	0.9751	8.22
47.5	3,366,664	52,902	0.0157	0.9843	8.02
48.5	2,825,785	90,797	0.0321	0.9679	7.89
49.5	2,564,726	30,248	0.0118	0.9882	7.64
50.5	2,290,742	39,118	0.0171	0.9829	7.55
51.5	2,128,753	48,903	0.0230	0.9770	7.42
52.5	1,961,053	26,686	0.0136	0.9864	7.25
53.5	1,843,155	37,607	0.0204	0.9796	7.15
54.5	1,670,064	22,629	0.0135	0.9865	7.01
55.5	1,003,742	22,292	0.0222	0.9778	6.91
56.5	925,064	29,846	0.0323	0.9677	6.76
57.5	778,206	30,545	0.0393	0.9607	6.54
58.5	712,778	8,361	0.0117	0.9883	6.28
59.5	653,757	6,583	0.0101	0.9899	6.21
60.5	580,614	52,815	0.0910	0.9090	6.15
61.5	473,561	3,906	0.0082	0.9918	5.59
62.5	415,409	4,020	0.0097	0.9903	5.54
63.5	364,815	1,865	0.0051	0.9949	5.49
64.5	301,020	3,421	0.0114	0.9886	5.46
65.5	27,764	1,700	0.0612	0.9388	5.40
66.5	25,362	133	0.0052	0.9948	5.07
67.5	26,019	582	0.0224	0.9776	5.04
68.5	25,209	2,822	0.1120	0.8880	4.93
69.5	22,930	926	0.0404	0.9596	4.38
70.5	26,730	1,810	0.0677	0.9323	4.20
71.5	28,713	6,644	0.2314	0.7686	3.92
72.5	24,671	4,268	0.1730	0.8270	3.01
73.5	24,782	2,887	0.1165	0.8835	2.49
74.5	30,468	5,289	0.1736	0.8264	2.20
75.5	29,546	8,596	0.2909	0.7091	1.82
76.5	10,551	4,519	0.4283	0.5717	1.29
77.5	8,205	3,060	0.3730	0.6270	0.74
78.5	10,147	2,481	0.2445	0.7555	0.46

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1901-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	9,306	5,755	0.6185	0.3815	0.35
80.5	9,066	2,274	0.2509	0.7491	0.13
81.5	9,718	5,605	0.5767	0.4233	0.10
82.5	4,107	2,911	0.7087	0.2913	0.04
83.5	1,618	0	0.0002	0.9998	0.01
84.5	3,308	508	0.1535	0.8465	0.01
85.5	2,881	1,692	0.5871	0.4129	0.01
86.5	1,253	146	0.1161	0.8839	0.00
87.5	1,991	109	0.0548	0.9452	0.00
88.5	2,096	947	0.4517	0.5483	0.00
89.5	1,090	187	0.1714	0.8286	0.00
90.5	894		0.0000	1.0000	0.00
91.5	891		0.0000	1.0000	0.00
92.5	722		0.0000	1.0000	0.00
93.5	718	17	0.0240	0.9760	0.00
94.5	726	144	0.1985	0.8015	0.00
95.5	865	142	0.1638	0.8362	0.00
96.5	634	6	0.0091	0.9909	0.00
97.5	613	54	0.0879	0.9121	0.00
98.5	686		0.0000	1.0000	0.00
99.5	2,119	157	0.0743	0.9257	0.00
100.5	1,961	1,584	0.8078	0.1922	0.00
101.5	373	19	0.0515	0.9485	0.00
102.5	353	81	0.2292	0.7708	0.00
103.5	272		0.0000	1.0000	0.00
104.5	272		0.0000	1.0000	0.00
105.5	267		0.0000	1.0000	0.00
106.5	93		0.0000	1.0000	0.00
107.5	77		0.0000	1.0000	0.00
108.5	54		0.0000	1.0000	0.00
109.5	54	27	0.5000	0.5000	0.00
110.5	27		0.0000	1.0000	0.00
111.5	27		0.0000	1.0000	0.00
112.5	27		0.0000	1.0000	0.00
113.5	27	27	1.0000		0.00
114.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 389.20 LAND RIGHTS
SMOOTH SURVIVOR CURVE
IOWA 70-R4
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
AGE IN YEARS

NSTAR ELECTRIC COMPANY
ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	209,031,340	4,722	0.0000	1.0000	100.00
0.5	205,925,852	56,000	0.0003	0.9997	100.00
1.5	194,905,268	140,006	0.0007	0.9993	99.97
2.5	182,965,453	55,593	0.0003	0.9997	99.90
3.5	139,872,143	367,640	0.0026	0.9974	99.87
4.5	131,728,419	234,168	0.0018	0.9982	99.61
5.5	129,057,939	399,558	0.0031	0.9969	99.43
6.5	124,654,943	413,435	0.0033	0.9967	99.12
7.5	120,651,164	704,116	0.0058	0.9942	98.79
8.5	113,768,700	170,575	0.0015	0.9985	98.22
9.5	109,515,901	45,450	0.0004	0.9996	98.07
10.5	106,172,080	45,401	0.0004	0.9996	98.03
11.5	103,769,348	97,308	0.0009	0.9991	97.99
12.5	99,446,907	52,589	0.0005	0.9995	97.89
13.5	94,523,029	92,895	0.0010	0.9990	97.84
14.5	90,858,699	261,626	0.0029	0.9971	97.75
15.5	88,504,477	573,640	0.0065	0.9935	97.46
16.5	85,456,657	43,531	0.0005	0.9995	96.83
17.5	83,568,385	1,116,949	0.0134	0.9866	96.78
18.5	51,179,190	160,095	0.0031	0.9969	95.49
19.5	44,148,015	637,982	0.0145	0.9855	95.19
20.5	43,167,215	1,403,788	0.0325	0.9675	93.82
21.5	41,556,144	83,343	0.0020	0.9980	90.76
22.5	40,662,853	236,128	0.0058	0.9942	90.58
23.5	39,231,025	400,443	0.0102	0.9898	90.06
24.5	38,506,970	232,522	0.0060	0.9940	89.14
25.5	32,623,137	296,932	0.0091	0.9909	88.60
26.5	32,015,286	233,729	0.0073	0.9927	87.79
27.5	31,229,181	1,860,966	0.0596	0.9404	87.15
28.5	29,119,672	110,506	0.0038	0.9962	81.96
29.5	28,008,181	31,781	0.0011	0.9989	81.65
30.5	26,981,783	13,079	0.0005	0.9995	81.55
31.5	26,105,088	38,883	0.0015	0.9985	81.52
32.5	25,665,219	11,240	0.0004	0.9996	81.39
33.5	24,053,019	21,616	0.0009	0.9991	81.36
34.5	9,893,777	17,983	0.0018	0.9982	81.29
35.5	9,819,744	16,053	0.0016	0.9984	81.14
36.5	9,693,922	545	0.0001	0.9999	81.00
37.5	9,129,592	4,013	0.0004	0.9996	81.00
38.5	8,743,144	7,943	0.0009	0.9991	80.96

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	8,444,020	607	0.0001	0.9999	80.89
40.5	8,675,980	21,646	0.0025	0.9975	80.89
41.5	8,525,139	42,409	0.0050	0.9950	80.68
42.5	8,400,978	63,232	0.0075	0.9925	80.28
43.5	8,492,722	52,789	0.0062	0.9938	79.68
44.5	8,354,819	72,841	0.0087	0.9913	79.18
45.5	8,224,978	15,532	0.0019	0.9981	78.49
46.5	7,810,293	9,903	0.0013	0.9987	78.34
47.5	7,593,674	103,541	0.0136	0.9864	78.24
48.5	5,278,521	1,010	0.0002	0.9998	77.18
49.5	5,255,461		0.0000	1.0000	77.16
50.5	4,840,818	9,030	0.0019	0.9981	77.16
51.5	2,589,422	338	0.0001	0.9999	77.02
52.5	2,352,316	1,896	0.0008	0.9992	77.01
53.5	1,466,867	398	0.0003	0.9997	76.95
54.5	1,447,066	22,794	0.0158	0.9842	76.93
55.5	1,082,881		0.0000	1.0000	75.71
56.5	411,849		0.0000	1.0000	75.71
57.5	203,313	3,564	0.0175	0.9825	75.71
58.5	180,974		0.0000	1.0000	74.39
59.5	177,032		0.0000	1.0000	74.39
60.5	176,661		0.0000	1.0000	74.39
61.5	174,111		0.0000	1.0000	74.39
62.5	167,246		0.0000	1.0000	74.39
63.5	166,352		0.0000	1.0000	74.39
64.5	159,778		0.0000	1.0000	74.39
65.5	159,046		0.0000	1.0000	74.39
66.5	158,633		0.0000	1.0000	74.39
67.5	158,633		0.0000	1.0000	74.39
68.5	158,633		0.0000	1.0000	74.39
69.5	158,633		0.0000	1.0000	74.39
70.5	158,633		0.0000	1.0000	74.39
71.5	158,543		0.0000	1.0000	74.39
72.5	157,073		0.0000	1.0000	74.39
73.5	157,073		0.0000	1.0000	74.39
74.5	157,073	607	0.0039	0.9961	74.39
75.5	156,466		0.0000	1.0000	74.10
76.5	202,143		0.0000	1.0000	74.10
77.5	202,143		0.0000	1.0000	74.10
78.5	202,143	500	0.0025	0.9975	74.10

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	201,643		0.0000	1.0000	73.92
80.5	201,643		0.0000	1.0000	73.92
81.5	201,584		0.0000	1.0000	73.92
82.5	201,584		0.0000	1.0000	73.92
83.5	201,584		0.0000	1.0000	73.92
84.5	201,584		0.0000	1.0000	73.92
85.5	201,584		0.0000	1.0000	73.92
86.5	201,584		0.0000	1.0000	73.92
87.5	201,584		0.0000	1.0000	73.92
88.5	201,584		0.0000	1.0000	73.92
89.5	201,584		0.0000	1.0000	73.92
90.5	154,359		0.0000	1.0000	73.92
91.5	38,599		0.0000	1.0000	73.92
92.5	38,599		0.0000	1.0000	73.92
93.5	38,599		0.0000	1.0000	73.92
94.5	38,599		0.0000	1.0000	73.92
95.5	2,754		0.0000	1.0000	73.92
96.5					73.92

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	157,801,941	4,722	0.0000	1.0000	100.00
0.5	155,090,886	56,000	0.0004	0.9996	100.00
1.5	144,271,642	140,006	0.0010	0.9990	99.96
2.5	133,177,991	55,593	0.0004	0.9996	99.86
3.5	91,110,307	367,640	0.0040	0.9960	99.82
4.5	83,592,223	234,168	0.0028	0.9972	99.42
5.5	81,658,699	399,558	0.0049	0.9951	99.14
6.5	77,628,119	413,435	0.0053	0.9947	98.66
7.5	74,443,132	704,116	0.0095	0.9905	98.13
8.5	67,821,010	170,575	0.0025	0.9975	97.20
9.5	64,755,889	45,450	0.0007	0.9993	96.96
10.5	64,369,581	45,401	0.0007	0.9993	96.89
11.5	62,876,853	97,308	0.0015	0.9985	96.82
12.5	59,043,697	52,589	0.0009	0.9991	96.67
13.5	61,120,614	92,895	0.0015	0.9985	96.59
14.5	74,488,374	261,626	0.0035	0.9965	96.44
15.5	72,255,809	573,640	0.0079	0.9921	96.10
16.5	69,423,084	41,326	0.0006	0.9994	95.34
17.5	68,708,962	1,116,949	0.0163	0.9837	95.28
18.5	36,813,856	160,095	0.0043	0.9957	93.73
19.5	35,534,783	633,157	0.0178	0.9822	93.32
20.5	34,696,210	1,403,788	0.0405	0.9595	91.66
21.5	33,274,456	83,343	0.0025	0.9975	87.95
22.5	32,475,410	236,128	0.0073	0.9927	87.73
23.5	31,113,124	400,443	0.0129	0.9871	87.09
24.5	30,514,086	232,522	0.0076	0.9924	85.97
25.5	24,685,506	296,932	0.0120	0.9880	85.32
26.5	24,498,394	225,829	0.0092	0.9908	84.29
27.5	23,927,381	1,860,966	0.0778	0.9222	83.51
28.5	24,036,575	110,076	0.0046	0.9954	77.02
29.5	22,948,351	31,781	0.0014	0.9986	76.67
30.5	22,340,649	12,079	0.0005	0.9995	76.56
31.5	23,846,459	38,883	0.0016	0.9984	76.52
32.5	23,642,915	11,240	0.0005	0.9995	76.39
33.5	22,914,134	21,616	0.0009	0.9991	76.36
34.5	8,779,036	17,983	0.0020	0.9980	76.29
35.5	8,705,817	16,053	0.0018	0.9982	76.13
36.5	9,471,888	545	0.0001	0.9999	75.99
37.5	8,908,522	4,013	0.0005	0.9995	75.98
38.5	8,541,713	7,943	0.0009	0.9991	75.95

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	8,246,531	607	0.0001	0.9999	75.88
40.5	8,480,547	21,646	0.0026	0.9974	75.87
41.5	8,345,940	42,409	0.0051	0.9949	75.68
42.5	8,230,168	63,232	0.0077	0.9923	75.30
43.5	8,322,806	52,789	0.0063	0.9937	74.72
44.5	8,195,041	72,841	0.0089	0.9911	74.24
45.5	8,065,932	15,532	0.0019	0.9981	73.58
46.5	7,651,660	9,903	0.0013	0.9987	73.44
47.5	7,435,041	103,541	0.0139	0.9861	73.35
48.5	5,119,887	1,010	0.0002	0.9998	72.33
49.5	5,096,828		0.0000	1.0000	72.31
50.5	4,682,184	9,030	0.0019	0.9981	72.31
51.5	2,430,879	338	0.0001	0.9999	72.17
52.5	2,195,243	1,896	0.0009	0.9991	72.16
53.5	1,309,794	398	0.0003	0.9997	72.10
54.5	1,289,993	22,794	0.0177	0.9823	72.08
55.5	925,808		0.0000	1.0000	70.80
56.5	255,853		0.0000	1.0000	70.80
57.5	47,316	3,564	0.0753	0.9247	70.80
58.5	24,978		0.0000	1.0000	65.47
59.5	21,035		0.0000	1.0000	65.47
60.5	20,664		0.0000	1.0000	65.47
61.5	18,781		0.0000	1.0000	65.47
62.5	11,916		0.0000	1.0000	65.47
63.5	11,022		0.0000	1.0000	65.47
64.5	4,448		0.0000	1.0000	65.47
65.5	3,716		0.0000	1.0000	65.47
66.5	3,303		0.0000	1.0000	65.47
67.5	3,303		0.0000	1.0000	65.47
68.5	3,303		0.0000	1.0000	65.47
69.5	3,303		0.0000	1.0000	65.47
70.5	3,774		0.0000	1.0000	65.47
71.5	119,444		0.0000	1.0000	65.47
72.5	117,974		0.0000	1.0000	65.47
73.5	117,974		0.0000	1.0000	65.47
74.5	117,974	607	0.0051	0.9949	65.47
75.5	153,212		0.0000	1.0000	65.13
76.5	202,143		0.0000	1.0000	65.13
77.5	202,143		0.0000	1.0000	65.13
78.5	202,143	500	0.0025	0.9975	65.13

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS - MAJOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1924-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	201,643		0.0000	1.0000	64.97
80.5	201,643		0.0000	1.0000	64.97
81.5	201,584		0.0000	1.0000	64.97
82.5	201,584		0.0000	1.0000	64.97
83.5	201,584		0.0000	1.0000	64.97
84.5	201,584		0.0000	1.0000	64.97
85.5	201,584		0.0000	1.0000	64.97
86.5	201,584		0.0000	1.0000	64.97
87.5	201,584		0.0000	1.0000	64.97
88.5	201,584		0.0000	1.0000	64.97
89.5	201,584		0.0000	1.0000	64.97
90.5	154,359		0.0000	1.0000	64.97
91.5	38,599		0.0000	1.0000	64.97
92.5	38,599		0.0000	1.0000	64.97
93.5	38,599		0.0000	1.0000	64.97
94.5	38,599		0.0000	1.0000	64.97
95.5	2,754		0.0000	1.0000	64.97
96.5					64.97

NSTAR ELECTRIC COMPANY
ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS - MINOR
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS - MINOR

ORIGINAL LIFE TABLE

PLACEMENT BAND 1906-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	64,830,193		0.0000	1.0000	100.00
0.5	42,658,671	3,460	0.0001	0.9999	100.00
1.5	35,590,509	52,127	0.0015	0.9985	99.99
2.5	33,905,196	3,576	0.0001	0.9999	99.85
3.5	33,052,102	32,960	0.0010	0.9990	99.83
4.5	31,213,352	494,702	0.0158	0.9842	99.74
5.5	24,770,529	350,001	0.0141	0.9859	98.15
6.5	23,985,991	389,014	0.0162	0.9838	96.77
7.5	22,870,376	1,125,417	0.0492	0.9508	95.20
8.5	21,380,380	121,660	0.0057	0.9943	90.51
9.5	20,533,325	74,611	0.0036	0.9964	90.00
10.5	20,231,175	13,773	0.0007	0.9993	89.67
11.5	19,246,313	130,715	0.0068	0.9932	89.61
12.5	17,161,875	120,625	0.0070	0.9930	89.00
13.5	16,129,788	117,787	0.0073	0.9927	88.38
14.5	15,941,067	41,297	0.0026	0.9974	87.73
15.5	15,396,774	201,572	0.0131	0.9869	87.50
16.5	14,289,947	278,946	0.0195	0.9805	86.36
17.5	13,622,152	21,642	0.0016	0.9984	84.67
18.5	13,165,747	576,469	0.0438	0.9562	84.54
19.5	9,272,155	18,585	0.0020	0.9980	80.84
20.5	8,954,472	26,220	0.0029	0.9971	80.67
21.5	8,910,228	84,141	0.0094	0.9906	80.44
22.5	7,683,253	355,300	0.0462	0.9538	79.68
23.5	6,931,207	14,824	0.0021	0.9979	75.99
24.5	6,643,729	46,454	0.0070	0.9930	75.83
25.5	6,447,038	54,414	0.0084	0.9916	75.30
26.5	6,388,088	5,377	0.0008	0.9992	74.67
27.5	6,099,283	15,936	0.0026	0.9974	74.60
28.5	6,023,312	101,842	0.0169	0.9831	74.41
29.5	5,854,180	55,884	0.0095	0.9905	73.15
30.5	5,622,482	378,541	0.0673	0.9327	72.45
31.5	5,035,354	26,030	0.0052	0.9948	67.57
32.5	4,949,128	112,656	0.0228	0.9772	67.22
33.5	4,708,999	52,651	0.0112	0.9888	65.69
34.5	4,358,565	90,088	0.0207	0.9793	64.96
35.5	4,104,555	762,145	0.1857	0.8143	63.62
36.5	3,305,839	40,713	0.0123	0.9877	51.80
37.5	3,107,961	49,904	0.0161	0.9839	51.17
38.5	2,867,196	26,738	0.0093	0.9907	50.34

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS - MINOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1906-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	2,635,322	40,674	0.0154	0.9846	49.88
40.5	2,367,018	143,592	0.0607	0.9393	49.11
41.5	2,220,407	32,794	0.0148	0.9852	46.13
42.5	2,148,710	9,507	0.0044	0.9956	45.45
43.5	1,671,998	5,310	0.0032	0.9968	45.24
44.5	1,309,413	10,330	0.0079	0.9921	45.10
45.5	1,191,629	16,840	0.0141	0.9859	44.74
46.5	1,105,328	16,518	0.0149	0.9851	44.11
47.5	1,021,750	21,269	0.0208	0.9792	43.45
48.5	989,208	130,026	0.1314	0.8686	42.55
49.5	831,847	2,911	0.0035	0.9965	36.96
50.5	813,529	1,982	0.0024	0.9976	36.83
51.5	802,399	1,170	0.0015	0.9985	36.74
52.5	484,540	1,952	0.0040	0.9960	36.68
53.5	339,164	2,033	0.0060	0.9940	36.54
54.5	337,131	1,582	0.0047	0.9953	36.32
55.5	334,783	800	0.0024	0.9976	36.15
56.5	333,983		0.0000	1.0000	36.06
57.5	314,103		0.0000	1.0000	36.06
58.5	306,545		0.0000	1.0000	36.06
59.5	305,365	532	0.0017	0.9983	36.06
60.5	298,637		0.0000	1.0000	36.00
61.5	297,431	442	0.0015	0.9985	36.00
62.5	295,164	1,291	0.0044	0.9956	35.94
63.5	292,802		0.0000	1.0000	35.79
64.5	290,873		0.0000	1.0000	35.79
65.5	289,471		0.0000	1.0000	35.79
66.5	289,134		0.0000	1.0000	35.79
67.5	285,654	1,339	0.0047	0.9953	35.79
68.5	282,387		0.0000	1.0000	35.62
69.5	281,769		0.0000	1.0000	35.62
70.5	277,345		0.0000	1.0000	35.62
71.5	277,345		0.0000	1.0000	35.62
72.5	274,769		0.0000	1.0000	35.62
73.5	274,769	167	0.0006	0.9994	35.62
74.5	274,554		0.0000	1.0000	35.60
75.5	274,554		0.0000	1.0000	35.60
76.5	177,150	103,033	0.5816	0.4184	35.60
77.5	73,273	1,234	0.0168	0.9832	14.89
78.5	69,992		0.0000	1.0000	14.64

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS - MINOR

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1906-2020 EXPERIENCE BAND 1924-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
79.5	68,071		0.0000	1.0000	14.64
80.5	66,300	4,255	0.0642	0.9358	14.64
81.5	62,012		0.0000	1.0000	13.70
82.5	61,135		0.0000	1.0000	13.70
83.5	61,135		0.0000	1.0000	13.70
84.5	48,008	174	0.0036	0.9964	13.70
85.5	47,834		0.0000	1.0000	13.65
86.5	47,834		0.0000	1.0000	13.65
87.5	47,834		0.0000	1.0000	13.65
88.5	47,834		0.0000	1.0000	13.65
89.5	47,834		0.0000	1.0000	13.65
90.5	47,834		0.0000	1.0000	13.65
91.5	47,834		0.0000	1.0000	13.65
92.5	47,834		0.0000	1.0000	13.65
93.5	47,834		0.0000	1.0000	13.65
94.5	47,834		0.0000	1.0000	13.65
95.5	47,834		0.0000	1.0000	13.65
96.5	47,314		0.0000	1.0000	13.65
97.5	47,314		0.0000	1.0000	13.65
98.5	47,314		0.0000	1.0000	13.65
99.5	47,314		0.0000	1.0000	13.65
100.5	47,314		0.0000	1.0000	13.65
101.5	47,314		0.0000	1.0000	13.65
102.5	47,314		0.0000	1.0000	13.65
103.5	31,258		0.0000	1.0000	13.65
104.5	31,258		0.0000	1.0000	13.65
105.5	31,258		0.0000	1.0000	13.65
106.5	31,258		0.0000	1.0000	13.65
107.5	6,437		0.0000	1.0000	13.65
108.5	6,437		0.0000	1.0000	13.65
109.5	6,437		0.0000	1.0000	13.65
110.5	1,717		0.0000	1.0000	13.65
111.5	1,717		0.0000	1.0000	13.65
112.5	1,717		0.0000	1.0000	13.65
113.5	1,717		0.0000	1.0000	13.65
114.5					13.65

NSTAR ELECTRIC COMPANY
ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

ORIGINAL LIFE TABLE

PLACEMENT BAND 1968-2020 EXPERIENCE BAND 1968-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	20,447,957		0.0000	1.0000	100.00
0.5	20,440,133		0.0000	1.0000	100.00
1.5	21,106,428		0.0000	1.0000	100.00
2.5	21,005,591	10,707	0.0005	0.9995	100.00
3.5	21,218,759	25,467	0.0012	0.9988	99.95
4.5	21,642,890		0.0000	1.0000	99.83
5.5	22,183,046	12,520	0.0006	0.9994	99.83
6.5	22,362,597	240,044	0.0107	0.9893	99.77
7.5	21,688,337	118,175	0.0054	0.9946	98.70
8.5	15,255,545	537,999	0.0353	0.9647	98.16
9.5	13,394,255	7,396	0.0006	0.9994	94.70
10.5	12,513,703		0.0000	1.0000	94.65
11.5	12,526,407	769,005	0.0614	0.9386	94.65
12.5	10,284,513	247,198	0.0240	0.9760	88.84
13.5	9,676,025	138	0.0000	1.0000	86.70
14.5	8,270,950	3,860	0.0005	0.9995	86.70
15.5	7,392,971		0.0000	1.0000	86.66
16.5	6,763,501		0.0000	1.0000	86.66
17.5	5,599,592		0.0000	1.0000	86.66
18.5	4,702,894		0.0000	1.0000	86.66
19.5	4,681,220	5,836	0.0012	0.9988	86.66
20.5	4,445,568		0.0000	1.0000	86.55
21.5	1,786,540	2,049	0.0011	0.9989	86.55
22.5	929,799	3,905	0.0042	0.9958	86.45
23.5	448,798		0.0000	1.0000	86.09
24.5	442,550	3,908	0.0088	0.9912	86.09
25.5	463,158		0.0000	1.0000	85.33
26.5	453,478	3,060	0.0067	0.9933	85.33
27.5	407,897	568	0.0014	0.9986	84.76
28.5	407,329	3,340	0.0082	0.9918	84.64
29.5	400,491		0.0000	1.0000	83.94
30.5	315,727	628	0.0020	0.9980	83.94
31.5	315,099	244	0.0008	0.9992	83.78
32.5	314,463	272	0.0009	0.9991	83.71
33.5	215,564		0.0000	1.0000	83.64
34.5	215,564		0.0000	1.0000	83.64
35.5	206,701	1,473	0.0071	0.9929	83.64
36.5	205,228		0.0000	1.0000	83.04
37.5	184,053	6,343	0.0345	0.9655	83.04
38.5	174,190	33	0.0002	0.9998	80.18

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1968-2020			EXPERIENCE BAND 1968-2020		
AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	178,732		0.0000	1.0000	80.17
40.5	177,799		0.0000	1.0000	80.17
41.5	176,381	4,575	0.0259	0.9741	80.17
42.5	171,514		0.0000	1.0000	78.09
43.5	163,148		0.0000	1.0000	78.09
44.5	160,809		0.0000	1.0000	78.09
45.5	55		0.0000	1.0000	78.09
46.5	55		0.0000	1.0000	78.09
47.5	55		0.0000	1.0000	78.09
48.5	55		0.0000	1.0000	78.09
49.5	55		0.0000	1.0000	78.09
50.5	55		0.0000	1.0000	78.09
51.5	55		0.0000	1.0000	78.09
52.5					78.09

NSTAR ELECTRIC COMPANY
ACCOUNT 392.00 TRANSPORTATION EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1959-2020 EXPERIENCE
1947-2020 PLACEMENTS
2001-2020 EXPERIENCE
1947-2020 PLACEMENTS
IOWA 16-L2
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1947-2020 EXPERIENCE BAND 1959-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	97,911,434		0.0000	1.0000	100.00
0.5	77,986,331	42,288	0.0005	0.9995	100.00
1.5	64,031,446	58,139	0.0009	0.9991	99.95
2.5	50,290,406	542,059	0.0108	0.9892	99.86
3.5	37,318,154	270,608	0.0073	0.9927	98.78
4.5	23,251,745	269,052	0.0116	0.9884	98.06
5.5	15,519,554	472,031	0.0304	0.9696	96.93
6.5	14,981,200	347,980	0.0232	0.9768	93.98
7.5	14,408,313	1,609,590	0.1117	0.8883	91.80
8.5	11,581,224	1,781,224	0.1538	0.8462	81.54
9.5	7,488,036	528,269	0.0705	0.9295	69.00
10.5	7,070,031	133,605	0.0189	0.9811	64.13
11.5	3,954,083	58,808	0.0149	0.9851	62.92
12.5	3,895,275	11,882	0.0031	0.9969	61.98
13.5	3,883,392	211,062	0.0543	0.9457	61.80
14.5	3,672,331	712,952	0.1941	0.8059	58.44
15.5	2,959,379	542,528	0.1833	0.8167	47.09
16.5	2,285,165	329,638	0.1443	0.8557	38.46
17.5	1,936,848	163,645	0.0845	0.9155	32.91
18.5	1,773,204	49,361	0.0278	0.9722	30.13
19.5	1,723,843	172,483	0.1001	0.8999	29.29
20.5	1,551,359	497,972	0.3210	0.6790	26.36
21.5	1,053,387	126,635	0.1202	0.8798	17.90
22.5	926,752	162,012	0.1748	0.8252	15.75
23.5	764,740	29,218	0.0382	0.9618	12.99
24.5	735,522	111,126	0.1511	0.8489	12.50
25.5	624,396	240,169	0.3846	0.6154	10.61
26.5	384,227	6,575	0.0171	0.9829	6.53
27.5	377,652	95,097	0.2518	0.7482	6.42
28.5	282,555	41,951	0.1485	0.8515	4.80
29.5	240,604	15,097	0.0627	0.9373	4.09
30.5	225,508	19,635	0.0871	0.9129	3.83
31.5	205,873	22,179	0.1077	0.8923	3.50
32.5	183,694	28,680	0.1561	0.8439	3.12
33.5	155,014	20,166	0.1301	0.8699	2.63
34.5	134,848	9,011	0.0668	0.9332	2.29
35.5	125,837	25,633	0.2037	0.7963	2.14
36.5	100,204	11,253	0.1123	0.8877	1.70
37.5	88,950	22,963	0.2582	0.7418	1.51
38.5	65,987	2,449	0.0371	0.9629	1.12

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1947-2020 EXPERIENCE BAND 1959-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	63,538	5,035	0.0793	0.9207	1.08
40.5	58,502	2,485	0.0425	0.9575	0.99
41.5	56,017	28,603	0.5106	0.4894	0.95
42.5	27,415	2,748	0.1002	0.8998	0.47
43.5	24,667	793	0.0321	0.9679	0.42
44.5	23,874	2,841	0.1190	0.8810	0.41
45.5	21,033	350	0.0166	0.9834	0.36
46.5	20,684	4,874	0.2356	0.7644	0.35
47.5	15,810	4,582	0.2898	0.7102	0.27
48.5	11,228	669	0.0596	0.9404	0.19
49.5	10,559	7,415	0.7023	0.2977	0.18
50.5	3,144	212	0.0675	0.9325	0.05
51.5	2,932	2,604	0.8884	0.1116	0.05
52.5	327		0.0000	1.0000	0.01
53.5	327		0.0000	1.0000	0.01
54.5	327	300	0.9167	0.0833	0.01
55.5	27	27	1.0000		0.00
56.5					

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1947-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	93,695,103		0.0000	1.0000	100.00
0.5	73,799,765	42,288	0.0006	0.9994	100.00
1.5	59,930,399	58,139	0.0010	0.9990	99.94
2.5	46,489,380	542,059	0.0117	0.9883	99.85
3.5	33,876,960	270,608	0.0080	0.9920	98.68
4.5	19,861,536	269,052	0.0135	0.9865	97.89
5.5	12,362,684	472,031	0.0382	0.9618	96.57
6.5	12,148,283	347,980	0.0286	0.9714	92.88
7.5	11,759,193	1,601,715	0.1362	0.8638	90.22
8.5	8,997,957	1,781,224	0.1980	0.8020	77.93
9.5	5,303,760	528,269	0.0996	0.9004	62.50
10.5	5,823,829	133,605	0.0229	0.9771	56.28
11.5	2,795,575	58,808	0.0210	0.9790	54.99
12.5	2,899,704	11,882	0.0041	0.9959	53.83
13.5	2,936,060	211,062	0.0719	0.9281	53.61
14.5	2,891,892	712,952	0.2465	0.7535	49.76
15.5	2,278,377	542,528	0.2381	0.7619	37.49
16.5	1,618,721	329,638	0.2036	0.7964	28.56
17.5	1,364,489	163,645	0.1199	0.8801	22.75
18.5	1,248,602	49,361	0.0395	0.9605	20.02
19.5	1,212,046	172,483	0.1423	0.8577	19.23
20.5	1,054,802	497,972	0.4721	0.5279	16.49
21.5	585,220	82,568	0.1411	0.8589	8.71
22.5	503,499	158,630	0.3151	0.6849	7.48
23.5	418,660	29,218	0.0698	0.9302	5.12
24.5	534,460	102,626	0.1920	0.8080	4.76
25.5	441,997	240,169	0.5434	0.4566	3.85
26.5	209,335	6,575	0.0314	0.9686	1.76
27.5	229,253	95,097	0.4148	0.5852	1.70
28.5	144,248	41,951	0.2908	0.7092	1.00
29.5	111,129	15,097	0.1358	0.8642	0.71
30.5	102,825	19,635	0.1910	0.8090	0.61
31.5	132,404	22,179	0.1675	0.8325	0.49
32.5	114,899	28,680	0.2496	0.7504	0.41
33.5	93,218	20,166	0.2163	0.7837	0.31
34.5	93,687	9,011	0.0962	0.9038	0.24
35.5	92,892	25,633	0.2760	0.7240	0.22
36.5	71,974	11,253	0.1564	0.8436	0.16
37.5	63,257	22,963	0.3630	0.6370	0.13
38.5	43,489	2,449	0.0563	0.9437	0.09

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1947-2020 EXPERIENCE BAND 2001-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	43,027	5,035	0.1170	0.8830	0.08
40.5	39,193	2,485	0.0634	0.9366	0.07
41.5	39,468	28,603	0.7247	0.2753	0.07
42.5	10,865	2,748	0.2529	0.7471	0.02
43.5	8,117	793	0.0977	0.9023	0.01
44.5	7,324	2,841	0.3878	0.6122	0.01
45.5	9,303	350	0.0376	0.9624	0.01
46.5	12,969	4,874	0.3758	0.6242	0.01
47.5	8,095	4,582	0.5660	0.4340	0.00
48.5	10,928	669	0.0613	0.9387	0.00
49.5	10,259	7,415	0.7228	0.2772	0.00
50.5	2,844	212	0.0746	0.9254	0.00
51.5	2,632	2,604	0.9896	0.0104	0.00
52.5	27		0.0000	1.0000	0.00
53.5	327		0.0000	1.0000	0.00
54.5	327	300	0.9167	0.0833	0.00
55.5	27	27	1.0000		0.00
56.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 396.00 POWER OPERATED EQUIPMENT
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE
1961-2020 EXPERIENCE
1961-2009 PLACEMENTS
IOWA 20-L3
PERCENT SURVIVING
100
90
80
70
60
50
40
30
20
10
0
0
10
20
30
40
50
60
AGE IN YEARS

NSTAR ELECTRIC COMPANY

ACCOUNT 396.00 POWER OPERATED EQUIPMENT

ORIGINAL LIFE TABLE

PLACEMENT BAND 1961-2009 EXPERIENCE BAND 1961-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	562,592		0.0000	1.0000	100.00
0.5	293,989		0.0000	1.0000	100.00
1.5	264,875		0.0000	1.0000	100.00
2.5	264,875		0.0000	1.0000	100.00
3.5	264,875		0.0000	1.0000	100.00
4.5	264,875		0.0000	1.0000	100.00
5.5	264,875		0.0000	1.0000	100.00
6.5	264,875		0.0000	1.0000	100.00
7.5	264,875		0.0000	1.0000	100.00
8.5	264,875		0.0000	1.0000	100.00
9.5	264,875		0.0000	1.0000	100.00
10.5	264,875		0.0000	1.0000	100.00
11.5	206,257		0.0000	1.0000	100.00
12.5	206,257		0.0000	1.0000	100.00
13.5	174,333		0.0000	1.0000	100.00
14.5	174,333		0.0000	1.0000	100.00
15.5	174,333		0.0000	1.0000	100.00
16.5	174,333		0.0000	1.0000	100.00
17.5	174,333		0.0000	1.0000	100.00
18.5	174,333		0.0000	1.0000	100.00
19.5	174,333		0.0000	1.0000	100.00
20.5	174,333		0.0000	1.0000	100.00
21.5	174,333		0.0000	1.0000	100.00
22.5	174,333		0.0000	1.0000	100.00
23.5	174,333		0.0000	1.0000	100.00
24.5	174,333		0.0000	1.0000	100.00
25.5	174,333	32,607	0.1870	0.8130	100.00
26.5	141,727		0.0000	1.0000	81.30
27.5	141,727		0.0000	1.0000	81.30
28.5	141,727		0.0000	1.0000	81.30
29.5	141,727		0.0000	1.0000	81.30
30.5	141,727		0.0000	1.0000	81.30
31.5	141,727		0.0000	1.0000	81.30
32.5	141,727	994	0.0070	0.9930	81.30
33.5	140,732		0.0000	1.0000	80.73
34.5	140,732	3,131	0.0223	0.9777	80.73
35.5	137,601		0.0000	1.0000	78.93
36.5	137,601		0.0000	1.0000	78.93
37.5	137,601		0.0000	1.0000	78.93
38.5	137,601		0.0000	1.0000	78.93

NSTAR ELECTRIC COMPANY

ACCOUNT 396.00 POWER OPERATED EQUIPMENT

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1961-2009 EXPERIENCE BAND 1961-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	137,601		0.0000	1.0000	78.93
40.5	137,601		0.0000	1.0000	78.93
41.5	137,601		0.0000	1.0000	78.93
42.5	137,601		0.0000	1.0000	78.93
43.5	136,179		0.0000	1.0000	78.93
44.5	109,153		0.0000	1.0000	78.93
45.5	105,034		0.0000	1.0000	78.93
46.5	2,916		0.0000	1.0000	78.93
47.5	423		0.0000	1.0000	78.93
48.5	40		0.0000	1.0000	78.93
49.5	40		0.0000	1.0000	78.93
50.5	40		0.0000	1.0000	78.93
51.5	40	40	1.0000		78.93
52.5					

NSTAR ELECTRIC COMPANY
ACCOUNT 397.20 COMMUNICATIONS EQUIPMENT - MICROWAVE
ORIGINAL AND SMOOTH SURVIVOR CURVES

NSTAR ELECTRIC COMPANY

ACCOUNT 397.20 COMMUNICATIONS EQUIPMENT - MICROWAVE

ORIGINAL LIFE TABLE

PLACEMENT BAND 1950-2017 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
0.0	4,577,336		0.0000	1.0000	100.00
0.5	4,649,278		0.0000	1.0000	100.00
1.5	5,406,240		0.0000	1.0000	100.00
2.5	5,463,718		0.0000	1.0000	100.00
3.5	5,517,830		0.0000	1.0000	100.00
4.5	5,465,219	17,695	0.0032	0.9968	100.00
5.5	4,521,550		0.0000	1.0000	99.68
6.5	4,545,999		0.0000	1.0000	99.68
7.5	5,382,187	418,533	0.0778	0.9222	99.68
8.5	5,318,070		0.0000	1.0000	91.93
9.5	5,775,145	4,339	0.0008	0.9992	91.93
10.5	5,552,123		0.0000	1.0000	91.86
11.5	3,754,593		0.0000	1.0000	91.86
12.5	3,754,593		0.0000	1.0000	91.86
13.5	3,752,624		0.0000	1.0000	91.86
14.5	3,752,456	7,530	0.0020	0.9980	91.86
15.5	3,859,146	4,104	0.0011	0.9989	91.67
16.5	3,455,948		0.0000	1.0000	91.57
17.5	3,441,995		0.0000	1.0000	91.57
18.5	3,713,116	6,395	0.0017	0.9983	91.57
19.5	3,706,721		0.0000	1.0000	91.42
20.5	3,481,428	1,747	0.0005	0.9995	91.42
21.5	3,476,009	485,862	0.1398	0.8602	91.37
22.5	2,953,893	49,844	0.0169	0.9831	78.60
23.5	2,921,698	11,334	0.0039	0.9961	77.27
24.5	2,859,498	11,155	0.0039	0.9961	76.97
25.5	2,287,964		0.0000	1.0000	76.67
26.5	2,243,183		0.0000	1.0000	76.67
27.5	2,063,949	285,084	0.1381	0.8619	76.67
28.5	1,675,427		0.0000	1.0000	66.08
29.5	1,659,860	8,986	0.0054	0.9946	66.08
30.5	1,623,994	8,016	0.0049	0.9951	65.72
31.5	1,225,771	10,467	0.0085	0.9915	65.40
32.5	847,188		0.0000	1.0000	64.84
33.5	398,552		0.0000	1.0000	64.84
34.5	355,001		0.0000	1.0000	64.84
35.5	322,569		0.0000	1.0000	64.84
36.5	322,569	4,280	0.0133	0.9867	64.84
37.5	308,909		0.0000	1.0000	63.98
38.5	304,374	48,054	0.1579	0.8421	63.98

NSTAR ELECTRIC COMPANY

ACCOUNT 397.20 COMMUNICATIONS EQUIPMENT - MICROWAVE

ORIGINAL LIFE TABLE, CONT.

PLACEMENT BAND 1950-2017 EXPERIENCE BAND 1997-2020

AGE AT BEGIN OF INTERVAL	EXPOSURES AT BEGINNING OF AGE INTERVAL	RETIREMENTS DURING AGE INTERVAL	RETMT RATIO	SURV RATIO	PCT SURV BEGIN OF INTERVAL
39.5	256,320		0.0000	1.0000	53.88
40.5	249,144		0.0000	1.0000	53.88
41.5	249,144		0.0000	1.0000	53.88
42.5	20,690		0.0000	1.0000	53.88
43.5	20,690		0.0000	1.0000	53.88
44.5	20,690		0.0000	1.0000	53.88
45.5	20,690		0.0000	1.0000	53.88
46.5	20,788		0.0000	1.0000	53.88
47.5	3,139		0.0000	1.0000	53.88
48.5	3,139		0.0000	1.0000	53.88
49.5	3,139		0.0000	1.0000	53.88
50.5	285		0.0000	1.0000	53.88
51.5	285		0.0000	1.0000	53.88
52.5	285		0.0000	1.0000	53.88
53.5	285		0.0000	1.0000	53.88
54.5	285		0.0000	1.0000	53.88
55.5	285		0.0000	1.0000	53.88
56.5	285		0.0000	1.0000	53.88
57.5	285		0.0000	1.0000	53.88
58.5	285		0.0000	1.0000	53.88
59.5	98		0.0000	1.0000	53.88
60.5	98		0.0000	1.0000	53.88
61.5	98		0.0000	1.0000	53.88
62.5	98		0.0000	1.0000	53.88
63.5	98		0.0000	1.0000	53.88
64.5	98		0.0000	1.0000	53.88
65.5	98		0.0000	1.0000	53.88
66.5	98		0.0000	1.0000	53.88
67.5	98		0.0000	1.0000	53.88
68.5	98		0.0000	1.0000	53.88
69.5	98		0.0000	1.0000	53.88
70.5					53.88

PART VIII. NET SALVAGE STATISTICS

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	1,775	791	45		0	791-	45-
1993	59,296	1,437	2		0	1,437-	2-
1994	81,725	5,513	7		0	5,513-	7-
1995	7,239	2,048	28		0	2,048-	28-
1996	192,774	4,082	2	152	0	3,930-	2-
1997	67,294	2,650	4		0	2,650-	4-
1998	64,949	21,259	33		0	21,259-	33-
1999	3,025	5,018	166		0	5,018-	166-
2000	10,700		0		0		0
2001	15,003	3,253	22		0	3,253-	22-
2002	1,342,649	43,327	3		0	43,327-	3-
2003	1,750,432	47,084	3		0	47,084-	3-
2004	496,878	18,527	4		0	18,527-	4-
2005	1,079,967	75,000	7		0	75,000-	7-
2006	16,243	10,000	62		0	10,000-	62-
2007	22,873	17,252	75		0	17,252-	75-
2008	70,657	16,815	24		0	16,815-	24-
2009	318,850	137,249	43	2,479	1	134,770-	42-
2010	40,940	99,569	243		0	99,569-	243-
2011	283,026	48,987	17		0	48,987-	17-
2012	84,060	7,341	9		0	7,341-	9-
2013	370,120	201,803	55		0	201,803-	55-
2014	223,341	70,583	32	11,869-	5-	82,452-	37-
2015	22,848	3,540	15		0	3,540-	15-
2016	77,822	188,370	242	3,694	5	184,676-	237-
2017	31,060	63,511	204		0	63,511-	204-
2018	454,777	447,428	98		0	447,428-	98-
2019	553,698	51,442	9		0	51,442-	9-
2020	345,189	145,046	42		0	145,046-	42-
TOTAL	8,089,210	1,738,924	21	5,544-	0	1,744,469-	22-
THREE-YEAR MOVING AVERAGES							
92-94	47,599	2,580	5		0	2,580-	5-
93-95	49,420	2,999	6		0	2,999-	6-
94-96	93,913	3,881	4	51	0	3,830-	4-
95-97	89,102	2,927	3	51	0	2,876-	3-
96-98	108,339	9,330	9	51	0	9,280-	9-
97-99	45,089	9,642	21		0	9,642-	21-
98-00	26,225	8,759	33		0	8,759-	33-
99-01	9,576	2,757	29		0	2,757-	29-
00-02	456,117	15,526	3		0	15,526-	3-

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	1,036,028	31,221	3		0	31,221-	3-
02-04	1,196,653	36,313	3		0	36,313-	3-
03-05	1,109,092	46,870	4		0	46,870-	4-
04-06	531,029	34,509	6		0	34,509-	6-
05-07	373,028	34,084	9		0	34,084-	9-
06-08	36,591	14,689	40		0	14,689-	40-
07-09	137,460	57,105	42	826	1	56,279-	41-
08-10	143,482	84,544	59	826	1	83,718-	58-
09-11	214,272	95,268	44	826	0	94,442-	44-
10-12	136,008	51,966	38		0	51,966-	38-
11-13	245,735	86,043	35		0	86,043-	35-
12-14	225,840	93,242	41	3,956-	2-	97,199-	43-
13-15	205,436	91,975	45	3,956-	2-	95,932-	47-
14-16	108,004	87,498	81	2,725-	3-	90,223-	84-
15-17	43,910	85,140	194	1,231	3	83,909-	191-
16-18	187,886	233,103	124	1,231	1	231,872-	123-
17-19	346,511	187,460	54		0	187,460-	54-
18-20	451,221	214,639	48		0	214,639-	48-
FIVE-YEAR AVERAGE							
16-20	292,509	179,159	61	739	0	178,421-	61-

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	346,176	181,135	52	50,177	14	130,958-	38-
1993	2,956,134	441,377	15	182,116	6	259,261-	9-
1994	1,743,166	531,115	30	155,159	9	375,956-	22-
1995	358,087	265,687	74	64,923	18	200,764-	56-
1996	17,513,755	1,684,980	10	774,028	4	910,952-	5-
1997	3,519,132	769,326	22	338,241	10	431,085-	12-
1998	1,334,416	253,687	19	33,266	2	220,421-	17-
1999	733,391	297,188	41	7,295	1	289,893-	40-
2000	186,929	2,114	1		0	2,114-	1-
2001	172,225	21,773	13		0	21,773-	13-
2002	1,552,028	715,367	46	11,194	1	704,173-	45-
2003	12,128,769	1,904,063	16	877,637	7	1,026,427-	8-
2004	4,057,572	969,889	24	16,891-	0	986,780-	24-
2005	8,157,260	3,058,065	37	82,207-	1-	3,140,272-	38-
2006	2,056,811	1,851,203	90	196,992	10	1,654,210-	80-
2007	2,590,718	2,545,379	98	20,624	1	2,524,755-	97-
2008	4,374,293	1,584,424	36	11,000-	0	1,595,424-	36-
2009	5,457,719	1,688,438	31	23,340	0	1,665,098-	31-
2010	2,498,782	1,305,234	52	51,111	2	1,254,123-	50-
2011	2,206,835	988,414	45		0	988,414-	45-
2012	1,516,680	281,259	19		0	281,259-	19-
2013	3,193,293	2,633,225	82	7,752	0	2,625,473-	82-
2014	395,756	30,001	8	2,859	1	27,142-	7-
2015	2,511,742	1,548,320	62	8,856-	0	1,557,175-	62-
2016	2,672,230	2,473,538	93	31,568	1	2,441,970-	91-
2017	2,350,103	802,970	34		0	802,970-	34-
2018	1,265,394	1,302,402	103	25,362	2	1,277,040-	101-
2019	4,103,053	1,967,785	48	5,330	0	1,962,455-	48-
2020	2,523,951	2,660,993	105	1,121	0	2,659,872-	105-
TOTAL	94,476,400	34,759,353	37	2,741,141	3	32,018,211-	34-
THREE-YEAR MOVING AVERAGES							
92-94	1,681,825	384,542	23	129,151	8	255,392-	15-
93-95	1,685,796	412,726	24	134,066	8	278,660-	17-
94-96	6,538,336	827,261	13	331,370	5	495,891-	8-
95-97	7,130,325	906,664	13	392,397	6	514,267-	7-
96-98	7,455,768	902,664	12	381,845	5	520,819-	7-
97-99	1,862,313	440,067	24	126,267	7	313,800-	17-
98-00	751,579	184,330	25	13,520	2	170,809-	23-
99-01	364,182	107,025	29	2,432	1	104,593-	29-
00-02	637,061	246,418	39	3,731	1	242,687-	38-

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	4,617,674	880,401	19	296,277	6	584,124-	13-
02-04	5,912,790	1,196,440	20	290,647	5	905,793-	15-
03-05	8,114,534	1,977,339	24	259,513	3	1,717,826-	21-
04-06	4,757,214	1,959,719	41	32,632	1	1,927,087-	41-
05-07	4,268,263	2,484,882	58	45,137	1	2,439,746-	57-
06-08	3,007,274	1,993,669	66	68,872	2	1,924,797-	64-
07-09	4,140,910	1,939,414	47	10,988	0	1,928,426-	47-
08-10	4,110,265	1,526,032	37	21,150	1	1,504,882-	37-
09-11	3,387,779	1,327,362	39	24,817	1	1,302,545-	38-
10-12	2,074,099	858,303	41	17,037	1	841,266-	41-
11-13	2,305,603	1,300,966	56	2,584	0	1,298,382-	56-
12-14	1,701,910	981,495	58	3,537	0	977,958-	57-
13-15	2,033,597	1,403,849	69	585	0	1,403,264-	69-
14-16	1,859,909	1,350,620	73	8,524	0	1,342,096-	72-
15-17	2,511,358	1,608,276	64	7,571	0	1,600,705-	64-
16-18	2,095,909	1,526,303	73	18,977	1	1,507,327-	72-
17-19	2,572,850	1,357,719	53	10,231	0	1,347,488-	52-
18-20	2,630,799	1,977,060	75	10,604	0	1,966,456-	75-
FIVE-YEAR AVERAGE							
16-20	2,582,946	1,841,537	71	12,676	0	1,828,861-	71-

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	1,193,408	1,370,565	115	214,968	18	1,155,597-	97-
1993	1,168,040	855,609	73	116,899	10	738,710-	63-
1994	1,444,493	1,542,357	107	155,926	11	1,386,431-	96-
1995	1,406,238	1,309,683	93	197,707	14	1,111,976-	79-
1996	664,040	560,124	84	92,899	14	467,225-	70-
1997	591,690	360,872	61	52,540	9	308,332-	52-
1998	520,041	267,350	51	3,625	1	263,725-	51-
1999	1,243,518	1,127,410	91	16,880	1	1,110,531-	89-
2000	593,270	268,305	45		0	268,305-	45-
2001	1,089,289	480,906	44	1,431	0	479,475-	44-
2002	1,330,725	602,037	45	14,041	1	587,996-	44-
2003	10,069,327	3,976,107	39	380,096	4	3,596,012-	36-
2004	4,767,536	2,309,878	48	15	0	2,309,863-	48-
2005	9,092,653	6,394,138	70	42,933-	0	6,437,070-	71-
2006	1,134,424	1,777,364	157		0	1,777,364-	157-
2007	2,001,053	5,436,018	272	8,808-	0	5,444,826-	272-
2008	1,366,915	2,643,482	193		0	2,643,482-	193-
2009	1,008,798	2,183,102	216	4	0	2,183,099-	216-
2010	765,630	4,559,200	595	7,095	1	4,552,105-	595-
2011	1,029,777	2,278,907	221	1,192	0	2,277,715-	221-
2012	1,153,740	1,481,491	128	897	0	1,480,594-	128-
2013	1,548,472	2,411,444	156	5,066-	0	2,416,510-	156-
2014	1,736,562	5,661,502	326	114,996	7	5,546,507-	319-
2015	3,085,494	1,302,306	42	66,075	2	1,236,232-	40-
2016	1,152,178	4,789,685	416		0	4,789,685-	416-
2017	1,343,166	2,353,145	175		0	2,353,145-	175-
2018	2,423,620	1,476,862	61		0	1,476,862-	61-
2019	2,249,088	5,250,934	233		0	5,250,934-	233-
2020	2,776,903	7,290,349	263		0	7,290,349-	263-
TOTAL	59,950,085	72,321,134	121	1,380,477	2	70,940,657-	118-
THREE-YEAR MOVING AVERAGES							
92-94	1,268,647	1,256,177	99	162,598	13	1,093,579-	86-
93-95	1,339,591	1,235,883	92	156,844	12	1,079,039-	81-
94-96	1,171,590	1,137,388	97	148,844	13	988,544-	84-
95-97	887,323	743,560	84	114,382	13	629,178-	71-
96-98	591,924	396,115	67	49,688	8	346,427-	59-
97-99	785,083	585,211	75	24,348	3	560,863-	71-
98-00	785,610	554,355	71	6,835	1	547,520-	70-
99-01	975,359	625,541	64	6,104	1	619,437-	64-
00-02	1,004,428	450,416	45	5,157	1	445,259-	44-

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	4,163,113	1,686,350	41	131,856	3	1,554,494-	37-
02-04	5,389,196	2,296,007	43	131,384	2	2,164,624-	40-
03-05	7,976,505	4,226,708	53	112,393	1	4,114,315-	52-
04-06	4,998,204	3,493,793	70	14,306-	0	3,508,099-	70-
05-07	4,076,043	4,535,840	111	17,247-	0	4,553,087-	112-
06-08	1,500,797	3,285,621	219	2,936-	0	3,288,557-	219-
07-09	1,458,922	3,420,867	234	2,935-	0	3,423,802-	235-
08-10	1,047,114	3,128,595	299	2,366	0	3,126,228-	299-
09-11	934,735	3,007,070	322	2,764	0	3,004,306-	321-
10-12	983,049	2,773,199	282	3,061	0	2,770,138-	282-
11-13	1,243,996	2,057,280	165	993-	0	2,058,273-	165-
12-14	1,479,591	3,184,812	215	36,942	2	3,147,870-	213-
13-15	2,123,509	3,125,084	147	58,668	3	3,066,416-	144-
14-16	1,991,411	3,917,831	197	60,357	3	3,857,474-	194-
15-17	1,860,279	2,815,046	151	22,025	1	2,793,021-	150-
16-18	1,639,655	2,873,231	175		0	2,873,231-	175-
17-19	2,005,291	3,026,981	151		0	3,026,981-	151-
18-20	2,483,204	4,672,715	188		0	4,672,715-	188-
FIVE-YEAR AVERAGE							
16-20	1,988,991	4,232,195	213		0	4,232,195-	213-

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	2,614,948	1,830,534	70	441,883	17	1,388,651-	53-
1993	5,728,891	1,447,122	25	312,634	5	1,134,488-	20-
1994	640,433-	375,584	59-	73,352	11-	302,232-	47
1995	2,291,572	1,285,343	56	304,751	13	980,592-	43-
1996	1,383,017	855,864	62	145,448	11	710,416-	51-
1997	1,248,147	567,985	46	345,102	28	222,883-	18-
1998	1,417,148	401,501	28	82,437	6	319,064-	23-
1999	5,053,576	1,334,108	26	73,485	1	1,260,623-	25-
2000	3,099,347	560,475	18		0	560,475-	18-
2001	3,038,797	1,020,887	34	21,454	1	999,433-	33-
2002	5,475,790	1,262,611	23	23,519	0	1,239,092-	23-
2003	24,779,650	5,968,653	24	71,252	0	5,897,402-	24-
2004	11,902,946	3,645,842	31	3	0	3,645,839-	31-
2005	21,865,661	9,056,295	41	8,048-	0	9,064,343-	41-
2006	4,302,489	2,256,258	52		0	2,256,258-	52-
2007	8,433,958	7,507,861	89	14,250-	0	7,522,111-	89-
2008	9,481,515	6,384,523	67	153	0	6,384,369-	67-
2009	8,109,538	6,568,568	81	4	0	6,568,564-	81-
2010	7,746,004	6,227,669	80	30,669	0	6,197,000-	80-
2011	5,602,914	3,758,802	67	1,600	0	3,757,202-	67-
2012	6,442,103	3,877,331	60	3,856	0	3,873,475-	60-
2013	7,335,090	3,201,043	44	63,453-	1-	3,264,496-	45-
2014	10,887,952	2,473,984	23		0	2,473,984-	23-
2015	8,005,526	2,713,783	34	35,511	0	2,678,272-	33-
2016	11,596,064	9,238,461	80		0	9,238,461-	80-
2017	7,822,302	5,845,505	75		0	5,845,505-	75-
2018	11,913,855	2,675,600	22		0	2,675,600-	22-
2019	10,305,101	13,342,247	129		0	13,342,247-	129-
2020	11,979,468	5,492,975	46		0	5,492,975-	46-
TOTAL	219,222,934	111,177,414	51	1,881,362	1	109,296,052-	50-
THREE-YEAR MOVING AVERAGES							
92-94	2,567,802	1,217,747	47	275,956	11	941,790-	37-
93-95	2,460,010	1,036,016	42	230,246	9	805,771-	33-
94-96	1,011,385	838,930	83	174,517	17	664,413-	66-
95-97	1,640,912	903,064	55	265,100	16	637,964-	39-
96-98	1,349,437	608,450	45	190,996	14	417,454-	31-
97-99	2,572,957	767,865	30	167,008	6	600,857-	23-
98-00	3,190,024	765,361	24	51,974	2	713,387-	22-
99-01	3,730,573	971,823	26	31,646	1	940,177-	25-
00-02	3,871,312	947,991	24	14,991	0	933,000-	24-

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	11,098,079	2,750,717	25	38,742	0	2,711,976-	24-
02-04	14,052,795	3,625,702	26	31,591	0	3,594,111-	26-
03-05	19,516,086	6,223,597	32	21,069	0	6,202,528-	32-
04-06	12,690,365	4,986,132	39	2,682-	0	4,988,814-	39-
05-07	11,534,036	6,273,471	54	7,433-	0	6,280,904-	54-
06-08	7,405,987	5,382,880	73	4,699-	0	5,387,580-	73-
07-09	8,675,004	6,820,317	79	4,698-	0	6,825,015-	79-
08-10	8,445,686	6,393,586	76	10,275	0	6,383,311-	76-
09-11	7,152,819	5,518,346	77	10,758	0	5,507,589-	77-
10-12	6,597,007	4,621,267	70	12,042	0	4,609,226-	70-
11-13	6,460,036	3,612,392	56	19,332-	0	3,631,724-	56-
12-14	8,221,715	3,184,120	39	19,865-	0	3,203,985-	39-
13-15	8,742,856	2,796,270	32	9,314-	0	2,805,584-	32-
14-16	10,163,180	4,808,743	47	11,837	0	4,796,906-	47-
15-17	9,141,297	5,932,583	65	11,837	0	5,920,746-	65-
16-18	10,444,074	5,919,855	57		0	5,919,855-	57-
17-19	10,013,753	7,287,784	73		0	7,287,784-	73-
18-20	11,399,475	7,170,274	63		0	7,170,274-	63-
FIVE-YEAR AVERAGE							
16-20	10,723,358	7,318,958	68		0	7,318,958-	68-

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	136,027	58,961	43	12,991	10	45,970-	34-
1993	111,547	48,647	44	12,006	11	36,641-	33-
1994	80,003	36,013	45	5,947	7	30,066-	38-
1995	162,562	93,178	57	26,162	16	67,016-	41-
1996	102,828	76,020	74	14,989	15	61,031-	59-
1997	100,311	36,966	37	4,117	4	32,849-	33-
1998	856,057	51,003	6	20,357	2	30,646-	4-
1999	163,286	16,057-	10-	1,317	1	17,374	11
2000	50,621	73,568	145		0	73,568-	145-
2001	69,655	47,189	68	45	0	47,144-	68-
2002	946,069	148,801	16	4,215	0	144,586-	15-
2003	535,720	103,934	19		0	103,934-	19-
2004	326,521	72,326	22		0	72,326-	22-
2005	467,799	123,047	26		0	123,047-	26-
2006	860,671	46,511	5		0	46,511-	5-
2007	695,862	249,663	36	58	0	249,606-	36-
2008	741,813	195,521	26		0	195,521-	26-
2009	454,797	1,486,954	327	40,228	9	1,446,726-	318-
2010	772,473	513,537	66		0	513,537-	66-
2011	784,495	430,356	55		0	430,356-	55-
2012	695,718	454,226	65	6	0	454,220-	65-
2013	459,965	347,159	75		0	347,159-	75-
2014	493,328	1,376,130	279	373	0	1,375,756-	279-
2015	104,604	208,125	199	31,048	30	177,077-	169-
2016	234,362	334,986	143		0	334,986-	143-
2017	116,166	148,657	128		0	148,657-	128-
2018	601,093	307,863	51		0	307,863-	51-
2019	848,321	564,794	67		0	564,794-	67-
2020	550,654	417,762	76		0	417,762-	76-
TOTAL	12,523,330	8,035,839	64	173,859	1	7,861,980-	63-
THREE-YEAR MOVING AVERAGES							
92-94	109,193	47,874	44	10,315	9	37,559-	34-
93-95	118,038	59,279	50	14,705	12	44,574-	38-
94-96	115,131	68,404	59	15,699	14	52,704-	46-
95-97	121,900	68,721	56	15,089	12	53,632-	44-
96-98	353,065	54,663	15	13,154	4	41,509-	12-
97-99	373,218	23,971	6	8,597	2	15,374-	4-
98-00	356,655	36,171	10	7,225	2	28,947-	8-
99-01	94,521	34,900	37	454	0	34,446-	36-
00-02	355,448	89,853	25	1,420	0	88,433-	25-

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	517,148	99,975	19	1,420	0	98,555-	19-
02-04	602,770	108,354	18	1,405	0	106,949-	18-
03-05	443,347	99,769	23		0	99,769-	23-
04-06	551,664	80,628	15		0	80,628-	15-
05-07	674,777	139,740	21	19	0	139,721-	21-
06-08	766,115	163,898	21	19	0	163,879-	21-
07-09	630,824	644,046	102	13,429	2	630,617-	100-
08-10	656,361	732,004	112	13,409	2	718,594-	109-
09-11	670,588	810,282	121	13,409	2	796,873-	119-
10-12	750,895	466,040	62	2	0	466,038-	62-
11-13	646,726	410,580	63	2	0	410,578-	63-
12-14	549,670	725,838	132	126	0	725,712-	132-
13-15	352,632	643,804	183	10,474	3	633,331-	180-
14-16	277,431	639,747	231	10,474	4	629,273-	227-
15-17	151,711	230,589	152	10,349	7	220,240-	145-
16-18	317,207	263,835	83		0	263,835-	83-
17-19	521,860	340,438	65		0	340,438-	65-
18-20	666,689	430,139	65		0	430,139-	65-
FIVE-YEAR AVERAGE							
16-20	470,119	354,812	75		0	354,812-	75-

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	4,256,154	3,504,328	82	920,042	22	2,584,286-	61-
1993	2,583,594	1,742,009	67	315,949	12	1,426,060-	55-
1994	5,312,445	3,588,769	68	909,649	17	2,679,120-	50-
1995	2,775,608	1,617,293	58	486,834	18	1,130,459-	41-
1996	3,060,967	1,131,988	37	316,040	10	815,948-	27-
1997	1,695,451	617,328	36	269,097	16	348,231-	21-
1998	8,389,769	809,164	10	541,910	6	267,254-	3-
1999	4,757,673	1,963,308	41	235,787	5	1,727,521-	36-
2000	4,929,377	395,295	8		0	395,295-	8-
2001	3,786,149	1,605,333	42	135,815	4	1,469,518-	39-
2002	3,531,565	1,080,460	31	55,523	2	1,024,937-	29-
2003	12,174,002	1,731,087	14	311,896	3	1,419,190-	12-
2004	5,504,276	1,231,391	22	12	0	1,231,379-	22-
2005	12,054,662	2,757,149	23	35,230-	0	2,792,379-	23-
2006	2,035,190	811,263	40		0	811,263-	40-
2007	15,596,756	6,300,787	40	31,708	0	6,269,079-	40-
2008	11,911,414	4,974,879	42		0	4,974,879-	42-
2009	9,014,469	4,258,738	47	30,723	0	4,228,015-	47-
2010	8,543,924	4,625,146	54	86,930	1	4,538,216-	53-
2011	6,394,568	2,986,032	47	15,092	0	2,970,940-	46-
2012	7,645,604	3,748,772	49	117	0	3,748,655-	49-
2013	7,109,076	3,503,771	49	101,514-	1-	3,605,285-	51-
2014	7,373,102	5,016,084	68	14	0	5,016,070-	68-
2015	6,267,734	2,172,414	35	166,026	3	2,006,388-	32-
2016	5,466,154	5,667,319	104		0	5,667,319-	104-
2017	6,058,388	2,450,715	40		0	2,450,715-	40-
2018	8,440,668	2,653,720	31		0	2,653,720-	31-
2019	7,450,227	5,537,351	74		0	5,537,351-	74-
2020	9,774,365	5,077,795	52		0	5,077,795-	52-
TOTAL	193,893,330	83,559,687	43	4,692,420	2	78,867,267-	41-
THREE-YEAR MOVING AVERAGES							
92-94	4,050,731	2,945,035	73	715,213	18	2,229,822-	55-
93-95	3,557,215	2,316,024	65	570,811	16	1,745,213-	49-
94-96	3,716,340	2,112,683	57	570,841	15	1,541,842-	41-
95-97	2,510,675	1,122,203	45	357,324	14	764,879-	30-
96-98	4,382,062	852,827	19	375,682	9	477,144-	11-
97-99	4,947,631	1,129,933	23	348,931	7	781,002-	16-
98-00	6,025,606	1,055,922	18	259,232	4	796,690-	13-
99-01	4,491,066	1,321,312	29	123,867	3	1,197,444-	27-
00-02	4,082,364	1,027,029	25	63,779	2	963,250-	24-

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SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	6,497,239	1,472,293	23	167,745	3	1,304,548-	20-
02-04	7,069,948	1,347,646	19	122,477	2	1,225,169-	17-
03-05	9,910,980	1,906,542	19	92,226	1	1,814,316-	18-
04-06	6,531,376	1,599,934	24	11,739-	0	1,611,674-	25-
05-07	9,895,536	3,289,733	33	1,174-	0	3,290,907-	33-
06-08	9,847,787	4,028,976	41	10,569	0	4,018,407-	41-
07-09	12,174,213	5,178,134	43	20,810	0	5,157,324-	42-
08-10	9,823,269	4,619,588	47	39,218	0	4,580,370-	47-
09-11	7,984,320	3,956,639	50	44,248	1	3,912,391-	49-
10-12	7,528,032	3,786,650	50	34,046	0	3,752,604-	50-
11-13	7,049,749	3,412,858	48	28,768-	0	3,441,627-	49-
12-14	7,375,927	4,089,542	55	33,794-	0	4,123,337-	56-
13-15	6,916,637	3,564,090	52	21,509	0	3,542,581-	51-
14-16	6,368,997	4,285,272	67	55,347	1	4,229,926-	66-
15-17	5,930,759	3,430,149	58	55,342	1	3,374,807-	57-
16-18	6,655,070	3,590,585	54		0	3,590,585-	54-
17-19	7,316,428	3,547,262	48		0	3,547,262-	48-
18-20	8,555,087	4,422,955	52		0	4,422,955-	52-
FIVE-YEAR AVERAGE							
16-20	7,437,960	4,277,380	58		0	4,277,380-	58-

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	6,732,764	3,376,303	50	839,399	12	2,536,904-	38-
1993	1,112,199	470,899	42	119,960	11	350,939-	32-
1994	452,791	291,314	64	52,192	12	239,122-	53-
1995	437,204	261,946	60	78,960	18	182,986-	42-
1996	6,966,458	848,659	12	343,286	5	505,373-	7-
1997	3,583,261	1,048,008	29	352,431	10	695,577-	19-
1998	1,961,163	309,585	16	54,868	3	254,717-	13-
1999	1,607,639	490,091	30	137,138	9	352,952-	22-
2000	2,213,816	27,749	1	99,070	4	71,321	3
2001	3,125,637	533,034	17	43,661	1	489,373-	16-
2002	24,112,705	4,927,213	20	333,979	1	4,593,233-	19-
2003	14,628,658	1,011,990	7	320,849	2	691,141-	5-
2004	6,447,537	397,620	6	65,508	1	332,113-	5-
2005	12,123,462	1,220,786	10	19,012	0	1,201,774-	10-
2006	3,241,752	57,203	2	147,335	5	90,132	3
2007	4,343,750	1,752,949	40	65,288	2	1,687,661-	39-
2008	3,880,715	1,548,699	40	49,735	1	1,498,964-	39-
2009	4,001,189	2,173,151	54	154,281	4	2,018,870-	50-
2010	23,896,471	951,109	4	127,828	1	823,281-	3-
2011	8,204,534	965,029	12	557,616	7	407,413-	5-
2012	5,024,545	977,547	19	932,134	19	45,413-	1-
2013	8,872,316	3,251,347	37	312,055	4	2,939,291-	33-
2014	7,466,139	947,590	13	758,756	10	188,834-	3-
2015	20,174,888	981,913	5	821	0	981,091-	5-
2016	14,067,230	6,582,017	47	132,486	1	6,449,532-	46-
2017	2,069,401	179,756	9		0	179,756-	9-
2018	5,163,525	1,187,355	23		0	1,187,355-	23-
2019	6,133,124	658,508	11		0	658,508-	11-
2020	6,060,855	389,243	6		0	389,243-	6-
TOTAL	208,105,732	37,818,613	18	6,098,650	3	31,719,963-	15-
THREE-YEAR MOVING AVERAGES							
92-94	2,765,918	1,379,505	50	337,184	12	1,042,322-	38-
93-95	667,398	341,386	51	83,704	13	257,682-	39-
94-96	2,618,818	467,306	18	158,146	6	309,160-	12-
95-97	3,662,308	719,538	20	258,226	7	461,312-	13-
96-98	4,170,294	735,417	18	250,195	6	485,222-	12-
97-99	2,384,021	615,895	26	181,479	8	434,415-	18-
98-00	1,927,540	275,808	14	97,026	5	178,783-	9-
99-01	2,315,698	350,291	15	93,290	4	257,001-	11-
00-02	9,817,386	1,829,332	19	158,904	2	1,670,428-	17-

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	13,955,667	2,157,412	15	232,830	2	1,924,583-	14-
02-04	15,062,967	2,112,274	14	240,112	2	1,872,162-	12-
03-05	11,066,552	876,799	8	135,123	1	741,676-	7-
04-06	7,270,917	558,536	8	77,285	1	481,251-	7-
05-07	6,569,655	1,010,313	15	77,212	1	933,101-	14-
06-08	3,822,072	1,119,617	29	87,453	2	1,032,164-	27-
07-09	4,075,218	1,824,933	45	89,768	2	1,735,165-	43-
08-10	10,592,792	1,557,653	15	110,615	1	1,447,038-	14-
09-11	12,034,065	1,363,096	11	279,908	2	1,083,188-	9-
10-12	12,375,184	964,562	8	539,193	4	425,369-	3-
11-13	7,367,132	1,731,308	24	600,602	8	1,130,706-	15-
12-14	7,121,000	1,725,495	24	667,648	9	1,057,846-	15-
13-15	12,171,114	1,726,950	14	357,211	3	1,369,739-	11-
14-16	13,902,752	2,837,173	20	297,354	2	2,539,819-	18-
15-17	12,103,840	2,581,229	21	44,436	0	2,536,793-	21-
16-18	7,100,052	2,649,709	37	44,162	1	2,605,548-	37-
17-19	4,455,350	675,206	15		0	675,206-	15-
18-20	5,785,835	745,036	13		0	745,036-	13-
FIVE-YEAR AVERAGE							
16-20	6,698,827	1,799,376	27	26,497	0	1,772,879-	26-

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	571,249	375,484	66	60,482	11	315,002-	55-
1993	466,274	233,353	50	21,951	5	211,402-	45-
1994	379,648	251,216	66	28,339	7	222,877-	59-
1995	498,265	306,866	62	35,851	7	271,015-	54-
1996	320,222	42,168	13	15,329	5	26,839-	8-
1997	290,152	153,233	53	29,422	10	123,811-	43-
1998	366,217	162,789	44	6,469	2	156,320-	43-
1999	1,016,552	657,861	65	12,736	1	645,125-	63-
2000	959,479	484,590	51		0	484,590-	51-
2001	1,648,544	846,214	51	16,458	1	829,756-	50-
2002	6,568,079	2,064,783	31	54,712	1	2,010,071-	31-
2003	3,363,185	2,122,348	63		0	2,122,348-	63-
2004	1,588,325	1,313,495	83		0	1,313,495-	83-
2005	2,982,922	3,159,464	106		0	3,159,464-	106-
2006	863,793	770,524	89		0	770,524-	89-
2007	1,422,946	2,051,516	144	70-	0	2,051,586-	144-
2008	1,726,588	2,104,700	122		0	2,104,700-	122-
2009	1,130,866	1,737,414	154		0	1,737,413-	154-
2010	2,535,967	1,370,949	54		0	1,370,949-	54-
2011	1,232,477	2,037,547	165		0	2,037,547-	165-
2012	905,382	1,883,200	208		0	1,883,200-	208-
2013	1,009,100	1,199,796	119	5,955-	1-	1,205,752-	119-
2014	993,804	1,824,080	184	4	0	1,824,075-	184-
2015	2,411,755	2,266,347	94		0	2,266,347-	94-
2016	4,410,099	3,328,641	75		0	3,328,641-	75-
2017	7,519,323	2,591,025	34		0	2,591,025-	34-
2018	6,012,105	3,169,082	53		0	3,169,082-	53-
2019	4,380,473	5,204,457	119		0	5,204,457-	119-
2020	2,692,190	3,610,549	134		0	3,610,549-	134-
TOTAL	60,265,980	47,323,692	79	275,728	0	47,047,964-	78-
THREE-YEAR MOVING AVERAGES							
92-94	472,390	286,684	61	36,924	8	249,760-	53-
93-95	448,062	263,812	59	28,714	6	235,098-	52-
94-96	399,378	200,083	50	26,506	7	173,577-	43-
95-97	369,546	167,422	45	26,867	7	140,555-	38-
96-98	325,530	119,397	37	17,073	5	102,323-	31-
97-99	557,640	324,628	58	16,209	3	308,419-	55-
98-00	780,749	435,080	56	6,402	1	428,678-	55-
99-01	1,208,192	662,888	55	9,731	1	653,157-	54-
00-02	3,058,700	1,131,862	37	23,723	1	1,108,139-	36-

NSTAR ELECTRIC COMPANY

ACCOUNTS 369.10 AND 369.20 SERVICES - OVERHEAD AND UNDERGROUND

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	3,859,936	1,677,782	43	23,723	1	1,654,058-	43-
02-04	3,839,863	1,833,542	48	18,237	0	1,815,305-	47-
03-05	2,644,811	2,198,436	83		0	2,198,436-	83-
04-06	1,811,680	1,747,828	96		0	1,747,828-	96-
05-07	1,756,553	1,993,835	114	23-	0	1,993,858-	114-
06-08	1,337,775	1,642,247	123	23-	0	1,642,270-	123-
07-09	1,426,800	1,964,543	138	23-	0	1,964,566-	138-
08-10	1,797,807	1,737,687	97		0	1,737,687-	97-
09-11	1,633,103	1,715,303	105		0	1,715,303-	105-
10-12	1,557,942	1,763,899	113		0	1,763,899-	113-
11-13	1,048,986	1,706,848	163	1,985-	0	1,708,833-	163-
12-14	969,428	1,635,692	169	1,984-	0	1,637,676-	169-
13-15	1,471,553	1,763,408	120	1,984-	0	1,765,391-	120-
14-16	2,605,219	2,473,023	95	1	0	2,473,021-	95-
15-17	4,780,392	2,728,671	57		0	2,728,671-	57-
16-18	5,980,509	3,029,583	51		0	3,029,583-	51-
17-19	5,970,634	3,654,855	61		0	3,654,855-	61-
18-20	4,361,589	3,994,696	92		0	3,994,696-	92-
FIVE-YEAR AVERAGE							
16-20	5,002,838	3,580,751	72		0	3,580,751-	72-

NSTAR ELECTRIC COMPANY

ACCOUNTS 370.10, 370.20 AND 370.30 METERS AND METERING EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	1,326,048	152,055	11	61,221	5	90,834-	7-
1993	621,065	79,520	13	44,046	7	35,474-	6-
1994	847,203	155,411	18	58,175	7	97,236-	11-
1995	1,043,799	194,739	19	133,300	13	61,439-	6-
1996	3,732,178	810,351	22	103,082	3	707,269-	19-
1997	2,815,863	1,024,228	36	68,528	2	955,700-	34-
1998	3,012,351	502,541	17	28,761	1	473,780-	16-
1999	2,630,986	253,595	10	18,496	1	235,099-	9-
2000	2,574,374		0		0		0
2001	1,154,391	2,560	0		0	2,560-	0
2002	9,718,382	243,226	3		0	243,226-	3-
2003	14,675,629	53,968	0	622,813	4	568,844	4
2004	6,518,707	15,361	0	1,215,865	19	1,200,504	18
2005	13,276,431	48,964	0	52,508	0	3,544	0
2006	778,571		0	1,750,480	225	1,750,480	225
2007	22,626,377		0	685,776	3	685,776	3
2008	3,626,269	506,189	14	1,260,956	35	754,767	21
2009	2,874,862	518,427	18	948,318	33	429,891	15
2010	1,218,868	1,036,927	85	1,472,656	121	435,729	36
2011	5,306,881		0	285,543	5	285,543	5
2012	5,881,545		0	318,135	5	318,135	5
2013	805,825		0	565,848	70	565,848	70
2014	1,636,166	461,556	28	824,765	50	363,209	22
2015	2,709,933	346,616	13	137,620	5	208,997-	8-
2016	2,614,118	102,788	4	311,192	12	208,404	8
2017	4,420,293		0		0		0
2018	4,757,513		0		0		0
2019	4,122,167		0		0		0
2020	11,702,852		0		0		0
TOTAL	139,029,647	6,509,023	5	10,968,082	8	4,459,059	3
THREE-YEAR MOVING AVERAGES							
92-94	931,439	128,995	14	54,481	6	74,515-	8-
93-95	837,356	143,223	17	78,507	9	64,716-	8-
94-96	1,874,394	386,834	21	98,186	5	288,648-	15-
95-97	2,530,613	676,439	27	101,637	4	574,803-	23-
96-98	3,186,797	779,040	24	66,790	2	712,250-	22-
97-99	2,819,733	593,455	21	38,595	1	554,860-	20-
98-00	2,739,237	252,046	9	15,752	1	236,293-	9-
99-01	2,119,917	85,385	4	6,165	0	79,220-	4-
00-02	4,482,382	81,929	2		0	81,929-	2-

NSTAR ELECTRIC COMPANY

ACCOUNTS 370.10, 370.20 AND 370.30 METERS AND METERING EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	8,516,134	99,918	1	207,604	2	107,686	1
02-04	10,304,239	104,185	1	612,892	6	508,707	5
03-05	11,490,256	39,431	0	630,395	5	590,964	5
04-06	6,857,903	21,442	0	1,006,284	15	984,843	14
05-07	12,227,126	16,321	0	829,588	7	813,266	7
06-08	9,010,405	168,730	2	1,232,404	14	1,063,674	12
07-09	9,709,169	341,539	4	965,016	10	623,478	6
08-10	2,573,333	687,181	27	1,227,310	48	540,129	21
09-11	3,133,537	518,451	17	902,172	29	383,721	12
10-12	4,135,765	345,642	8	692,111	17	346,469	8
11-13	3,998,084		0	389,842	10	389,842	10
12-14	2,774,512	153,852	6	569,583	21	415,731	15
13-15	1,717,308	269,391	16	509,411	30	240,020	14
14-16	2,320,073	303,653	13	424,526	18	120,872	5
15-17	3,248,115	149,801	5	149,604	5	197-	0
16-18	3,930,641	34,263	1	103,731	3	69,468	2
17-19	4,433,324		0		0		0
18-20	6,860,844		0		0		0
FIVE-YEAR AVERAGE							
16-20	5,523,389	20,558	0	62,238	1	41,681	1

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1999	158,390	79,685	50		0	79,685-	50-
2000	190,542	46,276	24		0	46,276-	24-
2001	165,192	33,604	20		0	33,604-	20-
2002	163,082	37,001	23	398	0	36,604-	22-
2003	242,654	45,547	19		0	45,547-	19-
2004	257,592	61,693	24		0	61,693-	24-
2005	153,525	50,417	33		0	50,417-	33-
2006	173,040	83,348	48		0	83,348-	48-
2007	144,574	49,301	34		0	49,301-	34-
2008	219,127	100,140	46		0	100,140-	46-
2009	214,244	69,679	33		0	69,679-	33-
2010	128,365	115,132	90	16,541	13	98,591-	77-
2011	134,903	78,576	58	2,067	2	76,509-	57-
2012	198,377	107,538	54		0	107,538-	54-
2013	202,892	133,503	66		0	133,503-	66-
2014	151,089	113,529	75		0	113,529-	75-
2015	181,276	138,855	77		0	138,855-	77-
2016	387,850	81,035	21		0	81,035-	21-
2017	118,569	86,137	73		0	86,137-	73-
2018	233,436	102,023	44		0	102,023-	44-
2019	221,704	153,941	69		0	153,941-	69-
2020	456,515	122,272	27		0	122,272-	27-
TOTAL	4,496,939	1,889,233	42	19,006	0	1,870,227-	42-
THREE-YEAR MOVING AVERAGES							
99-01	171,375	53,189	31		0	53,189-	31-
00-02	172,939	38,961	23	133	0	38,828-	22-
01-03	190,309	38,718	20	133	0	38,585-	20-
02-04	221,110	48,081	22	133	0	47,948-	22-
03-05	217,924	52,553	24		0	52,553-	24-
04-06	194,719	65,153	33		0	65,153-	33-
05-07	157,046	61,022	39		0	61,022-	39-
06-08	178,914	77,596	43		0	77,596-	43-
07-09	192,648	73,040	38		0	73,040-	38-
08-10	187,245	94,984	51	5,514	3	89,470-	48-
09-11	159,171	87,796	55	6,203	4	81,593-	51-
10-12	153,882	100,415	65	6,203	4	94,213-	61-
11-13	178,724	106,539	60	689	0	105,850-	59-
12-14	184,119	118,190	64		0	118,190-	64-
13-15	178,419	128,629	72		0	128,629-	72-
14-16	240,072	111,140	46		0	111,140-	46-

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
15-17	229,232	102,009	45		0	102,009-	45-
16-18	246,618	89,732	36		0	89,732-	36-
17-19	191,236	114,033	60		0	114,033-	60-
18-20	303,885	126,078	41		0	126,078-	41-
FIVE-YEAR AVERAGE							
16-20	283,615	109,081	38		0	109,081-	38-

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	2,776,528	1,589,614	57	424,321	15	1,165,293-	42-
1993	3,077,364	729,258	24	271,495	9	457,763-	15-
1994	1,573,165	776,722	49	174,994	11	601,728-	38-
1995	2,070,268	774,044	37	255,992	12	518,052-	25-
1996	1,236,170	140,475	11	64,548	5	75,927-	6-
1997	361,590	181,226	50	74,876	21	106,350-	29-
1998	93,754	145,627	155	5,984-	6-	151,611-	162-
1999	1,137,961	365,814	32	5,710	1	360,103-	32-
2000	425,039	150,090	35		0	150,090-	35-
2001	559,746	49,215	9		0	49,215-	9-
2002	21,595,315	58,981-	0	283,879	1	342,860	2
2003	2,342,867	223,030	10	2,442,051	104	2,219,021	95
2004	7,687,392	156,170	2	1,630,455	21	1,474,285	19
2005	4,734,681	1,237,476	26	3,869,656	82	2,632,180	56
2006	941,620	20,905-	2-		0	20,905	2
2007	1,185,310	181,265	15		0	181,265-	15-
2008	2,031,694	276,691-	14-	222,254	11	498,945	25
2009	1,034,368	393,819	38	252,268	24	141,551-	14-
2010	1,148,225	192,035	17	65,431	6	126,604-	11-
2011	812,359	217,100	27	13,026	2	204,074-	25-
2012	731,548	244,526	33		0	244,526-	33-
2013	627,598	338,370	54		0	338,370-	54-
2014	1,001,738	152,454	15		0	152,454-	15-
2015	341,844	63,536	19		0	63,536-	19-
2016	3,124,013	260,298	8		0	260,298-	8-
2017	522,717	116,089	22		0	116,089-	22-
2018	761,544	139,118	18		0	139,118-	18-
2019	677,646	252,833	37	18,068	3	234,765-	35-
2020	1,544,299	202,985	13		0	202,985-	13-
TOTAL	66,158,363	8,916,610	13	10,063,040	15	1,146,431	2
THREE-YEAR MOVING AVERAGES							
92-94	2,475,686	1,031,865	42	290,270	12	741,595-	30-
93-95	2,240,266	760,008	34	234,160	10	525,848-	23-
94-96	1,626,534	563,747	35	165,178	10	398,569-	25-
95-97	1,222,676	365,248	30	131,805	11	233,443-	19-
96-98	563,838	155,776	28	44,480	8	111,296-	20-
97-99	531,102	230,889	43	24,867	5	206,021-	39-
98-00	552,251	220,510	40	91-	0	220,601-	40-
99-01	707,582	188,373	27	1,903	0	186,469-	26-
00-02	7,526,700	46,775	1	94,626	1	47,852	1

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	8,165,976	71,088	1	908,643	11	837,555	10
02-04	10,541,858	106,740	1	1,452,128	14	1,345,389	13
03-05	4,921,646	538,892	11	2,647,387	54	2,108,495	43
04-06	4,454,564	457,580	10	1,833,370	41	1,375,790	31
05-07	2,287,204	465,945	20	1,289,885	56	823,940	36
06-08	1,386,208	38,777-	3-	74,085	5	112,862	8
07-09	1,417,124	99,464	7	158,174	11	58,710	4
08-10	1,404,763	103,054	7	179,984	13	76,930	5
09-11	998,317	267,651	27	110,242	11	157,410-	16-
10-12	897,377	217,887	24	26,152	3	191,735-	21-
11-13	723,835	266,666	37	4,342	1	262,324-	36-
12-14	786,961	245,117	31		0	245,117-	31-
13-15	657,060	184,787	28		0	184,787-	28-
14-16	1,489,198	158,762	11		0	158,762-	11-
15-17	1,329,525	146,641	11		0	146,641-	11-
16-18	1,469,425	171,835	12		0	171,835-	12-
17-19	653,969	169,346	26	6,023	1	163,324-	25-
18-20	994,497	198,312	20	6,023	1	192,289-	19-
FIVE-YEAR AVERAGE							
16-20	1,326,044	194,264	15	3,614	0	190,651-	14-

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1992	11,429	159,359		1,656	14	157,703-	
1993	53,702	8,788	16		0	8,788-	16-
1994	22,962,393	28,967	0	487	0	28,480-	0
1995	158,735	30,633	19	2,160	1	28,473-	18-
1996	1,044,189	29,917	3		0	29,917-	3-
1997							
1998	30,001-		0		0		0
1999	28,390	25,998	92		0	25,998-	92-
2000	167,203	46,610	28		0	46,610-	28-
2001	693,744	172,697	25		0	172,697-	25-
2002	118,258	31,696	27		0	31,696-	27-
2003	1,099,445	204,511	19	697	0	203,814-	19-
2004	35,737	26,169	73		0	26,169-	73-
2005	1,395,470	269,042	19		0	269,042-	19-
2006	2,150,493	431,074	20		0	431,074-	20-
2007	120,770	6,252	5		0	6,252-	5-
2008	582,430	146,777	25		0	146,777-	25-
2009	53,364	26,822	50		0	26,822-	50-
2010	17,650	114,206	647		0	114,206-	647-
2011	59,971	43,548	73		0	43,548-	73-
2012	4,556	34,367	754		0	34,367-	754-
2013	11,700	14,662	125		0	14,662-	125-
2014	4,794	690	14		0	690-	14-
2015	478,397	49,847	10		0	49,847-	10-
2016	18,828	24,776	132		0	24,776-	132-
2017	248,699	66,937	27		0	66,937-	27-
2018	2,315,461	981,468	42		0	981,468-	42-
2019	8,772	261,583			0	261,583-	
2020	1,617,154	129,346	8	952	0	128,393-	8-
TOTAL	35,431,733	3,366,743	10	5,952	0	3,360,791-	9-
THREE-YEAR MOVING AVERAGES							
92-94	7,675,841	65,705	1	714	0	64,990-	1-
93-95	7,724,943	22,796	0	882	0	21,914-	0
94-96	8,055,106	29,839	0	882	0	28,957-	0
95-97	400,975	20,183	5	720	0	19,463-	5-
96-98	338,063	9,972	3		0	9,972-	3-
97-99	537-	8,666			0	8,666-	
98-00	55,197	24,203	44		0	24,203-	44-
99-01	296,446	81,768	28		0	81,768-	28-
00-02	326,402	83,668	26		0	83,668-	26-

NSTAR ELECTRIC COMPANY

ACCOUNTS 390.00 AND 390.30 STRUCTURES AND IMPROVEMENTS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
01-03	637,149	136,301	21	232	0	136,069-	21-
02-04	417,814	87,459	21	232	0	87,226-	21-
03-05	843,551	166,574	20	232	0	166,342-	20-
04-06	1,193,900	242,095	20		0	242,095-	20-
05-07	1,222,244	235,456	19		0	235,456-	19-
06-08	951,231	194,701	20		0	194,701-	20-
07-09	252,188	59,950	24		0	59,950-	24-
08-10	217,814	95,935	44		0	95,935-	44-
09-11	43,661	61,526	141		0	61,526-	141-
10-12	27,392	64,041	234		0	64,041-	234-
11-13	25,409	30,859	121		0	30,859-	121-
12-14	7,017	16,573	236		0	16,573-	236-
13-15	164,964	21,733	13		0	21,733-	13-
14-16	167,340	25,105	15		0	25,105-	15-
15-17	248,641	47,187	19		0	47,187-	19-
16-18	860,996	357,727	42		0	357,727-	42-
17-19	857,644	436,662	51		0	436,662-	51-
18-20	1,313,796	457,465	35	317	0	457,148-	35-
FIVE-YEAR AVERAGE							
16-20	841,783	292,822	35	190	0	292,631-	35-

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1994	269,304		0		0		0
1995	3,135		0		0		0
1996							
1997							
1998							
1999							
2000							
2001							
2002							
2003							
2004							
2005	1,092,921	46,313	4		0	46,313-	4-
2006	579,881	24,161	4		0	24,161-	4-
2007	2,395,102	22,608	1		0	22,608-	1-
2008	357,682	445,687	125		0	445,687-	125-
2009	146,088	408,892	280		0	408,892-	280-
2010	942,501	63,172	7		0	63,172-	7-
2011	1,137,391	118,124	10		0	118,124-	10-
2012	591,049	732,966	124		0	732,966-	124-
2013	530,028	139,878	26		0	139,878-	26-
2014	116,837	34,982-	30-		0	34,982	30
2015	48,057	18,787	39		0	18,787-	39-
2016	272	514	189		0	514-	189-
2017	3,060	7	0		0	7-	0
2018							
2019							
2020							
TOTAL	8,213,309	1,986,125	24		0	1,986,125-	24-
THREE-YEAR MOVING AVERAGES							
94-96	90,813		0		0		0
95-97	1,045		0		0		0
96-98							
97-99							
98-00							
99-01							
00-02							
01-03							
02-04							
03-05	364,307	15,438	4		0	15,438-	4-
04-06	557,601	23,491	4		0	23,491-	4-

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
05-07	1,355,968	31,027	2		0	31,027-	2-
06-08	1,110,888	164,152	15		0	164,152-	15-
07-09	966,291	292,396	30		0	292,396-	30-
08-10	482,090	305,917	63		0	305,917-	63-
09-11	741,993	196,729	27		0	196,729-	27-
10-12	890,314	304,754	34		0	304,754-	34-
11-13	752,823	330,322	44		0	330,322-	44-
12-14	412,638	279,287	68		0	279,287-	68-
13-15	231,641	41,228	18		0	41,228-	18-
14-16	55,056	5,227-	9-		0	5,227	9
15-17	17,130	6,436	38		0	6,436-	38-
16-18	1,111	174	16		0	174-	16-
17-19	1,020	2	0		0	2-	0
18-20							
FIVE-YEAR AVERAGE							
16-20	666	104	16		0	104-	16-

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
2002	1,115,881		0	114,012	10	114,012	10
2003							
2004							
2005	396,448		0		0		0
2006							
2007							
2008							
2009							
2010							
2011	46,821		0	14,355	31	14,355	31
2012	174,728		0	174,734	100	174,734	100
2013	189,871		0	50,749	27	50,749	27
2014	103,770		0	4,946	5	4,946	5
2015	130,296		0	48,046	37	48,046	37
2016	152,956		0	1,310-	1-	1,310-	1-
2017	1,829,527	142-	0	146,129	8	146,271	8
2018	1,841,888	6	0	261,870	14	261,865	14
2019	1,011,372		0	198,808	20	198,808	20
2020	125,246		0	144,717	116	144,717	116
TOTAL	7,118,802	136-	0	1,157,057	16	1,157,194	16
THREE-YEAR MOVING AVERAGES							
02-04	371,960		0	38,004	10	38,004	10
03-05	132,149		0		0		0
04-06	132,149		0		0		0
05-07	132,149		0		0		0
06-08							
07-09							
08-10							
09-11	15,607		0	4,785	31	4,785	31
10-12	73,850		0	63,030	85	63,030	85
11-13	137,140		0	79,946	58	79,946	58
12-14	156,123		0	76,809	49	76,809	49
13-15	141,312		0	34,580	24	34,580	24
14-16	129,007		0	17,227	13	17,227	13
15-17	704,259	47-	0	64,289	9	64,336	9
16-18	1,274,790	45-	0	135,563	11	135,609	11

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
17-19	1,560,929	45-	0	202,269	13	202,315	13
18-20	992,835	2	0	201,799	20	201,797	20
FIVE-YEAR AVERAGE							
16-20	992,198	27-	0	150,043	15	150,070	15

NSTAR ELECTRIC COMPANY

ACCOUNT 396.00 POWER OPERATED EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
1995	5,783		0		0		0
1996	2		0	401		401	
1997							
1998							
1999							
2000							
2001	297,718		0		0		0
2002							
2003							
2004							
2005							
2006							
2007							
2008							
2009							
2010							
2011	36,772		0		0		0
2012	35,778-		0		0		0
2013	35,778		0		0		0
2014							
2015							
2016							
2017							
2018							
2019							
2020							
TOTAL	340,275		0	401	0	401	0
THREE-YEAR MOVING AVERAGES							
95-97	1,928		0	134	7	134	7
96-98	1		0	134		134	
97-99							
98-00							
99-01	99,239		0		0		0
00-02	99,239		0		0		0
01-03	99,239		0		0		0
02-04							
03-05							
04-06							
05-07							
06-08							

NSTAR ELECTRIC COMPANY

ACCOUNT 396.00 POWER OPERATED EQUIPMENT

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
THREE-YEAR MOVING AVERAGES							
07-09							
08-10							
09-11	12,257		0		0		0
10-12	331		0		0		0
11-13	12,257		0		0		0
12-14							
13-15	11,926		0		0		0
14-16							
15-17							
16-18							
17-19							
18-20							
FIVE-YEAR AVERAGE							
16-20							

NSTAR ELECTRIC COMPANY

ACCOUNT 397.20 COMMUNICATIONS EQUIPMENT - MICROWAVE

SUMMARY OF BOOK SALVAGE

YEAR	REGULAR RETIREMENTS	COST OF REMOVAL AMOUNT	PCT	GROSS SALVAGE AMOUNT	PCT	NET SALVAGE AMOUNT	PCT
2005	4,339	47	1		0	47-	1-
2006							
2007							
2008	1,898	1,898	100		0	1,898-	100-
2009							
2010							
2011	191,467		0		0		0
2012		2,941				2,941-	
2013	15,831	6,905	44		0	6,905-	44-
2014							
2015		3				3-	
2016							
2017	1,139,625		0		0		0
2018	19,108		0		0		0
2019							
2020	11,155	1,242	11		0	1,242-	11-
TOTAL	1,383,423	13,036	1		0	13,036-	1-
THREE-YEAR MOVING AVERAGES							
05-07	1,446	16	1		0	16-	1-
06-08	633	633	100		0	633-	100-
07-09	633	633	100		0	633-	100-
08-10	633	633	100		0	633-	100-
09-11	63,822		0		0		0
10-12	63,822	980	2		0	980-	2-
11-13	69,100	3,282	5		0	3,282-	5-
12-14	5,277	3,282	62		0	3,282-	62-
13-15	5,277	2,303	44		0	2,303-	44-
14-16		1				1-	
15-17	379,875	1	0		0	1-	0
16-18	386,244		0		0		0
17-19	386,244		0		0		0
18-20	10,088	414	4		0	414-	4-
FIVE-YEAR AVERAGE							
16-20	233,978	248	0		0	248-	0

PART IX. DETAILED DEPRECIATION CALCULATIONS

NSTAR ELECTRIC COMPANY

ACCOUNT 303.10 MISCELLANEOUS INTANGIBLE PLANT - 5 YEAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
1994	60,846.27	60,846	60,846			
2000	85,644.42	85,644	85,644			
2002	313,115.05	313,115	313,115			
2003	593,244.08	593,244	593,244			
2004	187,573.75	187,574	187,574			
2005	30,193.50	30,194	30,194			
2006	374,216.30	374,216	374,216			
2007	36,067.63	36,068	36,068			
2008	196,160.73	196,161	196,161			
2009	670,012.11	670,012	670,012			
2010	135,691.63	135,692	135,692			
2011	1,055,218.97	1,055,219	1,055,219			
2012	255,814.80	255,815	255,815			
2015	168,755.94	168,756	168,755			
	4,162,555.18	4,162,556	4,162,555			

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 0.0 0.00

NSTAR ELECTRIC COMPANY

ACCOUNT 303.20 MISCELLANEOUS INTANGIBLE PLANT - 10 YEAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 10-SQUARE						
NET SALVAGE PERCENT.. 0						
1992	17,209.91	17,210	17,210			
2001	788.04	788	788			
2005	2,123,629.02	2,123,629	2,123,629			
2007	119,067.10	119,067	119,067			
2008	9,735,883.77	9,735,884	9,735,884			
2009	254,346.97	254,347	254,347			
2010	1,243,586.55	1,243,587	1,243,587			
2011	8,637,643.09	8,205,761	8,637,643			
2012	5,349,723.82	4,547,265	5,349,724			
2013	3,490,887.97	2,618,166	3,296,127	194,761	2.50	77,904
2015	7,400,727.70	4,070,400	5,124,409	2,276,319	4.50	505,849
2016	2,075,816.79	934,118	1,176,003	899,814	5.50	163,603
2017	132,331.58	46,316	58,309	74,023	6.50	11,388
2020	11,055,238.18	552,762	695,897	10,359,341	9.50	1,090,457
	51,636,880.49	34,469,300	37,832,624	13,804,256		1,849,201

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 7.5 3.58

NSTAR ELECTRIC COMPANY

ACCOUNT 303.30 MISCELLANEOUS INTANGIBLE PLANT - 15 YEAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
2015	14,476,008.18	5,307,918	7,907,099	6,568,909	9.50	691,464
	14,476,008.18	5,307,918	7,907,099	6,568,909		691,464

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.5 4.78

NSTAR ELECTRIC COMPANY

ACCOUNT 340.10 LAND RIGHTS - SOLAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
INTERIM SURVIVOR CURVE.. IOWA 50-R4						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2010	157,818.11	50,716		157,818	22.11	7,138
2014	757,336.17	170,726		757,336	22.30	33,961
2018	2,590,555.66	260,092		2,590,556	22.40	115,650
	3,505,709.94	481,534		3,505,710		156,749

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 22.4 4.47

NSTAR ELECTRIC COMPANY

ACCOUNT 341.10 STRUCTURES AND IMPROVEMENTS - SOLAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
INTERIM SURVIVOR CURVE.. IOWA 35-R3						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2010	590,693.20	199,725	184,344	406,349	19.83	20,492
2011	1,854,097.32	581,779	536,977	1,317,120	20.12	65,463
2012	7,111.26	2,051	1,893	5,218	20.38	256
2014	191,407.22	44,772	41,324	150,083	20.83	7,205
2015	3,259.94	665	614	2,646	21.03	126
2018	31,811,787.01	3,276,614	3,024,288	28,787,499	21.51	1,338,331
2019	7,392,464.62	473,192	436,752	6,955,713	21.64	321,429
	41,850,820.57	4,578,798	4,226,192	37,624,629		1,753,302

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 21.5 4.19

NSTAR ELECTRIC COMPANY

ACCOUNT 344.10 GENERATORS - SOLAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

INTERIM SURVIVOR CURVE.. IOWA 25-S2.5
PROBABLE RETIREMENT YEAR.. 6-2043
NET SALVAGE PERCENT.. 0

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
2010	7,560,780.70	3,144,907	2,755,140	4,805,641	14.35	334,888
2011	8,645,112.12	3,295,863	2,887,387	5,757,725	15.11	381,054
2012	8,863.21	3,064	2,684	6,179	15.86	390
2013	1,475.77	456	399	1,077	16.59	65
2014	10,934,875.72	2,974,286	2,605,666	8,329,210	17.29	481,736
2015	613.82	144	126	488	17.96	27
2017	11,981.13	1,846	1,617	10,364	19.16	541
2018	84,404,100.86	9,513,186	8,334,162	76,069,939	19.68	3,865,342
2019	16,114,286.40	1,116,398	978,036	15,136,250	20.15	751,179
2020	16,770.55	398	349	16,422	20.57	798
	127,698,860.28	20,050,548	17,565,566	110,133,294		5,816,020

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 18.9 4.55

NSTAR ELECTRIC COMPANY

ACCOUNT 345.10 ACCESSORY ELECTRIC EQUIPMENT - SOLAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
INTERIM SURVIVOR CURVE.. IOWA 30-S1.5						
PROBABLE RETIREMENT YEAR.. 6-2043						
NET SALVAGE PERCENT.. 0						
2010	548,298.69	201,023	244,499	303,800	17.12	17,745
2011	848,878.91	288,916	351,400	497,479	17.56	28,330
2014	1,065,972.04	268,923	327,084	738,888	18.82	39,261
2018	4,442,548.48	486,015	591,126	3,851,422	20.27	190,006
2019	914,071.34	61,709	75,055	839,016	20.58	40,769
	7,819,769.46	1,306,586	1,589,164	6,230,605		316,111

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.7 4.04

NSTAR ELECTRIC COMPANY

ACCOUNT 360.20 LAND RIGHTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. 0						
1888	6,383.00	6,383	6,383			
1913	1,000.00	937	10-	1,010	4.72	214
1920	300.00	274	3-	303	6.52	46
1923	373.21	337	4-	377	7.31	52
1924	125.00	112	1-	126	7.57	17
1927	340.80	303	3-	344	8.39	41
1929	1,122.00	988	10-	1,132	8.97	126
1930	126.84	111	1-	128	9.26	14
1931	506.72	442	5-	512	9.57	54
1933	340.30	294	3-	343	10.20	34
1957	1.00	1	1			
1961	1,902.39	1,296	14-	1,916	23.89	80
1963	817,580.70	542,653	5,706-	823,287	25.22	32,644
1964	1,410.34	923	10-	1,420	25.89	55
1965	307.52	199	2-	310	26.58	12
1966	1,627.94	1,036	11-	1,639	27.28	60
1968	3,885.18	2,398	25-	3,910	28.70	136
1969	1,500.55	912	10-	1,511	29.42	51
1970	8,339.17	4,987	52-	8,391	30.15	278
1971	2,535.07	1,491	16-	2,551	30.89	83
1972	61.14	35		61	31.64	2
1975	7,961.29	4,361	46-	8,007	33.92	236
1977	695.12	366	4-	699	35.49	20
1979	3,073.67	1,554	16-	3,090	37.08	83
1985	325.00	143	2-	327	42.02	8
1995	33,466.01	10,825	114-	33,580	50.74	662
2002	125,000.00	29,716	312-	125,312	57.17	2,192
2005	1,415.00	283	3-	1,418	59.99	24
2011	1,075.00	133	1-	1,076	65.73	16
	1,022,779.96	613,493		1,022,780		37,240

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 27.5 3.64

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. -20						
1901	5,182.67	6,077	6,219			
1907	17,460.61	20,064	20,953			
1913	919.67	1,034	1,099	5	4.72	1
1917	644.62	714	759	15	5.75	3
1918	13,447.73	14,846	15,774	363	6.00	60
1919	3,465.22	3,811	4,049	109	6.26	17
1920	923.56	1,012	1,075	33	6.52	5
1921	37,268.30	40,679	43,221	1,501	6.78	221
1923	739.45	801	851	36	7.31	5
1924	54,056.84	58,321	61,965	2,903	7.57	383
1925	1,871.22	2,011	2,137	108	7.84	14
1926	17,580.23	18,812	19,987	1,109	8.12	137
1927	5,991.68	6,386	6,785	405	8.39	48
1928	70,779.95	75,106	79,798	5,138	8.68	592
1929	15,442.72	16,315	17,334	1,197	8.97	133
1930	140,960.93	148,268	157,531	11,622	9.26	1,255
1931	3,981.10	4,168	4,428	349	9.57	36
1932	921.61	960	1,020	86	9.88	9
1934	504.00	520	552	53	10.53	5
1935	1,945.39	1,996	2,121	213	10.87	20
1936	9,519.25	9,714	10,321	1,102	11.22	98
1937	5,261.51	5,338	5,672	642	11.59	55
1938	12,677.70	12,787	13,586	1,627	11.96	136
1939	2,744.79	2,752	2,924	370	12.34	30
1940	21,742.74	21,659	23,012	3,079	12.74	242
1941	3,478.46	3,443	3,658	516	13.14	39
1942	934.96	919	976	146	13.56	11
1943	1,470.95	1,436	1,526	239	14.00	17
1945	360.60	347	369	64	14.90	4
1946	897.60	856	909	168	15.37	11
1947	66,394.24	62,836	66,762	12,911	15.85	815
1948	4,047.00	3,798	4,035	821	16.35	50
1949	141,773.91	131,906	140,147	29,982	16.85	1,779
1950	691,809.42	637,904	677,758	152,413	17.37	8,774
1951	75,311.03	68,792	73,090	17,283	17.91	965
1952	69,197.14	62,610	66,522	16,515	18.45	895
1953	108,450.36	97,154	103,224	26,916	19.01	1,416
1954	574,025.06	508,997	540,798	148,032	19.58	7,560
1955	733,037.12	643,196	683,381	196,264	20.16	9,735
1956	328,176.99	284,856	302,653	91,159	20.75	4,393
1957	268,527.58	230,461	244,860	77,373	21.36	3,622
1958	359,413.81	304,896	323,945	107,352	21.98	4,884
1959	318,831.53	267,310	284,011	98,587	22.60	4,362

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 75-R3
NET SALVAGE PERCENT.. -20

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1960	144,914.60	120,012	127,510	46,388	23.24	1,996
1961	22,001.22	17,992	19,116	7,285	23.89	305
1962	232,410.40	187,603	199,324	79,568	24.55	3,241
1963	261,227.58	208,061	221,060	92,413	25.22	3,664
1964	315,642.24	248,019	263,515	115,256	25.89	4,452
1965	82,133.74	63,631	67,606	30,954	26.58	1,165
1966	216,175.05	165,055	175,367	84,043	27.28	3,081
1967	538,203.43	404,899	430,196	215,648	27.98	7,707
1968	226,162.98	167,541	178,008	93,388	28.70	3,254
1969	373,557.31	272,426	289,446	158,823	29.42	5,398
1970	758,395.44	544,225	578,227	331,848	30.15	11,007
1971	317,903.87	224,363	238,381	143,104	30.89	4,633
1972	841,686.92	583,925	620,407	389,617	31.64	12,314
1973	915,871.89	624,401	663,412	435,634	32.39	13,450
1974	148,298.56	99,301	105,505	72,453	33.15	2,186
1975	2,416,481.28	1,588,295	1,687,527	1,212,251	33.92	35,739
1976	49,961.55	32,215	34,228	25,726	34.70	741
1977	3,387,908.15	2,141,700	2,275,507	1,789,983	35.49	50,436
1978	796,282.77	493,316	524,137	431,402	36.28	11,891
1979	1,062,908.19	644,888	685,179	590,311	37.08	15,920
1980	54,218.13	32,201	34,213	30,849	37.88	814
1981	114,675.82	66,604	70,765	66,846	38.70	1,727
1982	244,972.58	139,067	147,756	146,211	39.52	3,700
1983	134,137.21	74,387	79,034	81,931	40.34	2,031
1984	224,506.16	121,484	129,074	140,333	41.18	3,408
1985	96,149.24	50,736	53,906	61,473	42.02	1,463
1986	215,495.49	110,816	117,739	140,856	42.86	3,286
1987	181,438.49	90,807	96,480	121,246	43.72	2,773
1988	435,175.70	211,877	225,114	297,097	44.57	6,666
1989	1,633,153.82	772,410	820,668	1,139,117	45.44	25,069
1990	12,442,575.47	5,711,590	6,068,434	8,862,657	46.31	191,377
1991	311,486.03	138,647	147,309	226,474	47.18	4,800
1992	370,763.42	159,756	169,737	275,179	48.07	5,725
1993	567,649.05	236,594	251,376	429,803	48.95	8,780
1994	5,000,934.14	2,012,356	2,138,082	3,863,039	49.85	77,493
1995	24,822,042.34	9,635,023	10,236,993	19,549,458	50.74	385,287
1996	1,819,162.44	679,632	722,094	1,460,901	51.65	28,285
1997	859,145.13	308,467	327,739	703,235	52.56	13,380
1998	4,427,477.36	1,525,195	1,620,485	3,692,488	53.47	69,057
1999	2,313,938.04	763,044	810,717	1,966,009	54.39	36,147
2000	385,896.26	121,571	129,166	333,910	55.31	6,037
2001	777,571.76	233,393	247,975	685,111	56.24	12,182
2002	1,420,369.21	405,197	430,513	1,273,930	57.17	22,283

NSTAR ELECTRIC COMPANY

ACCOUNT 361.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. -20						
2003	1,969,851.90	532,333	565,592	1,798,230	58.11	30,945
2004	559,810.85	142,866	151,792	519,981	59.05	8,806
2005	15,573,776.01	3,740,136	3,973,809	14,714,722	59.99	245,286
2006	282,473.52	63,546	67,516	271,452	60.94	4,454
2007	1,555,035.46	326,184	346,563	1,519,480	61.89	24,551
2008	1,045,102.73	203,331	216,035	1,038,088	62.84	16,520
2009	2,008,206.53	359,863	382,346	2,027,502	63.80	31,779
2010	933,206.11	152,893	162,445	957,402	64.76	14,784
2011	2,971,085.89	440,671	468,203	3,097,100	65.73	47,119
2012	1,745,263.12	232,050	246,548	1,847,768	66.69	27,707
2013	2,343,359.93	275,214	292,409	2,519,623	67.66	37,239
2014	623,998.59	63,595	67,568	681,230	68.63	9,926
2015	2,610,391.10	225,131	239,196	2,893,273	69.61	41,564
2016	11,378,300.85	804,628	854,899	12,799,062	70.58	181,341
2017	12,921,366.34	711,244	755,681	14,749,959	71.56	206,120
2018	3,476,981.29	136,854	145,404	4,026,974	72.54	55,514
2019	670,510.73	15,875	16,867	787,746	73.52	10,715
2020	174,511.74	1,367	1,452	207,962	74.51	2,791
	138,996,464.40	44,646,371	47,435,149	119,360,608		2,154,348

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 55.4 1.55

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 62-R2.5						
NET SALVAGE PERCENT.. -35						
1900	56,072.26	75,698	75,698			
1919	1,070.70	1,361	1,445			
1921	1,091.58	1,376	1,474			
1922	4,891.76	6,142	6,604			
1923	173.37	217	234			
1924	273.32	340	369			
1925	2,040.02	2,531	2,753	1	5.01	
1927	312.14	384	418	3	5.45	1
1928	5,522.01	6,773	7,368	87	5.67	15
1929	7,030.51	8,591	9,346	145	5.88	25
1930	1,506,424.64	1,833,255	1,994,391	39,282	6.11	6,429
1931	413.97	502	546	13	6.33	2
1932	8,345.36	10,074	10,959	307	6.56	47
1933	4,636.29	5,574	6,064	195	6.79	29
1934	960.76	1,150	1,251	46	7.01	7
1935	1,507.48	1,797	1,955	80	7.25	11
1936	5,451.49	6,470	7,039	321	7.49	43
1937	4,288.21	5,067	5,512	277	7.73	36
1938	565.69	666	725	39	7.97	5
1939	3,375.38	3,953	4,300	257	8.22	31
1940	49,952.08	58,223	63,341	4,094	8.47	483
1941	36,491.44	42,327	46,047	3,216	8.73	368
1942	11,850.72	13,679	14,881	1,117	8.99	124
1943	46,330.38	53,194	57,870	4,676	9.27	504
1944	1,014.99	1,159	1,261	109	9.54	11
1945	5,698.39	6,473	7,042	651	9.83	66
1946	68,223.66	77,053	83,826	8,276	10.13	817
1947	362,579.72	407,137	442,923	46,560	10.43	4,464
1948	102,581.10	114,473	124,535	13,949	10.75	1,298
1949	486,382.74	539,378	586,787	69,830	11.07	6,308
1950	333,742.45	367,637	399,951	50,601	11.41	4,435
1951	842,270.98	921,387	1,002,373	134,693	11.76	11,453
1952	1,073,907.87	1,166,127	1,268,625	181,151	12.13	14,934
1953	373,672.92	402,755	438,156	66,302	12.50	5,304
1954	1,405,594.32	1,503,051	1,635,163	262,389	12.89	20,356
1955	2,321,104.09	2,461,827	2,678,212	455,279	13.29	34,257
1956	1,981,447.00	2,083,441	2,266,567	408,386	13.71	29,787
1957	1,866,735.46	1,945,360	2,116,349	403,744	14.14	28,553
1958	3,461,063.59	3,572,918	3,886,963	785,473	14.59	53,836
1959	3,008,659.47	3,075,756	3,346,102	715,588	15.05	47,547
1960	1,311,956.08	1,327,789	1,444,496	326,645	15.52	21,047
1961	818,847.39	819,985	892,058	213,386	16.01	13,328
1962	2,201,083.84	2,180,192	2,371,822	599,641	16.51	36,320

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 62-R2.5
NET SALVAGE PERCENT.. -35

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1963	1,354,924.99	1,327,011	1,443,650	385,499	17.02	22,650
1964	1,076,442.77	1,041,856	1,133,431	319,767	17.55	18,220
1965	1,490,986.94	1,425,548	1,550,848	461,984	18.09	25,538
1966	2,316,596.59	2,186,651	2,378,849	748,556	18.65	40,137
1967	1,979,382.01	1,844,222	2,006,322	665,844	19.21	34,661
1968	2,555,187.70	2,347,904	2,554,275	895,228	19.80	45,214
1969	2,136,599.20	1,935,813	2,105,963	778,446	20.39	38,178
1970	6,110,091.64	5,456,052	5,935,617	2,313,007	20.99	110,196
1971	3,274,308.16	2,879,615	3,132,721	1,287,595	21.61	59,583
1972	9,128,191.43	7,904,626	8,599,410	3,723,648	22.23	167,506
1973	6,820,840.69	5,811,530	6,322,340	2,885,795	22.87	126,183
1974	2,488,900.50	2,085,394	2,268,692	1,091,324	23.52	46,400
1975	8,683,492.08	7,150,856	7,779,387	3,943,327	24.18	163,082
1976	1,204,848.66	974,610	1,060,274	566,272	24.85	22,788
1977	4,540,070.62	3,605,318	3,922,211	2,206,884	25.53	86,443
1978	1,935,751.78	1,508,115	1,640,672	972,593	26.22	37,094
1979	6,180,881.80	4,722,561	5,137,655	3,206,535	26.91	119,158
1980	1,228,998.09	920,030	1,000,897	658,250	27.62	23,832
1981	2,479,839.99	1,817,512	1,977,264	1,370,520	28.34	48,360
1982	1,932,943.35	1,386,387	1,508,245	1,101,229	29.06	37,895
1983	1,964,776.21	1,377,549	1,498,630	1,153,818	29.80	38,719
1984	4,644,451.96	3,181,529	3,461,172	2,808,838	30.54	91,972
1985	4,695,493.05	3,139,792	3,415,767	2,923,149	31.29	93,421
1986	10,605,176.49	6,918,398	7,526,497	6,790,491	32.04	211,938
1987	11,157,344.66	7,091,536	7,714,853	7,347,562	32.81	223,943
1988	7,030,169.04	4,350,455	4,732,842	4,757,886	33.58	141,688
1989	14,163,583.00	8,524,260	9,273,508	9,847,329	34.36	286,593
1990	21,852,439.70	12,775,614	13,898,538	15,602,256	35.15	443,876
1991	5,950,010.30	3,376,226	3,672,982	4,359,532	35.94	121,300
1992	5,441,898.98	2,991,962	3,254,943	4,091,621	36.75	111,337
1993	10,117,646.39	5,384,171	5,857,418	7,801,405	37.56	207,705
1994	14,163,475.44	7,287,469	7,928,008	11,192,684	38.37	291,704
1995	18,930,028.77	9,401,883	10,228,270	15,327,269	39.19	391,102
1996	10,081,133.22	4,824,851	5,248,936	8,360,594	40.02	208,910
1997	11,049,467.87	5,086,175	5,533,229	9,383,553	40.86	229,651
1998	19,859,129.02	8,778,073	9,549,630	17,260,194	41.70	413,914
1999	9,012,107.00	3,816,704	4,152,177	8,014,167	42.55	188,347
2000	4,523,815.60	1,832,145	1,993,183	4,113,968	43.40	94,792
2001	10,118,876.75	3,906,488	4,249,852	9,410,632	44.27	212,574
2002	18,269,870.32	6,711,163	7,301,047	17,363,278	45.13	384,739
2003	33,896,202.72	11,808,793	12,846,737	32,913,137	46.00	715,503
2004	33,006,791.30	10,866,644	11,821,777	32,737,391	46.88	698,323
2005	40,534,572.25	12,568,474	13,673,191	41,048,482	47.76	859,474

NSTAR ELECTRIC COMPANY

ACCOUNT 362.00 STATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 62-R2.5
NET SALVAGE PERCENT.. -35

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
2006	24,146,081.37	7,018,831	7,635,757	24,961,453	48.65	513,082
2007	32,222,948.40	8,742,392	9,510,812	33,990,168	49.54	686,116
2008	38,729,273.97	9,748,449	10,605,298	41,679,222	50.44	826,313
2009	50,589,474.01	11,742,778	12,774,920	55,520,870	51.34	1,081,435
2010	27,676,186.40	5,875,682	6,392,130	30,970,722	52.25	592,741
2011	22,607,531.91	4,351,566	4,734,051	25,786,117	53.16	485,066
2012	40,483,011.40	6,989,999	7,604,391	47,047,674	54.07	870,125
2013	55,910,659.27	8,533,700	9,283,777	66,195,613	54.99	1,203,775
2014	48,705,119.03	6,447,632	7,014,353	58,737,558	55.92	1,050,386
2015	36,446,215.79	4,095,115	4,455,059	44,747,332	56.84	787,251
2016	73,916,691.55	6,808,503	7,406,943	92,380,591	57.77	1,599,110
2017	42,230,721.43	3,025,029	3,290,916	53,720,558	58.71	915,015
2018	35,990,777.55	1,849,242	2,011,783	46,575,767	59.64	780,948
2019	48,044,824.61	1,485,306	1,615,858	63,244,655	60.58	1,043,986
2020	83,832,945.27	857,863	933,266	112,241,210	61.53	1,824,170
	1,075,305,838.61	317,017,294	344,875,025	1,106,787,857		22,536,443

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 49.1 2.10

NSTAR ELECTRIC COMPANY

ACCOUNT 362.10 STATION EQUIPMENT - SOLAR

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-R2.5						
NET SALVAGE PERCENT.. -10						
2010	464,064.29	191,529	178,217	332,254	15.62	21,271
2011	333,252.29	125,223	116,520	250,058	16.46	15,192
2012	27,423.15	9,291	8,645	21,520	17.30	1,244
2013	8,445.18	2,542	2,365	6,925	18.16	381
2014	767,100.90	201,165	187,184	656,627	19.04	34,487
2018	8,993,707.50	925,992	861,634	9,031,444	22.66	398,563
2019	3,150,533.43	195,459	181,874	3,283,713	23.59	139,199
	13,744,526.74	1,651,201	1,536,439	13,582,540		610,337

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 22.3 4.44

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 62-R1.5						
NET SALVAGE PERCENT.. -100						
1922	400.17	706	593	207	7.31	28
1923	758.92	1,333	1,120	398	7.57	53
1924	692.96	1,211	1,018	368	7.84	47
1925	1,998.14	3,474	2,920	1,076	8.11	133
1926	5,746.66	9,940	8,354	3,139	8.38	375
1927	3,392.27	5,837	4,906	1,879	8.66	217
1928	5,644.68	9,662	8,121	3,168	8.94	354
1929	15,260.59	25,982	21,837	8,684	9.22	942
1930	1,704.01	2,885	2,425	983	9.51	103
1931	4,125.80	6,947	5,839	2,413	9.80	246
1932	5,247.81	8,786	7,384	3,112	10.10	308
1933	3,062.33	5,097	4,284	1,841	10.40	177
1934	6,809.28	11,268	9,471	4,148	10.70	388
1935	9,780.61	16,088	13,522	6,039	11.01	549
1936	15,828.04	25,876	21,748	9,908	11.32	875
1937	13,449.50	21,853	18,367	8,532	11.63	734
1938	12,800.37	20,666	17,369	8,232	11.95	689
1939	20,765.82	33,313	27,999	13,533	12.27	1,103
1940	29,375.72	46,811	39,344	19,407	12.60	1,540
1941	22,841.53	36,149	30,383	15,300	12.94	1,182
1942	25,293.63	39,752	33,411	17,176	13.28	1,293
1943	16,032.29	25,016	21,025	11,040	13.63	810
1944	29,334.87	45,441	38,192	20,478	13.98	1,465
1945	26,174.08	40,241	33,822	18,526	14.34	1,292
1946	18,863.48	28,782	24,191	13,536	14.70	921
1947	26,701.65	40,414	33,967	19,436	15.08	1,289
1948	24,773.54	37,193	31,260	18,287	15.46	1,183
1949	36,579.33	54,456	45,769	27,390	15.85	1,728
1950	51,247.75	75,648	63,581	38,914	16.24	2,396
1951	37,066.20	54,236	45,584	28,548	16.64	1,716
1952	46,028.03	66,726	56,082	35,974	17.06	2,109
1953	74,199.59	106,560	89,562	58,837	17.48	3,366
1954	80,908.95	115,099	96,738	65,080	17.90	3,636
1955	806,820.00	1,136,309	955,045	658,595	18.34	35,910
1956	210,730.20	293,800	246,933	174,527	18.78	9,293
1957	245,789.92	339,033	284,950	206,630	19.24	10,740
1958	276,542.64	377,348	317,153	235,932	19.70	11,976
1959	300,767.07	405,843	341,103	260,431	20.17	12,912
1960	368,404.60	491,525	413,117	323,692	20.64	15,683
1961	288,538.55	380,403	319,721	257,356	21.13	12,180
1962	262,208.76	341,464	286,994	237,424	21.63	10,977
1963	280,404.40	360,634	303,106	257,703	22.13	11,645
1964	337,528.05	428,553	360,190	314,866	22.64	13,908

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 62-R1.5
NET SALVAGE PERCENT.. -100

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1965	2,929,986.39	3,670,980	3,085,384	2,774,589	23.16	119,801
1966	979,276.35	1,210,190	1,017,140	941,413	23.69	39,739
1967	984,933.40	1,200,023	1,008,595	961,272	24.23	39,673
1968	1,087,812.93	1,306,420	1,098,020	1,077,606	24.77	43,504
1969	1,921,132.51	2,273,122	1,910,513	1,931,752	25.32	76,294
1970	2,032,738.14	2,367,815	1,990,101	2,075,375	25.89	80,161
1971	1,647,864.30	1,889,211	1,587,844	1,707,885	26.46	64,546
1972	2,004,749.90	2,261,478	1,900,726	2,108,774	27.03	78,016
1973	2,213,366.40	2,454,712	2,063,136	2,363,597	27.62	85,576
1974	1,823,929.87	1,988,084	1,670,944	1,976,916	28.21	70,079
1975	2,164,322.75	2,317,211	1,947,569	2,381,076	28.81	82,648
1976	2,328,161.32	2,446,804	2,056,489	2,599,834	29.42	88,370
1977	2,547,503.62	2,627,240	2,208,142	2,886,865	30.03	96,133
1978	2,318,567.06	2,344,767	1,970,729	2,666,405	30.65	86,995
1979	2,489,879.47	2,467,371	2,073,775	2,905,984	31.28	92,902
1980	2,952,038.01	2,864,422	2,407,489	3,496,587	31.92	109,542
1981	2,898,494.67	2,752,642	2,313,540	3,483,449	32.56	106,986
1982	3,164,661.44	2,939,021	2,470,188	3,859,135	33.21	116,204
1983	3,433,650.42	3,116,862	2,619,659	4,247,642	33.86	125,447
1984	4,250,765.74	3,768,134	3,167,040	5,334,491	34.52	154,533
1985	4,421,354.80	3,823,764	3,213,796	5,628,914	35.19	159,958
1986	5,250,579.62	4,425,714	3,719,723	6,781,436	35.87	189,056
1987	5,865,555.24	4,815,386	4,047,234	7,683,876	36.55	210,229
1988	5,234,183.34	4,182,322	3,515,157	6,953,210	37.23	186,764
1989	6,960,837.65	5,404,812	4,542,635	9,379,040	37.93	247,272
1990	12,279,085.77	9,260,886	7,783,587	16,774,585	38.62	434,350
1991	13,310,135.95	9,733,702	8,180,979	18,439,293	39.33	468,835
1992	7,339,213.74	5,201,301	4,371,588	10,306,839	40.03	257,478
1993	6,681,684.79	4,580,161	3,849,533	9,513,837	40.75	233,468
1994	7,352,067.70	4,868,980	4,092,279	10,611,856	41.47	255,892
1995	8,585,904.09	5,486,736	4,611,490	12,560,318	42.19	297,708
1996	4,250,934.88	2,616,365	2,199,002	6,302,868	42.92	146,852
1997	5,558,653.34	3,290,389	2,765,505	8,351,802	43.65	191,336
1998	6,527,928.46	3,708,255	3,116,713	9,939,144	44.39	223,905
1999	11,844,948.37	6,446,021	5,417,750	18,272,147	45.13	404,878
2000	3,241,778.54	1,686,762	1,417,689	5,065,868	45.87	110,440
2001	8,662,562.62	4,297,671	3,612,105	13,713,020	46.62	294,145
2002	10,614,341.27	5,009,332	4,210,242	17,018,441	47.37	359,266
2003	13,102,195.24	5,862,184	4,927,047	21,277,343	48.13	442,081
2004	17,555,358.44	7,424,161	6,239,857	28,870,860	48.89	590,527
2005	11,934,939.10	4,750,822	3,992,970	19,876,908	49.66	400,260
2006	21,506,128.04	8,026,517	6,746,125	36,266,131	50.43	719,138
2007	23,890,647.62	8,323,024	6,995,333	40,785,962	51.20	796,601

NSTAR ELECTRIC COMPANY

ACCOUNT 364.00 POLES, TOWERS AND FIXTURES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 62-R1.5						
NET SALVAGE PERCENT.. -100						
2008	21,019,695.11	6,793,986	5,710,208	36,329,182	51.98	698,907
2009	17,396,575.60	5,185,223	4,358,075	30,435,076	52.76	576,859
2010	15,983,633.82	4,361,934	3,666,117	28,301,151	53.54	528,598
2011	13,096,203.16	3,240,263	2,723,376	23,469,030	54.33	431,972
2012	10,879,711.37	2,414,643	2,029,459	19,729,964	55.12	357,946
2013	11,467,009.84	2,252,809	1,893,440	21,040,580	55.91	376,329
2014	12,182,186.78	2,078,768	1,747,162	22,617,212	56.71	398,822
2015	15,662,011.37	2,263,474	1,902,404	29,421,619	57.52	511,502
2016	11,752,256.43	1,394,993	1,172,463	22,332,050	58.32	382,923
2017	12,631,222.23	1,169,399	982,856	24,279,588	59.13	410,614
2018	24,051,851.36	1,590,308	1,336,622	46,767,081	59.95	780,101
2019	26,178,191.86	1,038,751	873,050	51,483,334	60.77	847,183
2020	30,391,252.17	401,772	337,681	60,444,823	61.59	981,406
	494,887,277.19	211,256,459	177,556,775	812,217,779		16,839,221

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 48.2 3.40

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R0.5						
NET SALVAGE PERCENT.. -50						
1901	16.56	25	25			
1903	64.09	94	81	15	1.24	12
1904	6.63	10	10			
1905	117.37	170	146	30	2.20	14
1906	123.16	176	151	34	2.68	13
1907	99.25	141	121	28	3.15	9
1908	362.31	511	439	104	3.62	29
1909	7.75	11	9	3	4.08	1
1910	117.46	163	140	36	4.54	8
1911	9.69	13	11	4	4.99	1
1912	647.22	883	758	213	5.43	39
1913	115.76	157	135	39	5.87	7
1914	77.15	104	89	27	6.30	4
1915	684.56	912	783	244	6.73	36
1916	9.20	12	10	4	7.15	1
1917	280.36	367	315	106	7.57	14
1918	365.36	475	408	140	7.99	18
1919	8,581.00	11,069	9,502	3,370	8.40	401
1920	50,898.18	65,149	55,924	20,423	8.80	2,321
1921	1,755.02	2,228	1,913	720	9.21	78
1922	32,910.55	41,459	35,589	13,777	9.61	1,434
1923	32,195.05	40,236	34,539	13,754	10.01	1,374
1924	106,033.34	131,455	112,842	46,208	10.41	4,439
1925	19,378.41	23,831	20,457	8,611	10.81	797
1926	5,601.18	6,833	5,865	2,537	11.20	227
1927	100,346.78	121,420	104,228	46,292	11.60	3,991
1928	275,692.56	330,901	284,047	129,492	11.99	10,800
1929	88,431.95	105,256	90,352	42,296	12.39	3,414
1930	23,061.73	27,218	23,364	11,229	12.79	878
1931	8,353.08	9,777	8,393	4,137	13.18	314
1932	2,275.08	2,640	2,266	1,147	13.58	84
1933	4,176.85	4,805	4,125	2,140	13.98	153
1934	5,986.89	6,828	5,861	3,119	14.38	217
1935	12,211.67	13,805	11,850	6,468	14.78	438
1936	18,683.61	20,935	17,971	10,054	15.18	662
1937	147,859.41	164,162	140,918	80,871	15.59	5,187
1938	40,129.90	44,153	37,901	22,294	15.99	1,394
1939	51,070.19	55,667	47,785	28,820	16.40	1,757
1940	19,988.11	21,582	18,526	11,456	16.81	681
1941	31,272.75	33,438	28,703	18,206	17.23	1,057
1942	1,453,620.95	1,539,385	1,321,416	859,015	17.64	48,697
1943	182,233.88	191,072	164,017	109,334	18.06	6,054
1944	10,796.56	11,207	9,620	6,575	18.48	356

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R0.5						
NET SALVAGE PERCENT.. -50						
1945	9,702.60	9,967	8,556	5,998	18.91	317
1946	37,747.18	38,370	32,937	23,684	19.34	1,225
1947	210,063.25	211,271	181,356	133,739	19.77	6,765
1948	83,605.42	83,187	71,408	54,000	20.20	2,673
1949	297,609.28	292,923	251,447	194,967	20.63	9,451
1950	386,631.97	376,288	323,008	256,940	21.07	12,195
1951	183,734.28	176,751	151,724	123,877	21.52	5,756
1952	134,917.49	128,307	110,139	92,237	21.96	4,200
1953	188,911.55	177,530	152,393	130,974	22.41	5,844
1954	303,876.70	282,072	242,132	213,683	22.87	9,343
1955	4,376,743.79	4,013,452	3,445,169	3,119,947	23.32	133,788
1956	873,374.95	790,623	678,675	631,387	23.79	26,540
1957	643,927.03	575,507	494,018	471,873	24.25	19,459
1958	685,318.02	604,450	518,863	509,114	24.72	20,595
1959	853,009.32	742,336	637,225	642,289	25.19	25,498
1960	861,201.20	739,130	634,473	657,329	25.67	25,607
1961	853,403.25	722,197	619,938	660,167	26.15	25,245
1962	759,628.43	633,724	543,992	595,451	26.63	22,360
1963	732,219.77	601,885	516,661	581,669	27.12	21,448
1964	989,545.34	801,279	687,822	796,496	27.61	28,848
1965	8,354,008.14	6,662,363	5,719,009	6,812,003	28.10	242,420
1966	2,805,839.48	2,202,570	1,890,698	2,318,061	28.60	81,051
1967	3,376,402.68	2,608,271	2,238,954	2,825,650	29.10	97,101
1968	3,532,901.81	2,684,122	2,304,065	2,995,288	29.61	101,158
1969	4,799,546.59	3,585,261	3,077,608	4,121,712	30.12	136,843
1970	7,294,061.85	5,353,805	4,595,735	6,345,358	30.64	207,094
1971	5,134,725.70	3,703,395	3,179,015	4,523,074	31.15	145,203
1972	7,891,402.52	5,587,113	4,796,008	7,041,096	31.68	222,257
1973	10,522,446.06	7,313,047	6,277,560	9,506,109	32.20	295,221
1974	6,913,402.08	4,713,212	4,045,847	6,324,256	32.73	193,225
1975	8,225,515.37	5,498,798	4,720,198	7,618,075	33.26	229,046
1976	6,535,795.91	4,280,979	3,674,816	6,128,878	33.80	181,328
1977	6,040,504.48	3,875,014	3,326,333	5,734,424	34.34	166,990
1978	6,114,150.74	3,839,717	3,296,034	5,875,192	34.88	168,440
1979	4,568,772.54	2,806,369	2,409,002	4,444,157	35.43	125,435
1980	4,469,363.00	2,683,830	2,303,814	4,400,230	35.98	122,297
1981	5,657,921.18	3,318,371	2,848,508	5,638,374	36.54	154,307
1982	5,224,363.82	2,992,228	2,568,545	5,268,001	37.09	142,033
1983	5,593,642.09	3,125,448	2,682,902	5,707,561	37.65	151,595
1984	6,234,532.61	3,396,293	2,915,396	6,436,403	38.21	168,448
1985	6,569,805.55	3,485,315	2,991,813	6,862,895	38.78	176,970
1986	7,550,584.78	3,898,027	3,346,088	7,979,789	39.35	202,790
1987	10,943,673.28	5,493,779	4,715,890	11,699,620	39.92	293,077

NSTAR ELECTRIC COMPANY

ACCOUNT 365.00 OVERHEAD CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 60-R0.5						
NET SALVAGE PERCENT.. -50						
1988	10,479,879.03	5,111,613	4,387,837	11,331,982	40.49	279,871
1989	15,130,623.83	7,160,568	6,146,671	16,549,265	41.07	402,953
1990	32,083,173.87	14,717,996	12,634,008	35,490,753	41.65	852,119
1991	24,141,621.72	10,725,036	9,206,430	27,006,003	42.23	639,498
1992	13,173,699.94	5,661,398	4,859,775	14,900,775	42.81	348,068
1993	11,111,829.95	4,611,465	3,958,507	12,709,238	43.40	292,840
1994	10,024,207.17	4,014,695	3,446,236	11,590,075	43.98	263,531
1995	11,981,990.16	4,622,113	3,967,647	14,005,338	44.57	314,232
1996	8,431,323.88	3,127,979	2,685,074	9,961,912	45.16	220,591
1997	14,216,660.84	5,064,685	4,347,553	16,977,438	45.75	371,092
1998	23,833,250.53	8,133,097	6,981,495	28,768,381	46.35	620,677
1999	24,398,309.06	7,966,170	6,838,204	29,759,260	46.94	633,985
2000	7,782,780.48	2,424,375	2,081,097	9,593,074	47.54	201,790
2001	14,411,824.12	4,276,637	3,671,089	17,946,647	48.13	372,879
2002	18,935,505.29	5,334,984	4,579,579	23,823,679	48.73	488,891
2003	20,594,581.41	5,493,502	4,715,652	26,176,220	49.33	530,635
2004	28,167,686.71	7,091,074	6,087,017	36,164,513	49.93	724,304
2005	20,587,423.97	4,873,970	4,183,842	26,697,294	50.53	528,345
2006	28,420,586.73	6,302,123	5,409,777	37,221,103	51.13	727,970
2007	28,829,365.47	5,960,327	5,116,377	38,127,671	51.73	737,051
2008	24,829,653.63	4,755,003	4,081,721	33,162,759	52.34	633,603
2009	35,678,809.36	6,297,488	5,405,798	48,112,416	52.94	908,810
2010	27,939,020.38	4,505,167	3,867,260	38,041,271	53.55	710,388
2011	47,015,551.30	6,864,035	5,892,125	64,631,202	54.16	1,193,338
2012	28,451,359.79	3,720,158	3,193,404	39,483,636	54.77	720,899
2013	24,183,428.33	2,793,186	2,397,686	33,877,456	55.38	611,727
2014	25,007,264.50	2,506,853	2,151,896	35,359,001	55.99	631,524
2015	24,848,944.94	2,112,285	1,813,197	35,460,220	56.60	626,506
2016	29,387,790.47	2,042,304	1,753,125	42,328,561	57.22	739,751
2017	29,859,118.85	1,620,006	1,390,622	43,398,056	57.83	750,442
2018	37,628,079.92	1,457,900	1,251,470	55,190,650	58.45	944,237
2019	67,542,110.83	1,570,354	1,348,000	99,965,166	59.07	1,692,317
2020	50,962,663.39	395,215	339,255	76,104,740	59.69	1,275,000
	980,625,301.49	271,453,072	233,016,805	1,237,921,147		25,498,761

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 48.5 2.60

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. -60						
1901	72,071.33	112,670	115,314			
1902	3,570.64	5,563	5,713			
1912	6,171.88	9,288	9,604	271	4.46	61
1913	27,703.26	41,536	42,949	1,376	4.72	292
1914	6,238.58	9,319	9,636	346	4.98	69
1915	5,625.33	8,373	8,658	343	5.23	66
1916	116,859.95	173,289	179,183	7,793	5.49	1,419
1917	68,888.94	101,772	105,234	4,988	5.75	867
1919	58,250.47	85,421	88,326	4,875	6.26	779
1920	131,349.28	191,890	198,417	11,742	6.52	1,801
1921	26,878.44	39,118	40,448	2,558	6.78	377
1922	41,219.52	59,760	61,793	4,158	7.04	591
1923	17,001.99	24,552	25,387	1,816	7.31	248
1924	43,696.53	62,858	64,996	4,918	7.57	650
1925	62,650.38	89,762	92,815	7,426	7.84	947
1926	57,247.94	81,680	84,458	7,139	8.12	879
1927	101,455.63	144,169	149,073	13,256	8.39	1,580
1929	44,178.07	62,231	64,348	6,337	8.97	706
1930	91,220.61	127,932	132,283	13,670	9.26	1,476
1931	16,035.74	22,383	23,144	2,513	9.57	263
1933	10,500.27	14,516	15,010	1,790	10.20	175
1935	2,859.44	3,912	4,045	530	10.87	49
1936	8,573.12	11,665	12,062	1,655	11.22	148
1937	3,065.85	4,147	4,288	617	11.59	53
1938	3,554.01	4,780	4,943	743	11.96	62
1939	29,808.45	39,847	41,202	6,492	12.34	526
1940	91,290.28	121,252	125,376	20,688	12.74	1,624
1941	50,524.59	66,676	68,944	11,895	13.14	905
1942	12.58	16	17	3	13.56	
1943	23,005.27	29,937	30,955	5,853	14.00	418
1944	1,014,136.57	1,310,216	1,354,779	267,840	14.44	18,548
1945	155.82	200	207	42	14.90	3
1946	23,750.68	30,214	31,242	6,759	15.37	440
1947	75,285.86	95,001	98,232	22,225	15.85	1,402
1948	153,361.28	191,886	198,412	46,966	16.35	2,873
1949	32,995.87	40,932	42,324	10,469	16.85	621
1950	484,662.37	595,863	616,130	159,330	17.37	9,173
1951	59,033.48	71,898	74,343	20,111	17.91	1,123
1952	185,771.56	224,115	231,738	65,496	18.45	3,550
1953	156,777.17	187,262	193,631	57,212	19.01	3,010
1954	149,204.70	176,403	182,403	56,325	19.58	2,877
1955	5,795,148.45	6,779,860	7,010,459	2,261,779	20.16	112,191
1956	327,029.69	378,481	391,354	131,894	20.75	6,356

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. -60						
1957	614,367.48	703,033	726,945	256,043	21.36	11,987
1958	363,763.40	411,448	425,442	156,579	21.98	7,124
1959	428,786.84	479,329	495,632	190,427	22.60	8,426
1960	386,009.27	426,235	440,732	176,883	23.24	7,611
1961	449,958.66	490,613	507,300	212,634	23.89	8,901
1962	416,581.20	448,355	463,605	202,925	24.55	8,266
1963	183,466.08	194,835	201,462	92,084	25.22	3,651
1964	1,023,545.21	1,072,348	1,108,821	528,851	25.89	20,427
1965	23,169,238.28	23,932,896	24,746,909	12,323,872	26.58	463,652
1966	1,644,074.30	1,673,720	1,730,647	899,872	27.28	32,987
1967	1,436,542.71	1,440,979	1,489,990	808,478	27.98	28,895
1968	2,123,989.91	2,097,924	2,169,279	1,229,105	28.70	42,826
1969	1,961,119.04	1,906,929	1,971,788	1,166,002	29.42	39,633
1970	2,904,803.78	2,779,316	2,873,847	1,773,839	30.15	58,834
1971	1,690,901.74	1,591,152	1,645,271	1,060,172	30.89	34,321
1972	4,738,007.89	4,382,695	4,531,761	3,049,052	31.64	96,367
1973	3,943,782.82	3,584,930	3,706,862	2,603,191	32.39	80,370
1974	3,575,907.42	3,192,570	3,301,157	2,420,295	33.15	73,010
1975	3,411,126.83	2,989,402	3,091,079	2,366,724	33.92	69,774
1976	3,369,612.32	2,896,950	2,995,482	2,395,898	34.70	69,046
1977	2,099,368.46	1,769,516	1,829,701	1,529,289	35.49	43,091
1978	1,497,428.00	1,236,923	1,278,994	1,116,891	36.28	30,785
1979	1,558,524.96	1,260,784	1,303,666	1,189,974	37.08	32,092
1980	1,589,715.17	1,258,876	1,301,693	1,241,851	37.88	32,784
1981	2,648,534.87	2,051,025	2,120,785	2,116,871	38.70	54,700
1982	2,400,107.66	1,816,670	1,878,459	1,961,713	39.52	49,638
1983	2,969,723.94	2,195,838	2,270,524	2,481,034	40.34	61,503
1984	4,200,655.13	3,030,722	3,133,804	3,587,244	41.18	87,111
1985	4,347,224.28	3,058,568	3,162,597	3,792,962	42.02	90,266
1986	6,115,478.62	4,193,066	4,335,682	5,449,084	42.86	127,137
1987	6,402,062.39	4,272,173	4,417,480	5,825,820	43.72	133,253
1988	7,573,461.35	4,916,449	5,083,669	7,033,869	44.57	157,816
1989	10,312,159.59	6,502,930	6,724,110	9,775,345	45.44	215,126
1990	13,868,173.48	8,487,988	8,776,684	13,412,394	46.31	289,622
1991	11,787,173.24	6,995,546	7,233,481	11,625,996	47.18	246,418
1992	9,485,798.94	5,449,705	5,635,062	9,542,216	48.07	198,507
1993	5,876,466.02	3,265,717	3,376,792	6,025,554	48.95	123,096
1994	6,048,001.06	3,244,922	3,355,289	6,321,513	49.85	126,811
1995	5,912,134.16	3,059,837	3,163,909	6,295,506	50.74	124,074
1996	7,211,319.38	3,592,160	3,714,338	7,823,773	51.65	151,477
1997	16,559,024.74	7,927,136	8,196,756	18,297,684	52.56	348,129
1998	13,749,754.22	6,315,427	6,530,229	15,469,378	53.47	289,309
1999	27,281,963.39	11,995,334	12,403,323	31,247,818	54.39	574,514

NSTAR ELECTRIC COMPANY

ACCOUNT 366.00 UNDERGROUND CONDUIT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 75-R3						
NET SALVAGE PERCENT.. -60						
2000	7,347,532.87	3,086,316	3,191,289	8,564,764	55.31	154,850
2001	18,578,561.71	7,435,289	7,688,180	22,037,519	56.24	391,848
2002	43,288,648.30	16,465,617	17,025,651	52,236,186	57.17	913,699
2003	26,476,558.20	9,540,033	9,864,512	32,497,981	58.11	559,249
2004	35,179,893.41	11,970,733	12,377,885	43,909,944	59.05	743,606
2005	16,049,078.47	5,139,043	5,313,834	20,364,692	59.99	339,468
2006	21,412,391.21	6,422,690	6,641,141	27,618,685	60.94	453,211
2007	35,583,760.74	9,952,066	10,290,559	46,643,458	61.89	753,651
2008	26,420,586.59	6,853,712	7,086,823	35,186,116	62.84	559,932
2009	23,361,289.72	5,581,666	5,771,511	31,606,553	63.80	495,401
2010	37,691,014.09	8,233,527	8,513,568	51,792,055	64.76	799,754
2011	31,863,932.60	6,301,411	6,515,737	44,466,555	65.73	676,503
2012	29,070,662.90	5,153,647	5,328,934	41,184,127	66.69	617,546
2013	30,069,260.54	4,708,606	4,868,757	43,242,060	67.66	639,108
2014	18,075,598.32	2,456,257	2,539,800	26,381,157	68.63	384,397
2015	13,879,070.53	1,595,982	1,650,265	20,556,248	69.61	295,306
2016	16,133,068.53	1,521,155	1,572,893	24,240,017	70.58	343,440
2017	16,818,752.64	1,234,362	1,276,345	25,633,659	71.56	358,212
2018	36,067,007.55	1,892,797	1,957,175	55,750,037	72.54	768,542
2019	29,768,002.22	939,716	971,678	46,657,126	73.52	634,618
2020	49,683,975.31	519,098	536,754	78,957,606	74.51	1,059,691
	801,827,306.55	283,429,339	293,068,204	989,855,486		16,874,597

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 58.7 2.10

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 52-R0.5						
NET SALVAGE PERCENT.. -40						
1901	2,746.27	3,845	3,845			
1910	597.76	837	837			
1914	417.25	584	584			
1915	5,564.81	7,791	7,791			
1916	70,265.64	98,353	98,372			
1917	1,989.64	2,772	2,785			
1918	181.37	250	254			
1919	8,038.75	10,988	11,254			
1920	8,580.97	11,616	12,013			
1921	2,099.23	2,815	2,939			
1922	2,231.85	2,965	3,125			
1923	1,647.24	2,167	2,306			
1924	6,241.50	8,133	8,738			
1925	11,337.56	14,636	15,873			
1926	1,958.25	2,504	2,742			
1927	486.49	616	681			
1928	5,288.11	6,637	7,403			
1929	1,492.43	1,856	2,089			
1930	14,251.41	17,562	19,952			
1933	265.44	318	372			
1936	1,399.45	1,633	1,959			
1937	125.94	146	176			
1938	2,613.85	2,993	3,659			
1939	1,164.06	1,320	1,630			
1940	49,127.43	55,208	68,778			
1941	18,005.54	20,040	25,208			
1942	28.19	31	39			
1943	4,877.15	5,325	6,828			
1944	160,827.44	173,849	225,158			
1945	2,646.36	2,832	3,705			
1946	11,250.49	11,919	15,751			
1947	16,719.78	17,533	23,408			
1948	62,437.89	64,786	87,413			
1949	12,683.15	13,024	17,756			
1950	26,281.08	26,697	36,571	223	14.27	16
1951	62,175.79	62,472	85,576	1,470	14.68	100
1952	30,757.54	30,557	41,858	1,203	15.10	80
1953	42,193.97	41,452	56,782	2,290	15.51	148
1954	69,533.44	67,525	92,498	4,849	15.93	304
1955	2,084,532.23	2,000,175	2,739,912	178,433	16.36	10,907
1956	198,173.64	187,862	257,340	20,103	16.79	1,197
1957	245,653.93	230,028	315,101	28,815	17.22	1,673
1958	355,667.02	328,925	450,573	47,361	17.65	2,683

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 52-R0.5						
NET SALVAGE PERCENT.. -40						
1959	297,811.70	271,893	372,449	44,487	18.09	2,459
1960	404,964.08	364,917	499,876	67,074	18.53	3,620
1961	223,752.40	198,916	272,482	40,771	18.98	2,148
1962	388,385.81	340,572	466,528	77,212	19.43	3,974
1963	530,148.26	458,454	628,007	114,201	19.88	5,745
1964	387,785.30	330,544	452,791	90,108	20.34	4,430
1965	8,179,658.48	6,870,913	9,412,024	2,039,498	20.80	98,053
1966	1,120,707.16	927,210	1,270,126	298,864	21.27	14,051
1967	1,364,564.84	1,111,695	1,522,840	387,551	21.74	17,827
1968	1,824,423.49	1,463,246	2,004,407	549,786	22.21	24,754
1969	2,357,021.09	1,859,949	2,547,825	752,005	22.69	33,143
1970	4,127,978.01	3,202,989	4,387,570	1,391,599	23.18	60,034
1971	2,444,165.97	1,864,899	2,554,606	867,226	23.66	36,654
1972	5,165,844.96	3,871,966	5,303,958	1,928,225	24.16	79,811
1973	5,311,318.76	3,910,958	5,357,371	2,078,475	24.65	84,319
1974	6,612,253.76	4,778,081	6,545,187	2,711,968	25.16	107,789
1975	9,854,429.23	6,988,328	9,572,863	4,223,338	25.66	164,588
1976	7,779,256.95	5,409,866	7,410,629	3,480,331	26.17	132,989
1977	6,614,534.57	4,507,289	6,174,247	3,086,101	26.69	115,628
1978	8,012,566.64	5,347,763	7,325,558	3,892,035	27.21	143,037
1979	7,934,416.00	5,184,522	7,101,945	4,006,237	27.73	144,473
1980	7,432,952.51	4,750,816	6,507,839	3,898,295	28.26	137,944
1981	8,499,587.96	5,311,308	7,275,621	4,623,802	28.79	160,604
1982	9,477,979.11	5,784,828	7,924,266	5,344,905	29.33	182,233
1983	14,211,526.34	8,467,398	11,598,947	8,297,190	29.87	277,777
1984	14,357,781.80	8,341,871	11,426,995	8,673,900	30.42	285,138
1985	11,018,624.78	6,241,698	8,550,103	6,875,972	30.96	222,092
1986	14,419,891.56	7,950,984	10,891,544	9,296,304	31.52	294,934
1987	13,796,159.56	7,402,716	10,140,507	9,174,116	32.07	286,065
1988	17,928,703.91	9,349,819	12,807,719	12,292,466	32.63	376,723
1989	21,342,454.64	10,808,289	14,805,583	15,073,853	33.19	454,169
1990	40,181,340.35	19,732,172	27,029,839	29,224,037	33.76	865,641
1991	42,752,783.40	20,338,953	27,861,030	31,992,867	34.33	931,922
1992	37,135,538.50	17,096,831	23,419,854	28,569,900	34.90	818,622
1993	23,622,573.02	10,506,517	14,392,205	18,679,397	35.48	526,477
1994	21,996,760.82	9,440,042	12,931,309	17,864,156	36.06	495,401
1995	32,886,009.55	13,599,417	18,628,971	27,411,442	36.64	748,129
1996	25,096,323.48	9,986,379	13,679,701	21,455,152	37.22	576,441
1997	33,972,694.74	12,978,657	17,778,632	29,783,141	37.81	787,705
1998	87,883,288.93	32,202,370	44,111,966	78,924,639	38.39	2,055,865
1999	41,659,094.97	14,602,846	20,003,504	38,319,229	38.98	983,048
2000	18,089,123.57	6,053,634	8,292,486	17,032,287	39.57	430,434
2001	28,929,560.67	9,214,065	12,621,758	27,879,627	40.17	694,041

NSTAR ELECTRIC COMPANY

ACCOUNT 367.00 UNDERGROUND CONDUCTORS AND DEVICES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 52-R0.5						
NET SALVAGE PERCENT.. -40						
2002	54,449,711.79	16,477,027	22,570,825	53,658,772	40.76	1,316,457
2003	42,771,007.22	12,252,525	16,783,950	43,095,460	41.36	1,041,960
2004	49,323,802.06	13,345,936	18,281,743	50,771,580	41.95	1,210,288
2005	64,515,843.68	16,414,250	22,484,830	67,837,351	42.55	1,594,297
2006	59,908,329.36	14,274,118	19,553,201	64,318,460	43.15	1,490,578
2007	74,087,246.46	16,455,518	22,541,361	81,180,784	43.75	1,855,561
2008	66,439,806.75	13,684,474	18,745,485	74,270,244	44.35	1,674,639
2009	57,597,652.90	10,916,598	14,953,949	65,682,765	44.96	1,460,916
2010	49,724,705.63	8,621,767	11,810,407	57,804,181	45.56	1,268,748
2011	61,623,827.24	9,672,969	13,250,381	73,022,977	46.17	1,581,611
2012	62,724,333.68	8,832,339	12,098,856	75,715,211	46.77	1,618,884
2013	62,458,528.71	7,769,216	10,642,552	76,799,388	47.38	1,620,924
2014	95,103,197.08	10,268,102	14,065,615	119,078,861	47.99	2,481,327
2015	63,445,417.17	5,790,409	7,931,911	80,891,673	48.61	1,664,095
2016	60,770,557.84	4,548,312	6,230,441	78,848,340	49.22	1,601,957
2017	51,693,416.50	3,020,033	4,136,950	68,233,833	49.83	1,369,332
2018	64,595,708.02	2,695,837	3,692,854	86,741,137	50.45	1,719,349
2019	67,638,174.03	1,693,119	2,319,295	92,374,149	51.07	1,808,775
2020	57,563,408.76	480,309	657,945	79,930,827	51.69	1,546,350
	1,817,665,973.84	490,183,015	671,377,853	1,873,354,510		43,814,087

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 42.8 2.41

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 37-R1
NET SALVAGE PERCENT.. -15

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1926	1,374.93	1,581	1,581			
1930	26,487.30	30,460	30,460			
1941	2,428.95	2,793	2,793			
1942	75,508.15	86,834	86,834			
1943	154.84	178	178			
1944	36.89	42	42			
1945	2,273.62	2,615	2,615			
1946	1,593.32	1,832	1,832			
1947	34,242.34	39,059	39,379			
1948	51,602.66	58,348	59,343			
1949	20,172.46	22,603	23,198			
1950	67,143.88	74,545	77,215			
1951	54,192.51	59,593	62,321			
1952	115,336.10	125,611	131,817	820	1.96	418
1953	126,004.63	136,015	142,735	2,170	2.27	956
1954	98,105.89	104,955	110,140	2,682	2.58	1,040
1955	284,861.81	302,180	317,110	10,481	2.87	3,652
1956	93,505.81	98,318	103,176	4,356	3.17	1,374
1957	279,398.91	291,176	305,562	15,747	3.47	4,538
1958	191,988.05	198,290	208,087	12,699	3.77	3,368
1959	197,117.42	201,750	211,718	14,967	4.07	3,677
1960	265,256.93	268,934	282,221	22,824	4.38	5,211
1961	216,430.60	217,345	228,083	20,812	4.69	4,438
1962	228,007.61	226,703	237,904	24,305	5.01	4,851
1963	223,010.95	219,450	230,292	26,171	5.34	4,901
1964	199,514.97	194,282	203,881	25,561	5.67	4,508
1965	555,711.38	535,264	561,710	77,358	6.01	12,872
1966	721,980.33	687,785	721,766	108,511	6.35	17,088
1967	411,688.42	387,583	406,732	66,710	6.71	9,942
1968	696,380.64	647,814	679,820	121,018	7.07	17,117
1969	650,434.94	597,794	627,329	120,671	7.43	16,241
1970	560,261.37	508,476	533,598	110,703	7.80	14,193
1971	749,854.71	671,688	704,874	157,459	8.18	19,249
1972	858,150.63	758,294	795,759	191,114	8.57	22,300
1973	663,537.75	578,284	606,855	156,213	8.96	17,434
1974	993,872.14	853,820	896,004	246,949	9.36	26,383
1975	1,857,101.11	1,571,744	1,649,399	486,267	9.77	49,771
1976	868,635.87	723,816	759,577	239,354	10.19	23,489
1977	1,196,305.34	980,869	1,029,330	346,421	10.62	32,620
1978	1,039,847.26	838,691	880,128	315,696	11.05	28,570
1979	990,557.93	785,393	824,197	314,945	11.49	27,410
1980	795,088.54	619,290	649,887	264,465	11.94	22,149
1981	995,929.50	761,477	799,099	346,220	12.40	27,921

NSTAR ELECTRIC COMPANY

ACCOUNT 368.00 LINE TRANSFORMERS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 37-R1						
NET SALVAGE PERCENT.. -15						
1982	1,744,127.76	1,308,068	1,372,695	633,052	12.87	49,188
1983	4,038,745.54	2,968,755	3,115,431	1,529,126	13.35	114,541
1984	4,623,341.99	3,329,514	3,494,014	1,822,829	13.83	131,803
1985	3,381,541.59	2,382,651	2,500,370	1,388,403	14.33	96,888
1986	5,074,595.92	3,496,744	3,669,506	2,166,279	14.83	146,074
1987	7,796,700.66	5,246,486	5,505,697	3,460,509	15.35	225,440
1988	7,948,752.17	5,220,279	5,478,196	3,662,869	15.87	230,805
1989	3,885,378.42	2,487,707	2,610,616	1,857,569	16.40	113,266
1990	9,165,321.99	5,714,432	5,996,763	4,543,357	16.94	268,203
1991	7,773,045.36	4,711,122	4,943,883	3,995,119	17.50	228,293
1992	8,484,646.01	4,994,686	5,241,457	4,515,886	18.06	250,049
1993	4,036,880.06	2,304,911	2,418,789	2,223,623	18.63	119,357
1994	8,560,343.84	4,733,284	4,967,140	4,877,255	19.21	253,891
1995	5,924,019.49	3,166,916	3,323,383	3,489,239	19.80	176,224
1996	7,581,984.57	3,914,260	4,107,651	4,611,631	20.39	226,171
1997	33,154,712.38	16,487,656	17,302,256	20,825,663	21.00	991,698
1998	57,566,065.70	27,536,296	28,896,772	37,304,204	21.61	1,726,247
1999	9,404,158.86	4,314,233	4,527,385	6,287,398	22.24	282,707
2000	12,421,193.11	5,455,059	5,724,575	8,559,797	22.87	374,281
2001	17,226,655.34	7,228,115	7,585,232	12,225,422	23.50	520,231
2002	40,167,902.91	16,042,860	16,835,484	29,357,604	24.15	1,215,636
2003	24,359,152.09	9,236,735	9,693,091	18,319,934	24.80	738,707
2004	15,158,298.79	5,436,880	5,705,498	11,726,546	25.46	460,587
2005	15,626,953.01	5,284,371	5,545,454	12,425,542	26.12	475,710
2006	23,100,828.94	7,330,875	7,693,069	18,872,884	26.79	704,475
2007	32,669,307.24	9,686,972	10,165,573	27,404,130	27.46	997,965
2008	20,387,824.75	5,614,379	5,891,767	17,554,231	28.14	623,818
2009	25,542,619.81	6,494,007	6,814,854	22,559,159	28.82	782,761
2010	28,338,043.91	6,596,941	6,922,874	25,665,876	29.51	869,735
2011	25,484,340.83	5,386,039	5,652,145	23,654,847	30.20	783,273
2012	25,169,726.61	4,780,008	5,016,172	23,929,014	30.89	774,652
2013	21,766,107.04	3,660,036	3,840,866	21,190,157	31.59	670,787
2014	20,786,073.54	3,042,977	3,193,321	20,710,664	32.29	641,396
2015	11,363,978.71	1,412,844	1,482,648	11,585,928	33.00	351,089
2016	50,259,121.51	5,123,792	5,376,942	52,421,048	33.72	1,554,598
2017	8,582,274.34	682,879	716,618	9,152,997	34.44	265,766
2018	27,935,695.02	1,597,628	1,676,561	30,449,488	35.16	866,026
2019	25,488,888.51	879,367	922,814	28,389,408	35.89	791,012
2020	44,356,698.54	510,102	535,304	50,474,899	36.63	1,377,966
	723,797,136.25	231,274,440	242,689,447	589,677,260		21,898,997

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 26.9 3.03

NSTAR ELECTRIC COMPANY

ACCOUNT 369.10 SERVICES - OVERHEAD

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-R1						
NET SALVAGE PERCENT.. -75						
1904	85.83	140	150			
1914	2.53	4	4			
1916	85.83	131	146	4	8.25	
1918	15.78	24	27	1	8.89	
1919	22.33	34	38	1	9.22	
1920	1,559.01	2,327	2,590	138	9.55	14
1921	113.28	168	187	11	9.88	1
1922	347.50	513	571	37	10.22	4
1923	2,118.43	3,105	3,456	251	10.56	24
1924	1,803.56	2,627	2,924	232	10.90	21
1925	2,162.61	3,130	3,484	301	11.25	27
1926	1,385.48	1,992	2,217	208	11.60	18
1927	3,129.76	4,469	4,975	502	11.96	42
1928	3,792.97	5,381	5,990	648	12.31	53
1929	3,223.36	4,540	5,054	587	12.68	46
1930	1,838.69	2,572	2,863	355	13.04	27
1931	804.66	1,118	1,245	163	13.41	12
1932	546.27	753	838	118	13.79	9
1933	393.67	539	600	89	14.17	6
1934	610.26	829	923	145	14.55	10
1935	888.38	1,197	1,332	223	14.94	15
1936	803.11	1,074	1,196	209	15.33	14
1937	1,757.44	2,332	2,596	480	15.72	31
1938	1,606.46	2,114	2,353	458	16.12	28
1939	1,590.68	2,076	2,311	473	16.53	29
1940	1,744.42	2,257	2,512	541	16.94	32
1941	1,395.86	1,791	1,994	449	17.35	26
1942	5,631.15	7,160	7,970	1,885	17.77	106
1943	3,497.59	4,408	4,907	1,214	18.19	67
1944	2,553.72	3,189	3,550	919	18.62	49
1945	7,226.52	8,940	9,952	2,694	19.05	141
1946	4,201.16	5,149	5,732	1,620	19.48	83
1947	7,263.74	8,816	9,814	2,898	19.92	145
1948	10,980.24	13,194	14,687	4,528	20.37	222
1949	22,084.12	26,268	29,241	9,406	20.82	452
1950	29,449.81	34,665	38,588	12,949	21.28	609
1951	27,787.44	32,364	36,027	12,601	21.74	580
1952	35,811.09	41,265	45,935	16,734	22.20	754
1953	47,382.49	54,000	60,111	22,808	22.67	1,006
1954	56,021.23	63,121	70,264	27,773	23.15	1,200
1955	768,026.47	855,432	952,239	391,807	23.63	16,581
1956	274,498.31	302,116	336,306	144,066	24.12	5,973
1957	225,623.41	245,346	273,111	121,730	24.61	4,946

NSTAR ELECTRIC COMPANY

ACCOUNT 369.10 SERVICES - OVERHEAD

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-R1						
NET SALVAGE PERCENT.. -75						
1958	272,644.34	292,885	326,030	151,098	25.10	6,020
1959	285,288.63	302,623	336,870	162,385	25.60	6,343
1960	342,215.02	358,314	398,863	200,013	26.11	7,660
1961	295,652.55	305,499	340,071	177,321	26.62	6,661
1962	289,158.58	294,741	328,096	177,932	27.14	6,556
1963	329,560.97	331,223	368,707	208,025	27.67	7,518
1964	394,294.48	390,763	434,985	255,030	28.19	9,047
1965	816,375.68	797,191	887,407	541,250	28.73	18,839
1966	774,827.73	745,351	829,700	526,249	29.27	17,979
1967	957,215.42	906,880	1,009,509	665,618	29.81	22,329
1968	1,009,489.98	941,460	1,048,002	718,605	30.36	23,669
1969	1,134,253.34	1,040,726	1,158,502	826,441	30.92	26,728
1970	1,028,439.74	928,123	1,033,156	766,614	31.48	24,352
1971	1,043,085.84	925,624	1,030,374	795,026	32.04	24,814
1972	1,335,207.31	1,163,984	1,295,709	1,040,904	32.62	31,910
1973	1,489,614.52	1,275,728	1,420,099	1,186,726	33.19	35,756
1974	1,224,525.13	1,029,587	1,146,102	996,817	33.77	29,518
1975	1,256,217.58	1,036,273	1,153,545	1,044,836	34.36	30,408
1976	1,451,342.43	1,174,198	1,307,079	1,232,770	34.95	35,272
1977	1,567,317.64	1,242,710	1,383,344	1,359,462	35.55	38,241
1978	1,391,918.15	1,081,155	1,203,506	1,232,351	36.15	34,090
1979	1,328,475.33	1,010,046	1,124,350	1,200,482	36.76	32,657
1980	1,293,256.08	962,040	1,070,911	1,192,287	37.37	31,905
1981	1,678,546.45	1,220,631	1,358,766	1,578,690	37.99	41,555
1982	1,602,792.43	1,138,784	1,267,657	1,537,230	38.61	39,814
1983	1,891,979.64	1,312,665	1,461,216	1,849,748	39.23	47,151
1984	2,634,243.36	1,782,981	1,984,756	2,625,170	39.86	65,860
1985	2,812,862.29	1,855,392	2,065,362	2,857,147	40.50	70,547
1986	2,760,697.01	1,773,444	1,974,140	2,857,080	41.14	69,448
1987	2,855,812.69	1,785,318	1,987,357	3,010,315	41.78	72,052
1988	2,460,558.93	1,495,811	1,665,088	2,640,890	42.42	62,256
1989	3,054,153.96	1,803,218	2,007,283	3,337,486	43.07	77,490
1990	4,562,010.89	2,612,447	2,908,090	5,075,429	43.73	116,063
1991	3,498,878.65	1,942,411	2,162,228	3,960,810	44.38	89,248
1992	1,839,731.26	988,653	1,100,536	2,118,994	45.04	47,047
1993	1,596,733.43	829,260	923,105	1,871,179	45.71	40,936
1994	2,369,602.08	1,188,557	1,323,063	2,823,741	46.37	60,896
1995	2,762,294.42	1,335,687	1,486,843	3,347,172	47.04	71,156
1996	1,595,421.89	742,250	826,248	1,965,740	47.72	41,193
1997	2,418,610.25	1,081,590	1,203,991	3,028,577	48.39	62,587
1998	2,908,476.22	1,247,416	1,388,583	3,701,250	49.07	75,428
1999	3,499,487.91	1,436,837	1,599,440	4,524,664	49.75	90,948
2000	1,160,141.32	455,080	506,580	1,523,667	50.43	30,214

NSTAR ELECTRIC COMPANY

ACCOUNT 369.10 SERVICES - OVERHEAD

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-R1						
NET SALVAGE PERCENT.. -75						
2001	2,705,877.69	1,011,883	1,126,395	3,608,891	51.11	70,610
2002	2,481,955.34	882,062	981,882	3,361,540	51.80	64,895
2003	2,671,200.88	899,674	1,001,488	3,673,114	52.49	69,977
2004	1,698,454.94	540,512	601,680	2,370,616	53.18	44,577
2005	2,043,402.21	612,311	681,604	2,894,350	53.87	53,728
2006	3,247,417.76	911,891	1,015,087	4,667,894	54.57	85,540
2007	2,741,461.75	718,146	799,417	3,998,141	55.27	72,338
2008	2,763,465.33	671,826	747,855	4,088,209	55.97	73,043
2009	2,945,296.71	660,520	735,269	4,419,000	56.67	77,978
2010	2,798,468.28	574,113	639,084	4,258,235	57.38	74,211
2011	2,891,843.64	538,006	598,891	4,461,835	58.09	76,809
2012	3,035,019.49	506,590	563,919	4,747,365	58.80	80,738
2013	2,722,481.74	401,682	447,139	4,317,204	59.52	72,534
2014	5,231,552.04	670,436	746,307	8,408,909	60.24	139,590
2015	2,584,587.56	281,106	312,918	4,210,110	60.96	69,063
2016	2,786,570.37	248,311	276,412	4,600,086	61.69	74,568
2017	2,466,046.34	171,285	190,669	4,124,912	62.42	66,083
2018	3,484,284.27	173,535	193,173	5,904,324	63.15	93,497
2019	4,064,233.99	121,480	135,228	6,977,181	63.89	109,206
2020	2,927,178.55	29,147	32,445	5,090,117	64.63	78,758
	131,126,077.08	58,942,742	65,613,121	163,857,514		3,361,307

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 48.7 2.56

NSTAR ELECTRIC COMPANY

ACCOUNT 369.20 SERVICES - UNDERGROUND

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-R1						
NET SALVAGE PERCENT.. -75						
1901	7,078.07	11,682	12,387			
1902	67.38	111	118			
1912	256.26	400	448			
1913	3,610.10	5,606	6,296	22	7.32	3
1914	739.33	1,142	1,283	11	7.63	1
1915	718.91	1,104	1,240	18	7.94	2
1916	516.94	790	887	18	8.25	2
1917	77.87	118	133	3	8.57	
1919	76.79	115	129	5	9.22	1
1920	845.74	1,263	1,418	62	9.55	6
1921	578.94	859	965	48	9.88	5
1922	1,604.31	2,366	2,657	151	10.22	15
1923	1,098.21	1,610	1,808	114	10.56	11
1924	954.14	1,390	1,561	109	10.90	10
1925	1,534.36	2,220	2,493	192	11.25	17
1926	944.62	1,358	1,525	128	11.60	11
1927	6,566.51	9,377	10,531	960	11.96	80
1928	274.08	389	437	43	12.31	3
1929	1,064.83	1,500	1,685	178	12.68	14
1930	1,533.64	2,145	2,409	275	13.04	21
1931	431.00	599	673	81	13.41	6
1933	1.00	1	1	1	14.17	
1936	406.62	544	611	101	15.33	7
1937	376.84	500	562	97	15.72	6
1939	324.38	423	475	93	16.53	6
1940	141.65	183	206	42	16.94	2
1941	1.00	1	1	1	17.35	
1942	635.98	809	909	204	17.77	11
1943	747.42	942	1,058	250	18.19	14
1944	114,801.33	143,352	160,998	39,904	18.62	2,143
1945	315.12	390	438	113	19.05	6
1946	1,742.24	2,135	2,398	651	19.48	33
1947	2,659.00	3,227	3,624	1,029	19.92	52
1948	3,777.40	4,539	5,098	1,512	20.37	74
1949	2,724.45	3,241	3,640	1,128	20.82	54
1950	6,092.02	7,171	8,054	2,607	21.28	123
1951	4,764.70	5,549	6,232	2,106	21.74	97
1952	3,651.26	4,207	4,725	1,665	22.20	75
1953	5,135.61	5,853	6,573	2,414	22.67	106
1954	6,253.33	7,046	7,913	3,030	23.15	131
1955	564,048.89	628,240	705,574	281,512	23.63	11,913
1956	40,639.97	44,729	50,235	20,885	24.12	866
1957	62,835.64	68,328	76,739	33,223	24.61	1,350

NSTAR ELECTRIC COMPANY

ACCOUNT 369.20 SERVICES - UNDERGROUND

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 65-R1
NET SALVAGE PERCENT.. -75

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1958	51,973.53	55,832	62,705	28,249	25.10	1,125
1959	50,057.22	53,099	59,635	27,965	25.60	1,092
1960	53,996.13	56,536	63,495	30,998	26.11	1,187
1961	52,969.50	54,734	61,472	31,225	26.62	1,173
1962	55,223.12	56,289	63,218	33,422	27.14	1,231
1963	64,999.62	65,327	73,368	40,381	27.67	1,459
1964	71,588.05	70,947	79,680	45,599	28.19	1,618
1965	4,090,514.37	3,994,387	4,486,078	2,672,322	28.73	93,015
1966	328,379.33	315,887	354,771	219,893	29.27	7,513
1967	444,090.08	420,738	472,529	304,629	29.81	10,219
1968	461,162.71	430,085	483,027	324,008	30.36	10,672
1969	649,713.02	596,139	669,521	467,477	30.92	15,119
1970	952,502.54	859,593	965,405	701,474	31.48	22,283
1971	703,505.28	624,284	701,131	530,003	32.04	16,542
1972	1,079,627.33	941,179	1,057,034	832,314	32.62	25,515
1973	1,556,550.82	1,333,053	1,497,146	1,226,818	33.19	36,963
1974	1,289,920.28	1,084,571	1,218,077	1,039,283	33.77	30,775
1975	1,553,097.48	1,281,173	1,438,880	1,279,041	34.36	37,225
1976	1,539,519.20	1,245,536	1,398,856	1,295,303	34.95	37,062
1977	1,445,437.63	1,146,073	1,287,149	1,242,367	35.55	34,947
1978	1,318,952.98	1,024,480	1,150,589	1,157,579	36.15	32,022
1979	1,512,394.64	1,149,881	1,291,426	1,355,265	36.76	36,868
1980	1,775,075.11	1,320,461	1,483,004	1,623,377	37.37	43,441
1981	2,131,146.78	1,549,759	1,740,527	1,988,980	37.99	52,355
1982	2,849,553.64	2,024,608	2,273,828	2,712,891	38.61	70,264
1983	2,927,171.46	2,030,886	2,280,879	2,841,671	39.23	72,436
1984	3,401,162.99	2,302,069	2,585,443	3,366,592	39.86	84,460
1985	3,342,022.27	2,204,431	2,475,787	3,372,752	40.50	83,278
1986	3,775,938.98	2,425,625	2,724,209	3,883,684	41.14	94,402
1987	3,782,011.44	2,364,334	2,655,373	3,963,147	41.78	94,858
1988	3,770,540.14	2,292,168	2,574,324	4,024,121	42.42	94,864
1989	4,091,219.90	2,415,518	2,712,858	4,446,777	43.07	103,245
1990	5,709,443.08	3,269,527	3,671,991	6,319,534	43.73	144,513
1991	8,971,359.67	4,980,473	5,593,547	10,106,332	44.38	227,723
1992	5,151,234.05	2,768,222	3,108,978	5,905,682	45.04	131,121
1993	5,214,771.84	2,708,279	3,041,656	6,084,195	45.71	133,104
1994	4,663,233.31	2,339,008	2,626,930	5,533,728	46.37	119,339
1995	5,144,781.87	2,487,721	2,793,948	6,209,420	47.04	132,003
1996	4,316,523.03	2,008,208	2,255,409	5,298,506	47.72	111,033
1997	3,933,748.23	1,759,153	1,975,697	4,908,362	48.39	101,433
1998	3,843,152.44	1,648,290	1,851,187	4,874,330	49.07	99,334
1999	11,279,968.00	4,631,386	5,201,489	14,538,455	49.75	292,230
2000	2,091,239.54	820,315	921,292	2,738,377	50.43	54,301

NSTAR ELECTRIC COMPANY

ACCOUNT 369.20 SERVICES - UNDERGROUND

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 65-R1						
NET SALVAGE PERCENT.. -75						
2001	4,717,030.02	1,763,969	1,981,106	6,273,697	51.11	122,749
2002	11,410,763.46	4,055,271	4,554,457	15,414,379	51.80	297,575
2003	9,220,918.70	3,105,652	3,487,944	12,648,664	52.49	240,973
2004	8,685,993.70	2,764,209	3,104,471	12,096,018	53.18	227,454
2005	6,923,981.42	2,074,788	2,330,185	9,786,782	53.87	181,674
2006	8,280,666.62	2,325,253	2,611,481	11,879,686	54.57	217,696
2007	7,279,323.23	1,906,873	2,141,601	10,597,215	55.27	191,735
2008	7,731,218.28	1,879,536	2,110,899	11,418,733	55.97	204,015
2009	9,164,800.14	2,055,321	2,308,322	13,730,078	56.67	242,281
2010	8,554,638.26	1,755,005	1,971,038	12,999,579	57.38	226,552
2011	11,961,196.58	2,225,291	2,499,214	18,432,880	58.09	317,316
2012	8,649,463.95	1,443,725	1,621,441	13,515,121	58.80	229,849
2013	9,032,134.71	1,332,624	1,496,664	14,309,572	59.52	240,416
2014	7,214,542.16	924,562	1,038,372	11,587,077	60.24	192,349
2015	5,843,639.67	635,569	713,805	9,512,564	60.96	156,046
2016	7,088,442.30	631,651	709,404	11,695,370	61.69	189,583
2017	9,134,680.99	634,472	712,573	15,273,119	62.42	244,683
2018	15,770,848.68	785,467	882,155	26,716,830	63.15	423,069
2019	18,340,452.53	548,196	615,676	31,480,116	63.89	492,724
2020	21,360,353.17	212,696	238,878	37,141,740	64.63	574,683
	308,709,209.08	101,247,948	113,710,381	426,530,735		8,026,061

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 53.1 2.60

NSTAR ELECTRIC COMPANY

ACCOUNT 369.30 SERVICES - ELECTRIC VEHICLE CHARGING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 25-R2.5						
NET SALVAGE PERCENT.. 0						
2018	1,133,237.40	106,071	76,529	1,056,708	22.66	46,633
2019	9,135,601.49	515,248	371,748	8,763,853	23.59	371,507
2020	9,777,489.17	183,817	132,623	9,644,866	24.53	393,187
	20,046,328.06	805,136	580,900	19,465,428		811,327

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 24.0 4.05

NSTAR ELECTRIC COMPANY

ACCOUNT 370.10 METERS (AMR)

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

INTERIM SURVIVOR CURVE.. IOWA 24-S0.5
PROBABLE RETIREMENT YEAR.. 12-2028
NET SALVAGE PERCENT.. 0

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1996	21,556,620.73	16,008,809	11,382,282	10,174,339	5.86	1,736,235
1997	1,085,639.88	797,837	567,263	518,377	5.97	86,830
1998	10,844,719.69	7,879,990	5,602,682	5,242,038	6.08	862,177
1999	1,532,551.43	1,100,862	782,714	749,837	6.18	121,333
2000	2,651,112.27	1,880,328	1,336,915	1,314,197	6.28	209,267
2001	4,841,521.98	3,386,548	2,407,840	2,433,682	6.38	381,455
2002	2,937,682.42	2,025,209	1,439,926	1,497,756	6.47	231,492
2003	7,509,809.09	5,094,880	3,622,466	3,887,343	6.56	592,583
2004	28,898,705.37	19,256,074	13,691,091	15,207,614	6.65	2,286,859
2005	21,934,720.40	14,337,191	10,193,760	11,740,960	6.73	1,744,571
2006	20,098,872.38	12,856,847	9,141,233	10,957,639	6.81	1,609,051
2007	5,430,773.71	3,389,400	2,409,867	3,020,907	6.89	438,448
2008	3,455,532.52	2,097,094	1,491,036	1,964,497	6.97	281,850
2009	2,417,447.54	1,422,184	1,011,175	1,406,273	7.04	199,755
2010	7,192,849.26	4,077,698	2,899,248	4,293,601	7.12	603,034
2011	6,027,249.05	3,274,002	2,327,819	3,699,430	7.19	514,524
2012	5,355,536.89	2,766,885	1,967,259	3,388,278	7.26	466,705
2013	5,497,662.50	2,673,678	1,900,988	3,596,674	7.33	490,679
2014	6,065,529.18	2,735,796	1,945,154	4,120,375	7.40	556,807
2015	9,703,577.41	3,987,006	2,834,766	6,868,811	7.47	919,520
2016	10,748,877.56	3,903,777	2,775,590	7,973,288	7.54	1,057,465
2017	6,003,894.53	1,848,179	1,314,058	4,689,837	7.60	617,084
2018	12,625,900.23	3,037,665	2,159,784	10,466,116	7.67	1,364,552
2019	3,276,286.15	526,466	374,318	2,901,968	7.73	375,416
2020	4,020,575.78	242,481	172,404	3,848,172	7.79	493,989
	211,713,647.95	120,606,886	85,751,638	125,962,010		18,241,681

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 6.9 8.62

NSTAR ELECTRIC COMPANY

ACCOUNT 370.20 METERS (NON-AMR)

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 15-S2.5						
NET SALVAGE PERCENT.. 0						
2017	15,338,973.80	3,558,642	2,530,198	12,808,776	11.52	1,111,873
2018	7,372,648.74	1,228,799	873,678	6,498,971	12.50	519,918
2019	25,016,273.43	2,501,627	1,778,660	23,237,613	13.50	1,721,305
2020	26,104,938.46	870,078	618,626	25,486,312	14.50	1,757,677
	73,832,834.43	8,159,146	5,801,162	68,031,672		5,110,773

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.3 6.92

NSTAR ELECTRIC COMPANY

ACCOUNT 370.30 METERING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 24-S0.5						
NET SALVAGE PERCENT.. 0						
1901	13.20	13	13			
1904	13.19	13	13			
1929	1.06	1	1			
1930	56.30	56	56			
1931	0.90	1	1			
1933	56.86	57	57			
1934	57.43	57	57			
1936	58.02	58	58			
1937	3.47	3	3			
1939	87.92	88	88			
1940	4.72	5	5			
1941	59.20	59	59			
1942	8,598.21	8,598	8,598			
1943	203.23	203	203			
1944	252.13	252	252			
1945	638.55	639	639			
1946	1,106.00	1,106	1,106			
1947	6,215.51	6,216	6,216			
1948	2,924.80	2,925	2,925			
1949	1,366.24	1,366	1,366			
1950	2,256.09	2,256	2,256			
1951	4,292.78	4,293	4,293			
1952	1,464.14	1,464	1,464			
1953	2,252.11	2,252	2,252			
1954	3,802.11	3,802	3,802			
1955	1,925.67	1,926	1,926			
1956	8,951.29	8,951	8,951			
1957	8,856.44	8,856	8,856			
1958	8,403.01	8,403	8,403			
1959	13,297.61	13,298	13,298			
1960	17,156.23	17,156	17,156			
1961	12,867.96	12,868	12,868			
1962	13,645.78	13,646	13,646			
1963	13,126.63	13,127	13,127			
1964	15,098.32	15,098	15,098			
1965	18,797.90	18,798	18,798			
1966	34,990.11	34,990	34,990			
1967	28,386.58	28,387	28,387			
1968	32,567.91	32,568	32,568			
1969	38,752.98	38,753	38,753			
1970	58,494.67	58,495	58,495			
1971	53,466.13	53,466	53,466			
1972	55,597.66	55,598	55,598			

NSTAR ELECTRIC COMPANY

ACCOUNT 370.30 METERING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

SURVIVOR CURVE.. IOWA 24-S0.5
NET SALVAGE PERCENT.. 0

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1973	62,876.35	62,378	43,913	18,963	0.19	18,963
1974	61,000.25	59,628	41,977	19,023	0.54	19,023
1975	80,873.70	77,875	54,823	26,051	0.89	26,051
1976	93,498.92	88,707	62,449	31,050	1.23	25,244
1977	128,831.44	120,403	84,762	44,069	1.57	28,069
1978	111,581.59	102,748	72,333	39,249	1.90	20,657
1979	88,355.05	80,109	56,396	31,959	2.24	14,267
1980	196,736.49	175,670	123,669	73,067	2.57	28,431
1981	306,281.57	269,145	189,474	116,808	2.91	40,140
1982	279,999.63	242,200	170,505	109,495	3.24	33,795
1983	322,746.24	274,602	193,316	129,430	3.58	36,154
1984	348,472.34	291,556	205,251	143,221	3.92	36,536
1985	1,337,929.20	1,099,885	774,304	563,625	4.27	131,996
1986	513,900.92	414,975	292,137	221,764	4.62	48,001
1987	536,383.81	425,309	299,412	236,972	4.97	47,680
1988	428,759.39	333,716	234,932	193,827	5.32	36,434
1989	317,627.64	242,324	170,593	147,035	5.69	25,841
1990	393,850.55	294,569	207,373	186,478	6.05	30,823
1991	528,868.04	387,174	272,565	256,303	6.43	39,860
1992	534,885.97	383,112	269,706	265,180	6.81	38,940
1993	4,113,199.65	2,879,240	2,026,945	2,086,255	7.20	289,758
1994	1,695,389.14	1,159,222	816,076	879,313	7.59	115,852
1995	4,715,048.63	3,143,381	2,212,897	2,502,152	8.00	312,769
1997	39,105.88	24,702	17,390	21,716	8.84	2,457
1998	128,413.23	78,814	55,484	72,929	9.27	7,867
1999	7,423,662.32	4,417,079	3,109,563	4,314,099	9.72	443,837
2000	60,824.39	35,050	24,675	36,149	10.17	3,554
2001	75,046.33	41,745	29,388	45,658	10.65	4,287
2002	850,906.55	456,299	321,228	529,679	11.13	47,590
2003	135,666.57	69,925	49,226	86,441	11.63	7,433
2004	25,071.68	12,390	8,722	16,350	12.14	1,347
2005	52,515.09	24,791	17,453	35,062	12.67	2,767
2006	6,692.91	3,006	2,116	4,577	13.22	346
2007	187,298.56	79,681	56,094	131,205	13.79	9,515
2008	31,502.23	12,627	8,889	22,613	14.38	1,573
2009	383,892.52	144,121	101,459	282,434	14.99	18,841
2010	142,818.49	49,868	35,106	107,712	15.62	6,896
2012	3,417.63	1,004	707	2,711	16.95	160
2013	193,437.37	51,100	35,974	157,463	17.66	8,916
2014	7,256.01	1,693	1,192	6,064	18.40	330
2015	147,667.39	29,780	20,965	126,702	19.16	6,613
2016	197,079.98	33,174	23,354	173,726	19.96	8,704
2017	13,107.07	1,753	1,234	11,873	20.79	571

NSTAR ELECTRIC COMPANY

ACCOUNT 370.30 METERING EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 24-S0.5						
NET SALVAGE PERCENT.. 0						
2018	12,113,313.19	1,181,048	831,442	11,281,871	21.66	520,862
2019	202,771.23	12,166	8,565	194,206	22.56	8,608
2020	3,832.02	78	55	3,777	23.51	161
	40,092,562.20	19,839,989	14,106,256	25,986,306		2,558,519

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.2 6.38

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 28-L0						
NET SALVAGE PERCENT.. -40						
1925	109.84	136	102	52	3.31	16
1936	772.45	898	676	405	4.76	85
1940	88.13	100	75	48	5.33	9
1941	1,209.60	1,362	1,025	668	5.48	122
1945	2,604.21	2,856	2,150	1,496	6.07	246
1947	3,965.96	4,287	3,227	2,325	6.38	364
1948	3,461.17	3,714	2,796	2,050	6.54	313
1950	1,653.11	1,748	1,316	998	6.85	146
1953	29,620.18	30,583	23,024	18,444	7.35	2,509
1955	5,970.72	6,066	4,567	3,792	7.68	494
1956	2,564.63	2,583	1,945	1,645	7.86	209
1957	240.76	240	181	156	8.03	19
1958	96.66	96	72	63	8.21	8
1959	1,755.56	1,722	1,296	1,162	8.38	139
1960	620.68	603	454	415	8.56	48
1961	1,030.55	992	747	696	8.75	80
1962	24,731.95	23,582	17,754	16,871	8.93	1,889
1963	88,537.84	83,580	62,923	61,030	9.12	6,692
1964	58,330.36	54,510	41,038	40,625	9.31	4,364
1965	19,423.92	17,967	13,526	13,667	9.50	1,439
1966	29,370.42	26,874	20,232	20,887	9.70	2,153
1967	48,906.57	44,261	33,322	35,147	9.90	3,550
1968	344,631.22	308,447	232,214	250,270	10.10	24,779
1969	148,660.12	131,564	99,048	109,076	10.30	10,590
1970	731,596.22	639,778	481,656	542,579	10.51	51,625
1971	93,529.65	80,809	60,837	70,105	10.72	6,540
1972	254,234.40	216,988	163,359	192,569	10.93	17,618
1973	472,619.88	398,417	299,948	361,720	11.14	32,470
1974	124,994.97	103,997	78,294	96,699	11.36	8,512
1975	157,285.81	129,132	97,217	122,983	11.58	10,620
1976	60,972.44	49,357	37,158	48,203	11.81	4,082
1977	58,729.47	46,866	35,283	46,938	12.04	3,899
1978	48,479.99	38,130	28,706	39,166	12.27	3,192
1979	49,869.42	38,649	29,097	40,720	12.50	3,258
1980	96,216.23	73,413	55,269	79,434	12.74	6,235
1981	27,132.12	20,363	15,330	22,655	12.99	1,744
1982	41,150.55	30,390	22,879	34,732	13.23	2,625
1983	39,852.62	28,933	21,782	34,012	13.48	2,523
1984	51,607.48	36,796	27,702	44,548	13.74	3,242
1985	76,191.94	53,334	40,152	66,517	14.00	4,751
1986	80,345.45	55,197	41,555	70,929	14.26	4,974
1987	194,217.14	130,805	98,476	173,428	14.53	11,936
1988	69,489.87	45,863	34,528	62,758	14.80	4,240

NSTAR ELECTRIC COMPANY

ACCOUNT 371.00 INSTALLATIONS ON CUSTOMERS' PREMISES

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 28-L0						
NET SALVAGE PERCENT.. -40						
1989	149,606.72	96,646	72,760	136,689	15.08	9,064
1990	99,214.95	62,704	47,207	91,694	15.36	5,970
1991	117,958.31	72,898	54,881	110,261	15.64	7,050
1992	101,055.07	60,987	45,914	95,563	15.93	5,999
1993	183,122.49	107,768	81,133	175,238	16.23	10,797
1994	118,904.19	68,191	51,337	115,129	16.53	6,965
1995	106,648.56	59,510	44,802	104,506	16.84	6,206
1996	134,247.55	72,829	54,829	133,118	17.15	7,762
1997	140,008.20	73,714	55,495	140,516	17.47	8,043
1998	121,054.98	61,798	46,525	122,952	17.79	6,911
1999	129,816.50	64,130	48,280	133,463	18.12	7,366
2000	169,843.66	81,100	61,056	176,725	18.45	9,579
2001	206,172.94	94,943	71,478	217,164	18.79	11,557
2002	262,487.53	116,283	87,544	279,939	19.14	14,626
2003	346,349.60	147,372	110,949	373,940	19.49	19,186
2004	251,304.89	102,406	77,096	274,731	19.85	13,840
2005	411,502.16	160,076	120,513	455,590	20.22	22,532
2006	327,709.75	121,415	91,407	367,387	20.59	17,843
2007	249,656.68	87,754	66,065	283,454	20.97	13,517
2008	218,776.86	72,633	54,682	251,606	21.36	11,779
2009	185,327.03	57,823	43,532	215,926	21.76	9,923
2010	183,269.18	53,422	40,219	216,358	22.17	9,759
2011	358,660.71	97,016	73,038	429,087	22.59	18,995
2012	398,168.61	98,945	74,491	482,945	23.03	20,970
2013	313,082.67	70,600	53,151	385,165	23.49	16,397
2014	279,730.14	56,366	42,435	349,187	23.97	14,568
2015	261,008.71	46,068	34,682	330,730	24.47	13,516
2016	347,658.82	52,147	39,259	447,463	25.00	17,899
2017	467,350.02	56,786	42,751	611,539	25.57	23,916
2018	461,682.92	42,246	31,805	614,551	26.17	23,483
2019	430,518.33	24,971	18,799	583,927	26.84	21,756
2020	285,595.47	5,998	4,516	395,318	27.58	14,334
	11,364,366.46	5,413,533	4,075,569	11,834,544		666,457

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 17.8 5.86

NSTAR ELECTRIC COMPANY

ACCOUNT 371.10 INSTALLATIONS ON CUSTOMERS' PREMISES - ELECTRIC VIHICLE CHARGING

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 10-S3						
NET SALVAGE PERCENT.. 0						
2018	145,268.73	36,317	1,961	143,308	7.50	19,108
	145,268.73	36,317	1,961	143,308		19,108

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 7.5 13.15

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
AGAWAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	732.88	664	806			
1956	171.69	154	189			
1957	306.26	273	337			
1958	206.49	183	227			
1959	7.74	7	9			
1961	1,604.65	1,385	1,765			
1962	2,393.73	2,047	2,633			
1963	205.45	174	226			
1964	44.53	37	49			
1966	169.08	139	186			
1967	131.99	108	145			
1968	204.58	165	225			
1969	733.77	586	804	3	6.03	
1971	408.19	319	438	11	6.38	2
1972	565.21	436	599	23	6.56	4
1973	7,751.66	5,915	8,120	407	6.74	60
1974	2,925.65	2,206	3,028	190	6.92	27
1975	18,973.76	14,126	19,392	1,479	7.11	208
1976	985.33	725	995	89	7.29	12
1977	18,084.79	13,121	18,013	1,881	7.49	251
1978	1,084.61	777	1,067	126	7.68	16
1979	6,659.75	4,702	6,455	871	7.88	111
1980	2,155.32	1,499	2,058	313	8.09	39
1981	2,308.98	1,583	2,173	367	8.29	44
1982	1,146.82	774	1,063	199	8.50	23
1983	20,722.88	13,760	18,890	3,905	8.72	448
1984	5,155.28	3,369	4,625	1,046	8.93	117
1985	3,226.12	2,071	2,843	706	9.16	77
1986	14,332.36	9,044	12,416	3,350	9.38	357
1987	31,204.30	19,331	26,538	7,787	9.61	810
1988	30,211.97	18,354	25,197	8,037	9.85	816
1989	33,270.07	19,812	27,198	9,399	10.09	932
1990	36,362.51	21,199	29,102	10,897	10.34	1,054
1991	6,697.60	3,821	5,246	2,122	10.59	200
1992	11,882.44	6,630	9,102	3,969	10.84	366
1993	15,540.56	8,470	11,628	5,467	11.10	493
1994	6,754.42	3,590	4,928	2,501	11.37	220
1995	39,519.50	20,471	28,103	15,369	11.64	1,320
1996	12,508.66	6,304	8,654	5,105	11.92	428
1997	1,576.72	773	1,061	673	12.20	55
1998	601.65	286	393	269	12.49	22
1999	5,138.11	2,369	3,252	2,400	12.78	188

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
AGAWAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2000	1,517.07	676	928	741	13.09	57
2001	296.01	127	174	151	13.40	11
2002	1,676.49	695	954	890	13.71	65
2003	2,356.57	938	1,288	1,305	14.04	93
2004	1,121.17	428	588	646	14.37	45
2005	3,136.77	1,143	1,569	1,881	14.71	128
2006	877.22	305	419	546	15.05	36
2007	1,510.50	498	684	978	15.41	63
2008	1,378.83	430	590	926	15.77	59
2009	7,170.14	2,101	2,884	5,003	16.14	310
2010	15,821.87	4,335	5,951	11,453	16.52	693
2011	20,368.40	5,184	7,117	15,289	16.91	904
2012	5,780.44	1,353	1,857	4,501	17.32	260
2013	5,145.26	1,096	1,505	4,155	17.74	234
2014	69,238.39	13,225	18,155	58,007	18.18	3,191
2015	15,918.09	2,674	3,671	13,839	18.64	742
2016	5,960.06	852	1,170	5,386	19.14	281
2017	21,883.46	2,560	3,514	20,557	19.66	1,046
2018	17,369.25	1,528	2,098	17,009	20.24	840
2019	18,247.50	1,031	1,415	18,657	20.87	894
2020	10,036.70	211	290	10,751	21.58	498
	571,478.25	253,149	346,997	281,629		19,150
AMHERST						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	240.69	218	265			
1961	2,360.73	2,037	2,597			
1962	26.95	23	30			
1963	14,386.77	12,193	15,825			
1964	34.43	29	38			
1965	2,948.31	2,452	3,243			
1966	3,390.37	2,792	3,729			
1967	1,835.23	1,496	2,019			
1968	1,596.62	1,288	1,756			
1969	6,008.75	4,798	6,610			
1970	4,032.22	3,185	4,435			
1971	3,451.39	2,696	3,766	30	6.38	5
1972	6,433.40	4,967	6,939	138	6.56	21

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
AMHERST						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1973	3,596.92	2,744	3,833	123	6.74	18
1974	896.25	676	944	42	6.92	6
1975	563.68	420	587	33	7.11	5
1976	75.88	56	78	5	7.29	1
1977	190.81	138	193	17	7.49	2
1978	2,349.77	1,682	2,350	235	7.68	31
1979	202.95	143	200	23	7.88	3
1980	55.24	38	53	8	8.09	1
1981	612.23	420	587	87	8.29	10
1982	114.80	77	108	19	8.50	2
1983	3,276.61	2,176	3,040	565	8.72	65
1984	579.42	379	529	108	8.93	12
1986	161.24	102	142	35	9.38	4
1987	22,845.03	14,152	19,770	5,360	9.61	558
1988	78.63	48	67	19	9.85	2
1989	405.83	242	338	108	10.09	11
1990	9,373.19	5,465	7,634	2,676	10.34	259
1993	177.17	97	136	59	11.10	5
1994	185.28	98	137	67	11.37	6
1995	954.74	495	691	359	11.64	31
1996	385.09	194	271	153	11.92	13
1997	117.01	57	80	49	12.20	4
1998	343.59	163	228	150	12.49	12
2000	53.25	24	34	25	13.09	2
2001	18,045.60	7,760	10,840	9,010	13.40	672
2002	200.90	83	116	105	13.71	8
2004	387.24	148	207	219	14.37	15
2006	86.82	30	42	54	15.05	4
2008	2,617.43	815	1,139	1,741	15.77	110
2010	4,364.24	1,196	1,671	3,130	16.52	189
2013	2,258.00	481	672	1,812	17.74	102
2019	2,516.86	142	198	2,570	20.87	123
2020	9,550.60	201	281	10,225	21.58	474
	134,368.16	79,116	108,446	39,359		2,786

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ASHFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	3,181.83	2,884	3,500			
1966	27.46	23	30			
1971	53.97	42	59			
1972	62.63	48	69			
1978	107.54	77	118	1	7.68	
1991	174.99	100	153	40	10.59	4
1996	257.21	130	199	84	11.92	7
1997	182.39	89	136	65	12.20	5
1999	591.01	272	416	234	12.78	18
2001	220.87	95	145	98	13.40	7
2002	1,196.04	496	758	557	13.71	41
2003	1,142.67	455	696	561	14.04	40
2004	218.99	84	128	112	14.37	8
2006	156.33	54	83	89	15.05	6
2007	365.89	121	185	218	15.41	14
2009	938.59	275	420	612	16.14	38
2012	2,170.60	508	777	1,611	17.32	93
2014	492.09	94	144	398	18.18	22
	11,541.10	5,847	8,015	4,680		303
BECKET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	35.13	32	39			
1965	235.60	196	259			
1967	34.44	28	38			
1969	41.50	33	45			
1970	42.39	33	45	1	6.20	
1971	26.14	20	27	1	6.38	
1972	1,392.20	1,075	1,475	56	6.56	9
1974	339.84	256	351	22	6.92	3
1975	77.22	57	78	7	7.11	1
1976	242.38	178	244	22	7.29	3
1977	105.37	76	104	12	7.49	2
1978	159.37	114	156	19	7.68	2
1980	430.14	299	410	63	8.09	8
1982	531.86	359	493	92	8.50	11
1984	413.49	270	371	84	8.93	9
1987	2,737.53	1,696	2,328	684	9.61	71

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BECKET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	220.40	114	156	86	11.64	7
1998	178.57	85	117	80	12.49	6
2000	234.50	104	143	115	13.09	9
2002	242.17	100	137	129	13.71	9
2004	649.84	248	340	374	14.37	26
2005	289.50	106	145	173	14.71	12
2006	245.17	85	117	153	15.05	10
2007	852.45	281	386	552	15.41	36
2008	948.26	295	405	638	15.77	40
2009	921.33	270	371	643	16.14	40
2010	3,434.03	941	1,291	2,486	16.52	150
2011	1,069.57	272	373	803	16.91	47
2012	1,779.99	417	572	1,386	17.32	80
2013	1,377.52	293	402	1,113	17.74	63
2014	2,072.56	396	543	1,736	18.18	95
2015	852.95	143	196	742	18.64	40
2016	528.74	76	104	477	19.14	25
2017	288.26	34	47	270	19.66	14
2018	700.63	62	85	686	20.24	34
2019	278.66	16	22	285	20.87	14
2020	2,872.84	60	82	3,078	21.58	143
	26,882.54	9,120	12,501	17,070		1,019
BERNARDSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1967	22.88	19	25			
1968	1.01	1	1			
1970	37.32	29	40	1	6.20	
1971	176.21	138	189	5	6.38	1
1973	234.46	179	245	13	6.74	2
1974	8.03	6	8	1	6.92	
1975	10.12	8	11			
1977	170.97	124	170	18	7.49	2
1983	132.50	88	121	25	8.72	3
1987	219.95	136	186	56	9.61	6
1989	35.41	21	29	10	10.09	1
1994	4,158.03	2,210	3,030	1,544	11.37	136
1997	1,442.77	707	969	618	12.20	51

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BERNARDSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2000	505.81	225	308	248	13.09	19
2003	177.46	71	97	98	14.04	7
2006	737.23	256	351	460	15.05	31
2007	339.83	112	154	220	15.41	14
2008	761.61	237	325	513	15.77	33
2009	1,089.22	319	437	761	16.14	47
2010	790.37	217	297	572	16.52	35
2016	738.91	106	145	667	19.14	35
2018	3,602.55	317	435	3,528	20.24	174
2020	568.89	12	16	609	21.58	28
	15,961.54	5,538	7,591	9,967		625
BLANDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	274.37	249	302			
1956	69.48	62	76			
1957	75.58	67	83			
1958	158.48	140	174			
1963	1,134.15	961	1,248			
1965	60.86	51	67			
1966	43.64	36	48			
1970	45.17	36	50			
1974	63.56	48	69	1	6.92	
1976	217.27	160	229	10	7.29	1
1977	201.16	146	209	12	7.49	2
1979	244.75	173	248	21	7.88	3
1983	1,101.15	731	1,048	164	8.72	19
1999	139.06	64	92	61	12.78	5
2004	282.83	108	155	156	14.37	11
2008	324.49	101	145	212	15.77	13
2009	1,140.47	334	479	776	16.14	48
2012	950.24	222	318	727	17.32	42
2014	589.29	113	162	486	18.18	27
2016	614.36	88	126	550	19.14	29
2019	348.97	20	29	355	20.87	17
2020	2,847.24	60	86	3,046	21.58	141
	10,926.57	3,970	5,442	6,577		358

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BUCKLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	254.71	231	280			
1962	78.93	67	87			
1964	35.91	30	40			
1966	90.28	74	99			
1967	182.94	149	201			
1968	20.23	16	22			
1970	503.09	397	546	7	6.20	1
1971	627.80	490	674	17	6.38	3
1973	52.54	40	55	3	6.74	
1982	98.95	67	92	17	8.50	2
1983	220.23	146	201	41	8.72	5
1985	239.82	154	212	52	9.16	6
1988	792.70	482	663	209	9.85	21
1991	789.69	451	620	248	10.59	23
1993	861.36	469	645	302	11.10	27
1994	376.14	200	275	139	11.37	12
1995	18.74	10	14	7	11.64	1
1996	316.84	160	220	128	11.92	11
1998	616.19	293	403	275	12.49	22
1999	268.73	124	171	125	12.78	10
2000	351.34	157	216	171	13.09	13
2001	1,158.68	498	685	589	13.40	44
2002	215.79	89	122	115	13.71	8
2004	1,254.32	479	659	721	14.37	50
2005	680.51	248	341	407	14.71	28
2007	288.75	95	131	187	15.41	12
2008	1,276.74	398	547	857	15.77	54
2010	935.44	256	352	677	16.52	41
2012	13,956.08	3,266	4,493	10,859	17.32	627
2016	3,265.67	467	642	2,950	19.14	154
2017	1,891.73	221	304	1,777	19.66	90
2018	965.15	85	117	945	20.24	47
2019	2,380.89	135	186	2,433	20.87	117
	35,066.91	10,444	14,316	24,258		1,429

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CHESHIRE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1961	26.85	23	30			
1971	50.35	39	54	2	6.38	
1974	119.13	90	124	7	6.92	1
1986	61.55	39	54	14	9.38	1
1989	164.00	98	135	46	10.09	5
1999	196.37	91	125	91	12.78	7
2001	337.30	145	199	172	13.40	13
2002	269.85	112	154	143	13.71	10
2013	324.68	69	95	262	17.74	15
	1,550.08	706	968	737		52
CHESTERFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	28.37	26	31			
1961	37.13	32	41			
1965	140.76	117	155			
1966	35.72	29	39			
1967	37.82	31	42			
1972	468.09	361	498	17	6.56	3
1973	42.32	32	44	2	6.74	
1980	215.07	150	207	30	8.09	4
2007	486.64	160	221	314	15.41	20
2009	938.59	275	380	653	16.14	40
2014	1,052.62	201	277	880	18.18	48
2015	1,890.21	318	439	1,640	18.64	88
2020	351.16	7	10	377	21.58	17
	5,724.50	1,739	2,384	3,913		220
COLRAIN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1963	88.25	75	97			
1965	45.10	38	50			
1966	197.18	162	217			
1971	47.80	37	51	2	6.38	
1972	27.62	21	29	2	6.56	

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COLRAIN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1974	1,189.64	897	1,232	77	6.92	11
1982	33.17	22	30	6	8.50	1
1988	168.99	103	141	44	9.85	4
1991	2,450.57	1,398	1,920	775	10.59	73
1996	373.56	188	258	153	11.92	13
2000	251.49	112	154	123	13.09	9
2001	329.84	142	195	168	13.40	13
2002	335.76	139	191	178	13.71	13
2003	511.35	204	280	282	14.04	20
2004	479.89	183	251	277	14.37	19
2005	357.91	130	179	215	14.71	15
2007	510.71	168	231	331	15.41	21
2008	1,346.12	419	576	905	15.77	57
2009	858.77	252	346	599	16.14	37
2011	491.74	125	172	369	16.91	22
2018	349.39	31	43	342	20.24	17
2019	270.91	15	21	277	20.87	13
2020	802.20	17	23	859	21.58	40
	11,517.96	4,878	6,686	5,984		398
CONWAY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	170.23	154	187			
1964	790.94	664	870			
1966	60.13	50	66			
1967	264.75	216	291			
1968	194.35	157	214			
1969	62.69	50	69			
1970	816.42	645	896	2	6.20	
1971	47.61	37	51	1	6.38	
1973	133.81	102	142	5	6.74	1
1977	137.38	100	139	12	7.49	2
1978	300.84	215	299	32	7.68	4
1993	477.98	260	361	165	11.10	15
1995	628.98	326	453	239	11.64	21
1998	380.08	181	251	167	12.49	13
1999	493.42	227	315	227	12.78	18
2000	226.90	101	140	109	13.09	8

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CONWAY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2001	377.05	162	225	190	13.40	14
2002	201.24	83	115	106	13.71	8
2005	301.16	110	153	178	14.71	12
2007	311.40	103	143	199	15.41	13
2008	301.73	94	131	201	15.77	13
2009	375.26	110	153	260	16.14	16
2010	877.65	240	333	632	16.52	38
2012	990.40	232	322	767	17.32	44
2013	780.61	166	231	628	17.74	35
2016	1,581.68	226	314	1,426	19.14	75
2017	445.61	52	72	418	19.66	21
2019	796.49	45	63	814	20.87	39
2020	469.65	10	14	503	21.58	23
	12,996.44	5,118	7,015	7,281		433
CUMMINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	67.11	61	74			
1960	19.79	17	22			
1969	48.54	39	53			
1972	3.70	3	4			
1973	61.41	47	67			
1974	35.33	27	39			
1998	224.50	107	154	93	12.49	7
	460.38	301	413	93		7
DALTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	172.59	156	190			
1957	25.54	23	28			
1959	518.35	455	570			
1960	780.39	679	858			
1961	126.33	109	139			
1962	377.31	323	415			
1966	3.35	3	4			

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DALTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1967	384.17	313	423			
1968	331.10	267	364			
1969	3,820.62	3,051	4,200	2	6.03	
1970	201.17	159	219	2	6.20	
1971	3,503.14	2,736	3,767	87	6.38	14
1972	332.36	257	354	12	6.56	2
1973	249.69	191	263	12	6.74	2
1974	284.64	215	296	17	6.92	2
1975	1,153.84	859	1,183	87	7.11	12
1976	94.44	69	95	9	7.29	1
1977	22.14	16	22	2	7.49	
1978	128.83	92	127	15	7.68	2
1979	814.60	575	792	104	7.88	13
1980	883.76	615	847	125	8.09	15
1981	1,898.43	1,301	1,791	297	8.29	36
1982	342.02	231	318	58	8.50	7
1984	2,155.13	1,408	1,938	432	8.93	48
1985	1,270.17	815	1,122	275	9.16	30
1986	1,327.04	837	1,152	307	9.38	33
1987	2,725.00	1,688	2,324	674	9.61	70
1988	3,675.98	2,233	3,074	969	9.85	98
1989	4,557.64	2,714	3,736	1,277	10.09	127
1990	3,334.06	1,944	2,676	991	10.34	96
1991	828.34	473	651	260	10.59	25
1993	264.88	144	198	93	11.10	8
1994	804.27	427	588	297	11.37	26
1995	1,019.19	528	727	394	11.64	34
1996	1,690.13	852	1,173	686	11.92	58
1997	586.15	287	395	250	12.20	20
1998	7,284.18	3,464	4,769	3,244	12.49	260
1999	170.56	79	109	79	12.78	6
2000	518.48	231	318	252	13.09	19
2001	6,253.84	2,689	3,702	3,177	13.40	237
2002	143.84	60	83	76	13.71	6
2012	693.71	162	223	540	17.32	31
2014	8,935.68	1,707	2,350	7,479	18.18	411
2017	515.51	60	83	484	19.66	25
2018	849.32	75	103	831	20.24	41
	66,051.91	35,572	48,759	23,898		1,815

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DEERFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	545.80	495	600			
1958	4.01	4	4			
1963	113.38	96	125			
1964	166.79	140	183			
1965	184.69	154	203			
1966	110.04	91	121			
1967	1,921.20	1,566	2,113			
1968	9.87	8	11			
1969	1,203.33	961	1,321	3	6.03	
1970	18.16	14	19	1	6.20	
1971	38.14	30	41	1	6.38	
1972	5,045.90	3,895	5,354	197	6.56	30
1973	3,737.90	2,852	3,920	192	6.74	28
1974	1,476.78	1,113	1,530	95	6.92	14
1975	1,452.32	1,081	1,486	112	7.11	16
1976	871.05	641	881	77	7.29	11
1977	80.18	58	80	8	7.49	1
1978	2,783.60	1,993	2,739	323	7.68	42
1979	626.79	443	609	81	7.88	10
1980	1,156.19	804	1,105	167	8.09	21
1981	740.22	507	697	117	8.29	14
1983	1,816.80	1,206	1,658	341	8.72	39
1984	609.38	398	547	123	8.93	14
1985	1,800.19	1,156	1,589	391	9.16	43
1987	318.24	197	271	79	9.61	8
1991	337.61	193	265	106	10.59	10
1992	643.93	359	493	215	10.84	20
1993	377.65	206	283	132	11.10	12
1994	533.17	283	389	198	11.37	17
1995	268.98	139	191	105	11.64	9
1996	292.84	148	203	119	11.92	10
1997	1,296.27	635	873	553	12.20	45
1998	328.16	156	214	147	12.49	12
1999	840.06	387	532	392	12.78	31
2000	793.54	354	487	386	13.09	29
2001	499.58	215	296	254	13.40	19
2005	9,795.34	3,570	4,907	5,868	14.71	399
2006	842.50	293	403	524	15.05	35
2007	490.10	161	221	318	15.41	21
2008	658.30	205	282	442	15.77	28
2009	2,487.22	729	1,002	1,734	16.14	107
2011	651.92	166	228	489	16.91	29

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DEERFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2012	2,402.15	562	772	1,870	17.32	108
2013	2,268.42	483	664	1,831	17.74	103
2014	49,724.73	9,498	13,055	41,642	18.18	2,291
2015	235.86	40	55	204	18.64	11
2017	7,448.73	871	1,197	6,996	19.66	356
2018	623.50	55	76	610	20.24	30
2020	1,991.39	42	58	2,133	21.58	99
	112,662.90	39,653	54,353	69,576		4,122
EASTHAMPTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1925	17.31	19	19			
1967	37.03	30	41			
1968	644.69	520	709			
1969	144.32	115	158	1	6.03	
1970	103.56	82	112	1	6.20	
1971	312.64	244	335	9	6.38	1
1972	547.53	423	580	22	6.56	3
1973	936.78	715	980	50	6.74	7
1975	2,436.74	1,814	2,487	193	7.11	27
1976	795.59	585	802	73	7.29	10
1977	128.44	93	128	14	7.49	2
1979	697.68	493	676	91	7.88	12
1980	465.39	324	444	68	8.09	8
1981	1,562.67	1,071	1,469	250	8.29	30
1982	207.73	140	192	37	8.50	4
1983	159.83	106	145	30	8.72	3
1984	420.97	275	377	86	8.93	10
1985	2,397.46	1,539	2,110	527	9.16	58
1987	1,395.82	865	1,186	349	9.61	36
1988	668.37	406	557	178	9.85	18
1989	531.70	317	435	150	10.09	15
1990	1,953.33	1,139	1,562	587	10.34	57
1991	139.41	80	110	44	10.59	4
1992	2,102.96	1,173	1,608	705	10.84	65
1993	2,835.70	1,545	2,119	1,001	11.10	90
1994	1,049.98	558	765	390	11.37	34
1995	531.68	275	377	208	11.64	18

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EASTHAMPTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1996	2,077.20	1,047	1,436	849	11.92	71
1997	3,205.19	1,571	2,154	1,371	12.20	112
1998	922.26	439	602	412	12.49	33
1999	1,386.09	639	876	648	12.78	51
2000	592.51	264	362	290	13.09	22
2003	1,492.84	594	815	828	14.04	59
2004	526.23	201	276	303	14.37	21
2006	1,724.50	599	821	1,076	15.05	71
2008	461.63	144	197	310	15.77	20
2012	1,055.55	247	339	822	17.32	47
2017	473.81	55	75	446	19.66	23
	37,143.12	20,746	28,437	12,420		1,042
ERVING						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	32.32	29	36			
1960	151.20	132	166			
1962	261.96	224	288			
1963	7.94	7	9			
1964	44.52	37	49			
1965	70.77	59	78			
1969	19.79	16	22			
1970	85.15	67	92	1	6.20	
1971	72.93	57	79	2	6.38	
1972	142.34	110	152	5	6.56	1
1973	15.85	12	17	1	6.74	
1974	134.74	102	141	7	6.92	1
1975	47.90	36	50	3	7.11	
1977	24.22	18	25	2	7.49	
1978	1,469.91	1,052	1,452	165	7.68	21
1980	118.85	83	115	16	8.09	2
1986	80.85	51	70	19	9.38	2
1987	825.42	511	705	203	9.61	21
1988	125.17	76	105	33	9.85	3
1989	231.83	138	190	65	10.09	6
1990	214.21	125	173	63	10.34	6
1995	134.53	70	97	51	11.64	4
1998	1,020.96	485	669	454	12.49	36

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ERVING						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1999	301.38	139	192	140	12.78	11
2000	1,076.57	480	663	522	13.09	40
2001	457.79	197	272	232	13.40	17
2002	1,345.79	558	770	710	13.71	52
2003	556.04	221	305	307	14.04	22
	9,070.93	5,092	6,980	2,998		245
GILL						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	673.65	611	741			
1958	46.55	41	51			
1962	81.51	70	90			
1965	58.30	48	64			
1966	27.61	23	30			
1971	30.06	23	32	1	6.38	
1978	21.92	16	22	2	7.68	
1980	44.25	31	43	5	8.09	1
1983	949.77	631	884	161	8.72	18
1984	428.82	280	392	80	8.93	9
1987	62.41	39	55	14	9.61	1
1995	92.35	48	67	34	11.64	3
2001	5,728.84	2,463	3,449	2,853	13.40	213
2002	245.92	102	143	128	13.71	9
2007	195.71	64	90	126	15.41	8
2015	190.68	32	45	165	18.64	9
	8,878.35	4,522	6,198	3,568		271
GRANVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	195.35	177	215			
1958	76.35	68	84			
1971	246.45	192	265	7	6.38	1
1972	480.32	371	511	17	6.56	3
1973	968.24	739	1,018	47	6.74	7
1974	199.88	151	208	12	6.92	2

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GRANVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1976	247.29	182	251	21	7.29	3
1979	425.29	300	413	54	7.88	7
1980	253.85	177	244	35	8.09	4
1987	183.57	114	157	45	9.61	5
2004	269.66	103	142	155	14.37	11
2006	431.91	150	207	268	15.05	18
2007	626.34	206	284	405	15.41	26
2009	901.16	264	364	628	16.14	39
2010	1,271.81	348	479	920	16.52	56
2012	869.34	203	280	677	17.32	39
2013	349.50	74	102	282	17.74	16
2014	1,377.19	263	362	1,153	18.18	63
2015	1,455.51	245	338	1,264	18.64	68
2016	515.92	74	102	466	19.14	24
2018	10,486.29	923	1,272	10,263	20.24	507
2019	2,394.92	135	186	2,448	20.87	117
2020	1,812.21	38	52	1,941	21.58	90
	26,038.35	5,497	7,535	21,107		1,106
GREENFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	6,768.23	6,135	7,445			
1958	2,117.65	1,874	2,329			
1959	3,129.91	2,748	3,443			
1961	219.64	190	242			
1962	118.54	101	130			
1963	78.75	67	87			
1964	86.29	72	95			
1965	46.44	39	51			
1966	145.98	120	161			
1967	1,942.57	1,583	2,137			
1968	416.61	336	458			
1969	536.31	428	590			
1970	1,055.28	834	1,161			
1971	1,197.31	935	1,317			
1972	1,290.01	996	1,416	3	6.56	
1973	3,094.16	2,361	3,356	47	6.74	7
1974	7,547.54	5,691	8,090	212	6.92	31

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
GREENFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1975	1,757.10	1,308	1,859	73	7.11	10
1976	677.55	498	708	37	7.29	5
1977	757.59	550	782	51	7.49	7
1978	724.47	519	738	59	7.68	8
1979	955.40	675	960	91	7.88	12
1980	759.06	528	751	84	8.09	10
1981	347.85	238	338	44	8.29	5
1982	240.60	162	230	34	8.50	4
1983	111.62	74	105	18	8.72	2
1984	1,307.05	854	1,214	224	8.93	25
1985	463.18	297	422	87	9.16	9
1986	561.45	354	503	114	9.38	12
1987	67.69	42	60	15	9.61	2
1988	114.92	70	100	27	9.85	3
1989	4,042.18	2,407	3,422	1,025	10.09	102
1990	1,373.12	801	1,139	372	10.34	36
1991	3,482.04	1,987	2,825	1,006	10.59	95
1993	276.22	151	215	89	11.10	8
1994	2,351.72	1,250	1,777	810	11.37	71
1995	738.51	383	544	268	11.64	23
1997	616.22	302	429	249	12.20	20
1999	4,031.03	1,858	2,641	1,793	12.78	140
2000	1,272.08	567	806	593	13.09	45
2001	1,158.29	498	708	566	13.40	42
2002	2,150.61	891	1,267	1,099	13.71	80
2004	687.19	262	372	383	14.37	27
2007	3,101.12	1,022	1,453	1,958	15.41	127
2008	1,181.00	368	523	776	15.77	49
2009	2,056.98	603	857	1,405	16.14	87
2010	518.33	142	202	368	16.52	22
2011	754.17	192	273	557	16.91	33
2012	1,130.02	264	375	868	17.32	50
2013	1,775.28	378	537	1,415	17.74	80
2014	1,399.81	267	380	1,160	18.18	64
2015	2,928.28	492	699	2,522	18.64	135
2018	69.44	6	9	68	20.24	3
2019	2,523.62	143	203	2,573	20.87	123
2020	872.53	18	26	934	21.58	43
	79,126.54	45,931	62,959	24,080		1,657

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HADLEY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	1,191.70	1,080	1,311			
1958	109.28	97	120			
1963	17.85	15	20			
1967	448.55	366	493			
1968	43.65	35	48			
1971	132.36	103	144	2	6.38	
1972	42.72	33	46	1	6.56	
1974	172.79	130	181	9	6.92	1
1975	77.22	57	79	6	7.11	1
1976	1,732.12	1,274	1,775	130	7.29	18
1978	1,340.66	960	1,338	137	7.68	18
1980	277.40	193	269	36	8.09	4
1981	304.82	209	291	44	8.29	5
1984	315.54	206	287	60	8.93	7
1986	47.72	30	42	11	9.38	1
1990	568.50	331	461	164	10.34	16
1993	241.87	132	184	82	11.10	7
1996	2,892.60	1,458	2,031	1,151	11.92	97
1997	1,789.75	877	1,222	747	12.20	61
2004	660.08	252	351	375	14.37	26
2005	73.54	27	38	43	14.71	3
2007	416.37	137	191	267	15.41	17
2008	1,249.32	389	542	832	15.77	53
2009	325.49	95	132	226	16.14	14
2011	589.14	150	209	439	16.91	26
2012	1,060.25	248	346	821	17.32	47
2013	1,463.71	312	435	1,175	17.74	66
2014	1,422.82	272	379	1,186	18.18	65
2017	2,029.65	237	330	1,902	19.66	97
2018	478.89	42	59	468	20.24	23
2019	5,732.03	324	451	5,854	20.87	280
2020	480.24	10	14	514	21.58	24
	27,728.63	10,081	13,818	16,683		977

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HANCOCK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1963	645.23	547	710			
1973	115.39	88	127			
1975	220.18	164	239	3	7.11	
1980	326.53	227	331	29	8.09	4
	1,307.33	1,026	1,406	32		4
HATFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	77.85	71	86			
1961	85.50	74	94			
1964	35.34	30	39			
1965	105.57	88	116			
1966	96.62	80	106			
1967	184.75	151	203			
1969	88.16	70	96	1	6.03	
1971	404.39	316	434	11	6.38	2
1972	472.24	365	501	18	6.56	3
1973	185.30	141	194	10	6.74	1
1974	380.23	287	394	24	6.92	3
1975	477.02	355	488	37	7.11	5
1976	26.98	20	27	2	7.29	
1978	34.13	24	33	5	7.68	1
1979	685.30	484	665	89	7.88	11
1980	173.85	121	166	25	8.09	3
1981	217.38	149	205	34	8.29	4
1983	887.84	590	810	166	8.72	19
1984	564.67	369	507	114	8.93	13
1988	92.03	56	77	24	9.85	2
1989	1,687.40	1,005	1,380	476	10.09	47
1990	661.12	385	529	198	10.34	19
1992	118.27	66	91	39	10.84	4
1993	67.31	37	51	23	11.10	2
1994	1,184.73	630	865	438	11.37	39
1995	1,214.57	629	864	472	11.64	41
1996	989.15	499	685	403	11.92	34
1997	683.73	335	460	292	12.20	24
1999	438.27	202	277	205	12.78	16
2001	226.99	98	135	115	13.40	9

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HATFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2002	1,036.98	430	591	550	13.71	40
2003	1,369.57	545	748	758	14.04	54
2004	768.65	293	402	443	14.37	31
2005	4,120.57	1,502	2,063	2,470	14.71	168
2007	1,151.47	379	520	746	15.41	48
2008	641.75	200	275	431	15.77	27
2010	280.16	77	106	202	16.52	12
2011	1,424.89	363	499	1,069	16.91	63
2012	962.48	225	309	750	17.32	43
2013	1,993.05	425	584	1,609	17.74	91
2014	1,997.21	381	523	1,674	18.18	92
2015	1,661.76	279	383	1,445	18.64	78
2016	870.06	124	170	787	19.14	41
2017	184.19	22	30	172	19.66	9
2018	1,665.83	147	202	1,631	20.24	81
2019	821.32	46	63	840	20.87	40
2020	507.08	11	15	543	21.58	25
	34,003.71	13,176	18,061	19,343		1,245
HINSDALE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	225.97	205	249			
1957	1,088.51	971	1,197			
1958	113.13	100	124			
1959	456.80	401	502			
1960	35.95	31	40			
1962	26.95	23	30			
1963	750.64	636	826			
1965	26.51	22	29			
1967	215.39	176	237			
1969	83.01	66	91			
1970	14.61	12	16			
1971	208.83	163	226	4	6.38	1
1975	416.10	310	429	29	7.11	4
1978	56.06	40	55	6	7.68	1
1979	623.81	440	609	77	7.88	10
1980	486.98	339	469	67	8.09	8
1981	217.38	149	206	33	8.29	4

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HINSDALE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	166.24	112	155	28	8.50	3
1983	220.23	146	202	40	8.72	5
1988	18.37	11	15	5	9.85	1
1989	159.41	95	131	44	10.09	4
1990	474.74	277	383	139	10.34	13
1991	595.02	339	469	185	10.59	17
1994	809.60	430	595	296	11.37	26
1998	1,510.22	718	994	668	12.49	53
1999	1,205.91	556	769	557	12.78	44
2000	549.50	245	339	265	13.09	20
2001	23,732.58	10,205	14,122	11,984	13.40	894
2002	705.93	293	405	371	13.71	27
2003	222.11	88	122	123	14.04	9
2004	625.70	239	331	358	14.37	25
2005	483.41	176	244	288	14.71	20
2006	1,064.37	370	512	659	15.05	44
2007	879.45	290	401	566	15.41	37
2008	1,164.46	363	502	779	15.77	49
2010	1,731.67	474	656	1,249	16.52	76
2011	2,109.49	537	743	1,577	16.91	93
2012	7,413.89	1,735	2,401	5,754	17.32	332
2013	1,927.06	410	567	1,552	17.74	87
2014	462.95	88	122	387	18.18	21
2015	7,523.39	1,264	1,749	6,527	18.64	350
2016	419.99	60	83	379	19.14	20
2019	7,174.44	405	560	7,331	20.87	351
2020	8,337.17	175	242	8,929	21.58	414
	76,733.93	24,185	33,151	51,256		3,063
HUNTINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	96.46	87	106			
1958	1,503.95	1,331	1,654			
1960	85.02	74	94			
1966	258.36	213	284			
1968	38.87	31	43			
1971	50.80	40	55			
1972	900.21	695	962	28	6.56	4

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HUNTINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1974	63.56	48	66	3	6.92	
1976	391.23	288	399	32	7.29	4
1977	162.41	118	163	15	7.49	2
1978	269.84	193	267	30	7.68	4
1979	716.58	506	701	88	7.88	11
1980	239.83	167	231	33	8.09	4
1981	217.38	149	206	33	8.29	4
1983	279.78	186	258	50	8.72	6
1984	6,913.94	4,518	6,256	1,349	8.93	151
1988	2,025.41	1,230	1,703	525	9.85	53
1989	294.49	175	242	82	10.09	8
1994	422.61	225	312	153	11.37	13
1995	1,467.82	760	1,052	562	11.64	48
1996	1,165.89	588	814	468	11.92	39
1997	668.83	328	454	282	12.20	23
1998	254.83	121	168	113	12.49	9
2003	199.06	79	109	110	14.04	8
2004	315.55	120	166	181	14.37	13
2005	386.41	141	195	230	14.71	16
2007	146.41	48	66	95	15.41	6
2008	800.60	249	345	536	15.77	34
2011	481.19	122	169	360	16.91	21
2012	1,897.36	444	615	1,472	17.32	85
2013	2,841.23	605	838	2,288	17.74	129
2014	7,801.26	1,490	2,063	6,518	18.18	359
2016	1,138.46	163	226	1,027	19.14	54
2017	1,080.68	126	174	1,014	19.66	52
2018	521.38	46	64	510	20.24	25
2019	2,221.81	126	174	2,270	20.87	109
2020	1,258.90	26	36	1,349	21.58	63
	39,578.40	15,856	21,734	21,802		1,357
LANESBOROUGH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1935	65.83	68	72			
1950	65.26	61	72			
1955	2,918.38	2,646	3,210			
1956	39.65	36	44			

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LANESBOROUGH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1957	224.12	200	247			
1958	598.24	529	658			
1959	331.06	291	364			
1960	488.19	425	537			
1961	344.08	297	378			
1963	211.45	179	233			
1964	180.88	152	199			
1966	250.42	206	275			
1967	262.66	214	289			
1968	78.60	63	86			
1969	339.05	271	373			
1970	21.71	17	24			
1971	24.26	19	26			
1972	45.74	35	48	2	6.56	
1973	103.49	79	109	4	6.74	1
1974	153.55	116	161	8	6.92	1
1975	874.19	651	902	60	7.11	8
1976	407.41	300	415	33	7.29	5
1977	363.57	264	366	34	7.49	5
1978	680.92	488	676	73	7.68	10
1979	2,052.58	1,449	2,007	251	7.88	32
1980	9,648.75	6,711	9,293	1,320	8.09	163
1981	580.32	398	551	87	8.29	10
1982	1,699.99	1,148	1,590	280	8.50	33
1986	38.95	25	35	8	9.38	1
1988	56.55	34	47	15	9.85	2
1989	700.85	417	577	193	10.09	19
1990	37,474.74	21,848	30,255	10,967	10.34	1,061
1991	752.84	429	594	234	10.59	22
1994	447.36	238	330	163	11.37	14
1995	565.33	293	406	216	11.64	19
1996	1,776.00	895	1,239	714	11.92	60
1997	547.66	268	371	231	12.20	19
1998	1,729.15	822	1,138	764	12.49	61
1999	249.66	115	159	115	12.78	9
2000	2,196.11	978	1,354	1,061	13.09	81
2001	1,805.65	776	1,075	912	13.40	68
2002	1,045.89	434	601	549	13.71	40
2004	833.97	318	440	477	14.37	33
2005	1,280.53	467	647	762	14.71	52
2006	986.17	343	475	610	15.05	41
2007	1,033.24	340	471	666	15.41	43

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LANESBOROUGH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2008	1,280.26	399	553	856	15.77	54
2009	2,430.79	712	986	1,688	16.14	105
2010	3,959.78	1,085	1,503	2,853	16.52	173
2011	2,852.43	726	1,005	2,132	16.91	126
2012	1,724.20	403	558	1,339	17.32	77
2013	5,009.63	1,067	1,478	4,033	17.74	227
2014	3,704.08	707	979	3,095	18.18	170
2015	5,027.08	845	1,170	4,360	18.64	234
2016	5,009.85	716	992	4,519	19.14	236
2017	2,569.38	301	417	2,409	19.66	123
2018	9,073.43	798	1,105	8,876	20.24	439
2019	8,667.99	490	679	8,856	20.87	424
2020	3,247.10	68	94	3,478	21.58	161
	131,131.00	54,670	74,937	69,307		4,462
LEE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	2,977.73	2,699	3,276			
1956	1,312.48	1,181	1,444			
1957	1,268.42	1,132	1,395			
1958	1,311.18	1,160	1,442			
1959	721.16	633	793			
1960	863.46	752	950			
1961	1,592.32	1,374	1,752			
1962	780.20	667	858			
1963	504.22	427	555			
1964	201.99	170	222			
1965	2,300.06	1,913	2,530			
1966	725.97	598	799			
1967	554.56	452	610			
1968	541.26	437	595			
1969	357.65	286	393			
1970	1,507.32	1,191	1,650	8	6.20	1
1971	1,097.32	857	1,188	19	6.38	3
1972	826.60	638	884	25	6.56	4
1973	284.81	217	301	13	6.74	2
1974	34.00	26	36	1	6.92	
1975	1,614.05	1,202	1,666	110	7.11	15

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LEE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1976	1,138.30	837	1,160	92	7.29	13
1977	1,510.69	1,096	1,519	143	7.49	19
1978	1,010.42	723	1,002	110	7.68	14
1979	524.69	370	513	64	7.88	8
1980	2,165.78	1,506	2,087	295	8.09	36
1981	2,306.16	1,581	2,191	346	8.29	42
1982	2,033.68	1,373	1,903	334	8.50	39
1983	13,152.17	8,733	12,101	2,366	8.72	271
1984	2,374.23	1,552	2,151	461	8.93	52
1985	997.34	640	887	210	9.16	23
1986	1,230.45	776	1,075	278	9.38	30
1987	34.01	21	29	8	9.61	1
1989	12,733.39	7,583	10,508	3,499	10.09	347
1990	34,800.38	20,289	28,115	10,166	10.34	983
1991	1,583.00	903	1,251	490	10.59	46
1992	45.26	25	35	15	10.84	1
1995	1,149.39	595	825	440	11.64	38
1996	1,396.47	704	976	561	11.92	47
1997	509.00	249	345	215	12.20	18
1998	1,169.94	556	770	516	12.49	41
1999	3,677.12	1,695	2,349	1,696	12.78	133
2000	751.12	335	464	362	13.09	28
2001	33,325.17	14,330	19,857	16,800	13.40	1,254
2002	644.69	267	370	339	13.71	25
2003	3,065.44	1,220	1,691	1,681	14.04	120
2004	3,689.37	1,408	1,951	2,107	14.37	147
2005	2,953.28	1,076	1,491	1,758	14.71	120
2006	5,818.52	2,022	2,802	3,598	15.05	239
2007	3,790.67	1,249	1,731	2,439	15.41	158
2008	1,702.46	530	734	1,138	15.77	72
2009	3,107.78	911	1,262	2,156	16.14	134
2010	6,294.91	1,725	2,390	4,534	16.52	274
2011	6,660.38	1,695	2,349	4,978	16.91	294
2012	6,865.41	1,607	2,227	5,325	17.32	307
2013	9,564.37	2,037	2,823	7,698	17.74	434
2014	5,802.54	1,108	1,535	4,847	18.18	267
2015	1,296.41	218	302	1,124	18.64	60
2016	38,101.09	5,448	7,549	34,362	19.14	1,795
2017	3,306.28	387	536	3,101	19.66	158

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LEE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2018	4,780.63	421	583	4,675	20.24	231
2019	909.98	51	71	930	20.87	45
2020	11,500.48	241	334	12,317	21.58	571
	260,849.61	108,105	148,182	138,753		8,960
LENOX						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	131.67	119	145			
1956	69.48	62	76			
1957	17.99	16	20			
1974	63.56	48	66	4	6.92	1
1975	433.73	323	444	33	7.11	5
1980	541.60	377	518	77	8.09	10
1981	1,782.40	1,222	1,681	280	8.29	34
1988	4,950.97	3,008	4,137	1,309	9.85	133
1989	244.54	146	201	68	10.09	7
1990	31.13	18	25	9	10.34	1
1992	750.99	419	576	250	10.84	23
2001	734.08	316	435	373	13.40	28
2003	272.89	109	150	150	14.04	11
2005	181.25	66	91	109	14.71	7
2013	264.21	56	77	214	17.74	12
2016	2,490.53	356	490	2,250	19.14	118
2019	315.17	18	25	322	20.87	15
2020	1,998.01	42	58	2,140	21.58	99
	15,274.20	6,721	9,213	7,589		504
LEVERETT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	115.51	96	127			
1969	12.34	10	14			
1970	110.63	87	119	2	6.20	
1972	244.57	189	259	10	6.56	2
1976	66.45	49	67	6	7.29	1
1986	465.56	294	403	109	9.38	12

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LEVERETT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1987	718.28	445	611	180	9.61	19
1995	119.80	62	85	47	11.64	4
1996	458.37	231	317	187	11.92	16
1997	201.88	99	136	86	12.20	7
1998	303.23	144	198	136	12.49	11
2003	1,728.57	688	944	957	14.04	68
2005	415.93	152	209	249	14.71	17
2006	811.75	282	387	506	15.05	34
2007	313.42	103	141	203	15.41	13
2008	495.42	154	211	334	15.77	21
2009	727.12	213	292	508	16.14	31
2011	1,097.40	279	383	824	16.91	49
2012	1,382.08	323	443	1,077	17.32	62
2014	324.53	62	85	272	18.18	15
2019	984.58	56	77	1,006	20.87	48
	11,097.42	4,018	5,508	6,699		430
LEYDEN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	125.98	105	139			
1967	37.82	31	42			
1971	15.26	12	17			
1976	153.69	113	157	12	7.29	2
1980	215.07	150	208	29	8.09	4
1981	55.41	38	53	8	8.29	1
2019	1,326.14	75	104	1,355	20.87	65
	1,929.37	524	718	1,404		72
LONGMEADOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1944	26.50	26	29			
1955	39,401.20	35,717	43,341			
1956	327.38	294	360			
1957	686.48	613	755			
1958	550.03	487	605			

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LONGMEADOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1959	690.21	606	759			
1960	2,991.03	2,604	3,290			
1961	1,966.71	1,697	2,163			
1962	1,730.68	1,480	1,904			
1963	714.22	605	786			
1964	578.71	486	637			
1965	2,514.90	2,091	2,766			
1966	1,195.19	984	1,315			
1967	652.13	531	717			
1968	135.72	110	149			
1969	1,551.04	1,239	1,706			
1970	1,465.79	1,158	1,612			
1971	389.39	304	427	1	6.38	
1972	4,686.17	3,618	5,086	69	6.56	11
1973	368.99	282	396	9	6.74	1
1974	815.72	615	865	33	6.92	5
1975	196.60	146	205	11	7.11	2
1976	11,993.86	8,822	12,402	791	7.29	109
1977	4,170.05	3,025	4,253	334	7.49	45
1978	1,542.53	1,104	1,552	145	7.68	19
1979	8,507.29	6,006	8,443	915	7.88	116
1980	5,653.28	3,932	5,528	691	8.09	85
1981	6,303.44	4,321	6,075	859	8.29	104
1982	8,620.34	5,819	8,180	1,302	8.50	153
1983	16,015.67	10,634	14,950	2,668	8.72	306
1984	4,825.95	3,154	4,434	875	8.93	98
1985	1,183.91	760	1,068	234	9.16	26
1986	5,663.55	3,574	5,024	1,205	9.38	128
1987	20,214.34	12,523	17,605	4,631	9.61	482
1988	1,364.56	829	1,165	336	9.85	34
1989	9,600.91	5,717	8,037	2,524	10.09	250
1990	3,864.67	2,253	3,167	1,084	10.34	105
1991	4,968.71	2,835	3,986	1,480	10.59	140
1992	3,399.23	1,897	2,667	1,072	10.84	99
1993	5,485.55	2,990	4,203	1,831	11.10	165
1994	6,393.71	3,398	4,777	2,256	11.37	198
1995	5,841.80	3,026	4,254	2,172	11.64	187
1996	16,624.45	8,379	11,779	6,508	11.92	546
1997	24,343.98	11,928	16,769	10,010	12.20	820
1998	4,169.66	1,983	2,788	1,799	12.49	144
1999	1,496.88	690	970	677	12.78	53
2000	2,272.47	1,012	1,423	1,077	13.09	82

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LONGMEADOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2001	1,443.39	621	873	715	13.40	53
2002	589.87	245	344	304	13.71	22
2003	14,734.95	5,865	8,245	7,963	14.04	567
2004	11,600.33	4,426	6,222	6,538	14.37	455
2005	102,351.36	37,307	52,447	60,140	14.71	4,088
2006	8,427.51	2,929	4,118	5,153	15.05	342
2007	6,654.26	2,193	3,083	4,237	15.41	275
2008	2,474.49	771	1,084	1,638	15.77	104
2009	3,470.91	1,017	1,430	2,388	16.14	148
2010	6,978.20	1,912	2,688	4,988	16.52	302
2011	10,874.75	2,768	3,891	8,071	16.91	477
2012	12,423.12	2,907	4,087	9,579	17.32	553
2013	15,936.28	3,394	4,771	12,759	17.74	719
2014	10,114.78	1,932	2,716	8,410	18.18	463
2015	5,975.07	1,004	1,411	5,161	18.64	277
2016	8,098.78	1,158	1,628	7,281	19.14	380
2017	6,240.63	730	1,026	5,838	19.66	297
2018	11,421.21	1,005	1,413	11,150	20.24	551
2019	22,949.71	1,297	1,823	23,421	20.87	1,122
2020	3,625.79	76	107	3,882	21.58	180
	514,540.97	239,861	328,783	237,212		15,888
LUDLOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	1,065.88	966	1,172			
1956	492.66	443	542			
1957	96.87	86	107			
1958	86.66	77	95			
1960	68.59	60	75			
1961	192.29	166	212			
1962	1,546.98	1,323	1,702			
1963	1,939.77	1,644	2,134			
1964	4,410.12	3,702	4,851			
1965	2,371.28	1,972	2,608			
1966	1,613.23	1,329	1,775			
1967	1,522.57	1,241	1,675			
1968	1,797.16	1,450	1,977			
1969	1,666.24	1,330	1,826	6	6.03	1

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LUDLOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1970	1,145.38	905	1,243	17	6.20	3
1971	1,610.58	1,258	1,728	44	6.38	7
1972	35,915.21	27,727	38,076	1,431	6.56	218
1973	3,019.95	2,304	3,164	158	6.74	23
1974	4,110.98	3,100	4,257	265	6.92	38
1975	4,813.19	3,583	4,920	374	7.11	53
1976	8,742.42	6,430	8,830	787	7.29	108
1977	6,682.67	4,848	6,657	693	7.49	93
1978	5,009.25	3,587	4,926	584	7.68	76
1979	5,384.16	3,801	5,220	703	7.88	89
1980	5,038.95	3,505	4,813	730	8.09	90
1981	1,719.77	1,179	1,619	273	8.29	33
1982	997.40	673	924	173	8.50	20
1983	2,901.99	1,927	2,646	546	8.72	63
1984	1,225.42	801	1,100	248	8.93	28
1985	1,997.96	1,283	1,762	436	9.16	48
1986	1,308.27	826	1,134	305	9.38	33
1987	529.03	328	450	132	9.61	14
1988	8,148.75	4,950	6,798	2,166	9.85	220
1989	6,850.49	4,079	5,601	1,934	10.09	192
1990	9,257.84	5,397	7,411	2,772	10.34	268
1991	989.21	564	775	314	10.59	30
1992	9,492.84	5,297	7,274	3,168	10.84	292
1993	4,347.52	2,369	3,253	1,529	11.10	138
1994	7,391.31	3,928	5,394	2,736	11.37	241
1995	865.23	448	615	337	11.64	29
1996	1,689.99	852	1,170	689	11.92	58
1997	2,079.30	1,019	1,399	888	12.20	73
1998	1,741.92	828	1,137	779	12.49	62
1999	3,761.82	1,734	2,381	1,757	12.78	137
2000	4,201.48	1,872	2,571	2,051	13.09	157
2001	14,846.00	6,384	8,767	7,564	13.40	564
2002	95,905.44	39,753	54,590	50,906	13.71	3,713
2003	2,801.02	1,115	1,531	1,550	14.04	110
2004	70,214.57	26,787	36,785	40,451	14.37	2,815
2005	38,627.10	14,079	19,334	23,156	14.71	1,574
2006	41,758.09	14,511	19,927	26,007	15.05	1,728
2007	140,506.62	46,298	63,578	90,979	15.41	5,904
2008	161,089.75	50,179	68,908	108,291	15.77	6,867
2009	13,971.16	4,093	5,621	9,748	16.14	604
2010	10,790.15	2,956	4,059	7,810	16.52	473
2011	19,129.30	4,868	6,685	14,357	16.91	849

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LUDLOW						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2012	30,224.49	7,073	9,713	23,534	17.32	1,359
2013	38,574.58	8,217	11,284	31,148	17.74	1,756
2014	15,427.23	2,947	4,047	12,923	18.18	711
2015	14,105.57	2,370	3,255	12,262	18.64	658
2016	36,592.00	5,233	7,186	33,065	19.14	1,728
2017	47,353.82	5,540	7,608	44,481	19.66	2,263
2018	90,435.94	7,958	10,928	88,551	20.24	4,375
2019	36,169.60	2,043	2,806	36,981	20.87	1,772
2020	42,608.88	895	1,229	45,641	21.58	2,115
	1,132,971.89	370,490	507,840	738,429		44,873
MIDDLEFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	52.00	47	57			
1973	39.46	30	41	2	6.74	
1975	100.20	75	103	7	7.11	1
1981	92.54	63	87	15	8.29	2
1987	208.65	129	178	52	9.61	5
1992	123.50	69	95	41	10.84	4
1996	445.70	225	310	180	11.92	15
1999	373.33	172	237	174	12.78	14
2010	1,285.45	352	485	929	16.52	56
	2,720.83	1,162	1,593	1,400		97
MONTAGUE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	1,671.17	1,515	1,838			
1956	128.86	116	142			
1957	235.13	210	259			
1958	67.19	59	74			
1959	79.24	70	87			
1960	79.85	70	88			
1961	274.88	237	302			
1962	412.30	353	454			
1963	792.40	672	872			

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MONTAGUE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1964	144.21	121	159			
1965	629.31	523	692			
1966	1,081.24	890	1,189			
1967	708.17	577	779			
1968	363.79	294	400			
1969	219.20	175	241			
1970	961.92	760	1,046	12	6.20	2
1971	1,390.72	1,086	1,495	35	6.38	5
1972	2,479.64	1,914	2,635	93	6.56	14
1973	16,641.24	12,697	17,479	827	6.74	123
1974	672.41	507	698	42	6.92	6
1975	497.23	370	509	38	7.11	5
1976	6,538.29	4,809	6,620	572	7.29	78
1977	341.14	247	340	35	7.49	5
1978	1,120.19	802	1,104	128	7.68	17
1979	743.39	525	723	95	7.88	12
1980	957.20	666	917	136	8.09	17
1981	1,238.44	849	1,169	194	8.29	23
1982	25.87	17	23	5	8.50	1
1983	6.80	5	7	1	8.72	
1984	8,385.59	5,480	7,544	1,680	8.93	188
1985	32.68	21	29	7	9.16	1
1986	590.04	372	512	137	9.38	15
1987	115.84	72	99	28	9.61	3
1988	1,536.47	933	1,284	406	9.85	41
1989	166.24	99	136	47	10.09	5
1990	2,053.29	1,197	1,648	611	10.34	59
1991	1,010.70	577	794	317	10.59	30
1992	3,218.78	1,796	2,472	1,068	10.84	99
1993	1,004.19	547	753	352	11.10	32
1994	1,297.59	690	950	477	11.37	42
1995	1,751.13	907	1,249	678	11.64	58
1996	8,831.70	4,451	6,127	3,588	11.92	301
1997	4,648.72	2,278	3,136	1,978	12.20	162
1998	11,421.41	5,431	7,476	5,087	12.49	407
1999	3,549.90	1,637	2,254	1,651	12.78	129
2000	4,293.92	1,913	2,633	2,090	13.09	160
2001	2,575.57	1,107	1,524	1,309	13.40	98
2002	2,205.23	914	1,258	1,168	13.71	85
2003	2,367.28	942	1,297	1,307	14.04	93
2004	5,273.97	2,012	2,770	3,032	14.37	211
2005	16,290.32	5,938	8,174	9,745	14.71	662

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MONTAGUE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2006	8,560.86	2,975	4,095	5,322	15.05	354
2007	2,311.61	762	1,049	1,494	15.41	97
2008	4,107.50	1,279	1,761	2,758	15.77	175
2009	5,983.62	1,753	2,413	4,169	16.14	258
2010	15,343.77	4,204	5,787	11,091	16.52	671
2011	3,731.20	950	1,308	2,797	16.91	165
2012	6,416.30	1,501	2,066	4,992	17.32	288
2013	6,454.64	1,375	1,893	5,207	17.74	294
2014	3,360.59	642	884	2,813	18.18	155
2015	3,888.12	653	899	3,378	18.64	181
2016	3,001.87	429	591	2,711	19.14	142
2017	5,566.60	651	896	5,227	19.66	266
2018	3,642.74	321	442	3,565	20.24	176
2019	8,688.59	491	676	8,882	20.87	426
2020	11,616.09	244	336	12,442	21.58	577
	215,796.08	88,680	121,556	115,820		7,414
MONTGOMERY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1969	15.14	12	16			
1973	52.53	40	55	3	6.74	
2019	1,175.86	66	91	1,203	20.87	58
	1,243.53	118	162	1,206		58
NORTHFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1964	120.79	101	133			
1968	21.56	17	23			
1969	187.58	150	206	1	6.03	
1970	123.53	98	134	2	6.20	
1971	104.05	81	111	3	6.38	
1972	139.94	108	148	6	6.56	1
1973	17.74	14	19			
1975	80.27	60	82	6	7.11	1
1976	313.67	231	317	28	7.29	4

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NORTHFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1977	178.60	130	178	18	7.49	2
1979	172.47	122	167	22	7.88	3
1982	60.93	41	56	11	8.50	1
1984	395.16	258	354	81	8.93	9
1987	1,300.35	806	1,105	325	9.61	34
1988	141.78	86	118	38	9.85	4
1989	481.39	287	393	136	10.09	13
1990	950.07	554	760	286	10.34	28
1993	587.89	320	439	208	11.10	19
1996	401.70	202	277	165	11.92	14
1998	857.05	408	559	383	12.49	31
1999	913.41	421	577	428	12.78	33
2000	1,294.90	577	791	633	13.09	48
2002	132.71	55	75	71	13.71	5
2003	1,738.17	692	949	963	14.04	69
2004	2,293.23	875	1,200	1,323	14.37	92
2005	610.97	223	306	366	14.71	25
2007	2,231.67	735	1,008	1,447	15.41	94
2008	1,769.86	551	755	1,191	15.77	76
2009	971.78	285	391	678	16.14	42
2010	905.26	248	340	656	16.52	40
2011	1,632.61	415	569	1,227	16.91	73
2012	33,034.12	7,730	10,598	25,739	17.32	1,486
2014	3,273.44	625	857	2,744	18.18	151
2015	574.62	97	133	499	18.64	27
2017	777.83	91	125	731	19.66	37
2019	1,174.01	66	90	1,201	20.87	58
	59,965.11	17,760	24,344	41,618		2,520
OTIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1956	334.24	301	368			
1959	98.31	86	108			
1967	499.74	407	550			
1968	29.64	24	33			
1970	244.13	193	265	3	6.20	
1971	652.38	510	701	16	6.38	3
1973	3,321.69	2,534	3,485	168	6.74	25

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OTIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1974	835.38	630	867	52	6.92	8
1975	1,158.30	862	1,186	88	7.11	12
1976	848.33	624	858	75	7.29	10
1977	1,566.09	1,136	1,563	160	7.49	21
1978	969.50	694	955	112	7.68	15
1979	1,198.83	846	1,164	155	7.88	20
1980	1,284.92	894	1,230	184	8.09	23
1981	1,165.33	799	1,099	183	8.29	22
1982	498.70	337	464	85	8.50	10
1983	220.23	146	201	41	8.72	5
1984	200.12	131	180	40	8.93	4
1985	517.32	332	457	112	9.16	12
1986	317.06	200	275	74	9.38	8
1989	220.57	131	180	62	10.09	6
1990	165.77	97	133	49	10.34	5
1997	371.47	182	250	158	12.20	13
2008	181.82	57	78	122	15.77	8
2009	540.19	158	217	377	16.14	23
2010	1,404.57	385	530	1,015	16.52	61
2011	923.17	235	323	692	16.91	41
2012	431.17	101	139	335	17.32	19
2013	720.26	153	210	582	17.74	33
2014	1,063.31	203	279	890	18.18	49
2016	324.48	46	63	294	19.14	15
2017	637.66	75	103	598	19.66	30
2018	7,208.87	634	872	7,058	20.24	349
2019	849.84	48	66	869	20.87	42
2020	1,140.52	24	33	1,222	21.58	57
	32,143.91	14,215	19,485	15,873		949
PELHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1968	14.94	12	16			
1970	63.97	51	70			
1973	99.01	76	104	5	6.74	1
1983	128.29	85	117	25	8.72	3
	306.21	224	307	30		4

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PERU						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1967	91.64	75	101			
2018	2,558.89	225	310	2,505	20.24	124
	2,650.53	300	411	2,505		124
PITTSFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	5,247.39	4,757	5,772			
1956	24.83	22	27			
1958	26.70	24	29			
1960	40.90	36	45			
1961	83.64	72	92			
1966	54.98	45	60			
1967	269.27	219	296			
1968	38.81	31	43			
1969	1,014.09	810	1,115			
1970	1,529.25	1,208	1,682			
1971	3,124.18	2,440	3,437			
1972	2,031.55	1,568	2,231	4	6.56	1
1973	3,628.90	2,769	3,940	52	6.74	8
1974	77.98	59	84	2	6.92	
1975	1,182.71	881	1,254	47	7.11	7
1978	3,475.10	2,488	3,540	282	7.68	37
1979	738.22	521	741	71	7.88	9
1980	449.68	313	445	49	8.09	6
1981	1,009.11	692	985	125	8.29	15
1982	1,287.47	869	1,236	180	8.50	21
1983	434.72	289	411	67	8.72	8
1986	483.10	305	434	97	9.38	10
1987	483.02	299	425	106	9.61	11
1989	134.97	80	114	35	10.09	3
1994	1,122.78	597	849	386	11.37	34
1996	607.32	306	435	233	11.92	20
2007	171.90	57	81	108	15.41	7
2008	92.88	29	41	61	15.77	4
2012	498.94	117	166	382	17.32	22
2013	82.15	17	24	66	17.74	4

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PITTSFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2015	106.21	18	26	91	18.64	5
2016	277.01	40	57	248	19.14	13
2019	1,591.32	90	128	1,622	20.87	78
	31,421.08	22,068	30,249	4,314		323
PLAINFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1966	43.64	36	48			
1969	23.67	19	26			
1993	447.03	244	335	157	11.10	14
1996	320.95	162	222	131	11.92	11
1998	266.51	127	174	119	12.49	10
2015	732.09	123	169	636	18.64	34
	1,833.89	711	975	1,042		69
RICHMOND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1970	67.65	53	73	2	6.20	
1975	29.68	22	30	2	7.11	
1978	652.92	467	640	78	7.68	10
1983	112.63	75	103	21	8.72	2
1999	306.58	141	193	144	12.78	11
2005	615.56	224	307	370	14.71	25
2006	399.69	139	191	249	15.05	17
2010	958.57	263	360	694	16.52	42
2011	707.24	180	247	531	16.91	31
2018	382.98	34	47	375	20.24	19
2019	227.19	13	18	232	20.87	11
	4,460.69	1,611	2,208	2,699		168

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RUSSELL						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1961	596.70	515	656			
1962	297.80	255	328			
1963	1,516.68	1,285	1,668			
1966	170.04	140	187			
1969	41.50	33	46			
1970	636.02	502	693	6	6.20	1
1971	95.60	75	104	2	6.38	
1972	549.03	424	585	18	6.56	3
1973	81.28	62	86	4	6.74	1
1974	63.56	48	66	4	6.92	1
1975	425.16	317	438	30	7.11	4
1976	121.19	89	123	10	7.29	1
1979	172.47	122	168	21	7.88	3
1981	908.86	623	860	140	8.29	17
1982	249.35	168	232	42	8.50	5
1984	804.36	526	726	159	8.93	18
1985	476.69	306	423	102	9.16	11
1986	690.01	435	601	158	9.38	17
1987	1,777.62	1,101	1,520	435	9.61	45
1991	1,330.10	759	1,048	415	10.59	39
1992	534.34	298	411	176	10.84	16
1993	3,745.95	2,042	2,820	1,301	11.10	117
1995	185.92	96	133	72	11.64	6
1996	314.71	159	220	127	11.92	11
1997	644.87	316	436	273	12.20	22
1999	5,534.07	2,551	3,522	2,565	12.78	201
2001	178.92	77	106	90	13.40	7
2002	287.34	119	164	152	13.71	11
2003	593.40	236	326	327	14.04	23
2004	662.55	253	349	379	14.37	26
2005	232.53	85	117	138	14.71	9
2006	2,256.98	784	1,083	1,400	15.05	93
2007	212.79	70	97	137	15.41	9
2008	473.11	147	203	317	15.77	20
2009	1,414.64	414	572	984	16.14	61
2010	431.37	118	163	312	16.52	19
2011	1,155.89	294	406	866	16.91	51
2012	5,378.70	1,259	1,738	4,178	17.32	241
2013	2,178.60	464	641	1,756	17.74	99
2014	1,179.57	225	311	987	18.18	54
2015	741.95	125	173	644	18.64	35
2016	996.29	142	196	900	19.14	47

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RUSSELL						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2017	5,644.30	660	911	5,297	19.66	269
2018	1,122.69	99	137	1,098	20.24	54
2019	3,687.29	208	287	3,769	20.87	181
	50,792.79	19,026	26,079	29,793		1,848
SANDISFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	715.88	649	787			
1960	18.03	16	20			
1967	80.70	66	89			
1969	385.24	308	424			
1971	82.15	64	90	1	6.38	
1972	234.06	181	254	4	6.56	1
1975	358.42	267	374	20	7.11	3
1978	654.56	469	658	62	7.68	8
1979	243.84	172	241	27	7.88	3
1980	531.56	370	519	66	8.09	8
1981	85.16	58	81	12	8.29	1
1989	982.22	585	820	260	10.09	26
2005	313.08	114	160	185	14.71	13
2008	1,638.14	510	715	1,087	15.77	69
2011	808.57	206	289	601	16.91	36
2014	1,026.44	196	275	854	18.18	47
2017	257.56	30	42	241	19.66	12
2018	889.01	78	109	869	20.24	43
2019	477.38	27	38	487	20.87	23
2020	592.85	12	17	635	21.58	29
	10,374.85	4,378	6,001	5,411		322
SAVOY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1971	38.14	30	41	1	6.38	
1975	84.32	63	86	6	7.11	1
1994	230.68	123	169	85	11.37	7
1995	175.90	91	125	69	11.64	6

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SAVOY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1998	2,096.42	997	1,367	939	12.49	75
2004	291.71	111	152	169	14.37	12
2006	606.72	211	289	378	15.05	25
2010	609.74	167	229	442	16.52	27
2019	530.33	30	41	542	20.87	26
	4,663.96	1,823	2,499	2,631		179
SHELBURNE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	8.40	8	9			
1960	35.47	31	39			
1963	89.48	76	98			
1964	195.29	164	215			
1965	19.05	16	21			
1966	23.90	20	26			
1967	75.64	62	83			
1968	38.87	31	43			
1969	83.00	66	91	1	6.03	
1970	554.27	438	601	9	6.20	1
1973	30.99	24	33	1	6.74	
1974	63.56	48	66	4	6.92	1
1976	48.56	36	49	4	7.29	1
1977	78.93	57	78	9	7.49	1
1979	231.21	163	224	31	7.88	4
1981	97.19	67	92	15	8.29	2
1984	934.00	610	837	190	8.93	21
1985	303.24	195	268	66	9.16	7
1993	505.18	275	377	178	11.10	16
1994	910.89	484	664	338	11.37	30
1996	497.63	251	345	203	11.92	17
1998	575.28	274	376	257	12.49	21
1999	924.15	426	585	432	12.78	34
2000	594.27	265	364	290	13.09	22
2002	1,909.64	792	1,087	1,014	13.71	74
2003	352.81	140	192	196	14.04	14
2004	948.95	362	497	547	14.37	38
2005	697.76	254	349	419	14.71	28
2007	518.88	171	235	336	15.41	22

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SHELBURNE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2010	1,530.29	419	575	1,108	16.52	67
2011	23,943.72	6,094	8,364	17,974	16.91	1,063
2012	5,015.36	1,174	1,611	3,906	17.32	226
2015	415.68	70	96	361	18.64	19
2016	295.62	42	58	268	19.14	14
2017	1,920.37	225	309	1,804	19.66	92
2019	846.76	48	66	866	20.87	41
	45,314.29	13,878	19,023	30,823		1,876
SOUTHAMPTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	185.89	169	204			
1965	425.98	354	469			
1966	142.89	118	157			
1968	35.42	29	39			
1970	240.84	190	261	4	6.20	1
1972	4,565.33	3,524	4,837	185	6.56	28
1973	165.32	126	173	9	6.74	1
1974	1,376.17	1,038	1,425	89	6.92	13
1975	673.78	502	689	52	7.11	7
1976	4,405.08	3,240	4,447	398	7.29	55
1977	162.41	118	162	17	7.49	2
1978	5,086.48	3,642	4,999	596	7.68	78
1979	340.96	241	331	44	7.88	6
1980	885.04	616	846	128	8.09	16
1981	1,063.05	729	1,001	169	8.29	20
1982	740.02	500	686	128	8.50	15
1983	439.67	292	401	83	8.72	10
1984	176.60	115	158	36	8.93	4
1985	472.21	303	416	104	9.16	11
1986	143.54	91	125	33	9.38	4
1987	282.85	175	240	71	9.61	7
1988	4,261.23	2,589	3,554	1,134	9.85	115
1989	4,607.17	2,744	3,767	1,301	10.09	129
1990	206.11	120	165	62	10.34	6
1994	466.22	248	340	172	11.37	15
1995	578.12	299	410	226	11.64	19
1999	384.47	177	243	180	12.78	14

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SOUTHAMPTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2000	332.01	148	203	162	13.09	12
2003	286.30	114	156	158	14.04	11
2004	908.41	347	476	523	14.37	36
2005	639.67	233	320	384	14.71	26
2006	536.35	186	255	335	15.05	22
2007	329.78	109	150	213	15.41	14
2008	932.55	290	398	628	15.77	40
2009	447.01	131	180	312	16.14	19
2010	747.66	205	281	541	16.52	33
2011	290.73	74	102	218	16.91	13
2012	674.08	158	217	525	17.32	30
2013	1,255.67	267	366	1,015	17.74	57
2014	1,473.32	281	386	1,235	18.18	68
2015	2,891.83	486	667	2,514	18.64	135
2016	4,785.39	684	939	4,325	19.14	226
2017	284.03	33	45	267	19.66	14
2018	1,861.22	164	225	1,822	20.24	90
2019	991.53	56	77	1,014	20.87	49
2020	5,632.58	118	162	6,034	21.58	280
	57,812.97	26,373	36,150	27,444		1,751
SOUTHWICK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	11.95	11	13			
1958	43.75	39	48			
1963	229.52	195	252			
1964	80.46	68	89			
1965	60.86	51	67			
1967	406.86	332	448			
1968	86.47	70	95			
1969	1,370.14	1,094	1,501	7	6.03	1
1970	717.54	567	778	12	6.20	2
1972	2,966.62	2,290	3,141	122	6.56	19
1973	3,875.50	2,957	4,056	207	6.74	31
1974	2,364.88	1,783	2,446	156	6.92	23
1975	763.46	568	779	61	7.11	9
1976	1,299.25	956	1,311	118	7.29	16
1977	29.23	21	29	3	7.49	

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SOUTHWICK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1978	1,490.12	1,067	1,464	176	7.68	23
1979	1,299.54	917	1,258	172	7.88	22
1980	1,035.02	720	988	151	8.09	19
1981	956.93	656	900	153	8.29	18
1982	750.40	507	695	130	8.50	15
1983	220.23	146	200	42	8.72	5
1985	406.30	261	358	89	9.16	10
1988	208.28	127	174	55	9.85	6
1989	178.33	106	145	51	10.09	5
1990	586.01	342	469	176	10.34	17
1991	907.08	517	709	289	10.59	27
1994	58.96	31	43	22	11.37	2
1995	79.62	41	56	31	11.64	3
1997	418.82	205	281	180	12.20	15
2000	1,263.43	563	772	618	13.09	47
2002	33,898.74	14,051	19,273	18,016	13.71	1,314
2003	344.77	137	188	191	14.04	14
2004	1,578.65	602	826	911	14.37	63
2005	200.72	73	100	121	14.71	8
2006	2,654.92	923	1,266	1,654	15.05	110
2007	9,611.05	3,167	4,344	6,228	15.41	404
2008	2,437.23	759	1,041	1,640	15.77	104
2009	1,072.68	314	431	749	16.14	46
2010	720.66	197	270	523	16.52	32
2011	673.74	171	235	507	16.91	30
2012	2,353.43	551	756	1,833	17.32	106
2013	6,104.90	1,300	1,783	4,932	17.74	278
2014	1,874.19	358	491	1,571	18.18	86
2015	1,950.40	328	450	1,696	18.64	91
2016	4,606.68	659	904	4,163	19.14	218
2017	9,945.20	1,164	1,597	9,343	19.66	475
2018	11,825.42	1,041	1,428	11,580	20.24	572
2019	7,578.15	428	587	7,749	20.87	371
2020	4,768.87	100	137	5,109	21.58	237
	128,365.96	43,531	59,669	81,534		4,894

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SPRINGFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1915	5.39	6	6			
1926	46.68	51	51			
1931	58.91	64	65			
1933	3.38	4	4			
1944	15.49	15	17			
1953	31.23	29	34			
1954	41.25	38	45			
1955	191,242.57	173,361	210,367			
1956	37,413.87	33,654	41,155			
1957	37,659.65	33,611	41,426			
1958	29,874.61	26,439	32,862			
1959	42,144.78	37,003	46,359			
1960	52,631.46	45,815	57,895			
1961	30,618.00	26,423	33,680			
1962	21,327.68	18,235	23,460			
1963	89,589.29	75,926	98,548			
1964	91,151.51	76,522	100,267			
1965	27,940.85	23,233	30,735			
1966	9,770.28	8,046	10,747			
1967	17,358.38	14,147	19,094			
1968	15,323.40	12,366	16,856			
1969	20,195.65	16,126	22,215			
1970	80,049.89	63,239	87,762	293	6.20	47
1971	81,020.72	63,277	87,815	1,308	6.38	205
1972	246,559.35	190,344	264,156	7,059	6.56	1,076
1973	106,642.51	81,369	112,923	4,384	6.74	650
1974	72,763.57	54,863	76,138	3,902	6.92	564
1975	121,664.87	90,580	125,706	8,126	7.11	1,143
1976	34,017.24	25,020	34,722	2,697	7.29	370
1977	36,538.83	26,509	36,789	3,404	7.49	454
1978	31,063.07	22,241	30,866	3,304	7.68	430
1979	38,245.53	27,001	37,472	4,599	7.88	584
1980	45,650.22	31,750	44,062	6,153	8.09	761
1981	19,161.34	13,135	18,229	2,849	8.29	344
1982	33,130.60	22,363	31,035	5,409	8.50	636
1983	51,134.06	33,953	47,119	9,128	8.72	1,047
1984	56,915.38	37,194	51,617	10,990	8.93	1,231
1985	43,501.95	27,928	38,758	9,094	9.16	993
1986	95,385.54	60,189	83,529	21,395	9.38	2,281
1987	64,438.91	39,920	55,400	15,482	9.61	1,611
1988	71,988.65	43,733	60,692	18,496	9.85	1,878
1989	98,031.31	58,377	81,015	26,820	10.09	2,658

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SPRINGFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1990	92,183.99	53,743	74,584	26,819	10.34	2,594
1991	159,549.07	91,023	126,320	49,184	10.59	4,644
1992	41,768.79	23,307	32,345	13,601	10.84	1,255
1993	105,659.47	57,584	79,914	36,311	11.10	3,271
1994	56,856.15	30,219	41,937	20,604	11.37	1,812
1995	42,817.49	22,180	30,781	16,318	11.64	1,402
1996	56,037.72	28,243	39,195	22,446	11.92	1,883
1997	46,244.33	22,659	31,446	19,423	12.20	1,592
1998	86,270.26	41,021	56,928	37,969	12.49	3,040
1999	110,488.88	50,935	70,687	50,851	12.78	3,979
2000	226,737.78	101,012	140,183	109,229	13.09	8,344
2001	291,092.03	125,170	173,709	146,492	13.40	10,932
2002	741,720.28	307,445	426,667	389,225	13.71	28,390
2003	403,197.81	160,474	222,703	220,814	14.04	15,727
2004	288,475.50	110,054	152,731	164,592	14.37	11,454
2005	222,026.95	80,928	112,311	131,919	14.71	8,968
2006	546,904.65	190,050	263,748	337,847	15.05	22,448
2007	333,985.31	110,050	152,726	214,658	15.41	13,930
2008	346,308.09	107,874	149,706	231,233	15.77	14,663
2009	623,326.06	182,632	253,454	432,205	16.14	26,779
2010	325,244.02	89,117	123,675	234,093	16.52	14,170
2011	581,524.15	147,996	205,387	434,290	16.91	25,682
2012	757,273.24	177,204	245,921	587,080	17.32	33,896
2013	523,046.53	111,411	154,614	420,737	17.74	23,717
2014	538,625.42	102,880	142,775	449,713	18.18	24,737
2015	380,851.11	63,984	88,796	330,140	18.64	17,711
2016	510,124.59	72,948	101,236	459,901	19.14	24,028
2017	575,754.18	67,361	93,483	539,847	19.66	27,459
2018	554,750.56	48,818	67,749	542,477	20.24	26,802
2019	609,650.85	34,443	47,799	622,816	20.87	29,843
2020	612,336.34	12,858	17,844	655,726	21.58	30,386
	12,933,179.45	4,459,722	6,113,049	8,113,448		484,501
SUNDERLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	130.40	118	143			
1958	55.31	49	61			
1967	26.84	22	30			

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SUNDERLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1968	162.60	131	179			
1969	1,001.00	799	1,101			
1971	595.91	465	645	10	6.38	2
1972	202.57	156	216	6	6.56	1
1976	115.29	85	118	9	7.29	1
1979	94.43	67	93	11	7.88	1
1980	194.21	135	187	26	8.09	3
1981	197.24	135	187	30	8.29	4
1983	61.42	41	57	11	8.72	1
2007	198.55	65	90	128	15.41	8
2020	1,837.56	39	54	1,967	21.58	91
	4,873.33	2,307	3,162	2,199		112
TOLLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1972	13.10	10	14	1	6.56	
1994	507.10	270	370	188	11.37	17
1995	266.44	138	189	104	11.64	9
2001	350.20	151	207	178	13.40	13
2005	4,735.89	1,726	2,366	2,844	14.71	193
2013	1,122.93	239	328	908	17.74	51
2014	2,476.21	473	648	2,075	18.18	114
2016	511.91	73	100	463	19.14	24
2018	378.48	33	45	371	20.24	18
	10,362.26	3,113	4,267	7,131		439
TYRINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	71.93	65	79			
1968	253.30	204	279			
1969	41.49	33	45			
1971	17.69	14	19			
1975	77.21	57	79	6	7.11	1
1976	424.43	312	430	37	7.29	5
1979	243.83	172	237	31	7.88	4

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TYRINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	560.22	378	521	96	8.50	11
1983	250.32	166	229	47	8.72	5
1994	229.89	122	168	85	11.37	7
1997	517.88	254	350	220	12.20	18
1998	346.87	165	227	154	12.49	12
	3,035.06	1,942	2,662	677		63
WASHINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1971	10.06	8	11			
1977	98.96	72	99	10	7.49	1
1978	143.84	103	141	17	7.68	2
1980	48.89	34	47	7	8.09	1
1983	136.11	90	123	26	8.72	3
1991	490.87	280	384	156	10.59	15
2010	1,104.23	303	415	799	16.52	48
	2,032.96	890	1,220	1,016		70
WESTHAMPTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	101.90	69	94	18	8.50	2
2009	257.42	75	103	181	16.14	11
2017	390.49	46	63	367	19.66	19
	749.81	190	260	565		32
WEST SPRINGFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	9,447.33	8,564	10,392			
1956	6,244.95	5,617	6,869			
1957	318.60	284	350			
1958	334.39	296	368			
1959	1,236.86	1,086	1,361			

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WEST SPRINGFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1960	285.88	249	314			
1961	728.86	629	802			
1962	2,034.68	1,740	2,238			
1963	478.16	405	526			
1964	141.62	119	156			
1965	465.88	387	512			
1966	859.14	708	945			
1967	3,114.59	2,538	3,426			
1968	892.61	720	982			
1969	2,192.68	1,751	2,412			
1970	14,510.81	11,464	15,817	145	6.20	23
1971	4,319.69	3,374	4,655	97	6.38	15
1972	3,908.25	3,017	4,163	136	6.56	21
1973	2,903.93	2,216	3,057	137	6.74	20
1974	8,127.61	6,128	8,455	485	6.92	70
1975	3,677.71	2,738	3,778	268	7.11	38
1976	15,596.62	11,471	15,827	1,330	7.29	182
1977	9,224.41	6,692	9,233	914	7.49	122
1978	3,038.96	2,176	3,002	341	7.68	44
1979	9,908.08	6,995	9,651	1,248	7.88	158
1980	4,778.94	3,324	4,586	671	8.09	83
1981	2,369.90	1,625	2,242	365	8.29	44
1982	4,167.84	2,813	3,881	703	8.50	83
1983	2,066.91	1,372	1,893	381	8.72	44
1984	2,726.37	1,782	2,459	540	8.93	60
1985	1,863.74	1,197	1,652	399	9.16	44
1986	8,229.65	5,193	7,165	1,888	9.38	201
1987	436.11	270	373	107	9.61	11
1988	9,625.87	5,848	8,069	2,520	9.85	256
1989	27,979.86	16,662	22,989	7,789	10.09	772
1990	30,938.47	18,037	24,886	9,146	10.34	885
1991	16,502.66	9,415	12,990	5,163	10.59	488
1992	16,291.78	9,091	12,543	5,378	10.84	496
1993	8,688.69	4,735	6,533	3,025	11.10	273
1994	8,469.16	4,501	6,210	3,106	11.37	273
1995	11,664.61	6,042	8,336	4,495	11.64	386
1996	3,261.89	1,644	2,268	1,320	11.92	111
1997	10,742.56	5,264	7,263	4,554	12.20	373
1998	5,350.03	2,544	3,510	2,375	12.49	190
1999	3,341.70	1,541	2,126	1,550	12.78	121
2000	5,472.72	2,438	3,364	2,656	13.09	203
2001	6,097.61	2,622	3,618	3,090	13.40	231

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WEST SPRINGFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2002	3,312.83	1,373	1,894	1,750	13.71	128
2003	28,770.37	11,451	15,799	15,848	14.04	1,129
2004	26,169.46	9,984	13,775	15,011	14.37	1,045
2005	61,372.94	22,370	30,864	36,646	14.71	2,491
2006	64,519.56	22,421	30,935	40,037	15.05	2,660
2007	14,657.72	4,830	6,664	9,459	15.41	614
2008	19,148.21	5,965	8,230	12,833	15.77	814
2009	10,274.46	3,010	4,153	7,149	16.14	443
2010	18,767.43	5,142	7,094	13,550	16.52	820
2011	13,271.21	3,377	4,659	9,939	16.91	588
2012	22,860.65	5,349	7,380	17,767	17.32	1,026
2013	121,340.55	25,846	35,660	97,815	17.74	5,514
2014	20,765.01	3,966	5,472	17,370	18.18	955
2015	13,903.50	2,336	3,223	12,071	18.64	648
2016	18,231.66	2,607	3,597	16,458	19.14	860
2017	26,752.87	3,130	4,318	25,110	19.66	1,277
2018	44,010.22	3,873	5,344	43,068	20.24	2,128
2019	57,933.54	3,273	4,516	59,211	20.87	2,837
2020	23,213.90	487	672	24,863	21.58	1,152
	904,335.46	330,114	452,495	542,274		33,450
WHATELY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	1,186.41	1,075	1,305			
1960	29.12	25	32			
1964	21.48	18	24			
1966	58.89	48	65			
1967	45.60	37	50			
1970	106.89	84	118			
1971	325.00	254	358			
1972	302.44	233	333			
1973	335.69	256	369			
1974	63.55	48	70			
1975	145.54	108	160			
1976	47.55	35	52	1	7.29	
1978	8.77	6	9	1	7.68	
1981	612.65	420	621	53	8.29	6
1987	56.62	35	52	11	9.61	1

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WHATELY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2003	319.36	127	188	163	14.04	12
2007	486.59	160	237	299	15.41	19
2009	920.11	270	399	613	16.14	38
	5,072.26	3,239	4,440	1,139		76
WINDSOR						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1964	34.66	29	38			
1969	41.49	33	45			
1971	41.65	33	45	1	6.38	
1975	318.35	237	325	25	7.11	4
1976	121.18	89	122	11	7.29	2
1982	249.34	168	230	44	8.50	5
1992	622.08	347	476	208	10.84	19
2003	244.82	97	133	136	14.04	10
2006	752.62	262	359	468	15.05	31
2019	447.46	25	34	458	20.87	22
	2,873.65	1,320	1,809	1,352		93
WORTHINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	83.46	76	92			
1968	38.86	31	43			
1971	47.79	37	52	1	6.38	
1974	204.05	154	216	8	6.92	1
1978	92.68	66	93	9	7.68	1
2005	331.22	121	170	195	14.71	13
	798.06	485	665	213		15

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
ACTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	107.02	89	118			
1966	47.56	39	52			
1967	22.44	18	25			
1968	7.38	6	8			
1970	162.78	129	177	2	6.20	
1971	42.45	33	45	1	6.38	
1974	16.48	12	16	2	6.92	
1976	488.12	359	492	45	7.29	6
1977	1,402.53	1,018	1,396	147	7.49	20
1978	2,536.96	1,816	2,489	301	7.68	39
1979	933.60	659	903	124	7.88	16
1980	2,961.76	2,060	2,824	434	8.09	54
1981	1,241.83	851	1,167	199	8.29	24
1982	1,414.37	955	1,309	247	8.50	29
1983	4,800.84	3,188	4,370	911	8.72	104
1984	5,391.45	3,523	4,829	1,101	8.93	123
1985	1,428.90	917	1,257	315	9.16	34
1986	1,863.53	1,176	1,612	438	9.38	47
1987	1,925.99	1,193	1,635	483	9.61	50
1988	2,170.87	1,319	1,808	580	9.85	59
1989	1,910.38	1,138	1,560	541	10.09	54
1990	7,234.52	4,218	5,782	2,176	10.34	210
1991	6,204.43	3,540	4,853	1,972	10.59	186
1992	173.67	97	133	58	10.84	5
1993	417.23	227	311	148	11.10	13
1994	5,240.79	2,785	3,818	1,947	11.37	171
1995	969.23	502	688	378	11.64	32
1996	377.53	190	260	155	11.92	13
1997	796.32	390	535	341	12.20	28
1998	143.11	68	93	64	12.49	5
2003	328.35	131	180	182	14.04	13
2004	172.56	66	90	99	14.37	7
2005	1,081.58	394	540	650	14.71	44
2006	1,410.62	490	672	880	15.05	58
2007	4,535.91	1,495	2,049	2,940	15.41	191
2008	837.89	261	358	564	15.77	36
2009	12,285.87	3,600	4,935	8,579	16.14	532
2010	1,277.51	350	480	925	16.52	56
2012	733.14	172	236	571	17.32	33
2014	11,691.51	2,233	3,061	9,800	18.18	539
2015	1,048.29	176	241	912	18.64	49

NSTAR ELECTRIC COMPANY

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ACTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2016	2,594.39	371	509	2,345	19.14	123
2019	1,781.30	101	138	1,821	20.87	87
2020	165,846.43	3,483	4,775	177,656	21.58	8,232
	258,059.42	45,838	62,831	221,034		11,322
ACUSHNET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1942	4.41	4	5			
1977	373.01	271	371	39	7.49	5
1978	1,450.29	1,038	1,423	173	7.68	23
1979	792.26	559	766	105	7.88	13
1980	20,422.21	14,204	19,470	2,995	8.09	370
1981	13,545.47	9,285	12,727	2,173	8.29	262
1982	456.87	308	422	80	8.50	9
1987	60,406.52	37,422	51,295	15,152	9.61	1,577
1988	4,306.14	2,616	3,586	1,151	9.85	117
1989	3,189.36	1,899	2,603	905	10.09	90
1990	1,419.43	828	1,135	426	10.34	41
1991	2,357.42	1,345	1,844	750	10.59	71
1992	3,136.25	1,750	2,399	1,051	10.84	97
1993	5,150.67	2,807	3,848	1,818	11.10	164
1994	6,313.33	3,356	4,600	2,345	11.37	206
1995	4,319.14	2,237	3,066	1,685	11.64	145
1996	8,432.55	4,250	5,826	3,450	11.92	289
1997	4,531.85	2,221	3,044	1,941	12.20	159
1998	8,645.71	4,111	5,635	3,875	12.49	310
1999	3,999.42	1,844	2,528	1,872	12.78	146
2000	17,753.04	7,909	10,841	8,687	13.09	664
2001	10,201.96	4,387	6,013	5,209	13.40	389
2002	1,455.55	603	827	775	13.71	57
2003	763.71	304	417	423	14.04	30
2004	3,882.94	1,481	2,030	2,241	14.37	156
2005	2,154.17	785	1,076	1,294	14.71	88
2006	2,207.88	767	1,051	1,377	15.05	91
2007	1,465.13	483	662	950	15.41	62
2008	1,086.96	339	465	731	15.77	46
2009	1,275.26	374	513	890	16.14	55
2010	661.10	181	248	479	16.52	29

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ACUSHNET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2012	1,144.96	268	367	892	17.32	52
2013	3,429.97	731	1,002	2,771	17.74	156
2014	542.00	104	143	454	18.18	25
2015	2,186.12	367	503	1,902	18.64	102
2016	3,150.88	451	618	2,848	19.14	149
2017	1,276.45	149	204	1,200	19.66	61
2019	14,408.13	814	1,116	14,733	20.87	706
2020	1,843.43	39	53	1,974	21.58	91
	224,141.95	112,891	154,742	91,814		7,103
AQUINNAH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1994	279.38	148	203	104	11.37	9
2002	53.57	22	30	29	13.71	2
2005	79.46	29	40	48	14.71	3
2013	283.88	60	82	230	17.74	13
2015	81.86	14	19	71	18.64	4
2016	174.69	25	34	158	19.14	8
2020	136,057.81	2,857	3,916	145,747	21.58	6,754
	137,010.65	3,155	4,325	146,387		6,793
ARLINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	5,609.93	4,665	6,171			
1966	300.61	248	331			
1967	14.16	12	16			
1968	934.08	754	1,027			
1969	475.60	380	522	1	6.03	
1970	2,748.16	2,171	2,983	40	6.20	6
1971	67.91	53	73	2	6.38	
1972	1,431.41	1,105	1,518	56	6.56	9
1973	2,954.86	2,255	3,099	152	6.74	23
1974	3,255.80	2,455	3,373	208	6.92	30
1975	2,075.85	1,545	2,123	160	7.11	23
1976	1,904.32	1,401	1,925	170	7.29	23

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ARLINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1977	41.57	30	41	5	7.49	1
1978	1,177.51	843	1,158	137	7.68	18
1979	2,005.64	1,416	1,946	260	7.88	33
1980	4,407.30	3,065	4,212	636	8.09	79
1981	9,961.73	6,829	9,384	1,574	8.29	190
1982	7,884.41	5,322	7,313	1,360	8.50	160
1983	2,499.14	1,659	2,280	469	8.72	54
1984	7,134.13	4,662	6,406	1,441	8.93	161
1985	8,377.31	5,378	7,390	1,825	9.16	199
1986	5,357.62	3,381	4,646	1,248	9.38	133
1987	5,112.86	3,167	4,352	1,272	9.61	132
1988	1,657.23	1,007	1,384	439	9.85	45
1989	1,862.16	1,109	1,524	524	10.09	52
1990	5,509.83	3,212	4,414	1,647	10.34	159
1991	9,200.01	5,249	7,213	2,907	10.59	275
1992	839.43	468	643	280	10.84	26
1993	3,860.86	2,104	2,891	1,356	11.10	122
1994	2,651.80	1,409	1,936	981	11.37	86
1995	1,897.31	983	1,351	736	11.64	63
1997	826.79	405	557	353	12.20	29
2005	1,905.80	695	955	1,141	14.71	78
2006	4.11	1	1	3	15.05	
2007	1,380.52	455	625	893	15.41	58
2008	2,143.11	668	918	1,440	15.77	91
2009	3,944.47	1,156	1,588	2,750	16.14	170
2010	2,828.26	775	1,065	2,046	16.52	124
2012	9,553.05	2,235	3,071	7,437	17.32	429
2013	1,003.74	214	294	810	17.74	46
2015	4,238.59	712	978	3,684	18.64	198
2016	2,007.78	287	394	1,814	19.14	95
2017	707.95	83	114	665	19.66	34
2018	2,203.31	194	267	2,157	20.24	107
2019	8,015.13	453	622	8,194	20.87	393
2020	297.23	6	8	319	21.58	15
	144,270.38	76,676	105,102	53,595		3,969

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ASHLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	31.24	26	34			
1969	56.48	45	62			
1970	30.45	24	33	1	6.20	
1971	888.27	694	951	26	6.38	4
1972	366.90	283	388	16	6.56	2
1973	642.77	490	672	35	6.74	5
1976	577.07	424	581	54	7.29	7
1977	615.13	446	611	65	7.49	9
1978	35.10	25	34	4	7.68	1
1979	852.95	602	825	113	7.88	14
1980	467.14	325	446	68	8.09	8
1981	1,254.43	860	1,179	201	8.29	24
1982	4,247.78	2,867	3,930	743	8.50	87
1983	86.07	57	78	17	8.72	2
1984	1,708.54	1,117	1,531	348	8.93	39
1985	2,421.25	1,554	2,130	533	9.16	58
1986	1,285.14	811	1,112	302	9.38	32
1987	445.46	276	378	112	9.61	12
1988	590.59	359	492	158	9.85	16
1989	715.50	426	584	203	10.09	20
1990	1,265.01	738	1,012	380	10.34	37
1991	825.00	471	646	262	10.59	25
1992	347.34	194	266	116	10.84	11
1993	681.78	372	510	240	11.10	22
1994	316.81	168	230	118	11.37	10
1995	659.74	342	469	257	11.64	22
1996	64.77	33	45	26	11.92	2
1997	796.32	390	535	341	12.20	28
1998	143.11	68	93	64	12.49	5
2006	2,640.47	918	1,258	1,646	15.05	109
2014	50.29	10	14	42	18.18	2
2015	1,077.91	181	248	938	18.64	50
2018	2,386.12	210	288	2,337	20.24	115
2020	63,300.55	1,329	1,822	67,809	21.58	3,142
	91,873.48	17,135	23,487	77,574		3,920

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BARNSTABLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1924	1.03	1	1			
1927	3.16	3	3			
1928	1.81	2	2			
1936	1.71	2	2			
1945	0.04		0			
1948	62.32	59	69			
1949	12.80	12	14			
1950	58.25	55	64			
1953	539.26	496	593			
1954	51.21	47	56			
1955	53.58	49	59			
1956	251.62	226	277			
1957	121.35	108	133			
1958	962.38	852	1,059			
1959	112.25	99	123			
1963	49.44	42	54			
1964	205.71	173	226			
1965	55.57	46	61			
1968	75.52	61	83			
1969	9.29	7	10	1	6.03	
1970	119.58	94	129	3	6.20	
1972	650.62	502	689	27	6.56	4
1973	22.14	17	23	1	6.74	
1974	105.68	80	110	7	6.92	1
1975	615.75	458	628	49	7.11	7
1976	2,878.60	2,117	2,904	263	7.29	36
1977	26,182.63	18,996	26,054	2,747	7.49	367
1978	15,239.15	10,911	14,965	1,798	7.68	234
1979	22,512.61	15,894	21,799	2,965	7.88	376
1980	23,149.50	16,100	22,082	3,383	8.09	418
1981	22,632.98	15,515	21,279	3,617	8.29	436
1983	9,763.36	6,483	8,892	1,848	8.72	212
1985	16,157.66	10,373	14,227	3,547	9.16	387
1986	11,626.66	7,336	10,062	2,728	9.38	291
1987	40,162.46	24,881	34,125	10,054	9.61	1,046
1988	16,932.37	10,286	14,108	4,518	9.85	459
1989	38,688.07	23,039	31,599	10,958	10.09	1,086
1990	30,333.20	17,684	24,254	9,112	10.34	881
1991	31,152.73	17,773	24,376	9,892	10.59	934
1992	14,849.42	8,286	11,364	4,970	10.84	458
1993	25,743.59	14,030	19,243	9,075	11.10	818
1994	30,726.56	16,331	22,398	11,401	11.37	1,003

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BARNSTABLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	22,578.93	11,696	16,041	8,795	11.64	756
1996	37,342.95	18,821	25,814	15,264	11.92	1,281
1997	39,404.44	19,308	26,481	16,863	12.20	1,382
1998	21,832.96	10,382	14,239	9,777	12.49	783
1999	16,096.05	7,420	10,177	7,529	12.78	589
2000	11,174.74	4,978	6,827	5,465	13.09	417
2001	130,001.05	55,901	76,670	66,331	13.40	4,950
2002	21,202.03	8,788	12,053	11,269	13.71	822
2003	3,096.19	1,232	1,690	1,716	14.04	122
2004	1,169.17	446	612	674	14.37	47
2005	1,689.60	616	845	1,014	14.71	69
2007	3,149.89	1,038	1,424	2,041	15.41	132
2008	9,092.48	2,832	3,884	6,118	15.77	388
2014	9,107.73	1,740	2,386	7,632	18.18	420
2015	5,386.05	905	1,241	4,683	18.64	251
2016	4,233.46	605	830	3,827	19.14	200
2017	9,065.68	1,061	1,455	8,517	19.66	433
2018	10,322.68	908	1,245	10,110	20.24	500
2019	113,451.07	6,410	8,791	116,005	20.87	5,558
2020	99,622.92	2,092	2,869	106,716	21.58	4,945
	951,893.69	396,705	543,773	503,310		33,499
BEDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1969	390.44	312	428	2	6.03	
1972	14.56	11	15	1	6.56	
1973	157.95	121	166	8	6.74	1
1974	217.83	164	225	15	6.92	2
1976	23.68	17	23	3	7.29	
1978	70.20	50	69	9	7.68	1
1979	419.26	296	406	55	7.88	7
1980	288.03	200	274	43	8.09	5
1981	919.34	630	864	148	8.29	18
1982	762.93	515	706	133	8.50	16
1983	459.92	305	418	88	8.72	10
1984	2,548.55	1,665	2,282	521	8.93	58
1985	557.73	358	491	123	9.16	13
1986	660.69	417	572	155	9.38	17

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BEDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1987	1,874.38	1,161	1,591	470	9.61	49
1988	2,732.14	1,660	2,275	730	9.85	74
1989	272.46	162	222	78	10.09	8
1990	2,432.64	1,418	1,944	732	10.34	71
1991	2,694.15	1,537	2,107	857	10.59	81
1992	597.15	333	456	200	10.84	18
1993	406.24	221	303	144	11.10	13
1994	3,437.58	1,827	2,504	1,277	11.37	112
1995	289.21	150	206	113	11.64	10
1997	1,670.39	818	1,121	716	12.20	59
1998	429.33	204	280	193	12.49	15
1999	61.83	29	40	28	12.78	2
2005	1,070.46	390	535	643	14.71	44
2007	178.82	59	81	116	15.41	8
2008	332.80	104	143	224	15.77	14
2009	1,198.85	351	481	838	16.14	52
2014	1,810.18	346	474	1,517	18.18	83
2015	1,396.38	235	322	1,214	18.64	65
2016	2,109.57	302	414	1,907	19.14	100
2020	1,490.65	31	42	1,597	21.58	74
	33,976.32	16,399	22,479	14,895		1,100
BELLINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	513.18	427	564			
1966	1,709.45	1,408	1,880			
1967	1,791.13	1,460	1,970			
1968	383.95	310	422			
1969	312.00	249	342	1	6.03	
1970	889.58	703	966	12	6.20	2
1972	1,010.55	780	1,072	39	6.56	6
1974	1,540.00	1,161	1,596	98	6.92	14
1975	2,171.11	1,616	2,221	167	7.11	23
1976	347.67	256	352	31	7.29	4
1977	1,972.32	1,431	1,967	203	7.49	27
1978	9,813.17	7,026	9,658	1,137	7.68	148
1979	465.70	329	452	60	7.88	8
1980	586.37	408	561	84	8.09	10

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BELLINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1981	1,389.78	953	1,310	219	8.29	26
1982	133.50	90	124	23	8.50	3
1983	323.80	215	296	61	8.72	7
1984	703.87	460	632	142	8.93	16
1985	1,965.32	1,262	1,735	427	9.16	47
1986	700.13	442	608	163	9.38	17
1988	951.68	578	794	252	9.85	26
1989	357.75	213	293	101	10.09	10
1990	2,027.20	1,182	1,625	605	10.34	59
1992	521.01	291	400	173	10.84	16
1993	2,843.68	1,550	2,131	998	11.10	90
1994	633.62	337	463	234	11.37	21
1995	1,544.21	800	1,100	599	11.64	51
1996	755.06	381	524	307	11.92	26
1997	1,763.28	864	1,188	752	12.20	62
1998	4,124.10	1,961	2,695	1,841	12.49	147
2000	682.55	304	418	333	13.09	25
2001	424.78	183	252	216	13.40	16
2005	954.09	348	478	571	14.71	39
2006	198.97	69	95	124	15.05	8
2008	307.58	96	132	206	15.77	13
2009	848.06	248	341	592	16.14	37
2012	1,469.60	344	473	1,144	17.32	66
2020	522.59	11	15	560	21.58	26
	49,652.39	30,746	42,144	12,474		1,096
BOSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	101,765.40	84,618	111,942			
1966	52,677.23	43,380	57,945			
1967	34,806.65	28,367	38,287			
1968	58,095.37	46,883	63,905			
1969	63,595.14	50,781	69,781	174	6.03	29
1970	56,831.45	44,897	61,695	819	6.20	132
1971	16,852.08	13,161	18,085	452	6.38	71
1972	41,262.46	31,855	43,774	1,615	6.56	246
1973	43,364.56	33,087	45,467	2,234	6.74	331
1974	27,500.43	20,735	28,493	1,757	6.92	254

NSTAR ELECTRIC COMPANY

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BOSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1975	22,870.35	17,027	23,398	1,760	7.11	248
1976	21,773.94	16,015	22,007	1,944	7.29	267
1977	35,759.49	25,944	35,651	3,684	7.49	492
1978	51,334.67	36,756	50,508	5,960	7.68	776
1979	89,173.08	62,956	86,511	11,579	7.88	1,469
1980	80,460.75	55,960	76,898	11,609	8.09	1,435
1981	102,994.43	70,602	97,018	16,276	8.29	1,963
1982	145,711.52	98,356	135,156	25,126	8.50	2,956
1983	159,045.51	105,607	145,120	29,830	8.72	3,421
1984	123,700.73	80,838	111,084	24,987	8.93	2,798
1985	138,959.59	89,213	122,592	30,263	9.16	3,304
1986	135,930.73	85,773	117,865	31,658	9.38	3,375
1987	69,843.77	43,268	59,457	17,371	9.61	1,808
1988	76,278.22	46,339	63,677	20,229	9.85	2,054
1989	120,096.31	71,517	98,275	33,831	10.09	3,353
1990	133,606.99	77,893	107,037	39,931	10.34	3,862
1991	138,851.16	79,215	108,854	43,883	10.59	4,144
1992	70,287.93	39,220	53,894	23,422	10.84	2,161
1993	57,789.64	31,495	43,279	20,290	11.10	1,828
1994	57,091.84	30,344	41,697	21,104	11.37	1,856
1995	212,439.89	110,044	151,217	82,466	11.64	7,085
1996	102,493.26	51,656	70,983	41,759	11.92	3,503
1997	31,858.79	15,611	21,452	13,593	12.20	1,114
1998	7,745.14	3,683	5,061	3,459	12.49	277
1999	4,900.07	2,259	3,104	2,286	12.78	179
2000	1,743.34	777	1,068	850	13.09	65
2001	32,433.65	13,947	19,165	16,512	13.40	1,232
2002	5,301.19	2,197	3,019	2,812	13.71	205
2003	696.58	277	381	386	14.04	27
2004	5,360.88	2,045	2,810	3,087	14.37	215
2005	54,807.42	19,977	27,451	32,837	14.71	2,232
2006	50,855.64	17,672	24,284	31,657	15.05	2,103
2007	62,034.98	20,441	28,089	40,149	15.41	2,605
2008	90,946.82	28,330	38,930	61,112	15.77	3,875
2009	58,000.88	16,994	23,352	40,449	16.14	2,506
2010	104,069.38	28,515	39,184	75,292	16.52	4,558
2011	85,235.46	21,692	29,808	63,951	16.91	3,782
2012	128,664.18	30,108	41,373	100,158	17.32	5,783
2013	35,258.93	7,510	10,320	28,465	17.74	1,605
2014	95,164.50	18,177	24,978	79,703	18.18	4,384
2015	113,830.33	19,124	26,279	98,934	18.64	5,308
2016	239,093.51	34,190	46,982	216,021	19.14	11,286

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BOSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2017	297,197.88	34,771	47,781	279,137	19.66	14,198
2018	165,354.01	14,551	19,995	161,894	20.24	7,999
2019	235,932.40	13,329	18,316	241,210	20.87	11,558
2020	640,369.40	13,447	18,478	685,928	21.58	31,785
	5,190,099.93	2,103,426	2,883,217	2,825,893		174,102
BOURNE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1923	0.66	1	1			
1942	23.95	24	26			
1954	28.88	26	32			
1955	79.95	72	88			
1959	287.60	253	316			
1965	2,261.85	1,881	2,488			
1966	193.71	160	213			
1967	6.70	5	7	1	5.70	
1968	43.47	35	48			
1969	84.41	67	92	1	6.03	
1971	9.77	8	11			
1972	1,626.24	1,255	1,723	66	6.56	10
1974	22.60	17	23	2	6.92	
1976	357.79	263	361	32	7.29	4
1977	199.98	145	199	21	7.49	3
1978	157.94	113	155	19	7.68	2
1979	4,726.73	3,337	4,581	618	7.88	78
1980	1,516.72	1,055	1,448	220	8.09	27
1981	2,531.83	1,736	2,383	402	8.29	48
1982	603.49	407	559	105	8.50	12
1983	1,030.42	684	939	194	8.72	22
1984	1,758.57	1,149	1,577	357	8.93	40
1985	3,573.65	2,294	3,149	782	9.16	85
1986	403.68	255	350	94	9.38	10
1987	971.42	602	826	242	9.61	25
1988	2,377.60	1,444	1,983	633	9.85	64
1989	5,592.22	3,330	4,572	1,580	10.09	157
1990	3,043.58	1,774	2,436	912	10.34	88
1991	14,457.88	8,248	11,324	4,580	10.59	432
1992	1,650.61	921	1,264	551	10.84	51

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BOURNE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1993	6,581.32	3,587	4,925	2,315	11.10	209
1994	6,314.00	3,356	4,608	2,338	11.37	206
1995	12,807.93	6,635	9,109	4,979	11.64	428
1996	3,816.12	1,923	2,640	1,558	11.92	131
1997	4,215.31	2,065	2,835	1,802	12.20	148
1998	4,833.81	2,298	3,155	2,162	12.49	173
1999	2,549.05	1,175	1,613	1,191	12.78	93
2001	15,617.80	6,716	9,221	7,959	13.40	594
2002	2,308.85	957	1,314	1,226	13.71	89
2003	766.51	305	419	424	14.04	30
2004	1,424.48	543	745	821	14.37	57
2005	2,047.00	746	1,024	1,227	14.71	83
2006	1,515.97	527	724	944	15.05	63
2007	794.55	262	360	514	15.41	33
2008	1,145.12	357	490	769	15.77	49
2009	2,344.88	687	943	1,636	16.14	101
2010	3,786.38	1,037	1,424	2,741	16.52	166
2011	3,107.20	791	1,086	2,332	16.91	138
2012	3,284.46	769	1,056	2,557	17.32	148
2013	2,324.12	495	680	1,877	17.74	106
2014	2,478.11	473	649	2,077	18.18	114
2015	2,970.61	499	685	2,583	18.64	139
2016	8,163.85	1,167	1,602	7,378	19.14	385
2017	4,576.53	535	735	4,300	19.66	219
2018	3,052.74	269	369	2,989	20.24	148
2019	5,307.76	300	412	5,427	20.87	260
2020	2,298.91	48	66	2,463	21.58	114
	160,057.27	70,083	96,064	79,999		5,582
BREWSTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	74.58	62	82			
1977	290.10	210	288	31	7.49	4
1978	155.21	111	152	19	7.68	2
1981	4,455.40	3,054	4,187	714	8.29	86
1982	880.45	594	814	154	8.50	18
1984	485.45	317	435	99	8.93	11
1985	320.75	206	282	70	9.16	8

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BREWSTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1986	1,310.60	827	1,134	308	9.38	33
1987	1,969.62	1,220	1,673	494	9.61	51
1988	1,504.63	914	1,253	402	9.85	41
1990	1,762.06	1,027	1,408	530	10.34	51
1991	370.32	211	289	118	10.59	11
1993	243.97	133	182	86	11.10	8
1994	340.46	181	248	126	11.37	11
1995	541.52	281	385	210	11.64	18
1996	1,660.64	837	1,147	679	11.92	57
1997	362.97	178	244	155	12.20	13
1998	519.17	247	339	232	12.49	19
2001	8,169.89	3,513	4,816	4,171	13.40	311
2003	533.17	212	291	296	14.04	21
2014	136.99	26	36	115	18.18	6
2017	666.70	78	107	626	19.66	32
2020	3,557.39	75	103	3,810	21.58	177
	30,312.04	14,514	19,895	13,448		989
BROOKLINE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	231,574.21	192,554	254,732			
1966	18,525.62	15,256	20,378			
1967	2,182.46	1,779	2,401			
1968	11,208.94	9,046	12,330			
1969	2,941.91	2,349	3,236			
1970	11,155.67	8,813	12,271			
1971	2,384.84	1,863	2,612	12	6.38	2
1972	10,021.55	7,737	10,847	177	6.56	27
1973	14,093.60	10,753	15,075	428	6.74	64
1974	8,971.36	6,764	9,483	386	6.92	56
1975	26,587.39	19,794	27,750	1,496	7.11	210
1976	32,360.52	23,801	33,368	2,229	7.29	306
1977	15,171.89	11,007	15,431	1,258	7.49	168
1978	11,321.10	8,106	11,364	1,089	7.68	142
1979	21,606.68	15,254	21,385	2,382	7.88	302
1980	23,942.26	16,652	23,345	2,991	8.09	370
1981	32,655.43	22,385	31,382	4,539	8.29	548
1982	32,141.59	21,696	30,417	4,939	8.50	581

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BROOKLINE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1983	22,418.45	14,886	20,869	3,791	8.72	435
1984	21,049.39	13,756	19,285	3,869	8.93	433
1985	17,082.39	10,967	15,375	3,416	9.16	373
1986	20,579.11	12,986	18,206	4,431	9.38	472
1987	12,402.22	7,683	10,771	2,871	9.61	299
1988	11,214.84	6,813	9,551	2,785	9.85	283
1989	6,503.83	3,873	5,430	1,724	10.09	171
1990	2,447.94	1,427	2,001	692	10.34	67
1991	16,377.09	9,343	13,098	4,916	10.59	464
1992	49,450.07	27,593	38,684	15,711	10.84	1,449
1993	997.35	544	763	334	11.10	30
1994	5,303.11	2,819	3,952	1,881	11.37	165
1995	992.42	514	721	371	11.64	32
1996	21,457.55	10,815	15,162	8,441	11.92	708
1998	1,574.21	749	1,050	682	12.49	55
2005	1,039.62	379	531	612	14.71	42
2006	4,572.63	1,589	2,228	2,802	15.05	186
2007	283.35	93	130	181	15.41	12
2008	8,090.66	2,520	3,533	5,367	15.77	340
2009	1,147.18	336	471	791	16.14	49
2010	7,482.51	2,050	2,874	5,357	16.52	324
2012	6,262.78	1,466	2,055	4,834	17.32	279
2013	6,678.06	1,422	1,994	5,352	17.74	302
2014	3,094.67	591	829	2,576	18.18	142
2015	3,672.64	617	865	3,175	18.64	170
2016	14,838.56	2,122	2,975	13,347	19.14	697
2017	40,532.31	4,742	6,648	37,938	19.66	1,930
2018	2,390.38	210	294	2,335	20.24	115
2020	5,492.31	115	161	5,880	21.58	272
	824,274.65	538,629	738,312	168,390		13,072
BURLINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	168.19	140	185			
1976	2,283.20	1,679	2,302	210	7.29	29
1977	178.09	129	177	19	7.49	3
1978	2,167.39	1,552	2,128	256	7.68	33
1980	4,958.50	3,449	4,728	726	8.09	90

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BURLINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1981	423.90	291	399	67	8.29	8
1983	1,142.10	758	1,039	217	8.72	25
1985	1,412.31	907	1,243	310	9.16	34
1986	281.70	178	244	66	9.38	7
1987	243.06	151	207	60	9.61	6
1988	1,098.60	667	914	294	9.85	30
1989	3,453.94	2,057	2,820	979	10.09	97
1990	4,802.22	2,800	3,839	1,444	10.34	140
1991	1,650.00	941	1,290	525	10.59	50
1992	1,805.67	1,008	1,382	604	10.84	56
1993	10,935.68	5,960	8,171	3,859	11.10	348
1994	2,900.93	1,542	2,114	1,077	11.37	95
1995	3,176.90	1,646	2,257	1,238	11.64	106
1996	414.72	209	287	170	11.92	14
1997	3,195.79	1,566	2,147	1,369	12.20	112
2002	868.39	360	494	462	13.71	34
2003	27.88	11	15	16	14.04	1
2009	649.08	190	260	454	16.14	28
2010	4,624.63	1,267	1,737	3,350	16.52	203
2012	895.75	210	288	697	17.32	40
2014	7,532.70	1,439	1,973	6,313	18.18	347
2015	5,829.86	979	1,342	5,071	18.64	272
2016	4,059.28	580	795	3,670	19.14	192
2018	183.65	16	22	180	20.24	9
2020	207,726.92	4,362	5,980	222,520	21.58	10,311
	279,091.03	37,044	50,777	256,223		12,720
CAMBRIDGE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1944	24.15	24	27			
1947	943.75	906	1,038			
1958	3,367.94	2,981	3,705			
1960	3,816.88	3,323	4,199			
1964	90.48	76	100			
1965	8,829.68	7,342	9,713			
1966	145.43	120	160			
1967	207.49	169	228			
1968	248.95	201	274			

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CAMBRIDGE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1969	669.74	535	735	2	6.03	
1970	7,645.71	6,040	8,299	111	6.20	18
1971	208.42	163	224	5	6.38	1
1972	760.55	587	807	30	6.56	5
1973	1,781.15	1,359	1,867	92	6.74	14
1974	2,486.45	1,875	2,576	159	6.92	23
1975	599.02	446	613	46	7.11	6
1977	140.32	102	140	14	7.49	2
1978	696.97	499	686	81	7.68	11
1979	4,291.45	3,030	4,163	557	7.88	71
1980	2,665.65	1,854	2,548	385	8.09	48
1981	8,152.80	5,589	7,680	1,288	8.29	155
1982	2,985.51	2,015	2,769	515	8.50	61
1983	17,227.62	11,439	15,718	3,233	8.72	371
1984	4,902.16	3,204	4,402	990	8.93	111
1985	9,045.07	5,807	7,979	1,970	9.16	215
1986	16,928.75	10,682	14,678	3,944	9.38	420
1987	27,290.01	16,906	23,230	6,789	9.61	706
1988	18,803.07	11,423	15,696	4,987	9.85	506
1989	27,703.06	16,497	22,668	7,805	10.09	774
1990	155,996.54	90,946	124,965	46,631	10.34	4,510
1991	7,432.51	4,240	5,826	2,350	10.59	222
1992	4,901.54	2,735	3,758	1,634	10.84	151
1993	2,638.23	1,438	1,976	926	11.10	83
1994	182,884.18	97,203	133,563	67,610	11.37	5,946
1995	11,143.66	5,772	7,931	4,327	11.64	372
1996	17,781.88	8,962	12,314	7,246	11.92	608
1997	25,439.97	12,465	17,128	10,856	12.20	890
1998	27,192.85	12,930	17,767	12,146	12.49	972
1999	9,474.27	4,368	6,002	4,420	12.78	346
2000	10,038.16	4,472	6,145	4,897	13.09	374
2001	12,534.98	5,390	7,406	6,382	13.40	476
2002	1,331.43	552	758	706	13.71	51
2003	6,627.72	2,638	3,625	3,666	14.04	261
2004	5,141.40	1,961	2,695	2,961	14.37	206
2005	903.30	329	452	542	14.71	37
2006	17,736.40	6,163	8,468	11,042	15.05	734
2007	19,656.90	6,477	8,900	12,723	15.41	826
2008	13,665.56	4,257	5,849	9,183	15.77	582
2009	22,925.20	6,717	9,230	15,988	16.14	991
2011	3,186.73	811	1,114	2,391	16.91	141
2012	4,382.01	1,025	1,408	3,412	17.32	197

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CAMBRIDGE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2013	7,228.59	1,540	2,116	5,835	17.74	329
2014	1,397.51	267	367	1,170	18.18	64
2015	339.80	57	78	295	18.64	16
2016	22,816.12	3,263	4,484	20,614	19.14	1,077
2017	771.96	90	124	725	19.66	37
2018	45,975.49	4,046	5,559	45,014	20.24	2,224
2019	6,597.99	373	513	6,745	20.87	323
2020	99,086.36	2,081	2,859	106,136	21.58	4,918
	919,887.47	408,762	560,300	451,576		31,482
CANTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	219.18	182	241			
1970	396.24	313	429	7	6.20	1
1971	7.90	6	8			
1972	46.05	36	49	1	6.56	
1973	51.48	39	53	3	6.74	
1974	336.25	254	348	22	6.92	3
1976	512.64	377	517	47	7.29	6
1977	1,134.60	823	1,128	120	7.49	16
1978	2,237.62	1,602	2,196	265	7.68	35
1979	178.13	126	173	23	7.88	3
1980	2,799.22	1,947	2,669	410	8.09	51
1981	2,525.41	1,731	2,373	405	8.29	49
1982	2,860.43	1,931	2,647	499	8.50	59
1983	4,079.19	2,709	3,714	773	8.72	89
1984	52.00	34	47	11	8.93	1
1985	5,079.61	3,261	4,470	1,117	9.16	122
1986	11,067.18	6,983	9,573	2,601	9.38	277
1987	222.73	138	189	56	9.61	6
1988	4,994.72	3,034	4,159	1,335	9.85	136
1989	3,577.50	2,130	2,920	1,015	10.09	101
1990	42.58	25	34	13	10.34	1
1991	3,927.14	2,240	3,071	1,249	10.59	118
1992	2,257.71	1,260	1,727	756	10.84	70
1993	2,296.64	1,252	1,716	810	11.10	73
1994	3,048.85	1,620	2,221	1,133	11.37	100
1995	6,077.27	3,148	4,316	2,369	11.64	204

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CANTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1996	3,712.49	1,871	2,565	1,519	11.92	127
1997	4,815.34	2,359	3,234	2,063	12.20	169
1999	343.25	158	217	161	12.78	13
2002	6,183.85	2,563	3,514	3,289	13.71	240
2003	10,163.23	4,045	5,545	5,634	14.04	401
2004	3,421.53	1,305	1,789	1,975	14.37	137
2005	2,910.51	1,061	1,455	1,747	14.71	119
2006	726.77	253	347	453	15.05	30
2007	1,170.99	386	529	759	15.41	49
2008	1,541.78	480	658	1,038	15.77	66
2009	1,936.20	567	777	1,353	16.14	84
2010	1,546.98	424	581	1,120	16.52	68
2011	1,095.41	279	382	822	16.91	49
2012	986.39	231	317	768	17.32	44
2013	1,185.04	252	345	958	17.74	54
2014	1,378.06	263	361	1,155	18.18	64
2015	881.74	148	203	767	18.64	41
2020	8,290.58	174	239	8,881	21.58	412
	112,318.41	54,020	74,047	49,503		3,688
CARLISLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	73.51	61	81			
1966	74.51	61	82			
1972	64.16	50	69	2	6.56	
1992	25,312.40	14,124	19,364	8,479	10.84	782
1997	4.50	2	3	2	12.20	
2002	429.50	178	244	228	13.71	17
2015	2,108.58	354	485	1,834	18.64	98
	28,067.16	14,830	20,328	10,546		897
CARVER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1986	442.57	279	382	104	9.38	11
1987	201.40	125	171	50	9.61	5

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CARVER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1988	283.26	172	236	76	9.85	8
1989	5,072.28	3,021	4,141	1,438	10.09	143
1990	629.15	367	503	189	10.34	18
1992	210.75	118	162	70	10.84	6
1993	349.26	190	260	124	11.10	11
1994	798.53	424	581	297	11.37	26
1995	1,359.32	704	965	530	11.64	46
1996	904.60	456	625	370	11.92	31
1997	557.67	273	374	239	12.20	20
1998	1,208.70	575	788	541	12.49	43
1999	886.52	409	561	415	12.78	32
2001	2,103.08	904	1,239	1,074	13.40	80
2002	435.65	181	248	231	13.71	17
2004	328.59	125	171	190	14.37	13
2005	286.42	104	143	173	14.71	12
2006	1,352.16	470	644	843	15.05	56
2007	1,087.47	358	491	705	15.41	46
2008	378.11	118	162	254	15.77	16
2009	506.66	148	203	354	16.14	22
2010	1,049.32	288	395	759	16.52	46
2011	1,471.62	375	514	1,105	16.91	65
2012	900.14	211	289	701	17.32	40
2013	1,280.72	273	374	1,035	17.74	58
2014	1,371.99	262	359	1,150	18.18	63
2015	1,177.04	198	271	1,023	18.64	55
2016	2,404.48	344	472	2,173	19.14	114
2017	1,131.99	132	181	1,064	19.66	54
2018	2,018.77	178	244	1,977	20.24	98
2019	971.03	55	75	993	20.87	48
2020	1,199.16	25	34	1,285	21.58	60
	34,358.41	11,862	16,260	21,534		1,363
CHATHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1925	0.52	1	1			
1965	137.15	114	151			
1976	219.02	161	221	20	7.29	3
1978	300.55	215	295	36	7.68	5

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CHATHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1979	566.09	400	548	74	7.88	9
1981	2,446.57	1,677	2,300	392	8.29	47
1982	973.91	657	901	170	8.50	20
1983	1,103.84	733	1,005	209	8.72	24
1984	325.17	212	291	67	8.93	8
1986	1,042.19	658	902	244	9.38	26
1987	1,210.15	750	1,028	303	9.61	32
1988	1,097.32	667	915	292	9.85	30
1989	1,682.08	1,002	1,374	476	10.09	47
1990	555.08	324	444	166	10.34	16
1991	1,302.40	743	1,019	414	10.59	39
1992	404.83	226	310	135	10.84	12
1993	574.67	313	429	203	11.10	18
1994	666.18	354	485	247	11.37	22
1995	753.78	390	535	294	11.64	25
1996	1,036.99	523	717	424	11.92	36
1998	1,482.40	705	967	664	12.49	53
1999	403.38	186	255	189	12.78	15
2000	471.78	210	288	231	13.09	18
2001	2,933.16	1,261	1,729	1,497	13.40	112
2002	776.60	322	442	413	13.71	30
2017	2,001.00	234	321	1,880	19.66	96
2018	2,854.75	251	344	2,796	20.24	138
2019	2,361.89	133	182	2,416	20.87	116
	29,683.45	13,422	18,398	14,254		997
CHELSEA						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	36,087.25	30,007	39,696			
1966	1,499.05	1,234	1,649			
1968	164.11	132	181			
1970	3,189.36	2,520	3,488	20	6.20	3
1972	271.92	210	291	8	6.56	1
1974	154.52	117	162	8	6.92	1
1975	1,061.79	791	1,095	73	7.11	10
1976	29.80	22	30	2	7.29	
1977	534.27	388	537	51	7.49	7
1978	9,209.46	6,594	9,126	1,004	7.68	131

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CHELSEA						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1979	306.81	217	300	37	7.88	5
1980	25,481.47	17,722	24,528	3,501	8.09	433
1981	5,793.21	3,971	5,496	876	8.29	106
1982	1,657.30	1,119	1,549	274	8.50	32
1983	8,729.08	5,796	8,022	1,580	8.72	181
1984	18,021.68	11,777	16,300	3,524	8.93	395
1985	16,444.31	10,557	14,611	3,477	9.16	380
1986	7,295.66	4,604	6,372	1,653	9.38	176
1987	2,722.62	1,687	2,335	660	9.61	69
1988	3,355.90	2,039	2,822	869	9.85	88
1989	4,867.49	2,899	4,012	1,342	10.09	133
1990	2,689.87	1,568	2,170	789	10.34	76
1991	3,649.14	2,082	2,882	1,132	10.59	107
1992	1,220.67	681	943	400	10.84	37
1993	1,456.26	794	1,099	503	11.10	45
1994	6,351.25	3,376	4,673	2,314	11.37	204
1995	708.10	367	508	271	11.64	23
1996	2,109.74	1,063	1,471	849	11.92	71
1997	380.79	187	259	160	12.20	13
1998	1,133.22	539	746	501	12.49	40
2004	11,093.47	4,232	5,857	6,345	14.37	442
2007	46,285.18	15,251	21,108	29,805	15.41	1,934
2008	9,489.40	2,956	4,091	6,347	15.77	402
2009	5,342.14	1,565	2,166	3,710	16.14	230
2010	3,328.66	912	1,262	2,399	16.52	145
2011	978.84	249	345	732	16.91	43
2012	1,098.38	257	356	853	17.32	49
2014	3,620.64	692	958	3,025	18.18	166
2015	597.75	100	138	519	18.64	28
2016	5,074.07	726	1,005	4,577	19.14	239
2017	177.33	21	29	166	19.66	8
2020	10,967.89	230	318	11,746	21.58	544
	264,629.85	142,251	194,987	96,106		6,997

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CHILMARK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1998	261.86	125	171	117	12.49	9
1999	262.22	121	166	123	12.78	10
	524.08	246	337	239		19
DARTMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1913	16.24	18	18			
1945	15.28	15	17			
1957	263.99	236	290			
1976	415.73	306	420	38	7.29	5
1977	90.17	65	89	10	7.49	1
1978	19.92	14	19	3	7.68	
1979	189.12	134	184	24	7.88	3
1980	44.59	31	43	7	8.09	1
1981	426.94	293	402	68	8.29	8
1982	50.00	34	47	8	8.50	1
1983	730.39	485	665	138	8.72	16
1984	1,377.21	900	1,234	281	8.93	31
1985	1,974.84	1,268	1,739	433	9.16	47
1987	3,253.47	2,016	2,765	814	9.61	85
1988	1,312.52	797	1,093	351	9.85	36
1989	9,343.58	5,564	7,631	2,647	10.09	262
1990	2,373.70	1,384	1,898	713	10.34	69
1991	11,250.78	6,419	8,804	3,572	10.59	337
1992	3,267.92	1,823	2,500	1,094	10.84	101
1993	5,391.77	2,938	4,029	1,901	11.10	171
1994	5,074.86	2,697	3,699	1,883	11.37	166
1995	2,999.14	1,554	2,131	1,168	11.64	100
1996	3,398.75	1,713	2,349	1,389	11.92	117
1997	14,135.37	6,926	9,499	6,050	12.20	496
1998	7,119.75	3,385	4,643	3,189	12.49	255
1999	72.29	33	45	34	12.78	3
2001	15,437.92	6,638	9,104	7,878	13.40	588
2002	5,591.38	2,318	3,179	2,971	13.71	217
2003	538.05	214	294	298	14.04	21
2004	9,603.03	3,664	5,025	5,538	14.37	385
2006	654.95	228	313	408	15.05	27
2007	313.79	103	141	204	15.41	13

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DARTMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2008	568.59	177	243	383	15.77	24
2012	1,114.33	261	358	868	17.32	50
2013	218.64	47	64	176	17.74	10
2014	110.47	21	29	93	18.18	5
2015	2,754.60	463	635	2,395	18.64	128
2016	1,670.83	239	328	1,510	19.14	79
2017	492.31	58	80	462	19.66	23
2018	1,422.03	125	171	1,393	20.24	69
2019	259.25	15	21	265	20.87	13
2020	883.87	19	26	946	21.58	44
	116,242.36	55,638	76,264	51,603		4,007
DEDHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	4,646.26	3,863	5,111			
1966	306.95	253	338			
1967	6,358.85	5,182	6,995			
1968	135.57	109	149			
1969	46.92	37	51	1	6.03	
1970	33.69	27	37			
1971	36.43	28	39	2	6.38	
1972	170.94	132	182	6	6.56	1
1973	33,163.17	25,304	34,827	1,653	6.74	245
1974	290.13	219	301	18	6.92	3
1975	4,710.97	3,507	4,827	355	7.11	50
1976	78.65	58	80	7	7.29	1
1978	8.59	6	8	1	7.68	
1980	140.45	98	135	20	8.09	2
1981	63.88	44	61	10	8.29	1
1982	17.80	12	17	3	8.50	
1983	2,271.66	1,508	2,075	423	8.72	49
1986	121.68	77	106	28	9.38	3
1988	128.77	78	107	34	9.85	3
1989	486.45	290	399	136	10.09	13
1990	67.24	39	54	20	10.34	2
1991	7,504.54	4,281	5,892	2,363	10.59	223
1992	5,170.12	2,885	3,971	1,716	10.84	158
1993	1,723.78	939	1,292	604	11.10	54

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DEDHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1994	5,900.88	3,136	4,316	2,175	11.37	191
1995	707.33	366	504	274	11.64	24
1996	2,265.18	1,142	1,572	920	11.92	77
1997	1,922.80	942	1,296	819	12.20	67
2003	6.02	2	3	4	14.04	
2004	3,009.99	1,148	1,580	1,731	14.37	120
2005	8,458.18	3,083	4,243	5,061	14.71	344
2006	5,834.69	2,028	2,791	3,627	15.05	241
2007	1,694.14	558	768	1,096	15.41	71
2008	1,298.41	404	556	872	15.77	55
2009	1,579.20	463	637	1,100	16.14	68
2013	402.74	86	118	325	17.74	18
2014	1,805.09	345	475	1,511	18.18	83
2020	28,227.68	593	816	30,234	21.58	1,401
	130,795.82	63,272	86,728	57,147		3,568
DENNIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1951	3.06	3	3			
1956	105.41	95	116			
1957	171.98	153	189			
1960	18.86	16	21			
1985	1,433.34	920	1,262	315	9.16	34
1986	995.24	628	861	233	9.38	25
1987	1,920.38	1,190	1,632	480	9.61	50
1989	9,708.08	5,781	7,929	2,750	10.09	273
1990	1,441.91	841	1,154	433	10.34	42
1991	2,158.55	1,231	1,688	686	10.59	65
1992	2,886.78	1,611	2,210	966	10.84	89
1993	2,746.72	1,497	2,053	968	11.10	87
1994	3,411.92	1,813	2,487	1,266	11.37	111
1995	8,600.24	4,455	6,111	3,350	11.64	288
1996	1,553.62	783	1,074	635	11.92	53
1997	2,999.56	1,470	2,016	1,283	12.20	105
1998	13,809.19	6,566	9,006	6,184	12.49	495
1999	2,639.79	1,217	1,669	1,235	12.78	97
2000	235.88	105	144	115	13.09	9
2001	14,661.24	6,304	8,647	7,481	13.40	558

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
DENNIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2002	2,753.40	1,141	1,565	1,464	13.71	107
2003	403.13	160	219	224	14.04	16
2009	361.30	106	145	252	16.14	16
2011	175.92	45	62	132	16.91	8
2012	59.63	14	19	46	17.32	3
2013	250.05	53	73	202	17.74	11
2014	4,376.94	836	1,147	3,668	18.18	202
2015	197.79	33	45	172	18.64	9
2016	1,442.17	206	283	1,304	19.14	68
2017	4,531.61	530	727	4,258	19.66	217
2018	1,593.45	140	192	1,561	20.24	77
2019	9,945.07	562	771	10,169	20.87	487
2020	3,771.67	79	108	4,040	21.58	187
	101,363.88	40,584	55,629	55,871		3,789
DOVER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	21.79	18	24			
1966	96.77	80	106			
1968	76.79	62	84			
1972	39.02	30	41	2	6.56	
1984	560.12	366	503	113	8.93	13
1991	167.26	95	131	53	10.59	5
1997	0.80			1	12.20	
2005	1,189.08	433	595	713	14.71	48
2019	1,069.85	60	83	1,094	20.87	52
	3,221.48	1,144	1,568	1,976		118
DUXBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1942	344.41	341	379			
1948	159.01	152	175			
1949	41.92	40	46			
1955	285.00	258	314			
1956	79.55	72	88			

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DUXBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1957	15.62	14	17			
1965	16.01	13	18			
1967	39.23	32	43			
1971	235.95	184	253	7	6.38	1
1972	301.59	233	320	12	6.56	2
1973	326.32	249	342	17	6.74	3
1974	88.06	66	91	6	6.92	1
1976	154.06	113	155	14	7.29	2
1978	1,353.07	969	1,332	157	7.68	20
1979	285.16	201	276	37	7.88	5
1980	949.77	661	908	136	8.09	17
1982	490.81	331	455	85	8.50	10
1984	826.21	540	742	167	8.93	19
1985	378.44	243	334	82	9.16	9
1986	1,873.54	1,182	1,625	436	9.38	46
1987	180.25	112	154	44	9.61	5
1988	685.16	416	572	182	9.85	18
1989	30,647.97	18,251	25,084	8,629	10.09	855
1990	2,649.19	1,544	2,122	792	10.34	77
1991	2,559.49	1,460	2,007	809	10.59	76
1992	1,109.92	619	851	370	10.84	34
1993	3,125.24	1,703	2,341	1,097	11.10	99
1994	1,212.23	644	885	448	11.37	39
1995	525.23	272	374	204	11.64	18
1996	1,272.13	641	881	518	11.92	43
1997	3,482.85	1,707	2,346	1,485	12.20	122
1998	3,298.05	1,568	2,155	1,473	12.49	118
1999	1,877.62	866	1,190	875	12.78	68
2001	14,133.11	6,077	8,352	7,194	13.40	537
2002	1,688.94	700	962	896	13.71	65
2003	434.03	173	238	240	14.04	17
2004	684.68	261	359	394	14.37	27
2005	4,587.07	1,672	2,298	2,748	14.71	187
2006	3,493.14	1,214	1,668	2,174	15.05	144
2007	3,275.57	1,079	1,483	2,120	15.41	138
2008	248.20	77	106	167	15.77	11
2009	1,231.33	361	496	858	16.14	53
2010	2,954.29	809	1,112	2,138	16.52	129
2011	2,916.61	742	1,020	2,188	16.91	129
2012	995.95	233	320	775	17.32	45
2013	1,544.34	329	452	1,247	17.74	70
2014	1,164.84	222	305	976	18.18	54

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DUXBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2015	5,487.36	922	1,267	4,769	18.64	256
2016	1,837.93	263	361	1,660	19.14	87
2017	938.57	110	151	881	19.66	45
2018	4,250.13	374	514	4,161	20.24	206
2019	1,589.16	90	124	1,624	20.87	78
2020	8,210.35	172	236	8,795	21.58	408
	122,534.66	51,577	70,698	64,090		4,393
EASTHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1972	380.01	293	402	16	6.56	2
1974	85.52	64	88	6	6.92	1
1978	926.08	663	909	110	7.68	14
1979	192.65	136	186	25	7.88	3
1980	387.60	270	370	56	8.09	7
1981	1,310.41	898	1,231	211	8.29	25
1982	953.23	643	881	167	8.50	20
1983	941.73	625	857	179	8.72	21
1984	823.75	538	737	169	8.93	19
1985	309.80	199	273	68	9.16	7
1986	180.06	114	156	42	9.38	4
1987	286.31	177	243	72	9.61	7
1988	2,508.39	1,524	2,089	670	9.85	68
1989	672.41	400	548	191	10.09	19
1990	490.42	286	392	147	10.34	14
1991	1,291.04	737	1,010	410	10.59	39
1992	1,214.50	678	929	407	10.84	38
1993	1,073.42	585	802	379	11.10	34
1994	651.45	346	474	242	11.37	21
1995	1,475.19	764	1,047	575	11.64	49
1996	429.52	216	296	176	11.92	15
1997	1,413.28	693	950	605	12.20	50
1998	1,812.04	862	1,182	812	12.49	65
1999	619.11	285	391	290	12.78	23
2001	362.35	156	214	185	13.40	14
2002	660.60	274	376	351	13.71	26
2003	1,434.29	571	783	795	14.04	57
2004	6,095.35	2,325	3,187	3,518	14.37	245

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EASTHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2005	2,098.53	765	1,049	1,260	14.71	86
2006	2,322.03	807	1,106	1,448	15.05	96
2007	1,842.72	607	832	1,195	15.41	78
2008	354.67	110	151	239	15.77	15
2010	1,766.96	484	663	1,280	16.52	77
2011	479.92	122	167	361	16.91	21
2013	3,759.28	801	1,098	3,037	17.74	171
2016	82.75	12	16	75	19.14	4
2018	649.75	57	78	637	20.24	31
2019	814.63	46	63	833	20.87	40
	43,151.75	19,133	26,226	21,241		1,526
EASTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1988	34,086.55	20,707	28,384	9,111	9.85	925
	34,086.55	20,707	28,384	9,111		925
EDGARTOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1939	1.11	1	1			
1950	66.63	63	73			
1959	13.42	12	15			
1961	55.41	48	61			
1979	244.05	172	238	31	7.88	4
1983	562.79	374	517	102	8.72	12
1985	203.97	131	181	43	9.16	5
1988	343.69	209	289	89	9.85	9
1991	276.87	158	218	86	10.59	8
2002	73.20	30	41	39	13.71	3
2003	240.14	96	133	131	14.04	9
2004	215.91	82	113	124	14.37	9
2008	317.23	99	137	212	15.77	13
2009	303.29	89	123	211	16.14	13
2010	394.74	108	149	285	16.52	17

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EDGARTOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2013	557.16	119	164	448	17.74	25
2014	156.02	30	41	130	18.18	7
2016	278.30	40	55	251	19.14	13
	4,303.93	1,861	2,551	2,183		147
EVERETT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1991	655.20	374	513	208	10.59	20
1997	0.31					
	655.51	374	513	208		20
FAIRHAVEN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1921	14.23	16	16			
1922	11.16	12	12			
1937	7.82	8	9			
1942	17.32	17	19			
1943	1.04	1	1			
1946	265.95	257	293			
1950	361.49	340	398			
1989	190.63	114	157	53	10.09	5
1990	895.09	522	719	266	10.34	26
1991	20,787.02	11,859	16,331	6,534	10.59	617
1992	888.45	496	683	294	10.84	27
1994	1,227.14	652	898	452	11.37	40
1997	424.06	208	286	180	12.20	15
2001	319.36	137	189	163	13.40	12
2002	909.01	377	519	481	13.71	35
2003	737.56	294	405	406	14.04	29
2004	2,019.94	771	1,062	1,160	14.37	81
2005	5,783.23	2,108	2,903	3,459	14.71	235
2006	1,280.09	445	613	795	15.05	53
2007	2,926.85	964	1,328	1,892	15.41	123
2008	2,712.08	845	1,164	1,820	15.77	115
2009	5,629.15	1,649	2,271	3,921	16.14	243

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FAIRHAVEN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2010	1,798.43	493	679	1,299	16.52	79
2012	195.32	46	63	152	17.32	9
2013	971.76	207	285	784	17.74	44
2014	2,245.24	429	591	1,879	18.18	103
2017	307.73	36	50	289	19.66	15
2018	512.30	45	62	502	20.24	25
2020	55.99	1	1	60	21.58	3
	53,495.44	23,349	32,005	26,840		1,934
FALMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1922	6.23	7	7			
1926	0.58	1	1			
1928	0.46	1	1			
1935	2.53	3	3			
1939	4.55	5	5			
1941	0.12		0			
1954	153.20	140	169			
1955	105.98	96	117			
1956	11,258.27	10,127	12,384			
1957	292.57	261	322			
1958	49.16	44	54			
1959	371.57	326	409			
1978	2,463.09	1,764	2,444	265	7.68	35
1981	588.87	404	560	88	8.29	11
1982	272.13	184	255	44	8.50	5
1983	2,566.60	1,704	2,361	462	8.72	53
1984	893.38	584	809	173	8.93	19
1985	9,751.54	6,261	8,676	2,051	9.16	224
1986	7,210.61	4,550	6,305	1,627	9.38	173
1987	4,508.87	2,793	3,870	1,090	9.61	113
1988	5,704.93	3,466	4,803	1,473	9.85	150
1989	10,453.58	6,225	8,626	2,873	10.09	285
1990	2,995.99	1,747	2,421	875	10.34	85
1991	5,806.74	3,313	4,591	1,797	10.59	170
1992	5,573.36	3,110	4,310	1,821	10.84	168
1993	10,196.57	5,557	7,700	3,516	11.10	317
1994	11,486.57	6,105	8,460	4,176	11.37	367

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FALMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	7,538.47	3,905	5,411	2,881	11.64	248
1996	7,646.14	3,854	5,340	3,070	11.92	258
1997	18,198.66	8,917	12,356	7,662	12.20	628
1998	6,063.16	2,883	3,995	2,675	12.49	214
1999	23,597.02	10,878	15,074	10,883	12.78	852
2001	52,126.43	22,414	31,059	26,280	13.40	1,961
2002	9,772.73	4,051	5,613	5,137	13.71	375
2003	923.93	368	510	506	14.04	36
2004	4,356.92	1,662	2,303	2,490	14.37	173
2005	162.04	59	82	96	14.71	7
2006	1,099.52	382	529	680	15.05	45
2007	156.54	52	72	100	15.41	6
2008	396.04	123	170	265	15.77	17
2014	342.82	65	90	287	18.18	16
2015	13.51	2	3	12	18.64	1
2017	2,279.06	267	370	2,137	19.66	109
2018	1,343.80	118	164	1,315	20.24	65
2019	8,809.77	498	690	9,001	20.87	431
2020	9,150.49	192	266	9,799	21.58	454
	246,695.10	119,468	163,758	107,607		8,071
FOXBORO						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1992	24,885.94	13,886	19,034	8,341	10.84	769
	24,885.94	13,886	19,034	8,341		769
FRAMINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	1,566.01	1,302	1,723			
1970	60.99	48	66	1	6.20	
1974	132.37	100	137	8	6.92	1
1977	752.62	546	749	79	7.49	11
1979	1,447.04	1,022	1,402	190	7.88	24
1980	4,044.75	2,813	3,858	591	8.09	73
1981	10,399.89	7,129	9,777	1,663	8.29	201

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FRAMINGHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	9,660.19	6,521	8,943	1,683	8.50	198
1983	13,309.18	8,837	12,119	2,521	8.72	289
1984	6,608.76	4,319	5,923	1,346	8.93	151
1985	4,065.55	2,610	3,579	893	9.16	97
1986	5,919.53	3,735	5,122	1,389	9.38	148
1987	6,125.48	3,795	5,205	1,534	9.61	160
1988	6,302.82	3,829	5,251	1,682	9.85	171
1989	10,598.59	6,311	8,655	3,003	10.09	298
1990	7,668.47	4,471	6,132	2,304	10.34	223
1991	8,435.43	4,812	6,599	2,680	10.59	253
1992	2,952.39	1,647	2,259	989	10.84	91
1993	5,687.36	3,100	4,251	2,005	11.10	181
1994	7,754.61	4,122	5,653	2,877	11.37	253
1995	58.76	30	41	23	11.64	2
1996	54.60	28	38	22	11.92	2
1997	7,991.81	3,916	5,370	3,421	12.20	280
1998	2,146.65	1,021	1,400	961	12.49	77
2000	198.46	88	121	98	13.09	7
2006	988.93	344	472	616	15.05	41
2007	440.03	145	199	285	15.41	18
2008	3,971.38	1,237	1,696	2,672	15.77	169
2009	1,598.77	468	642	1,117	16.14	69
2010	13,551.56	3,713	5,092	9,815	16.52	594
2011	1,050.37	267	366	789	16.91	47
2012	8,323.99	1,948	2,672	6,485	17.32	374
2016	177.22	25	34	161	19.14	8
2017	1,684.30	197	270	1,583	19.66	81
2018	4,289.01	377	517	4,201	20.24	208
2019	15,045.40	850	1,166	15,384	20.87	737
2020	284,517.45	5,975	8,194	304,775	21.58	14,123
	459,580.72	91,698	125,693	379,846		19,660

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FRANKLIN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1968	76.79	62	84			
1987	1,336.38	828	1,136	334	9.61	35
1988	237.92	145	199	63	9.85	6
	1,651.09	1,035	1,419	397		41
FREETOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1942	25.60	25	28			
1966	53.00	44	58			
1967	32.02	26	35			
1976	315.31	232	318	29	7.29	4
1978	59.83	43	59	7	7.68	1
1979	53.45	38	52	7	7.88	1
1980	9,036.38	6,285	8,616	1,324	8.09	164
1981	587.50	403	552	94	8.29	11
1984	2,225.01	1,454	1,993	454	8.93	51
1985	2,759.38	1,772	2,429	606	9.16	66
1986	1,312.01	828	1,135	308	9.38	33
1987	6,238.14	3,865	5,299	1,563	9.61	163
1988	3,758.98	2,284	3,131	1,004	9.85	102
1989	2,120.89	1,263	1,731	602	10.09	60
1990	2,172.76	1,267	1,737	653	10.34	63
1991	4,746.16	2,708	3,712	1,508	10.59	142
1992	482.51	269	369	162	10.84	15
1993	1,272.15	693	950	449	11.10	40
1994	4,841.54	2,573	3,527	1,798	11.37	158
1995	2,624.69	1,360	1,864	1,023	11.64	88
1996	1,473.77	743	1,019	603	11.92	51
1997	9,694.11	4,750	6,512	4,152	12.20	340
1998	2,087.54	993	1,361	935	12.49	75
1999	7,850.37	3,619	4,961	3,674	12.78	287
2001	1,480.12	636	872	756	13.40	56
2002	1,025.38	425	583	545	13.71	40
2003	763.52	304	417	423	14.04	30
2004	2,226.75	850	1,165	1,284	14.37	89
2005	6,885.99	2,510	3,441	4,134	14.71	281
2006	4,556.15	1,583	2,170	2,842	15.05	189
2007	1,119.30	369	506	725	15.41	47

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
FREETOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2008	2,066.99	644	883	1,391	15.77	88
2009	687.21	201	276	480	16.14	30
2010	2,407.08	660	905	1,743	16.52	106
2011	648.92	165	226	488	16.91	29
2012	2,996.56	701	961	2,335	17.32	135
2013	2,023.33	431	591	1,635	17.74	92
2014	3,124.39	597	818	2,618	18.18	144
2015	3,900.87	655	898	3,393	18.64	182
2016	824.98	118	162	746	19.14	39
2017	870.93	102	140	818	19.66	42
2018	931.13	82	112	912	20.24	45
2020	1,110.62	23	32	1,190	21.58	55
	105,473.32	48,593	66,608	49,413		3,634
HARWICH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1939	0.71	1	1			
1944	0.40		0			
1954	76.19	70	84			
1956	4.43	4	5			
1959	52.95	46	58			
1984	411.51	269	369	84	8.93	9
1987	453.53	281	385	113	9.61	12
1988	1,537.72	934	1,281	410	9.85	42
1990	787.74	459	630	237	10.34	23
1991	1,317.67	752	1,031	418	10.59	39
1992	1,214.50	678	930	406	10.84	37
1993	475.76	259	355	168	11.10	15
1994	1,336.27	710	974	496	11.37	44
1995	2,002.31	1,037	1,422	780	11.64	67
1996	3,960.25	1,996	2,738	1,619	11.92	136
1997	3,976.08	1,948	2,672	1,702	12.20	140
1998	1,299.32	618	848	582	12.49	47
1999	3,176.87	1,465	2,009	1,485	12.78	116
2001	16,121.60	6,932	9,507	8,226	13.40	614
2002	4,570.23	1,894	2,598	2,430	13.71	177
2003	456.53	182	250	253	14.04	18
2004	0.02		0			

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HARWICH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2009	512.09	150	206	358	16.14	22
2011	1,848.06	470	645	1,388	16.91	82
2012	413.08	97	133	321	17.32	19
2013	807.96	172	236	653	17.74	37
2014	136.99	26	36	115	18.18	6
2015	1,609.05	270	370	1,400	18.64	75
2016	1,294.24	185	254	1,170	19.14	61
2017	1,538.49	180	247	1,445	19.66	73
2018	1,953.29	172	236	1,913	20.24	95
2019	848.44	48	66	867	20.87	42
2020	1,444.98	30	41	1,548	21.58	72
	55,639.26	22,335	30,615	30,588		2,120
HOLLISTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	444.15	369	489			
1966	48.97	40	54			
1967	9.05	7	10			
1968	34.63	28	38			
1969	24.53	20	27			
1970	8.95	7	10			
1975	3,586.44	2,670	3,660	285	7.11	40
1977	309.39	224	307	33	7.49	4
1979	7,911.32	5,585	7,656	1,047	7.88	133
1980	14,306.50	9,950	13,639	2,098	8.09	259
1981	15,862.78	10,874	14,906	2,543	8.29	307
1983	2,370.32	1,574	2,158	450	8.72	52
1984	7,303.46	4,773	6,543	1,491	8.93	167
1985	9,761.78	6,267	8,591	2,147	9.16	234
1986	2,081.01	1,313	1,800	489	9.38	52
1987	7,584.05	4,698	6,440	1,902	9.61	198
1988	4,680.05	2,843	3,897	1,251	9.85	127
1989	4,825.96	2,874	3,940	1,369	10.09	136
1990	3,557.24	2,074	2,843	1,070	10.34	103
1991	1,238.21	706	968	394	10.59	37
1992	19,114.66	10,666	14,621	6,405	10.84	591
1993	1,218.72	664	910	430	11.10	39
1994	950.43	505	692	353	11.37	31

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HOLLISTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	16,369.05	8,479	11,623	6,383	11.64	548
1996	58,311.84	29,389	40,286	23,857	11.92	2,001
1997	157,671.36	77,258	105,905	67,534	12.20	5,536
1998	4,024.58	1,914	2,624	1,803	12.49	144
1999	26,682.01	12,300	16,861	12,489	12.78	977
2001	6,325.40	2,720	3,729	3,229	13.40	241
2002	12,369.13	5,127	7,028	6,578	13.71	480
2003	4,291.90	1,708	2,341	2,380	14.04	170
2004	1,752.49	669	917	1,011	14.37	70
2005	8,818.52	3,214	4,406	5,295	14.71	360
2007	8,177.90	2,695	3,694	5,301	15.41	344
2008	930.80	290	398	626	15.77	40
2009	122,488.42	35,889	49,196	85,541	16.14	5,300
2010	13,219.91	3,622	4,965	9,577	16.52	580
2011	41,062.68	10,450	14,325	30,844	16.91	1,824
2013	1,014.61	216	296	820	17.74	46
2014	1,732.67	331	454	1,452	18.18	80
2015	692.37	116	159	603	18.64	32
2016	651.63	93	127	589	19.14	31
2017	792.60	93	127	744	19.66	38
2018	1,272.30	112	154	1,246	20.24	62
2019	4,392.05	248	340	4,491	20.87	215
2020	5,559.12	117	160	5,955	21.58	276
	605,835.94	265,781	364,312	302,108		21,905
HOPKINTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1972	433.11	334	458	19	6.56	3
1973	815.06	622	853	44	6.74	7
1976	570.97	420	576	52	7.29	7
1978	810.89	581	796	96	7.68	12
1979	833.04	588	806	110	7.88	14
1980	6,003.43	4,175	5,723	881	8.09	109
1981	1,432.50	982	1,346	230	8.29	28
1982	897.81	606	831	157	8.50	18
1983	1,059.75	704	965	201	8.72	23
1984	120.83	79	108	25	8.93	3
1985	1,034.66	664	910	228	9.16	25

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HOPKINTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1986	656.82	414	567	155	9.38	17
1989	0.60			1	10.09	
1990	1,000.22	583	799	301	10.34	29
1991	412.50	235	322	132	10.59	12
1992	173.67	97	133	58	10.84	5
1993	635.63	346	474	225	11.10	20
1994	316.81	168	230	118	11.37	10
1995	926.55	480	658	361	11.64	31
1996	498.58	251	344	204	11.92	17
1998	429.33	204	280	193	12.49	15
1999	1,043.36	481	659	488	12.78	38
2000	593.80	265	363	290	13.09	22
2009	487.21	143	196	340	16.14	21
2016	683.07	98	134	617	19.14	32
2020	58,502.67	1,228	1,683	62,670	21.58	2,904
	80,372.87	14,748	20,215	68,195		3,422
KINGSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1942	0.11		0			
1947	15.60	15	17			
1951	11.80	11	13			
1952	23.28	22	26			
1953	93.56	86	103			
1954	6.16	6	7			
1973	12.15	9	12	1	6.74	
1984	5,834.93	3,813	5,228	1,191	8.93	133
1985	4,162.46	2,672	3,664	915	9.16	100
1986	7,074.18	4,464	6,120	1,661	9.38	177
1987	5,206.89	3,226	4,423	1,305	9.61	136
1988	6,022.25	3,658	5,015	1,609	9.85	163
1989	8,884.80	5,291	7,254	2,519	10.09	250
1990	7,161.28	4,175	5,724	2,153	10.34	208
1991	5,516.03	3,147	4,315	1,753	10.59	166
1992	8,260.21	4,609	6,319	2,767	10.84	255
1993	5,843.56	3,185	4,367	2,061	11.10	186
1994	3,846.44	2,044	2,802	1,429	11.37	126
1995	5,795.29	3,002	4,116	2,259	11.64	194

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KINGSTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1996	4,747.82	2,393	3,281	1,942	11.92	163
1997	2,943.44	1,442	1,977	1,261	12.20	103
1998	7,774.15	3,697	5,069	3,483	12.49	279
1999	4,940.17	2,277	3,122	2,312	12.78	181
2001	18,582.11	7,990	10,955	9,485	13.40	708
2002	5,153.31	2,136	2,929	2,740	13.71	200
2003	1,958.87	780	1,069	1,085	14.04	77
2004	2,663.81	1,016	1,393	1,537	14.37	107
2005	1,875.01	683	936	1,126	14.71	77
2006	1,994.57	693	950	1,244	15.05	83
2007	2,209.31	728	998	1,432	15.41	93
2008	1,680.57	523	717	1,132	15.77	72
2009	2,874.94	842	1,154	2,008	16.14	124
2010	1,490.70	408	559	1,080	16.52	65
2011	4,833.04	1,230	1,686	3,630	16.91	215
2012	2,317.69	542	743	1,806	17.32	104
2013	1,957.25	417	572	1,581	17.74	89
2014	4,013.59	767	1,052	3,363	18.18	185
2015	4,505.88	757	1,038	3,919	18.64	210
2016	5,719.84	818	1,122	5,170	19.14	270
2017	7,217.18	844	1,157	6,782	19.66	345
2018	9,888.62	870	1,193	9,685	20.24	479
2019	1,701.00	96	132	1,739	20.87	83
2020	10,696.35	225	308	11,457	21.58	531
	187,510.20	75,609	103,639	102,622		6,937
LAKEVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1980	4.95	3	4	1	8.09	
1981	20.04	14	19	3	8.29	
1983	170.67	113	155	33	8.72	4
1984	10.00	7	10	1	8.93	
1988	230.20	140	192	61	9.85	6
1989	561.26	334	458	159	10.09	16
1990	859.92	501	687	259	10.34	25
1993	936.53	510	699	331	11.10	30
1994	441.23	235	322	163	11.37	14

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LAKEVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2001	577.25	248	340	295	13.40	22
2005	344.29	125	171	207	14.71	14
2007	310.91	102	140	202	15.41	13
	4,467.25	2,332	3,197	1,717		144
LEXINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	24,550.50	20,414	27,006			
1966	120.82	99	133			
1967	350.76	286	386			
1968	4,039.22	3,260	4,443			
1969	1,616.49	1,291	1,778			
1970	2,626.47	2,075	2,864	25	6.20	4
1971	6,495.77	5,073	7,001	144	6.38	23
1972	593.18	458	632	20	6.56	3
1973	6,945.15	5,299	7,313	327	6.74	49
1974	1,249.68	942	1,300	75	6.92	11
1975	1,288.60	959	1,324	94	7.11	13
1977	2,465.90	1,789	2,469	244	7.49	33
1978	2,022.60	1,448	1,998	226	7.68	29
1979	9,201.26	6,496	8,965	1,156	7.88	147
1980	2,800.47	1,948	2,688	392	8.09	48
1981	7,271.03	4,984	6,878	1,120	8.29	135
1982	3,073.96	2,075	2,864	518	8.50	61
1983	6,053.97	4,020	5,548	1,111	8.72	127
1984	5,222.50	3,413	4,710	1,035	8.93	116
1985	7,712.14	4,951	6,833	1,651	9.16	180
1986	4,788.02	3,021	4,169	1,098	9.38	117
1987	806.35	500	690	197	9.61	20
1988	3,026.79	1,839	2,538	791	9.85	80
1989	2,205.83	1,314	1,813	613	10.09	61
1990	5,021.33	2,927	4,040	1,484	10.34	144
1991	11,933.75	6,808	9,396	3,731	10.59	352
1992	1,042.67	582	803	344	10.84	32
1993	2,971.63	1,620	2,236	1,033	11.10	93
1994	18,784.49	9,984	13,779	6,884	11.37	605
1995	10,206.75	5,287	7,297	3,931	11.64	338
1996	479.45	242	334	193	11.92	16

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LEXINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1998	47,457.96	22,566	31,143	21,061	12.49	1,686
2000	1,084.23	483	667	526	13.09	40
2002	393.45	163	225	208	13.71	15
2004	299.17	114	157	172	14.37	12
2005	263.47	96	132	157	14.71	11
2009	479.73	141	195	333	16.14	21
2010	2,916.76	799	1,103	2,106	16.52	127
2013	2,179.96	464	640	1,758	17.74	99
2014	2,954.37	564	778	2,471	18.18	136
2015	6,702.12	1,126	1,554	5,818	18.64	312
2016	2,940.24	420	580	2,655	19.14	139
2020	1,946.15	41	57	2,084	21.58	97
	226,585.14	132,381	181,458	67,786		5,532
LINCOLN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	281.42	234	310			
1967	2,773.93	2,261	3,051			
1968	4,377.03	3,532	4,815			
1969	5,200.00	4,152	5,707	13	6.03	2
1970	512.55	405	557	7	6.20	1
1971	1,494.18	1,167	1,604	40	6.38	6
1972	285.67	221	304	10	6.56	2
1974	369.79	279	383	23	6.92	3
1975	906.10	675	928	69	7.11	10
1976	1,261.36	928	1,275	112	7.29	15
1977	376.28	273	375	39	7.49	5
1978	827.90	593	815	96	7.68	12
1979	227.92	161	221	29	7.88	4
1980	283.13	197	271	41	8.09	5
1981	416.96	286	393	66	8.29	8
1983	471.76	313	430	89	8.72	10
1984	3,920.06	2,562	3,521	791	8.93	89
1985	831.96	534	734	181	9.16	20
1986	635.88	401	551	148	9.38	16
1987	222.73	138	190	55	9.61	6
1989	715.50	426	586	202	10.09	20
1990	2,027.20	1,182	1,625	605	10.34	59

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LINCOLN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1991	618.75	353	485	195	10.59	18
1992	1,921.17	1,072	1,473	640	10.84	59
1993	4,671.76	2,546	3,499	1,640	11.10	148
1994	1,267.24	674	926	468	11.37	41
1995	308.85	160	220	120	11.64	10
1998	143.11	68	93	64	12.49	5
1999	1,633.63	753	1,035	762	12.78	60
2000	136.29	61	84	66	13.09	5
2004	137.97	53	73	79	14.37	5
2005	1.00			1	14.71	
2010	324.99	89	122	235	16.52	14
2012	392.66	92	126	305	17.32	18
2013	148.73	32	44	120	17.74	7
2014	1,590.04	304	418	1,331	18.18	73
2016	9,432.34	1,349	1,854	8,521	19.14	445
2017	1,438.67	168	231	1,352	19.66	69
2019	6,901.99	390	536	7,056	20.87	338
	59,488.50	29,084	39,866	25,571		1,608
MANSFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1976	231.78	170	233	22	7.29	3
1986	567.06	358	491	133	9.38	14
	798.84	528	724	155		17
MARION						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1912	23.00	25	25			
1923	4.00	4	4			
1934	45.65	48	50			
1942	474.55	471	522			
1955	10.00	9	11			
1956	0.58	1	1			
1958	15.96	14	18			
1963	60.44	51	66			

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MARION						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	16.00	13	18			
1967	78.40	64	86			
1968	0.75	1	1			
1970	121.52	96	132	2	6.20	
1973	12.88	10	14			
1975	15.42	11	15	2	7.11	
1976	737.97	543	746	66	7.29	9
1978	719.48	515	708	84	7.68	11
1979	3,200.62	2,260	3,105	416	7.88	53
1980	968.75	674	926	140	8.09	17
1981	483.13	331	455	77	8.29	9
1983	1,556.49	1,034	1,421	292	8.72	33
1984	1,990.09	1,301	1,787	402	8.93	45
1985	251.55	161	221	56	9.16	6
1986	5,116.81	3,229	4,436	1,192	9.38	127
1987	2,256.57	1,398	1,921	562	9.61	58
1988	1,589.09	965	1,326	422	9.85	43
1989	28,891.22	17,205	23,638	8,142	10.09	807
1990	5,337.65	3,112	4,276	1,596	10.34	154
1991	2,990.39	1,706	2,344	946	10.59	89
1992	2,037.83	1,137	1,562	679	10.84	63
1993	1,797.54	980	1,346	631	11.10	57
1994	2,771.79	1,473	2,024	1,025	11.37	90
1995	1,123.22	582	800	436	11.64	37
1996	3,232.24	1,629	2,238	1,317	11.92	110
1997	1,322.80	648	890	565	12.20	46
1998	820.67	390	536	367	12.49	29
1999	987.77	455	625	461	12.78	36
2001	4,180.07	1,797	2,469	2,129	13.40	159
2002	238.19	99	136	126	13.71	9
2003	3,464.84	1,379	1,895	1,917	14.04	137
2004	1,486.23	567	779	856	14.37	60
2005	3,162.25	1,153	1,584	1,894	14.71	129
2006	72.75	25	34	46	15.05	3
2007	909.77	300	412	589	15.41	38
2010	246.39	68	93	178	16.52	11
2011	569.51	145	199	427	16.91	25
2012	424.63	99	136	331	17.32	19
2013	862.78	184	253	696	17.74	39
2015	318.98	54	74	277	18.64	15
2016	2,194.50	314	431	1,983	19.14	104
2017	1,893.36	222	305	1,778	19.66	90

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MARION						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2018	2,881.97	254	349	2,821	20.24	139
2019	1,370.90	77	106	1,402	20.87	67
2020	73,608.80	1,546	2,124	78,846	21.58	3,654
	168,948.74	50,829	69,673	116,171		6,627
MARSHFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1941	4.91	5	5			
1953	85.47	79	94			
1956	34.10	31	38			
1958	20.49	18	23			
1959	1.04	1	1			
1961	92.68	80	102			
1965	28.46	24	31			
1966	97.25	80	107			
1973	1,317.96	1,006	1,379	71	6.74	11
1974	121.43	92	126	7	6.92	1
1975	169.00	126	173	13	7.11	2
1976	114.41	84	115	11	7.29	2
1978	1,735.57	1,243	1,704	205	7.68	27
1979	1,106.87	781	1,071	147	7.88	19
1980	480.72	334	458	71	8.09	9
1981	120.00	82	112	20	8.29	2
1982	4,658.29	3,144	4,310	814	8.50	96
1983	3,653.50	2,426	3,326	693	8.72	79
1984	1,418.09	927	1,271	289	8.93	32
1985	1,509.45	969	1,328	332	9.16	36
1986	5,474.43	3,454	4,735	1,286	9.38	137
1987	8,742.68	5,416	7,425	2,192	9.61	228
1988	10,025.19	6,090	8,349	2,678	9.85	272
1989	28,721.47	17,104	23,449	8,144	10.09	807
1990	7,217.40	4,208	5,769	2,170	10.34	210
1991	6,098.62	3,479	4,770	1,939	10.59	183
1992	4,152.33	2,317	3,177	1,391	10.84	128
1993	8,077.25	4,402	6,035	2,850	11.10	257
1994	5,496.87	2,922	4,006	2,041	11.37	180
1995	8,189.39	4,242	5,816	3,193	11.64	274
1996	18,050.95	9,098	12,473	7,383	11.92	619

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MARSHFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1997	12,337.90	6,046	8,289	5,283	12.20	433
1998	8,095.84	3,850	5,278	3,627	12.49	290
1999	7,273.07	3,353	4,597	3,403	12.78	266
2001	25,774.23	11,083	15,195	13,157	13.40	982
2002	2,181.81	904	1,239	1,161	13.71	85
2003	3,270.09	1,302	1,785	1,812	14.04	129
2004	3,683.02	1,405	1,926	2,125	14.37	148
2005	6,604.32	2,407	3,300	3,965	14.71	270
2006	9,349.11	3,249	4,454	5,830	15.05	387
2007	6,734.57	2,219	3,042	4,366	15.41	283
2008	3,165.54	986	1,352	2,130	15.77	135
2009	4,759.52	1,395	1,913	3,323	16.14	206
2010	6,581.39	1,803	2,472	4,768	16.52	289
2011	17,471.21	4,446	6,095	13,123	16.91	776
2012	3,843.30	899	1,233	2,995	17.32	173
2013	3,731.83	795	1,090	3,015	17.74	170
2014	8,562.65	1,636	2,243	7,176	18.18	395
2015	13,703.70	2,302	3,156	11,918	18.64	639
2016	14,352.70	2,052	2,813	12,975	19.14	678
2017	7,480.53	875	1,200	7,029	19.66	358
2018	7,451.51	656	899	7,297	20.24	361
2019	10,402.85	588	806	10,637	20.87	510
2020	25,404.45	533	731	27,214	21.58	1,261
	339,231.41	129,048	176,889	196,266		12,835
MASHPEE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1947	42.95	41	47			
1958	69.78	62	77			
1961	43.96	38	48			
1964	0.66	1	1			
1965	116.33	97	128			
1967	6.71	5	7	1	5.70	
1972	0.20		0			
1975	53.00	39	53	5	7.11	1
1976	14,292.26	10,512	14,416	1,305	7.29	179
1977	349.48	254	348	36	7.49	5
1980	438.15	305	418	64	8.09	8

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MASHPEE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1981	519.69	356	488	83	8.29	10
1986	1,602.68	1,011	1,386	376	9.38	40
1987	618.37	383	525	155	9.61	16
1988	890.39	541	742	238	9.85	24
1989	4,124.87	2,456	3,368	1,169	10.09	116
1990	816.20	476	653	245	10.34	24
1991	6,890.72	3,931	5,391	2,189	10.59	207
1992	1,082.98	604	828	363	10.84	33
1993	1,119.09	610	837	394	11.10	35
1994	5,520.64	2,934	4,024	2,049	11.37	180
1995	4,642.80	2,405	3,298	1,809	11.64	155
1996	4,838.93	2,439	3,345	1,978	11.92	166
1997	1,948.73	955	1,310	834	12.20	68
1998	3,623.29	1,723	2,363	1,623	12.49	130
1999	3,397.49	1,566	2,148	1,590	12.78	124
2001	5,720.10	2,460	3,374	2,918	13.40	218
2005	753.25	275	377	451	14.71	31
2007	86.85	29	40	56	15.41	4
2009	638.61	187	256	446	16.14	28
2010	921.93	253	347	667	16.52	40
2011	487.05	124	170	366	16.91	22
2013	1,305.92	278	381	1,055	17.74	59
2014	1,316.20	251	344	1,104	18.18	61
2016	1,837.31	263	361	1,660	19.14	87
2017	518.73	61	84	487	19.66	25
2018	5,726.28	504	691	5,608	20.24	277
2019	1,598.82	90	123	1,635	20.87	78
2020	36,609.17	769	1,055	39,215	21.58	1,817
	114,570.57	39,288	53,853	72,175		4,268
MATTAPOISETT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1950	66.06	62	73			
1977	520.73	378	518	55	7.49	7
1978	59.74	43	59	7	7.68	1
1979	1,895.96	1,339	1,836	250	7.88	32
1980	13,578.31	9,444	12,947	1,989	8.09	246
1981	12,130.94	8,316	11,401	1,944	8.29	234

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MATTAPOISETT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	3,210.14	2,167	2,971	560	8.50	66
1983	420.29	279	382	80	8.72	9
1984	588.05	384	526	120	8.93	13
1985	2,212.86	1,421	1,948	486	9.16	53
1986	1,515.02	956	1,311	356	9.38	38
1987	8,542.67	5,292	7,255	2,142	9.61	223
1988	1,462.05	888	1,217	391	9.85	40
1989	12,552.58	7,475	10,248	3,560	10.09	353
1990	859.92	501	687	259	10.34	25
1991	1,796.42	1,025	1,405	571	10.59	54
1992	3,377.50	1,885	2,584	1,131	10.84	104
1993	4,734.20	2,580	3,537	1,671	11.10	151
1994	3,360.69	1,786	2,448	1,248	11.37	110
1995	1,692.64	877	1,202	660	11.64	57
1996	4,149.05	2,091	2,867	1,697	11.92	142
1997	1,733.65	849	1,164	743	12.20	61
1998	7,108.61	3,380	4,634	3,186	12.49	255
1999	4,797.72	2,212	3,032	2,245	12.78	176
2001	2,168.46	932	1,278	1,108	13.40	83
2002	2,887.55	1,197	1,641	1,535	13.71	112
2003	1,338.74	533	731	742	14.04	53
2004	390.86	149	204	226	14.37	16
2005	1,897.19	692	949	1,138	14.71	77
2006	2,410.48	838	1,149	1,503	15.05	100
2007	2,946.26	971	1,331	1,910	15.41	124
2008	1,400.14	436	598	942	15.77	60
2009	4,069.81	1,192	1,634	2,843	16.14	176
2010	517.92	142	195	375	16.52	23
2011	646.84	165	226	485	16.91	29
2012	3,378.74	791	1,084	2,632	17.32	152
2013	1,072.07	228	313	867	17.74	49
2014	940.99	180	247	788	18.18	43
2015	630.09	106	145	548	18.64	29
2016	4,468.49	639	876	4,039	19.14	211
2018	2,630.73	232	318	2,576	20.24	127
2019	493.79	28	38	505	20.87	24
	126,654.95	65,081	89,208	50,112		3,938

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MAYNARD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	5,580.66	4,640	6,139			
1967	29.61	24	33			
1970	93.49	74	102	1	6.20	
1971	30.97	24	33	1	6.38	
1972	9.20	7	10			
1973	54.64	42	58	2	6.74	
1975	224.07	167	230	16	7.11	2
1977	2,697.65	1,957	2,695	272	7.49	36
1978	2,293.39	1,642	2,261	261	7.68	34
1979	528.93	373	514	68	7.88	9
1980	2,776.12	1,931	2,659	394	8.09	49
1981	47.17	32	44	8	8.29	1
1982	2,835.98	1,914	2,636	484	8.50	57
1983	5,555.80	3,689	5,081	1,031	8.72	118
1984	3,869.03	2,528	3,482	774	8.93	87
1985	6,408.00	4,114	5,666	1,383	9.16	151
1986	2,962.39	1,869	2,574	685	9.38	73
1987	7,376.41	4,570	6,294	1,820	9.61	189
1988	2,221.67	1,350	1,859	585	9.85	59
1989	2,045.20	1,218	1,677	572	10.09	57
1990	2,101.54	1,225	1,687	625	10.34	60
1991	4,548.71	2,595	3,574	1,430	10.59	135
1992	1,662.26	928	1,278	550	10.84	51
1993	1,088.03	593	817	380	11.10	34
1995	716.20	371	511	277	11.64	24
1997	321.86	158	218	136	12.20	11
1998	512.14	244	336	227	12.49	18
2002	1,259.37	522	719	666	13.71	49
	59,850.49	38,801	53,185	12,651		1,304
MEDFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	875.38	728	963			
1969	332.92	266	365	1	6.03	
1970	9,035.23	7,138	9,789	150	6.20	24
1971	15.76	12	16	1	6.38	
1980	715.14	497	682	105	8.09	13
1981	1,742.36	1,194	1,637	279	8.29	34

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MEDFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1982	1,035.95	699	959	181	8.50	21
1983	776.88	516	708	147	8.72	17
1984	4,802.29	3,138	4,303	979	8.93	110
1985	1,641.51	1,054	1,445	360	9.16	39
1986	1,834.25	1,157	1,587	431	9.38	46
1987	1,114.20	690	946	279	9.61	29
1988	3,568.80	2,168	2,973	953	9.85	97
1989	7,930.44	4,723	6,477	2,247	10.09	223
1990	37,908.64	22,101	30,308	11,391	10.34	1,102
1991	618.75	353	484	197	10.59	19
1992	781.08	436	598	261	10.84	24
1993	597.13	325	446	211	11.10	19
1994	316.81	168	230	118	11.37	10
1995	308.85	160	219	120	11.64	10
1996	3,640.10	1,835	2,516	1,488	11.92	125
1998	572.44	272	373	257	12.49	21
1999	534.53	246	337	251	12.78	20
2000	110.73	49	67	55	13.09	4
2002	64.72	27	37	34	13.71	2
2003	4,525.20	1,801	2,470	2,508	14.04	179
2005	1,717.07	626	858	1,030	14.71	70
2007	230.81	76	104	150	15.41	10
2008	1,920.74	598	820	1,293	15.77	82
2009	6,638.60	1,945	2,667	4,635	16.14	287
2010	3,719.89	1,019	1,397	2,694	16.52	163
2014	0.37		0			
2020	306.74	6	8	330	21.58	15
	99,934.31	56,023	76,792	33,136		2,815
MEDWAY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	274.65	228	302			
1973	182.54	139	191	10	6.74	1
1974	288.75	218	299	18	6.92	3
1977	414.10	300	412	44	7.49	6
1978	491.94	352	483	58	7.68	8
1980	2,250.22	1,565	2,148	327	8.09	40
1981	11.29	8	11	1	8.29	

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MEDWAY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1984	637.37	417	572	129	8.93	14
1986	3,211.99	2,027	2,782	751	9.38	80
1988	300.39	182	250	81	9.85	8
1989	714.90	426	585	202	10.09	20
1991	206.25	118	162	65	10.59	6
1992	347.34	194	266	116	10.84	11
2004	660.14	252	346	380	14.37	26
	9,991.87	6,426	8,808	2,183		223
MILLIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1977	4,138.99	3,003	4,116	437	7.49	58
1980	21,293.14	14,809	20,299	3,123	8.09	386
1981	4,919.99	3,373	4,623	789	8.29	95
1982	1,215.66	821	1,125	212	8.50	25
1984	844.37	552	757	172	8.93	19
1985	1,616.76	1,038	1,423	356	9.16	39
1986	782.49	494	677	184	9.38	20
1987	22.98	14	19	6	9.61	1
1989	2,123.52	1,265	1,734	602	10.09	60
1990	7,942.37	4,630	6,346	2,390	10.34	231
1991	45,901.82	26,187	35,895	14,597	10.59	1,378
1992	3,647.07	2,035	2,789	1,222	10.84	113
1993	2,896.52	1,579	2,164	1,022	11.10	92
1995	5,367.65	2,780	3,811	2,094	11.64	180
1996	3,775.30	1,903	2,608	1,544	11.92	130
1998	143.11	68	93	64	12.49	5
1999	121.42	56	77	57	12.78	4
2000	508.56	227	311	248	13.09	19
2001	608.21	262	359	310	13.40	23
2005	1,719.21	627	859	1,032	14.71	70
2007	9,813.48	3,234	4,433	6,362	15.41	413
2008	1,429.54	445	610	963	15.77	61
2009	2,225.93	652	894	1,555	16.14	96

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MILLIS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2010	3,720.26	1,019	1,397	2,696	16.52	163
2012	2,359.35	552	757	1,839	17.32	106
2014	197.40	38	52	165	18.18	9
	129,335.10	71,663	98,230	44,039		3,796
MILTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	13,066.08	10,864	14,373			
1966	422.67	348	465			
1967	119.43	97	131			
1968	108.64	88	120			
1969	239.00	191	262	1	6.03	
1970	1,236.21	977	1,342	18	6.20	3
1971	843.37	659	905	23	6.38	4
1972	48,514.46	37,453	51,431	1,935	6.56	295
1973	9,228.48	7,041	9,669	483	6.74	72
1974	15,192.73	11,455	15,730	982	6.92	142
1975	834.06	621	853	65	7.11	9
1976	4,781.19	3,517	4,830	430	7.29	59
1977	6,347.31	4,605	6,324	658	7.49	88
1978	938.45	672	923	109	7.68	14
1979	909.28	642	882	119	7.88	15
1980	12,149.74	8,450	11,604	1,761	8.09	218
1981	10,902.48	7,474	10,263	1,729	8.29	209
1982	7,729.47	5,217	7,164	1,338	8.50	157
1983	14,743.28	9,790	13,444	2,774	8.72	318
1984	10,870.05	7,104	9,755	2,202	8.93	247
1985	14,345.88	9,210	12,647	3,133	9.16	342
1986	4,702.85	2,968	4,076	1,097	9.38	117
1987	4,641.95	2,876	3,949	1,157	9.61	120
1988	26,215.32	15,926	21,870	6,967	9.85	707
1989	12,896.57	7,680	10,546	3,640	10.09	361
1990	8,693.79	5,068	6,959	2,604	10.34	252
1991	20,111.61	11,474	15,756	6,366	10.59	601
1992	784.30	438	601	261	10.84	24
1993	1,601.36	873	1,199	563	11.10	51
1994	1,451.13	771	1,059	537	11.37	47
1996	1,212.73	611	839	495	11.92	42

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MILTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1998	2.47	1	1	1	12.49	
2001	18,380.94	7,904	10,854	9,365	13.40	699
2002	2,107.75	874	1,200	1,118	13.71	82
2006	2,112.12	734	1,008	1,315	15.05	87
2007	2,391.99	788	1,082	1,549	15.41	101
2008	2,676.75	834	1,145	1,799	15.77	114
2009	1,419.18	416	571	990	16.14	61
2010	5,702.36	1,562	2,145	4,128	16.52	250
2011	3,154.58	803	1,103	2,367	16.91	140
2012	1,609.85	377	518	1,253	17.32	72
2013	3,708.14	790	1,085	2,994	17.74	169
2014	5,965.53	1,139	1,564	4,998	18.18	275
2015	5,070.41	852	1,170	4,407	18.64	236
2016	215,685.12	30,843	42,354	194,899	19.14	10,183
2017	14,038.60	1,642	2,255	13,188	19.66	671
2018	3,052.26	269	369	2,988	20.24	148
2019	7,613.06	430	590	7,784	20.87	373
2020	4,090.22	86	118	4,381	21.58	203
	554,615.20	225,504	309,104	300,973		18,378
NATICK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	1,976.20	1,643	2,174			
1966	6.10	5	7			
1967	86.25	70	95			
1969	108.69	87	119			
1970	42.36	33	45	1	6.20	
1972	28.03	22	30	1	6.56	
1973	1,387.75	1,059	1,452	74	6.74	11
1974	127.20	96	132	8	6.92	1
1975	224.07	167	229	17	7.11	2
1977	310.57	225	309	33	7.49	4
1978	138.40	99	136	16	7.68	2
1979	32.30	23	32	4	7.88	1
1980	117.60	82	112	17	8.09	2
1981	44.02	30	41	7	8.29	1
1982	128.12	86	118	23	8.50	3
1983	401.94	267	366	76	8.72	9

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NATICK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1984	707.06	462	633	144	8.93	16
1985	6,544.33	4,201	5,760	1,438	9.16	157
1986	7,748.70	4,889	6,704	1,820	9.38	194
1987	934.50	579	794	234	9.61	24
1988	2,342.22	1,423	1,951	625	9.85	63
1989	1,431.00	852	1,168	406	10.09	40
1990	701.91	409	561	211	10.34	20
1991	2,394.77	1,366	1,873	761	10.59	72
1992	1,389.32	775	1,063	466	10.84	43
1993	3,626.86	1,977	2,711	1,279	11.10	115
1994	650.80	346	474	241	11.37	21
1995	6,119.53	3,170	4,347	2,385	11.64	205
1996	4,280.47	2,157	2,958	1,751	11.92	147
1997	269,019.32	131,818	180,750	115,171	12.20	9,440
1998	7,827.18	3,722	5,104	3,506	12.49	281
2005	256.08	93	128	154	14.71	10
2006	2,814.48	978	1,341	1,755	15.05	117
2008	536.76	167	229	361	15.77	23
2009	367.44	108	148	256	16.14	16
2010	375.86	103	141	272	16.52	16
2014	1,613.32	308	422	1,352	18.18	74
2015	524.53	88	121	456	18.64	24
2016	2,617.32	374	513	2,366	19.14	124
2017	1,168.82	137	188	1,098	19.66	56
2018	697.81	61	84	684	20.24	34
2020	133.59	3	4	143	21.58	7
	331,983.58	164,560	225,566	139,616		11,375
NEEDHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	441.97	367	486			
1969	54.27	43	59	1	6.03	
1970	75.04	59	81	2	6.20	
1971	47.17	37	51	1	6.38	
1972	7.30	6	8			
1973	77.92	59	81	5	6.74	1
1974	117.21	88	121	8	6.92	1
1976	9.07	7	10			

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NEEDHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1988	2,790.81	1,695	2,326	744	9.85	76
1990	1,013.60	591	811	304	10.34	29
1991	1,560.04	890	1,221	495	10.59	47
1992	694.84	388	532	232	10.84	21
1993	1,603.90	874	1,199	565	11.10	51
1994	316.81	168	230	118	11.37	10
1995	5,370.06	2,782	3,817	2,090	11.64	180
1996	2,756.39	1,389	1,906	1,126	11.92	94
1997	1,592.64	780	1,070	682	12.20	56
2002	4,986.30	2,067	2,836	2,649	13.71	193
2005	414.88	151	207	249	14.71	17
2010	770.77	211	289	558	16.52	34
2014	1,727.08	330	453	1,447	18.18	80
2015	563.34	95	130	489	18.64	26
2016	2,181.70	312	428	1,972	19.14	103
2017	1,040.33	122	167	977	19.66	50
2019	473.84	27	37	484	20.87	23
2020	2,358.14	50	69	2,525	21.58	117
	33,045.42	13,588	18,625	17,725		1,209
NEW BEDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1919	4.47	5	5			
1920	0.74	1	1			
1921	120.26	132	132			
1922	13.12	14	14			
1923	10.56	12	12			
1924	88.06	97	97			
1925	8.14	9	9			
1926	163.44	180	180			
1928	181.36	199	199			
1929	2.98	3	3			
1930	10.86	12	12			
1940	0.45		0			
1941	6.00	6	7			
1944	14,093.94	13,805	15,503			
1947	75.55	73	83			
1949	285.49	271	314			

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NEW BEDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1950	762.24	717	838			
1951	539.16	504	593			
1952	204.57	190	225			
1953	1,198.08	1,103	1,318			
1954	285.00	260	314			
1955	3,058.73	2,773	3,365			
1957	3,117.10	2,782	3,429			
1958	10,859.03	9,610	11,945			
1959	431.56	379	475			
1960	4,330.33	3,770	4,763			
1961	6,236.50	5,382	6,860			
1962	1,572.31	1,344	1,730			
1963	2,725.11	2,310	2,998			
1964	1,225.92	1,029	1,349			
1965	1,844.92	1,534	2,029			
1966	8,854.93	7,292	9,740			
1967	11,751.97	9,578	12,927			
1968	2,660.72	2,147	2,927			
1969	972.03	776	1,069			
1970	8,112.79	6,409	8,868	56	6.20	9
1971	4,398.58	3,435	4,753	86	6.38	13
1972	10,783.77	8,325	11,519	343	6.56	52
1973	14,357.61	10,955	15,158	636	6.74	94
1974	14,197.65	10,705	14,812	806	6.92	116
1975	22,963.46	17,096	23,655	1,605	7.11	226
1976	51,736.88	38,053	52,651	4,259	7.29	584
1977	31,829.40	23,092	31,951	3,061	7.49	409
1978	42,748.68	30,608	42,350	4,673	7.68	608
1979	8,249.22	5,824	8,058	1,016	7.88	129
1980	12,881.66	8,959	12,396	1,774	8.09	219
1981	5,621.99	3,854	5,333	852	8.29	103
1982	4,791.98	3,235	4,476	795	8.50	94
1983	4,653.33	3,090	4,275	843	8.72	97
1984	30,633.54	20,019	27,699	5,998	8.93	672
1985	59,291.08	38,065	52,668	12,552	9.16	1,370
1986	13,496.32	8,516	11,783	3,063	9.38	327
1987	28,649.46	17,748	24,557	6,958	9.61	724
1988	19,226.25	11,680	16,161	4,988	9.85	506
1989	38,698.72	23,045	31,886	10,683	10.09	1,059
1990	52,496.88	30,606	42,348	15,399	10.34	1,489
1991	114,667.92	65,419	90,516	35,619	10.59	3,363
1992	19,406.94	10,829	14,983	6,364	10.84	587

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NEW BEDFORD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1993	12,244.67	6,673	9,233	4,236	11.10	382
1994	60,420.59	32,113	44,433	22,030	11.37	1,938
1995	48,214.10	24,975	34,556	18,479	11.64	1,588
1996	70,825.06	35,696	49,390	28,517	11.92	2,392
1997	5,964.34	2,922	4,043	2,518	12.20	206
1998	59,269.88	28,183	38,995	26,202	12.49	2,098
1999	39,455.90	18,189	25,167	18,235	12.78	1,427
2000	1,881.33	838	1,159	910	13.09	70
2001	108,514.92	46,662	64,563	54,803	13.40	4,090
2002	23,648.37	9,802	13,562	12,451	13.71	908
2003	6,236.61	2,482	3,434	3,426	14.04	244
2004	3,751.53	1,431	1,980	2,147	14.37	149
2005	18,509.53	6,747	9,335	11,025	14.71	749
2006	16,154.93	5,614	7,768	10,003	15.05	665
2007	6,364.96	2,097	2,901	4,100	15.41	266
2008	1,058.98	330	457	708	15.77	45
2009	444.90	130	180	310	16.14	19
2010	1,768.83	485	671	1,275	16.52	77
2011	5,518.32	1,404	1,943	4,128	16.91	244
2012	6,263.13	1,466	2,028	4,861	17.32	281
2013	2,411.89	514	711	1,942	17.74	109
2014	3,190.56	609	843	2,667	18.18	147
2015	1,976.61	332	459	1,715	18.64	92
2016	4,262.33	610	844	3,845	19.14	201
2017	3,459.16	405	560	3,245	19.66	165
2018	12,407.99	1,092	1,511	12,138	20.24	600
2019	1,303.42	74	102	1,331	20.87	64
2020	5,692.91	120	166	6,096	21.58	282
	1,222,805.49	699,861	959,317	385,769		32,348
NEWTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	19,095.39	15,878	21,005			
1966	11,166.57	9,196	12,283			
1967	28,561.78	23,278	31,418			
1968	9,281.82	7,490	10,210			
1969	287.79	230	316	1	6.03	
1970	6,564.20	5,186	7,123	98	6.20	16

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NEWTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1971	0.54			1	6.38	
1972	6,326.82	4,884	6,708	251	6.56	38
1973	39,984.37	30,508	41,902	2,081	6.74	309
1974	2,239.25	1,688	2,318	145	6.92	21
1975	10,017.31	7,458	10,243	776	7.11	109
1976	122,471.75	90,078	123,721	10,998	7.29	1,509
1977	21,309.08	15,460	21,234	2,206	7.49	295
1978	12,793.78	9,160	12,581	1,492	7.68	194
1979	4,036.38	2,850	3,914	526	7.88	67
1980	1,333.80	928	1,275	193	8.09	24
1981	6,324.19	4,335	5,954	1,003	8.29	121
1982	9,416.76	6,356	8,730	1,629	8.50	192
1983	6,398.54	4,249	5,836	1,202	8.72	138
1984	10,951.25	7,157	9,830	2,216	8.93	248
1985	22,174.76	14,236	19,553	4,839	9.16	528
1986	84,042.33	53,031	72,837	19,609	9.38	2,091
1987	5,554.21	3,441	4,726	1,383	9.61	144
1988	13,977.04	8,491	11,662	3,712	9.85	377
1989	21,291.68	12,679	17,414	6,006	10.09	595
1990	11,978.33	6,983	9,591	3,585	10.34	347
1991	11,958.59	6,822	9,370	3,785	10.59	357
1992	3,926.48	2,191	3,009	1,310	10.84	121
1993	1,963.18	1,070	1,470	690	11.10	62
1994	484,592.24	257,560	353,754	179,297	11.37	15,769
1995	14,113.10	7,311	10,042	5,483	11.64	471
1996	3,256.63	1,641	2,254	1,328	11.92	111
1997	1,592.64	780	1,071	681	12.20	56
1998	1,679.42	799	1,097	750	12.49	60
1999	1,607.73	741	1,018	751	12.78	59
2000	4,877.23	2,173	2,985	2,380	13.09	182
2001	1,189.31	511	702	606	13.40	45
2002	2,999.39	1,243	1,707	1,592	13.71	116
2003	1,984.17	790	1,085	1,098	14.04	78
2004	732.96	280	385	422	14.37	29
2005	109.36	40	55	65	14.71	4
2006	973.52	338	464	607	15.05	40
2007	14,017.87	4,619	6,344	9,076	15.41	589
2008	5,369.22	1,673	2,298	3,608	15.77	229
2009	12,175.12	3,567	4,899	8,493	16.14	526
2010	4,115.38	1,128	1,549	2,978	16.52	180
2012	1,880.45	440	604	1,464	17.32	85
2013	1,701.94	363	499	1,374	17.74	77

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NEWTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2014	5,594.87	1,069	1,468	4,686	18.18	258
2015	3,277.56	551	757	2,849	18.64	153
2016	8,328.81	1,191	1,636	7,526	19.14	393
2017	4,746.84	555	762	4,459	19.66	227
2018	9,062.05	797	1,095	8,874	20.24	438
2019	5,484.29	310	426	5,607	20.87	269
2020	5,799.91	122	168	6,212	21.58	288
	1,106,689.98	645,905	885,358	332,001		28,635
NORFOLK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	52.63	44	58			
1969	38.33	31	42			
1971	70.19	55	75	2	6.38	
1978	1,014.15	726	995	120	7.68	16
1979	9.86	7	10	1	7.88	
1980	199.25	139	191	29	8.09	4
1981	2,545.95	1,745	2,392	409	8.29	49
1982	2,336.20	1,577	2,162	408	8.50	48
1983	3,556.19	2,361	3,236	675	8.72	77
1984	4,490.70	2,935	4,023	916	8.93	103
1985	3,452.04	2,216	3,038	760	9.16	83
1986	2,654.06	1,675	2,296	623	9.38	66
1987	1,032.94	640	877	259	9.61	27
1988	1,016.76	618	847	271	9.85	28
1990	405.44	236	324	122	10.34	12
1991	5,530.11	3,155	4,325	1,758	10.59	166
1992	14,568.37	8,129	11,143	4,882	10.84	450
1993	406.24	221	303	144	11.10	13
1994	633.62	337	462	235	11.37	21
1995	1,544.25	800	1,097	602	11.64	52
1996	755.06	381	522	308	11.92	26
1997	4,778.46	2,341	3,209	2,047	12.20	168
1998	143.11	68	93	64	12.49	5
2000	191.90	85	117	95	13.09	7
2001	1,261.20	542	743	644	13.40	48
2002	11,775.29	4,881	6,691	6,262	13.71	457
2005	4,981.79	1,816	2,489	2,991	14.71	203

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NORFOLK						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2006	1,156.24	402	551	721	15.05	48
2007	372.22	123	169	241	15.41	16
2009	1,896.75	556	762	1,324	16.14	82
2010	930.07	255	350	674	16.52	41
2012	618.45	145	199	482	17.32	28
2020	1,279.40	27	37	1,370	21.58	63
	75,697.22	39,269	53,827	29,440		2,407
OAK BLUFFS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1958	24.41	22	27			
1959	59.98	53	66			
1960	99.82	87	110			
1989	11,252.84	6,701	9,188	3,190	10.09	316
1990	1,504.14	877	1,203	452	10.34	44
1991	1,630.81	930	1,275	519	10.59	49
1993	1,971.22	1,074	1,473	696	11.10	63
1994	628.59	334	458	233	11.37	20
1995	307.66	159	218	120	11.64	10
1996	1,730.63	872	1,196	708	11.92	59
1998	422.47	201	276	189	12.49	15
1999	1,543.20	711	975	723	12.78	57
2001	7,353.80	3,162	4,336	3,753	13.40	280
2002	535.27	222	304	284	13.71	21
2003	1,928.45	768	1,053	1,068	14.04	76
2005	1,027.94	375	514	617	14.71	42
2006	221.97	77	106	139	15.05	9
2007	396.81	131	180	257	15.41	17
2008	1,355.90	422	579	913	15.77	58
2011	497.98	127	174	374	16.91	22
2012	495.82	116	159	386	17.32	22
2013	118,746.67	25,294	34,683	95,939	17.74	5,408
2014	350.08	67	92	293	18.18	16
2015	668.95	112	154	582	18.64	31
2016	286.49	41	56	259	19.14	14
2017	425.73	50	69	400	19.66	20
	155,467.63	42,985	58,921	112,093		6,669

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ORLEANS						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1959	4.07	4	4			
1967	46.95	38	52			
1972	24.65	19	26	1	6.56	
1977	2,544.41	1,846	2,530	268	7.49	36
1979	375.32	265	363	50	7.88	6
1985	2,057.76	1,321	1,811	453	9.16	49
1986	1,440.05	909	1,246	338	9.38	36
1987	1,413.71	876	1,201	354	9.61	37
1988	1,208.30	734	1,006	323	9.85	33
1989	3,361.23	2,002	2,744	953	10.09	94
1990	1,470.02	857	1,175	442	10.34	43
1991	2,012.99	1,148	1,574	641	10.59	61
1992	1,224.79	683	936	411	10.84	38
1993	1,491.54	813	1,114	526	11.10	47
1994	1,032.49	549	753	383	11.37	34
1995	624.87	324	444	243	11.64	21
1996	3,235.37	1,631	2,236	1,323	11.92	111
1997	2,662.60	1,305	1,789	1,140	12.20	93
1998	3,675.74	1,748	2,396	1,647	12.49	132
1999	2,223.88	1,025	1,405	1,041	12.78	81
2001	5,025.60	2,161	2,962	2,566	13.40	191
2002	5,527.98	2,291	3,140	2,940	13.71	214
2007	5.30	2	3	3	15.41	
2010	274.52	75	103	199	16.52	12
2011	402.95	103	141	302	16.91	18
2013	488.06	104	143	394	17.74	22
2015	761.02	128	175	662	18.64	36
2016	1,173.56	168	230	1,061	19.14	55
2017	171.01	20	27	161	19.66	8
	45,960.74	23,149	31,731	18,826		1,508
PEMBROKE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1967	23.38	19	26			
1988	911.68	554	760	243	9.85	25

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PEMBROKE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1992	226.43	126	173	76	10.84	7
2007	39.48	13	18	26	15.41	2
2017	433.22	51	70	407	19.66	21
	1,634.19	763	1,046	752		55
PLYMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1926	6.00	7	7			
1927	142.54	157	157			
1936	700.00	719	770			
1942	172.04	171	189			
1945	93.34	91	103			
1949	54.98	52	60			
1950	47.56	45	52			
1954	2.49	2	3			
1955	28.07	25	31			
1956	149.11	134	164			
1959	172.88	152	190			
1965	720.95	599	793			
1966	671.76	553	739			
1967	1,168.70	952	1,286			
1969	742.85	593	814	4	6.03	1
1970	19.18	15	21	1	6.20	
1972	374.00	289	396	15	6.56	2
1974	436.37	329	451	29	6.92	4
1975	107.88	80	110	9	7.11	1
1976	2,489.79	1,831	2,512	227	7.29	31
1977	98.57	72	99	10	7.49	1
1978	530.58	380	521	62	7.68	8
1979	461.83	326	447	61	7.88	8
1980	28,752.40	19,997	27,434	4,194	8.09	518
1981	27,067.62	18,555	25,456	4,319	8.29	521
1982	17,192.53	11,605	15,921	2,991	8.50	352
1983	12,187.88	8,093	11,103	2,304	8.72	264
1984	14,171.06	9,261	12,705	2,883	8.93	323
1985	15,606.98	10,020	13,746	3,421	9.16	373
1986	50,168.87	31,657	43,430	11,756	9.38	1,253
1987	15,937.33	9,873	13,545	3,986	9.61	415

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PLYMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1988	15,878.96	9,646	13,233	4,234	9.85	430
1989	41,497.82	24,712	33,902	11,745	10.09	1,164
1990	16,825.50	9,809	13,457	5,051	10.34	488
1991	33,527.80	19,128	26,242	10,639	10.59	1,005
1992	19,871.46	11,088	15,212	6,647	10.84	613
1993	24,312.12	13,250	18,178	8,566	11.10	772
1994	24,221.20	12,874	17,662	8,981	11.37	790
1995	23,856.76	12,358	16,954	9,288	11.64	798
1996	28,354.46	14,291	19,606	11,584	11.92	972
1997	27,132.13	13,295	18,239	11,606	12.20	951
1998	23,191.58	11,028	15,129	10,381	12.49	831
1999	18,005.34	8,300	11,387	8,419	12.78	659
2000	19,522.97	8,697	11,931	9,544	13.09	729
2001	65,329.79	28,092	38,539	33,323	13.40	2,487
2002	15,504.59	6,427	8,817	8,238	13.71	601
2003	14,989.54	5,966	8,185	8,304	14.04	591
2004	12,416.97	4,737	6,499	7,160	14.37	498
2005	16,983.52	6,190	8,492	10,190	14.71	693
2006	15,278.17	5,309	7,283	9,523	15.05	633
2007	6,823.70	2,248	3,084	4,422	15.41	287
2008	11,675.81	3,637	4,990	7,854	15.77	498
2009	15,236.16	4,464	6,124	10,636	16.14	659
2010	12,359.67	3,387	4,647	8,949	16.52	542
2011	16,859.39	4,291	5,887	12,659	16.91	749
2012	16,284.70	3,811	5,228	12,685	17.32	732
2013	15,562.18	3,315	4,548	12,571	17.74	709
2014	39,602.14	7,564	10,377	33,185	18.18	1,825
2015	24,931.96	4,189	5,747	21,678	18.64	1,163
2016	11,210.97	1,603	2,199	10,133	19.14	529
2017	42,418.08	4,963	6,809	39,851	19.66	2,027
2018	38,577.44	3,395	4,658	37,778	20.24	1,867
2019	83,054.86	4,692	6,437	84,923	20.87	4,069
2020	101,933.56	2,141	2,937	109,190	21.58	5,060
	1,083,707.44	405,532	555,873	636,205		40,496

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PLYMTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1970	353.60	279	382	7	6.20	1
1977	90.33	66	90	9	7.49	1
1978	635.07	455	624	75	7.68	10
1979	1,564.47	1,105	1,515	206	7.88	26
1982	195.93	132	181	35	8.50	4
1983	559.44	371	509	107	8.72	12
1984	180.21	118	162	36	8.93	4
1985	631.44	405	555	139	9.16	15
1986	235.98	149	204	55	9.38	6
1988	914.98	556	762	244	9.85	25
1989	5,909.47	3,519	4,824	1,677	10.09	166
1990	1,380.64	805	1,103	415	10.34	40
1992	1,676.43	935	1,282	562	10.84	52
1994	1,508.32	802	1,099	560	11.37	49
1996	263.43	133	182	107	11.92	9
1997	1,806.66	885	1,213	774	12.20	63
1998	302.03	144	197	135	12.49	11
1999	847.09	391	536	396	12.78	31
2001	3,704.67	1,593	2,184	1,892	13.40	141
2003	375.92	150	206	208	14.04	15
2005	918.32	335	459	551	14.71	37
2008	791.72	247	339	532	15.77	34
2009	353.12	103	141	247	16.14	15
2010	1,638.52	449	615	1,187	16.52	72
2013	588.14	125	171	476	17.74	27
2014	2.30			3	18.18	
2015	1,205.55	203	278	1,048	18.64	56
2016	744.56	106	145	674	19.14	35
2017	640.15	75	103	601	19.66	31
2020	3,327.44	70	96	3,564	21.58	165
	33,345.93	14,706	20,158	16,523		1,153
PROVINCETOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1957	157.60	141	173			
1965	99.45	83	109			
1966	130.40	107	143			
1967	41.09	33	45			

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PROVINCETOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1974	91.55	69	95	6	6.92	1
1978	839.42	601	825	99	7.68	13
1980	368.93	257	353	53	8.09	7
1981	349.06	239	328	56	8.29	7
1982	385.30	260	357	67	8.50	8
1983	595.75	396	543	112	8.72	13
1984	394.94	258	354	80	8.93	9
1985	210.98	135	185	47	9.16	5
1986	1,148.70	725	995	269	9.38	29
1987	619.60	384	527	155	9.61	16
1988	211.76	129	177	56	9.85	6
1989	1,873.41	1,116	1,532	529	10.09	52
1990	495.92	289	397	149	10.34	14
1991	2,351.86	1,342	1,842	745	10.59	70
1992	390.96	218	299	131	10.84	12
1994	366.34	195	268	135	11.37	12
1995	2,129.58	1,103	1,514	829	11.64	71
1997	1,714.62	840	1,153	733	12.20	60
1998	15,563.24	7,400	10,155	6,964	12.49	558
2001	141.92	61	84	72	13.40	5
2002	801.53	332	456	426	13.71	31
2003	1,942.62	773	1,061	1,076	14.04	77
2010	170.70	47	64	123	16.52	7
2014	384.14	73	100	322	18.18	18
2016	171.83	25	34	155	19.14	8
2017	412.59	48	66	388	19.66	20
2018	81.86	7	10	80	20.24	4
2019	1,838.73	104	143	1,880	20.87	90
2020	191.31	4	5	205	21.58	9
	36,667.69	17,794	24,391	15,943		1,232
READING						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	98.49	82	108			
2001	365.61	157	220	183	13.40	14
	464.10	239	328	183		14

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ROCHESTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1966	156.10	129	172			
1972	55.37	43	59	2	6.56	
1974	96.92	73	100	7	6.92	1
1979	1,211.23	855	1,172	160	7.88	20
1980	757.37	527	723	111	8.09	14
1981	287.10	197	270	46	8.29	6
1982	327.04	221	303	57	8.50	7
1984	280.45	183	251	58	8.93	6
1985	1,470.93	944	1,294	324	9.16	35
1987	788.24	488	669	198	9.61	21
1988	1,185.41	720	987	317	9.85	32
1989	2,242.38	1,335	1,830	636	10.09	63
1990	349.27	204	280	104	10.34	10
1991	795.02	454	622	252	10.59	24
1993	1,877.22	1,023	1,403	662	11.10	60
1994	421.99	224	307	157	11.37	14
1995	1,751.78	907	1,244	683	11.64	59
1996	1,194.31	602	825	488	11.92	41
1997	224.98	110	151	97	12.20	8
1998	1,732.37	824	1,130	776	12.49	62
1999	894.32	412	565	419	12.78	33
2001	8,047.81	3,461	4,745	4,107	13.40	306
2006	464.70	161	221	290	15.05	19
2007	142.79	47	64	93	15.41	6
2008	207.04	64	88	140	15.77	9
2015	1,042.83	175	240	907	18.64	49
2016	328.42	47	64	297	19.14	16
2017	1,026.27	120	165	964	19.66	49
2020	157.83	3	4	169	21.58	8
	29,517.49	14,553	19,948	12,521		978
SANDWICH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	6,239.22	3,232	4,430	2,433	11.64	209
1996	5,551.82	2,798	3,835	2,272	11.92	191
1997	5,764.71	2,825	3,872	2,469	12.20	202
1998	3,439.93	1,636	2,242	1,541	12.49	123
1999	4,218.41	1,945	2,666	1,974	12.78	154

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SANDWICH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2001	29,142.44	12,531	17,176	14,880	13.40	1,110
2002	791.73	328	450	421	13.71	31
2003	169.45	67	92	95	14.04	7
2004	257.60	98	134	149	14.37	10
2006	1,922.88	668	916	1,200	15.05	80
2007	362.68	120	164	234	15.41	15
2008	6,212.04	1,935	2,652	4,181	15.77	265
2009	1,482.12	434	595	1,035	16.14	64
2010	1,328.84	364	499	963	16.52	58
2011	801.69	204	280	602	16.91	36
2012	1,058.82	248	340	825	17.32	48
2013	644.88	137	188	522	17.74	29
2014	315.71	60	82	265	18.18	15
2015	1,638.39	275	377	1,425	18.64	76
2016	1,691.88	242	332	1,529	19.14	80
2017	1,548.89	181	248	1,456	19.66	74
2018	4,470.38	393	539	4,379	20.24	216
2019	383.14	22	30	391	20.87	19
2020	4,135.60	87	119	4,430	21.58	205
	83,573.25	30,830	42,259	49,672		3,317
SCITUATE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1979	981.48	693	950	130	7.88	16
1980	314.34	219	300	46	8.09	6
1982	272.22	184	252	47	8.50	6
1984	907.68	593	813	186	8.93	21
1985	421.94	271	371	93	9.16	10
1986	276.20	174	239	65	9.38	7
1987	371.13	230	315	93	9.61	10
1988	426.29	259	355	114	9.85	12
1993	941.42	513	703	332	11.10	30
1994	1,054.98	561	769	391	11.37	34
1995	1,945.48	1,008	1,382	758	11.64	65
1996	1,562.91	788	1,080	639	11.92	54
1997	1,884.54	923	1,265	808	12.20	66
1998	1,493.16	710	973	669	12.49	54
1999	885.98	408	559	415	12.78	32

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SCITUATE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2001	3,903.82	1,679	2,301	1,993	13.40	149
2002	555.18	230	315	295	13.71	22
2003	108.10	43	59	60	14.04	4
2004	1,032.91	394	540	596	14.37	41
2005	1,733.07	632	866	1,040	14.71	71
2006	199.83	69	95	125	15.05	8
2007	189.23	62	85	123	15.41	8
2008	1,255.20	391	536	845	15.77	54
2009	1,112.44	326	447	777	16.14	48
2010	321.15	88	121	233	16.52	14
2011	182.92	47	64	137	16.91	8
2013	257.93	55	75	208	17.74	12
2015	3,047.15	512	702	2,650	18.64	142
2016	1,691.43	242	332	1,529	19.14	80
2017	1,264.40	148	203	1,188	19.66	60
2018	868.60	76	104	851	20.24	42
2019	617.29	35	48	631	20.87	30
2020	1,206.95	25	34	1,293	21.58	60
	33,287.35	12,588	17,255	19,361		1,276
SHARON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	114.07	95	125			
1970	148.09	117	160	3	6.20	
1973	335.77	256	351	18	6.74	3
1974	1,317.36	993	1,361	88	6.92	13
1975	6,928.63	5,158	7,071	551	7.11	77
1976	7,006.22	5,153	7,064	643	7.29	88
1977	11,011.84	7,989	10,951	1,162	7.49	155
1978	12,310.27	8,814	12,082	1,459	7.68	190
1979	1,592.93	1,125	1,542	210	7.88	27
1980	3,736.00	2,598	3,561	548	8.09	68
1981	13,606.35	9,327	12,785	2,182	8.29	263
1982	4,301.90	2,904	3,981	751	8.50	88
1983	10,285.44	6,830	9,362	1,951	8.72	224
1984	3,408.94	2,228	3,054	696	8.93	78
1985	8,559.98	5,496	7,534	1,882	9.16	205
1987	762.86	473	648	191	9.61	20

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SHARON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1988	5,781.13	3,512	4,814	1,545	9.85	157
1989	16,435.05	9,787	13,416	4,663	10.09	462
1990	2,509.52	1,463	2,005	755	10.34	73
1991	1,031.25	588	806	328	10.59	31
1992	1,516.47	846	1,160	508	10.84	47
1993	1,005.35	548	751	355	11.10	32
1995	1,235.40	640	877	482	11.64	41
1996	589.58	297	407	241	11.92	20
1997	100.22	49	67	43	12.20	4
2002	599.03	248	340	319	13.71	23
2005	402.03	147	202	241	14.71	16
2006	600.20	209	286	374	15.05	25
2009	289.05	85	117	201	16.14	12
2010	1,989.99	545	747	1,442	16.52	87
2015	927.82	156	214	807	18.64	43
2019	419.08	24	33	428	20.87	21
2020	717.17	15	21	768	21.58	36
	121,574.99	78,715	107,897	25,835		2,629
SHERBORN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	224.28	186	247			
1966	96.77	80	106			
1967	189.65	155	209			
1972	7.40	6	8			
1973	91.27	70	96	4	6.74	1
1974	231.25	174	239	16	6.92	2
1976	629.29	463	635	57	7.29	8
1977	137.24	100	137	14	7.49	2
1979	483.28	341	468	64	7.88	8
1981	759.03	520	713	122	8.29	15
1982	2,533.23	1,710	2,345	441	8.50	52
1983	758.23	503	690	144	8.72	17
1989	715.50	426	584	203	10.09	20
1991	18,243.99	10,408	14,274	5,794	10.59	547
1992	2,452.59	1,369	1,878	820	10.84	76
1993	2,640.56	1,439	1,974	931	11.10	84
1995	1,235.40	640	878	481	11.64	41

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SHERBORN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2009	754.79	221	303	527	16.14	33
2010	7,416.13	2,032	2,787	5,371	16.52	325
2013	289.11	62	85	233	17.74	13
2015	379.50	64	88	330	18.64	18
	40,268.49	20,969	28,743	15,552		1,262
SOMERVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	20,493.20	17,040	22,543			
1966	1,628.58	1,341	1,791			
1967	884.39	721	973			
1968	2,696.25	2,176	2,966			
1969	362.63	290	399			
1970	1,458.79	1,152	1,590	14	6.20	2
1971	41.29	32	44	1	6.38	
1972	1,048.58	810	1,118	35	6.56	5
1973	671.50	512	707	32	6.74	5
1974	2,092.40	1,578	2,178	123	6.92	18
1975	2,488.13	1,852	2,557	180	7.11	25
1976	2,195.41	1,615	2,230	185	7.29	25
1977	7,484.80	5,430	7,496	737	7.49	98
1978	617.38	442	610	69	7.68	9
1979	677.36	478	660	85	7.88	11
1980	1,012.18	704	972	142	8.09	18
1981	11,549.28	7,917	10,929	1,775	8.29	214
1982	5,582.91	3,768	5,202	939	8.50	110
1983	5,859.97	3,891	5,372	1,074	8.72	123
1984	12,749.47	8,332	11,502	2,522	8.93	282
1985	23,095.59	14,827	20,469	4,936	9.16	539
1986	5,414.66	3,417	4,717	1,239	9.38	132
1987	4,516.27	2,798	3,863	1,105	9.61	115
1988	2,033.82	1,236	1,706	531	9.85	54
1989	11,424.34	6,803	9,392	3,175	10.09	315
1990	6,940.19	4,046	5,586	2,049	10.34	198
1991	4,702.59	2,683	3,704	1,469	10.59	139
1992	1,879.82	1,049	1,448	620	10.84	57
1993	537.87	293	404	187	11.10	17
1994	4,533.96	2,410	3,327	1,660	11.37	146

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SOMERVILLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	2,353.23	1,219	1,683	906	11.64	78
1996	1,258.62	634	875	509	11.92	43
1997	789.86	387	534	335	12.20	27
1998	395.53	188	260	176	12.49	14
2003	148.40	59	81	82	14.04	6
2004	2,775.74	1,059	1,462	1,591	14.37	111
2005	516.91	188	260	309	14.71	21
2006	2,627.49	913	1,260	1,630	15.05	108
2007	884.72	292	403	570	15.41	37
2009	2,012.57	590	814	1,399	16.14	87
2010	955.71	262	362	690	16.52	42
2011	15,021.31	3,823	5,278	11,246	16.91	665
2012	3,449.48	807	1,114	2,680	17.32	155
2013	855.22	182	251	689	17.74	39
2014	7,229.36	1,381	1,906	6,046	18.18	333
2015	2,572.21	432	596	2,233	18.64	120
2016	4,595.24	657	907	4,148	19.14	217
2018	828.69	73	101	811	20.24	40
2019	98.77	6	8	100	20.87	5
	196,042.67	112,795	154,611	61,036		4,805
STONEHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	4,118.12	3,424	4,530			
1966	55.20	45	61			
1967	78.26	64	86			
1968	5,346.87	4,315	5,882			
1969	216.44	173	237	1	6.03	
1970	6,272.03	4,955	6,797	103	6.20	17
1971	333.15	260	357	10	6.38	2
1972	2,246.94	1,735	2,380	92	6.56	14
1973	3,091.26	2,359	3,236	165	6.74	24
1974	6,747.70	5,088	6,979	443	6.92	64
1975	8,165.19	6,079	8,338	643	7.11	90
1976	2,482.55	1,826	2,505	226	7.29	31
1977	7,190.41	5,217	7,156	754	7.49	101
1978	4,845.37	3,469	4,758	572	7.68	74
1979	7,832.13	5,529	7,584	1,031	7.88	131

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STONEHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1980	7,928.16	5,514	7,563	1,158	8.09	143
1981	17,742.89	12,163	16,683	2,834	8.29	342
1982	20,524.78	13,854	19,003	3,574	8.50	420
1983	76,332.79	50,685	69,523	14,444	8.72	1,656
1984	3,118.42	2,038	2,795	635	8.93	71
1985	9,223.84	5,922	8,123	2,023	9.16	221
1986	68,801.12	43,414	59,549	16,132	9.38	1,720
1987	2,838.10	1,758	2,411	711	9.61	74
1988	12,862.63	7,814	10,718	3,431	9.85	348
1989	2,622.28	1,562	2,143	742	10.09	74
1990	5,818.21	3,392	4,653	1,747	10.34	169
1991	27,799.02	15,859	21,753	8,826	10.59	833
1992	795.33	444	609	266	10.84	25
1993	1,713.86	934	1,281	604	11.10	54
1994	13,308.87	7,074	9,703	4,937	11.37	434
1996	54.60	28	38	22	11.92	2
1997	478.69	235	322	204	12.20	17
2003	3,322.92	1,323	1,815	1,841	14.04	131
2006	806.19	280	384	503	15.05	33
2007	317.03	104	143	206	15.41	13
2008	513.42	160	219	345	15.77	22
2011	1,944.45	495	679	1,460	16.91	86
2013	652.20	139	191	527	17.74	30
2014	1,041.92	199	273	873	18.18	48
2015	988.33	166	228	859	18.64	46
2016	4,901.68	701	962	4,430	19.14	231
2018	2,063.49	182	250	2,020	20.24	100
2019	529.39	30	41	541	20.87	26
2020	49.53	1	1	53	21.58	2
	348,115.76	221,008	302,941	79,986		7,919
STOUGHTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1981	320.24	220	302	51	8.29	6
1983	465.53	309	423	89	8.72	10
	785.77	529	725	139		16

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SUDBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	40.45	34	44			
1969	7.88	6	8			
1980	809.88	563	772	119	8.09	15
1981	225.23	154	211	37	8.29	4
1982	5,289.57	3,570	4,894	925	8.50	109
1983	1,321.81	878	1,204	250	8.72	29
1984	700.13	458	628	142	8.93	16
1985	1,028.04	660	905	226	9.16	25
1986	1,020.43	644	883	240	9.38	26
1987	445.46	276	378	112	9.61	12
1988	968.12	588	806	259	9.85	26
1989	2,174.19	1,295	1,775	616	10.09	61
1990	2,229.92	1,300	1,782	671	10.34	65
1991	3,918.75	2,236	3,065	1,245	10.59	118
1992	900.51	502	688	302	10.84	28
1993	31.44	17	23	11	11.10	1
1997	1,290.04	632	866	553	12.20	45
2007	705.87	233	319	457	15.41	30
2008	797.11	248	340	537	15.77	34
2009	1,263.25	370	507	882	16.14	55
2010	984.97	270	370	713	16.52	43
2011	2,108.45	537	736	1,583	16.91	94
2016	2,083.20	298	409	1,883	19.14	98
	30,344.70	15,769	21,615	11,764		934
TAUNTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2014	1,286.43	246	337	1,078	18.18	59
2015	5,353.33	899	1,232	4,657	18.64	250
2016	2,390.01	342	469	2,160	19.14	113
	9,029.77	1,487	2,038	7,895		422

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TISBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1920	0.24		0			
1941	673.43	672	741			
1950	215.03	202	237			
1956	47.72	43	52			
1958	50.48	45	56			
1959	195.36	172	215			
1960	529.42	461	582			
1961	276.06	238	304			
1962	861.80	737	948			
1963	224.10	190	247			
1964	68.68	58	76			
1965	49.72	41	55			
1966	97.10	80	107			
1967	140.20	114	154			
1969	44.92	36	49			
1970	280.34	221	305	4	6.20	1
1971	336.34	263	362	7	6.38	1
1972	229.63	177	244	9	6.56	1
1973	374.85	286	394	18	6.74	3
1974	126.52	95	131	8	6.92	1
1975	765.34	570	786	56	7.11	8
1977	1,286.65	933	1,286	129	7.49	17
1978	496.92	356	491	56	7.68	7
1979	1,081.14	763	1,052	138	7.88	18
1980	844.71	587	809	120	8.09	15
1981	292.65	201	277	45	8.29	5
1982	8,689.50	5,865	8,083	1,475	8.50	174
1983	1,684.45	1,118	1,541	312	8.72	36
1984	1,639.89	1,072	1,477	326	8.93	37
1985	3,599.71	2,311	3,185	775	9.16	85
1986	4,138.50	2,611	3,599	954	9.38	102
1987	578.56	358	493	143	9.61	15
1988	2,613.61	1,588	2,189	686	9.85	70
1989	1,518.68	904	1,246	425	10.09	42
1990	2,483.16	1,448	1,996	736	10.34	71
1991	2,608.30	1,488	2,051	818	10.59	77
1992	1,433.54	800	1,103	474	10.84	44
1993	1,806.67	985	1,358	630	11.10	57
1994	1,682.10	894	1,232	618	11.37	54
1995	3,817.28	1,977	2,725	1,474	11.64	127
1996	2,991.90	1,508	2,078	1,213	11.92	102
1997	2,946.90	1,444	1,990	1,251	12.20	103

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TISBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1998	2,061.52	980	1,351	917	12.49	73
1999	641.50	296	408	298	12.78	23
2001	4,037.90	1,736	2,393	2,049	13.40	153
2002	188.29	78	108	100	13.71	7
2003	55.46	22	30	31	14.04	2
2004	94.24	36	50	54	14.37	4
2006	152.52	53	73	95	15.05	6
2007	382.59	126	174	247	15.41	16
2008	2,225.94	693	955	1,493	15.77	95
2009	683.18	200	276	476	16.14	29
2010	188.63	52	72	136	16.52	8
2011	242.15	62	85	181	16.91	11
2012	420.19	98	135	327	17.32	19
2013	91,383.11	19,465	26,828	73,694	17.74	4,154
2014	100.15	19	26	84	18.18	5
2015	529.72	89	123	460	18.64	25
2016	84.11	12	17	76	19.14	4
	157,293.30	57,929	79,405	93,618		5,907
TRURO						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1966	130.40	107	143			
1982	524.64	354	485	92	8.50	11
1983	780.20	518	710	148	8.72	17
1986	279.41	176	241	66	9.38	7
1987	646.05	400	548	162	9.61	17
1988	795.77	483	662	213	9.85	22
1989	1,924.55	1,146	1,571	546	10.09	54
1990	717.83	418	573	216	10.34	21
1991	907.09	517	709	289	10.59	27
1993	517.53	282	387	183	11.10	16
1994	320.75	170	233	120	11.37	11
1995	512.78	266	365	199	11.64	17
1996	1,478.26	745	1,021	605	11.92	51
1997	1,981.62	971	1,331	848	12.20	70
1998	1,027.43	489	670	460	12.49	37
1999	403.38	186	255	189	12.78	15
2001	4,487.16	1,929	2,645	2,291	13.40	171

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TRURO						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2002	230.79	96	132	122	13.71	9
2003	206.52	82	112	115	14.04	8
2014	446.41	85	117	375	18.18	21
2015	249.26	42	58	217	18.64	12
2017	1,298.79	152	208	1,220	19.66	62
2018	480.53	42	58	471	20.24	23
2019	422.84	24	33	432	20.87	21
2020	361.11	8	11	386	21.58	18
	21,131.10	9,688	13,280	9,964		738
SPECIAL TAX DISTRICT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1990	7,107.05	4,143	5,679	2,139	10.34	207
1993	96.25	52	71	35	11.10	3
1994	6,539.49	3,476	4,765	2,429	11.37	214
1997	104.87	51	70	45	12.20	4
1999	164.92	76	104	77	12.78	6
2000	228.03	102	140	111	13.09	8
2001	1,099.70	473	648	561	13.40	42
2002	0.55			1	13.71	
2005	0.01					
	15,340.87	8,373	11,477	5,398		484
WAKEFIELD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	252.46	210	278			
1973	365.08	279	392	9	6.74	1
	617.54	489	670	9		1

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WALPOLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	6,672.95	5,549	7,340			
1970	1,693.76	1,338	1,835	28	6.20	5
1971	76.63	60	82	2	6.38	
1982	33,590.55	22,674	31,094	5,855	8.50	689
1983	19,341.62	12,843	17,612	3,663	8.72	420
1985	3,788.06	2,432	3,335	832	9.16	91
1986	23,858.75	15,055	20,646	5,599	9.38	597
1987	15,143.40	9,381	12,865	3,793	9.61	395
1988	41,440.65	25,175	34,524	11,061	9.85	1,123
1989	4,913.81	2,926	4,013	1,393	10.09	138
1990	28,993.94	16,903	23,180	8,713	10.34	843
1991	71,456.12	40,766	55,905	22,697	10.59	2,143
1992	13,411.13	7,483	10,262	4,490	10.84	414
1993	18,240.14	9,941	13,633	6,431	11.10	579
1994	36,640.87	19,475	26,707	13,598	11.37	1,196
1995	62,189.05	32,214	44,177	24,231	11.64	2,082
1996	74,838.78	37,719	51,727	30,596	11.92	2,567
1997	11,633.90	5,701	7,818	4,979	12.20	408
1998	4,951.39	2,354	3,228	2,218	12.49	178
1999	11,457.55	5,282	7,244	5,360	12.78	419
2000	1,967.67	877	1,203	962	13.09	73
2001	14,437.67	6,208	8,513	7,368	13.40	550
2002	10,228.39	4,240	5,815	5,437	13.71	397
2003	23,812.16	9,477	12,996	13,197	14.04	940
2004	42,399.19	16,175	22,182	24,457	14.37	1,702
2005	16,023.60	5,841	8,010	9,616	14.71	654
2006	12,627.00	4,388	6,018	7,872	15.05	523
2007	70,129.18	23,108	31,690	45,453	15.41	2,950
2008	43,033.40	13,405	18,383	28,954	15.77	1,836
2009	57,878.44	16,958	23,256	40,411	16.14	2,504
2010	14,839.37	4,066	5,576	10,747	16.52	651
2011	252.47	64	88	190	16.91	11
2012	71,428.66	16,715	22,922	55,649	17.32	3,213
2013	24,225.32	5,160	7,076	19,572	17.74	1,103
2014	7,961.85	1,521	2,086	6,672	18.18	367
2015	21,166.10	3,556	4,877	18,406	18.64	987
2016	11,377.22	1,627	2,231	10,284	19.14	537
2017	33,049.11	3,867	5,303	31,051	19.66	1,579

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WALPOLE						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2018	55,247.50	4,862	6,668	54,105	20.24	2,673
2019	25,651.19	1,449	1,987	26,229	20.87	1,257
2020	5,948.71	125	171	6,372	21.58	295
	1,048,017.25	418,960	574,278	578,541		39,089
WALTHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	24,201.94	20,124	26,622			
1966	2,566.20	2,113	2,823			
1967	115.00	94	127			
1968	2,288.59	1,847	2,517			
1969	2,974.21	2,375	3,272			
1970	5,399.30	4,265	5,876	63	6.20	10
1971	2,028.45	1,584	2,182	49	6.38	8
1972	341.72	264	364	12	6.56	2
1973	3,886.51	2,965	4,085	190	6.74	28
1974	704.91	531	732	44	6.92	6
1975	2,054.38	1,529	2,107	153	7.11	22
1976	334.85	246	339	29	7.29	4
1977	1,507.99	1,094	1,507	151	7.49	20
1978	6,171.25	4,419	6,088	700	7.68	91
1979	184.20	130	179	24	7.88	3
1980	176.40	123	169	25	8.09	3
1981	3,966.14	2,719	3,746	617	8.29	74
1982	4,059.92	2,740	3,775	691	8.50	81
1983	13,744.76	9,127	12,575	2,544	8.72	292
1984	23,435.37	15,315	21,101	4,678	8.93	524
1985	3,775.31	2,424	3,340	813	9.16	89
1986	19,779.22	12,481	17,196	4,561	9.38	486
1987	6,193.90	3,837	5,287	1,527	9.61	159
1988	6,025.31	3,660	5,043	1,585	9.85	161
1989	5,602.21	3,336	4,596	1,566	10.09	155
1990	15,659.35	9,129	12,578	4,647	10.34	449
1991	18,659.78	10,645	14,667	5,859	10.59	553
1992	5,392.45	3,009	4,146	1,786	10.84	165
1993	6,428.95	3,504	4,828	2,244	11.10	202
1994	7,618.52	4,049	5,579	2,802	11.37	246
1995	1,757.43	910	1,254	679	11.64	58

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WALTHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1996	2,599.74	1,310	1,805	1,055	11.92	89
1997	7,036.25	3,448	4,751	2,989	12.20	245
1998	2,268.67	1,079	1,487	1,009	12.49	81
1999	3,656.28	1,686	2,323	1,699	12.78	133
2001	25,052.88	10,773	14,843	12,715	13.40	949
2002	2,035.27	844	1,163	1,076	13.71	78
2004	1,123.12	428	590	646	14.37	45
2005	10.05	4	6	6	14.71	
2006	2,839.53	987	1,360	1,764	15.05	117
2008	9,201.15	2,866	3,949	6,173	15.77	391
2010	11,064.83	3,032	4,177	7,994	16.52	484
2011	79.61	20	28	60	16.91	4
2013	16,217.63	3,454	4,759	13,081	17.74	737
2014	18,757.40	3,583	4,937	15,697	18.18	863
2015	14,319.34	2,406	3,315	12,436	18.64	667
2016	9,524.84	1,362	1,877	8,601	19.14	449
2017	4,611.03	539	743	4,330	19.66	220
2018	8,441.71	743	1,024	8,262	20.24	408
2019	12,340.44	697	960	12,614	20.87	604
2020	158,450.65	3,327	4,584	169,712	21.58	7,864
	506,664.94	173,176	237,376	319,955		18,319
WAREHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1938	6.12	6	7			
1941	64.61	64	71			
1942	64.79	64	71			
1946	33.80	33	37			
1947	6.14	6	7			
1948	18.88	18	21			
1950	150.78	142	166			
1951	674.33	630	742			
1953	76.55	70	84			
1954	726.74	664	799			
1955	664.06	602	730			
1956	546.33	491	601			
1957	14.28	13	16			
1958	23.12	20	25			

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WAREHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1959	30.33	27	33			
1960	4.14	4	5			
1967	39.12	32	43			
1968	182.27	147	200			
1969	454.45	363	499	1	6.03	
1970	90.79	72	99	1	6.20	
1971	692.21	541	744	17	6.38	3
1972	933.38	721	992	35	6.56	5
1973	1,253.78	957	1,316	63	6.74	9
1974	578.58	436	600	37	6.92	5
1975	531.43	396	545	40	7.11	6
1976	299.69	220	303	27	7.29	4
1977	360.88	262	360	37	7.49	5
1978	74.42	53	73	9	7.68	1
1979	7,300.76	5,154	7,088	943	7.88	120
1980	4,686.42	3,259	4,482	673	8.09	83
1981	2,734.22	1,874	2,577	430	8.29	52
1982	6,181.99	4,173	5,739	1,061	8.50	125
1983	3,231.38	2,146	2,951	603	8.72	69
1984	3,030.27	1,980	2,723	610	8.93	68
1985	6,074.00	3,900	5,364	1,318	9.16	144
1986	5,749.51	3,628	4,989	1,335	9.38	142
1987	5,761.90	3,569	4,908	1,430	9.61	149
1988	7,790.70	4,733	6,509	2,061	9.85	209
1989	15,232.29	9,071	12,475	4,281	10.09	424
1990	6,930.88	4,041	5,557	2,067	10.34	200
1991	4,719.74	2,693	3,704	1,488	10.59	141
1992	3,460.23	1,931	2,656	1,151	10.84	106
1993	7,066.98	3,851	5,296	2,478	11.10	223
1994	8,735.52	4,643	6,385	3,224	11.37	284
1995	2,661.86	1,379	1,896	1,032	11.64	89
1996	7,157.36	3,607	4,961	2,913	11.92	244
1997	5,701.62	2,794	3,842	2,429	12.20	199
1998	10,871.82	5,170	7,110	4,849	12.49	388
1999	3,393.21	1,564	2,151	1,582	12.78	124
2000	254.57	113	155	125	13.09	10
2001	40,347.16	17,349	23,859	20,522	13.40	1,531
2002	6,773.23	2,808	3,862	3,589	13.71	262
2003	310.53	124	171	171	14.04	12
2005	1,484.32	541	744	889	14.71	60
2006	3,764.59	1,308	1,799	2,342	15.05	156
2007	923.42	304	418	598	15.41	39

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WAREHAM						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2008	696.52	217	298	468	15.77	30
2009	1,508.80	442	608	1,052	16.14	65
2010	4,582.43	1,256	1,727	3,313	16.52	201
2011	7,462.14	1,899	2,612	5,597	16.91	331
2012	1,413.11	331	455	1,099	17.32	63
2013	1,101.17	235	323	888	17.74	50
2014	4,447.49	849	1,168	3,725	18.18	205
2015	400.99	67	92	349	18.64	19
2016	1,601.15	229	315	1,446	19.14	76
2017	13,818.39	1,617	2,224	12,976	19.66	660
2018	7,163.83	630	866	7,014	20.24	347
2019	2,297.79	130	179	2,349	20.87	113
2020	11,186.10	235	323	11,982	21.58	555
	248,606.39	112,898	154,752	118,715		8,406
WATERTOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	3,530.93	2,936	3,884			
1966	49.35	41	54			
1968	62.14	50	68			
1970	169.79	134	184	3	6.20	
1971	20.27	16	22			
1972	112.70	87	119	4	6.56	1
1973	89.81	69	95	4	6.74	1
1974	9.96	8	11			
1975	562.44	419	575	43	7.11	6
1977	905.56	657	902	94	7.49	13
1978	1,085.78	777	1,067	127	7.68	17
1979	506.40	358	492	65	7.88	8
1980	917.55	638	876	133	8.09	16
1981	3,193.32	2,189	3,006	506	8.29	61
1982	3,869.98	2,612	3,587	670	8.50	79
1983	4,017.82	2,668	3,664	756	8.72	87
1984	3,971.26	2,595	3,564	805	8.93	90
1985	30,822.82	19,788	27,175	6,730	9.16	735
1986	4,474.17	2,823	3,877	1,045	9.38	111
1987	1,307.47	810	1,112	326	9.61	34
1988	1,960.89	1,191	1,636	521	9.85	53

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WATERTOWN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1989	1,115.23	664	912	315	10.09	31
1990	4,695.95	2,738	3,760	1,405	10.34	136
1991	1,694.53	967	1,328	536	10.59	51
1992	752.70	420	577	251	10.84	23
1993	1,218.72	664	912	429	11.10	39
1994	3,568.72	1,897	2,605	1,320	11.37	116
1995	1,235.40	640	879	480	11.64	41
1996	1,887.65	951	1,306	770	11.92	65
2005	197.37	72	99	118	14.71	8
2006	2,639.86	917	1,259	1,645	15.05	109
2008	712.92	222	305	479	15.77	30
2009	3,433.58	1,006	1,382	2,395	16.14	148
2010	2,366.85	649	891	1,712	16.52	104
2011	1,084.68	276	379	814	16.91	48
2013	4,372.73	931	1,279	3,531	17.74	199
2014	17,756.11	3,391	4,657	14,875	18.18	818
2015	2,482.16	417	573	2,158	18.64	116
2016	700.90	100	137	634	19.14	33
2017	1,832.31	214	294	1,722	19.66	88
2018	654.54	58	80	640	20.24	32
2020	1,251.64	26	36	1,341	21.58	62
	117,294.96	58,086	79,620	49,404		3,609
WAYLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	10,346.42	8,603	11,381			
1966	14,351.13	11,818	15,786			
1967	2,836.33	2,312	3,120			
1968	3,014.28	2,433	3,316			
1969	3,884.88	3,102	4,273			
1970	2,875.65	2,272	3,151	12	6.20	2
1971	2,438.34	1,904	2,641	41	6.38	6
1972	2,342.35	1,808	2,508	69	6.56	11
1973	4,191.18	3,198	4,435	175	6.74	26
1974	1,225.89	924	1,282	67	6.92	10
1975	701.92	523	725	47	7.11	7
1976	2,920.90	2,148	2,979	234	7.29	32
1977	1,693.29	1,228	1,703	159	7.49	21

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WAYLAND						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1978	509.13	365	506	54	7.68	7
1979	3,499.77	2,471	3,427	423	7.88	54
1980	3,740.23	2,601	3,607	507	8.09	63
1981	3,044.49	2,087	2,894	454	8.29	55
1982	1,262.68	852	1,182	207	8.50	24
1983	3,417.38	2,269	3,147	612	8.72	70
1984	4,427.58	2,893	4,012	858	8.93	96
1985	1,426.40	916	1,270	299	9.16	33
1986	4,863.18	3,069	4,256	1,093	9.38	117
1987	1,118.24	693	961	269	9.61	28
1988	1,248.67	759	1,053	321	9.85	33
1989	715.50	426	591	196	10.09	19
1990	5,473.44	3,191	4,426	1,595	10.34	154
1991	4,009.78	2,288	3,173	1,238	10.59	117
1992	2,275.38	1,270	1,761	742	10.84	68
1993	1,421.84	775	1,075	489	11.10	44
1994	316.81	168	233	115	11.37	10
1995	2,470.80	1,280	1,775	943	11.64	81
1996	1,887.65	951	1,319	757	11.92	64
1998	1,144.88	544	754	505	12.49	40
2001	315.05	135	187	159	13.40	12
2002	129.13	54	75	67	13.71	5
2003	289.92	115	159	159	14.04	11
2006	580.43	202	280	358	15.05	24
2007	1,807.33	596	827	1,161	15.41	75
2009	1,971.69	578	802	1,367	16.14	85
2010	7,416.15	2,032	2,818	5,340	16.52	323
2011	24,387.58	6,207	8,609	18,218	16.91	1,077
2014	59.55	11	15	50	18.18	3
2016	176.40	25	35	159	19.14	8
2020	215.26	5	7	230	21.58	11
	138,444.88	82,101	112,538	39,751		2,926
WELLFLEET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1955	9.21	8	10			
1980	1,706.47	1,187	1,627	250	8.09	31
1982	1,597.94	1,079	1,479	279	8.50	33

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WELLFLEET						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1983	593.35	394	540	113	8.72	13
1986	1,437.96	907	1,243	338	9.38	36
1987	1,147.68	711	975	288	9.61	30
1989	1,124.15	669	917	320	10.09	32
1990	675.39	394	540	203	10.34	20
1992	188.55	105	144	63	10.84	6
1993	693.91	378	518	245	11.10	22
1994	730.45	388	532	272	11.37	24
1995	794.99	412	565	310	11.64	27
1996	703.50	355	487	287	11.92	24
1997	1,430.28	701	961	612	12.20	50
1998	275.77	131	180	124	12.49	10
1999	619.62	286	392	290	12.78	23
2001	1,369.28	589	807	699	13.40	52
2002	341.25	141	193	182	13.71	13
2003	756.52	301	413	420	14.04	30
2014	29.23	6	8	24	18.18	1
2017	1,593.83	186	255	1,498	19.66	76
2018	1,289.85	114	156	1,263	20.24	62
2019	571.75	32	44	585	20.87	28
	19,680.93	9,474	12,986	8,663		643
TISBURY						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1960	365.69	318	402			
1984	179.96	118	164	33	8.93	4
1989	133.79	80	112	36	10.09	4
1993	425.54	232	323	145	11.10	13
1994	320.00	170	237	115	11.37	10
2001	365.88	157	219	184	13.40	14
2006	742.27	258	360	457	15.05	30
2011	1,015.09	258	360	757	16.91	45
2016	60.51	9	13	54	19.14	3
2019	2,995.03	169	236	3,059	20.87	147
	6,603.76	1,769	2,425	4,839		270

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WESTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	918.77	764	1,011			
1971	10.27	8	11			
1972	1,725.60	1,332	1,829	69	6.56	11
1975	2,412.33	1,796	2,467	187	7.11	26
1977	28.30	21	29	2	7.49	
1978	1,023.75	733	1,007	119	7.68	15
1979	1,507.62	1,064	1,461	197	7.88	25
1980	29.32	20	27	5	8.09	1
1981	1,572.94	1,078	1,481	250	8.29	30
1982	370.79	250	343	65	8.50	8
1983	776.88	516	709	146	8.72	17
1984	702.25	459	630	142	8.93	16
1985	1,038.49	667	916	226	9.16	25
1986	1,150.53	726	997	268	9.38	29
1987	789.29	489	672	197	9.61	20
1988	16.64	10	14	5	9.85	1
1990	1,348.03	786	1,079	403	10.34	39
1991	1,329.19	758	1,041	421	10.59	40
1992	521.01	291	400	173	10.84	16
1993	609.36	332	456	214	11.10	19
1994	1,584.05	842	1,156	586	11.37	52
1995	1,552.51	804	1,104	604	11.64	52
1996	198.13	100	137	81	11.92	7
2003	515.71	205	282	286	14.04	20
2005	1.00			1	14.71	
2006	3.00	1	1	2	15.05	
2010	1,541.51	422	580	1,116	16.52	68
2016	1,124.68	161	221	1,016	19.14	53
	24,401.95	14,635	20,061	6,781		590
WESTPORT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1953	22.38	21	25			
1956	201.19	181	221			
1977	1,325.47	962	1,319	139	7.49	19
1978	1,604.75	1,149	1,576	189	7.68	25
1979	878.47	620	850	116	7.88	15
1980	2,211.88	1,538	2,109	324	8.09	40

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WESTPORT						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1981	40.19	28	38	6	8.29	1
1982	1,333.95	900	1,234	233	8.50	27
1983	559.70	372	510	105	8.72	12
1984	1,046.89	684	938	213	8.93	24
1985	366.34	235	322	81	9.16	9
1986	2,639.93	1,666	2,285	619	9.38	66
1987	3,902.57	2,418	3,316	977	9.61	102
1988	6,032.76	3,665	5,027	1,610	9.85	163
1989	3,427.69	2,041	2,799	971	10.09	96
1990	571.53	333	457	172	10.34	17
1991	718.36	410	562	228	10.59	22
1992	543.71	303	416	183	10.84	17
1993	3,274.85	1,785	2,448	1,154	11.10	104
1994	6,304.98	3,351	4,596	2,340	11.37	206
1996	4,766.47	2,402	3,294	1,949	11.92	164
1997	3,302.27	1,618	2,219	1,413	12.20	116
1998	7,807.05	3,712	5,091	3,497	12.49	280
1999	6,154.65	2,837	3,891	2,879	12.78	225
2001	1,969.90	847	1,162	1,005	13.40	75
2002	2,864.21	1,187	1,628	1,523	13.71	111
2004	2,225.93	849	1,164	1,284	14.37	89
2006	5,314.02	1,847	2,533	3,312	15.05	220
2007	484.01	159	218	314	15.41	20
2008	1,437.42	448	614	967	15.77	61
2009	1,138.59	334	458	794	16.14	49
2010	515.77	141	193	374	16.52	23
2011	121.93	31	43	92	16.91	5
2012	492.45	115	158	384	17.32	22
2013	10.97	2	3	9	17.74	1
2016	4,092.67	585	802	3,700	19.14	193
2017	785.55	92	126	738	19.66	38
2018	4,991.96	439	602	4,889	20.24	242
2020	687.25	14	19	737	21.58	34
	86,170.66	40,321	55,269	39,519		2,933

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WESTWOOD						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	626.38	521	689			
1977	178.09	129	177	19	7.49	3
1982	6,680.94	4,510	6,186	1,163	8.50	137
1984	171.58	112	154	35	8.93	4
1986	2,592.50	1,636	2,244	608	9.38	65
1987	331.80	206	283	82	9.61	9
1988	5,240.45	3,184	4,367	1,397	9.85	142
1991	206.25	118	162	65	10.59	6
1993	406.24	221	303	144	11.10	13
1994	316.81	168	230	118	11.37	10
1995	360.57	187	257	140	11.64	12
1996	1,132.59	571	783	463	11.92	39
2001	14,766.79	6,350	8,710	7,533	13.40	562
2002	2,752.34	1,141	1,565	1,462	13.71	107
2003	9,881.55	3,933	5,395	5,475	14.04	390
2004	795.74	304	417	458	14.37	32
2005	1,115.97	407	558	669	14.71	45
2010	1,708.87	468	642	1,238	16.52	75
2020	109,855.24	2,307	3,164	117,676	21.58	5,453
	159,120.70	26,473	36,287	138,746		7,104
WILMINGTON						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2016	4,306.02	616	844	3,893	19.14	203
	4,306.02	616	844	3,893		203
WINCHESTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	22,461.43	18,677	24,708			
1966	582.50	480	641			
1967	143.21	117	158			
1968	759.47	613	835			
1969	192.40	154	212			
1970	10,227.18	8,079	11,166	84	6.20	14
1971	180.16	141	195	3	6.38	

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WINCHESTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1972	1,452.61	1,121	1,549	49	6.56	7
1973	1,343.12	1,025	1,417	61	6.74	9
1974	895.71	675	933	52	6.92	8
1975	14,486.04	10,785	14,906	1,028	7.11	145
1976	2,358.71	1,735	2,398	197	7.29	27
1977	2,409.89	1,748	2,416	235	7.49	31
1978	2,175.75	1,558	2,153	240	7.68	31
1979	113.70	80	111	14	7.88	2
1980	6,603.51	4,593	6,348	916	8.09	113
1981	5,037.41	3,453	4,772	769	8.29	93
1982	7,302.40	4,929	6,813	1,220	8.50	144
1983	6,864.36	4,558	6,300	1,251	8.72	143
1984	1,417.21	926	1,280	279	8.93	31
1985	7,968.47	5,116	7,071	1,694	9.16	185
1986	4,395.54	2,774	3,834	1,001	9.38	107
1987	2,503.97	1,551	2,144	611	9.61	64
1988	1,245.38	757	1,046	324	9.85	33
1989	2,978.50	1,774	2,452	824	10.09	82
1990	3,388.77	1,976	2,731	997	10.34	96
1991	1,378.51	786	1,086	430	10.59	41
1992	872.67	487	673	287	10.84	26
1993	2,416.81	1,317	1,820	838	11.10	75
1994	4,634.71	2,463	3,404	1,694	11.37	149
1995	313.89	163	225	120	11.64	10
1996	954.57	481	665	385	11.92	32
1997	0.80			1	12.20	
1998	3,674.69	1,747	2,415	1,628	12.49	130
1999	3,200.41	1,475	2,039	1,482	12.78	116
2000	375.10	167	231	182	13.09	14
2001	1,680.60	723	999	849	13.40	63
2002	855.27	355	491	450	13.71	33
2003	194.95	78	108	107	14.04	8
2005	855.63	312	431	510	14.71	35
2007	2,784.93	918	1,269	1,795	15.41	116
2008	8,940.12	2,785	3,849	5,985	15.77	380
2009	2,316.91	679	938	1,610	16.14	100
2010	1,373.53	376	520	991	16.52	60
2011	15,188.79	3,865	5,342	11,366	16.91	672
2012	1,146.10	268	370	890	17.32	51
2014	2,926.73	559	773	2,447	18.18	135

NSTAR ELECTRIC COMPANY

ACCOUNT 373.00 STREET LIGHTING AND SIGNAL SYSTEMS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WINCHESTER						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2015	5,076.17	853	1,179	4,405	18.64	236
2016	316.07	45	62	285	19.14	15
2018	2,432.41	214	296	2,380	20.24	118
	173,397.77	100,511	137,773	52,965		3,980
WOBURN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1965	11,350.14	9,438	12,485			
1966	1,326.90	1,093	1,460			
1967	1,142.97	932	1,257			
1970	1,001.94	792	1,090	12	6.20	2
1971	440.60	344	473	11	6.38	2
1973	5,208.72	3,974	5,468	261	6.74	39
1974	1,154.73	871	1,199	72	6.92	10
1976	232.39	171	235	20	7.29	3
1978	453.73	325	447	52	7.68	7
1979	1,892.51	1,336	1,838	243	7.88	31
1980	2,535.10	1,763	2,426	363	8.09	45
1981	606.01	415	571	96	8.29	12
1982	379.74	256	352	65	8.50	8
1983	390.59	259	356	73	8.72	8
1984	1,007.02	658	905	202	8.93	23
1985	256.24	165	227	55	9.16	6
1986	711.22	449	618	165	9.38	18
1987	31.45	19	26	8	9.61	1
1988	256.39	156	215	67	9.85	7
1989	1,397.96	832	1,145	393	10.09	39
1990	70,420.13	41,055	56,493	20,969	10.34	2,028
1991	7,772.08	4,434	6,101	2,448	10.59	231
1992	1,623.51	906	1,247	539	10.84	50
1993	10,040.50	5,472	7,530	3,515	11.10	317
1994	6,274.86	3,335	4,589	2,313	11.37	203
1996	6,583.13	3,318	4,566	2,676	11.92	224
1997	5,574.24	2,731	3,758	2,374	12.20	195
1998	2,314.19	1,100	1,514	1,032	12.49	83
2000	2,877.45	1,282	1,764	1,401	13.09	107
2001	2,628.96	1,130	1,555	1,337	13.40	100
2002	5,613.78	2,327	3,202	2,973	13.71	217

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WOBURN						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
2003	895.75	357	491	494	14.04	35
2004	2,025.00	773	1,064	1,164	14.37	81
2005	3,823.44	1,394	1,918	2,288	14.71	156
2006	5,385.77	1,872	2,576	3,348	15.05	222
2007	1,426.36	470	647	922	15.41	60
2008	1,681.40	524	721	1,129	15.77	72
2009	809.85	237	326	565	16.14	35
2010	11,423.15	3,130	4,307	8,259	16.52	500
2011	984.92	251	345	738	16.91	44
2012	7,481.03	1,751	2,409	5,820	17.32	336
2014	4,300.10	821	1,130	3,600	18.18	198
2015	19,490.20	3,274	4,505	16,934	18.64	908
2016	9,471.01	1,354	1,863	8,555	19.14	447
2018	281.22	25	34	275	20.24	14
2019	845.43	48	66	864	20.87	41
	223,823.81	107,619	147,515	98,691		7,165
YARMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1944	0.94	1	1			
1946	18.06	17	20			
1953	56.78	52	62			
1955	101.55	92	112			
1956	105.09	95	116			
1957	36.09	32	40			
1958	248.59	220	273			
1959	29.89	26	33			
1960	11.79	10	13			
1964	87.32	73	96			
1980	4,242.72	2,951	4,050	617	8.09	76
1984	410.88	269	369	83	8.93	9
1988	977.21	594	815	260	9.85	26
1989	10,299.47	6,133	8,416	2,913	10.09	289
1990	3,211.74	1,872	2,569	964	10.34	93
1991	3,505.91	2,000	2,745	1,112	10.59	105
1992	6,063.35	3,383	4,643	2,027	10.84	187
1993	5,323.57	2,901	3,981	1,875	11.10	169
1994	4,082.21	2,170	2,978	1,513	11.37	133

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
YARMOUTH						
SURVIVOR CURVE.. IOWA 22-L0						
NET SALVAGE PERCENT.. -10						
1995	7,094.33	3,675	5,043	2,761	11.64	237
1996	5,966.48	3,007	4,127	2,437	11.92	204
1997	4,244.02	2,080	2,854	1,814	12.20	149
1998	9,524.00	4,529	6,215	4,261	12.49	341
1999	6,209.95	2,863	3,929	2,902	12.78	227
2000	1,330.92	593	814	650	13.09	50
2001	13,238.58	5,693	7,813	6,750	13.40	504
2002	997.82	414	568	529	13.71	39
2003	148.41	59	81	82	14.04	6
2005	195.66	71	97	118	14.71	8
2007	361.86	119	163	235	15.41	15
2008	472.18	147	202	318	15.77	20
2009	522.30	153	210	365	16.14	23
2010	451.55	124	170	327	16.52	20
2011	1,737.44	442	607	1,305	16.91	77
2012	1,507.79	353	484	1,174	17.32	68
2013	3,166.91	675	926	2,557	17.74	144
2014	1,509.46	288	395	1,265	18.18	70
2015	1,899.57	319	438	1,652	18.64	89
2016	2,017.02	288	395	1,823	19.14	95
2017	8,838.31	1,034	1,419	8,303	19.66	422
2018	8,589.18	756	1,037	8,411	20.24	416
2019	1,425.11	81	111	1,456	20.87	70
2020	66,336.39	1,393	1,912	71,058	21.58	3,293
	186,598.40	52,047	71,342	133,916		7,674
	40,135,447.07	16,184,005	22,183,808	21,965,182		1,390,201

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 15.8 3.46

NSTAR ELECTRIC COMPANY

ACCOUNT 389.20 LAND RIGHTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 70-R4						
NET SALVAGE PERCENT.. 0						
1950	394.58	338		395	10.02	39
	394.58	338		395		39

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 10.1 9.88

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
EAST SPRINGFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2044						
NET SALVAGE PERCENT.. -10						
1959	2,019.10	1,597	1,450	771	18.14	43
1969	2,002,815.12	1,492,047	1,354,395	848,702	19.52	43,479
1970	401,033.06	296,761	269,383	171,754	19.64	8,745
1971	14,571.17	10,707	9,719	6,309	19.76	319
1972	3,138.24	2,290	2,079	1,373	19.87	69
1973	54,448.68	39,427	35,790	24,104	19.99	1,206
1974	2,024.51	1,455	1,321	906	20.09	45
1975	3,079.54	2,196	1,993	1,394	20.20	69
1976	1,742.21	1,232	1,118	798	20.30	39
1977	1,611.84	1,131	1,027	746	20.40	37
1978	17,918.70	12,460	11,310	8,400	20.50	410
1979	623.57	430	390	296	20.59	14
1980	315.97	216	196	151	20.68	7
1981	2,892.50	1,956	1,776	1,406	20.77	68
1982	1,018.51	682	619	501	20.85	24
1984	5,426.84	3,559	3,231	2,739	21.01	130
1987	19,667.60	12,448	11,300	10,335	21.24	487
1988	31,566.71	19,723	17,903	16,820	21.31	789
1989	59,882.34	36,924	33,517	32,353	21.37	1,514
1990	42,201.31	25,652	23,285	23,136	21.44	1,079
1991	471,786.67	282,623	256,549	262,416	21.50	12,205
1993	92,222.69	53,495	48,560	52,885	21.62	2,446
1994	8,288.54	4,725	4,289	4,828	21.68	223
1995	72,805.83	40,750	36,991	43,096	21.73	1,983
1996	145,256.94	79,744	72,387	87,396	21.78	4,013
1998	465,712.00	244,964	222,364	289,919	21.88	13,250
2001	90,975.67	44,356	40,264	59,809	22.02	2,716
2002	62,888.73	29,785	27,037	42,140	22.06	1,910
2003	40,324.41	18,505	16,798	27,559	22.10	1,247
2004	246,102.00	109,159	99,088	171,624	22.14	7,752
2005	86,908.36	37,138	33,712	61,887	22.18	2,790
2006	311,720.46	127,943	116,139	226,753	22.21	10,210
2007	76,814.95	30,144	27,363	57,133	22.25	2,568
2008	193,053.16	72,130	65,475	146,883	22.28	6,593
2009	356,776.28	126,044	114,415	278,038	22.32	12,457
2010	306,506.86	101,822	92,428	244,729	22.35	10,950
2011	538,142.93	166,660	151,284	440,673	22.38	19,690
2012	59,673.29	17,061	15,487	50,154	22.41	2,238
2013	17,418.50	4,536	4,118	15,043	22.44	670
2014	1,827,235.82	426,373	387,037	1,622,922	22.47	72,226
2015	651,360.30	133,032	120,759	595,738	22.50	26,477

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
EAST SPRINGFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2044						
NET SALVAGE PERCENT.. -10						
2016	285,266.07	49,306	44,757	269,036	22.53	11,941
2017	34,907.96	4,876	4,426	33,973	22.55	1,507
2018	802,369.75	83,195	75,520	807,087	22.58	35,743
2019	740,192.25	47,794	43,385	770,827	22.61	34,092
2020	856,706.68	19,177	17,408	924,970	22.63	40,874
	11,509,414.62	4,318,230	3,919,841	8,740,515		397,344
GREENFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2027						
NET SALVAGE PERCENT.. -10						
1964	810.35	789	716	175	6.18	28
1966	2,741.92	2,661	2,416	601	6.20	97
1967	882,204.29	854,575	775,734	194,691	6.21	31,351
1968	19,201.62	18,564	16,851	4,270	6.22	686
1969	1,484.70	1,432	1,300	333	6.23	53
1970	468.11	451	409	106	6.24	17
1971	1,134.97	1,090	989	259	6.25	41
1972	2,030.87	1,947	1,767	467	6.25	75
1973	9,388.23	8,978	8,150	2,177	6.26	348
1974	2,747.02	2,620	2,378	643	6.27	103
1977	1,236.24	1,170	1,062	298	6.29	47
1978	1,343.16	1,267	1,150	327	6.30	52
1980	44,075.89	41,321	37,509	10,975	6.31	1,739
1983	3,344.83	3,102	2,816	863	6.33	136
1984	2,804.47	2,590	2,351	734	6.34	116
1987	2,446.00	2,230	2,024	666	6.35	105
1989	119,244.90	107,623	97,694	33,475	6.36	5,263
1990	43,081.22	38,676	35,108	12,281	6.36	1,931
1991	37,027.28	33,040	29,992	10,738	6.37	1,686
1993	19,357.37	17,050	15,477	5,816	6.38	912
1999	29,355.65	24,560	22,294	9,997	6.40	1,562
2001	75,028.98	61,344	55,685	26,847	6.40	4,195
2002	20,294.72	16,376	14,865	7,459	6.40	1,165
2003	90,301.99	71,768	65,147	34,185	6.41	5,333
2004	81,709.70	63,905	58,009	31,871	6.41	4,972
2005	126,991.94	97,573	88,571	51,120	6.41	7,975
2006	43,808.81	32,995	29,951	18,239	6.41	2,845

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
GREENFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2027						
NET SALVAGE PERCENT.. -10						
2007	279,510.45	205,713	186,734	120,727	6.42	18,805
2008	34,449.27	24,715	22,435	15,459	6.42	2,408
2009	90,196.43	62,859	57,060	42,156	6.42	6,566
2010	14,268.38	9,618	8,731	6,965	6.42	1,085
2011	26,271.39	17,010	15,441	13,458	6.43	2,093
2012	91,188.12	56,371	51,170	49,137	6.43	7,642
2013	25,225.95	14,744	13,384	14,365	6.43	2,234
	2,224,775.22	1,900,727	1,725,371	721,882		113,666
PITTSFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2037						
NET SALVAGE PERCENT.. -10						
1972	2,169,394.96	1,745,818	1,584,754	801,581	14.80	54,161
1975	7,133.54	5,644	5,123	2,724	14.96	182
1977	8,584.34	6,711	6,092	3,351	15.05	223
1978	1,535.72	1,193	1,083	606	15.10	40
1979	1,014.47	783	711	405	15.14	27
1980	786.12	602	546	318	15.19	21
1981	729.30	555	504	298	15.23	20
1984	22,354.03	16,594	15,063	9,526	15.35	621
1987	8,751.64	6,322	5,739	3,888	15.45	252
1988	15,213.30	10,879	9,875	6,859	15.48	443
1989	41,486.44	29,346	26,639	18,996	15.52	1,224
1990	15,133.37	10,586	9,609	7,037	15.55	453
1991	274,041.17	189,437	171,960	129,485	15.58	8,311
1993	31,180.08	21,012	19,073	15,225	15.63	974
1994	244,699.55	162,592	147,592	121,578	15.66	7,764
1995	5,485.27	3,592	3,261	2,773	15.68	177
1996	1,687.29	1,087	987	869	15.71	55
2001	564,504.05	329,988	299,544	321,410	15.81	20,330
2002	53,271.29	30,386	27,583	31,016	15.83	1,959
2003	29,783.53	16,545	15,019	17,743	15.85	1,119
2004	218,724.63	118,020	107,132	133,465	15.87	8,410
2005	32,222.94	16,845	15,291	20,154	15.89	1,268
2006	9,082.26	4,587	4,164	5,827	15.90	366
2007	216,282.14	105,109	95,412	142,498	15.92	8,951
2008	181,349.92	84,400	76,613	122,871	15.94	7,708

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
PITTSFIELD SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2037						
NET SALVAGE PERCENT.. -10						
2009	67,593.60	29,986	27,220	47,133	15.95	2,955
2010	13,862.06	5,821	5,284	9,964	15.97	624
2011	6,868.56	2,712	2,462	5,094	15.98	319
2012	104,295.00	38,305	34,771	79,953	16.00	4,997
2013	979,872.35	330,827	300,306	777,554	16.01	48,567
2014	6,735.41	2,058	1,868	5,541	16.02	346
2015	36,709.61	9,915	9,000	31,380	16.04	1,956
2016	87,469.44	20,256	18,387	77,829	16.05	4,849
2017	80,649.19	15,273	13,864	74,850	16.06	4,661
2018	585,445.59	83,377	75,685	568,305	16.07	35,364
2019	53,825.77	4,833	4,387	54,821	16.09	3,407
2020	104,001.74	3,312	3,006	111,395	16.10	6,919
	6,281,759.67	3,465,308	3,145,608	3,764,328		240,023
DOTY ROAD - VEHICLE REPAIR SHOP						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2034						
NET SALVAGE PERCENT.. -10						
1969	235,108.93	201,072	182,522	76,098	12.27	6,202
1972	20,646.29	17,436	15,827	6,884	12.38	556
1973	822.24	691	627	277	12.42	22
1976	1,442.08	1,195	1,085	502	12.52	40
1977	506.81	418	379	178	12.55	14
1978	2,499.00	2,047	1,858	891	12.59	71
1980	7,626.14	6,176	5,606	2,783	12.64	220
1981	3,100.80	2,495	2,265	1,146	12.67	90
1982	5,218.83	4,172	3,787	1,954	12.70	154
1983	340,291.14	270,226	245,296	129,025	12.72	10,143
1984	6,359.07	5,013	4,551	2,444	12.75	192
1985	12,734.90	9,965	9,046	4,963	12.77	389
1986	4,219.67	3,276	2,974	1,668	12.79	130
1987	25,022.35	19,263	17,486	10,039	12.82	783
1989	64,338.96	48,650	44,162	26,611	12.86	2,069
1990	20,140.51	15,083	13,691	8,463	12.88	657
1992	7,913.50	5,802	5,267	3,438	12.92	266
1994	2,490.82	1,784	1,619	1,120	12.95	86
1995	827.40	585	531	379	12.97	29
1996	21,101.75	14,708	13,351	9,861	12.98	760

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
DOTY ROAD - VEHICLE REPAIR SHOP						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2034						
NET SALVAGE PERCENT.. -10						
1998	15,737.22	10,636	9,655	7,656	13.01	588
1999	55,363.30	36,766	33,374	27,526	13.03	2,113
2000	51,550.24	33,612	30,511	26,194	13.04	2,009
2001	15,505.12	9,910	8,996	8,060	13.05	618
2002	3,324.56	2,080	1,888	1,769	13.06	135
2003	37,467.60	22,878	20,767	20,447	13.08	1,563
2004	76,599.25	45,586	41,380	42,879	13.09	3,276
2005	17,879.30	10,343	9,389	10,278	13.10	785
2006	50,833.73	28,492	25,863	30,054	13.11	2,292
2007	4,136.72	2,239	2,032	2,518	13.12	192
2008	84,026.28	43,749	39,713	52,716	13.13	4,015
2010	77,548.51	36,744	33,354	51,949	13.15	3,950
2011	9,298.88	4,160	3,776	6,453	13.16	490
2012	54,247.70	22,707	20,612	39,060	13.17	2,966
2016	17,469.21	4,727	4,291	14,925	13.21	1,130
2018	8,971.27	1,522	1,382	8,487	13.22	642
	1,362,370.08	946,208	858,913	639,694		49,637
NEW BEDFORD FACILITY						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2057						
NET SALVAGE PERCENT.. -10						
1924	2,754.38	2,493	2,263	767	12.40	62
1925	35,844.69	32,280	29,302	10,127	12.69	798
1929	115,760.35	102,055	92,640	34,697	13.89	2,498
1930	470.54	413	375	143	14.19	10
1939	59.40	49	44	21	16.99	1
1944	1,076.62	868	788	396	18.59	21
1948	1,469.45	1,152	1,046	571	19.88	29
1949	90.76	71	64	35	20.20	2
1954	412.50	310	281	172	21.80	8
1955	731.94	545	495	310	22.12	14
1956	6,574.41	4,858	4,410	2,822	22.43	126
1957	893.85	655	595	389	22.75	17
1958	3,573.84	2,598	2,358	1,573	23.06	68
1962	2,084.73	1,465	1,330	963	24.28	40
1964	399.20	276	251	189	24.87	8
1965	813.23	556	505	390	25.17	15

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
NEW BEDFORD FACILITY						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2057						
NET SALVAGE PERCENT.. -10						
1968	200,607.40	133,354	121,051	99,617	26.02	3,828
1969	2,318.24	1,526	1,385	1,165	26.29	44
1970	5,896.42	3,842	3,488	2,999	26.56	113
1971	1,494.49	964	875	769	26.83	29
1972	2,310.97	1,475	1,339	1,203	27.09	44
1973	123,063.83	77,674	70,508	64,862	27.35	2,372
1974	8,788.25	5,486	4,980	4,687	27.60	170
1975	15,026.40	9,274	8,418	8,111	27.85	291
1976	8,672.13	5,290	4,802	4,737	28.09	169
1977	4,187.40	2,524	2,291	2,315	28.33	82
1978	35,288.62	21,011	19,073	19,745	28.56	691
1979	42,231.65	24,831	22,540	23,915	28.78	831
1980	37,195.29	21,583	19,592	21,323	29.01	735
1981	155,654.78	89,136	80,913	90,308	29.22	3,091
1982	116,162.75	65,600	59,548	68,231	29.43	2,318
1983	17,771.62	9,893	8,980	10,568	29.64	357
1984	53,506.27	29,359	26,650	32,206	29.83	1,080
1985	3,771.55	2,037	1,849	2,300	30.03	77
1986	55,472.65	29,498	26,777	34,243	30.22	1,133
1987	7,459.60	3,902	3,542	4,664	30.40	153
1988	72,990.56	37,538	34,075	46,215	30.58	1,511
1989	379,600.03	191,823	174,126	243,434	30.75	7,917
1990	90,592.28	44,933	40,788	58,864	30.92	1,904
1991	84,900.69	41,291	37,482	55,909	31.09	1,798
1992	328.77	157	143	219	31.24	7
1993	312,020.82	145,623	132,188	211,035	31.40	6,721
1994	2,288.92	1,045	949	1,569	31.55	50
1995	42,374.34	18,898	17,155	29,457	31.69	930
1996	11,507.56	5,009	4,547	8,111	31.83	255
1997	35,826.05	15,189	13,788	25,621	31.97	801
1998	12,550.50	5,177	4,699	9,106	32.10	284
1999	10,584.71	4,244	3,852	7,791	32.22	242
2000	38,610.99	15,012	13,627	28,845	32.34	892
2001	14,830.35	5,579	5,064	11,249	32.46	347
2002	8,496.66	3,085	2,800	6,546	32.58	201
2003	33,757.06	11,802	10,713	26,420	32.69	808
2005	10,725.98	3,447	3,129	8,670	32.90	264
2006	5,031.98	1,542	1,400	4,135	33.00	125
2008	41,762.30	11,474	10,415	35,523	33.19	1,070
2009	64,215.80	16,571	15,042	55,595	33.28	1,671
2010	87,062.46	20,943	19,011	76,758	33.37	2,300

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
NEW BEDFORD FACILITY						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2057						
NET SALVAGE PERCENT.. -10						
2011	22,902.29	5,089	4,620	20,573	33.46	615
2012	5,173.66	1,051	954	4,737	33.54	141
2013	44,319.19	8,131	7,381	41,370	33.62	1,231
2014	15,030.14	2,445	2,219	14,314	33.70	425
2015	40,427.88	5,694	5,169	39,302	33.78	1,163
2016	274,608.21	32,421	29,430	272,639	33.85	8,054
2017	22,258,482.06	2,091,941	1,898,944	22,585,386	33.93	665,647
2018	490,721.38	33,786	30,669	509,125	34.00	14,974
2019	1,919,058.79	81,631	74,100	2,036,865	34.06	59,802
2020	181,654.95	2,658	2,413	197,408	34.13	5,784
	27,682,327.56	3,554,132	3,226,237	27,224,323		809,259
PLYMOUTH SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2042						
NET SALVAGE PERCENT.. -10						
1959	530.86	428	389	195	17.04	11
1963	701.07	554	503	268	17.54	15
1966	367.78	286	260	145	17.89	8
1969	639.00	488	443	260	18.21	14
1972	1,224.35	917	832	514	18.51	28
1973	732.56	545	495	311	18.60	17
1974	20,983.17	15,497	14,067	9,014	18.69	482
1975	723.34	530	481	315	18.78	17
1976	13,609.42	9,904	8,990	5,980	18.86	317
1977	31,145.97	22,492	20,417	13,844	18.94	731
1978	12,362.04	8,854	8,037	5,561	19.03	292
1979	18,411.10	13,080	11,873	8,379	19.10	439
1980	27,836.94	19,602	17,794	12,827	19.18	669
1981	29,297.25	20,449	18,562	13,665	19.25	710
1982	259,384.59	179,354	162,807	122,516	19.32	6,341
1983	87,233.64	59,730	54,219	41,738	19.39	2,153
1984	1,858.45	1,260	1,144	901	19.46	46
1985	10,729.82	7,197	6,533	5,270	19.52	270
1986	14,985.01	9,941	9,024	7,460	19.58	381
1987	2,702.15	1,772	1,609	1,364	19.64	69
1988	158,259.34	102,519	93,061	81,024	19.70	4,113
1989	53,808.74	34,428	31,252	27,938	19.75	1,415

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
PLYMOUTH SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2042						
NET SALVAGE PERCENT.. -10						
1990	46,834.57	29,561	26,834	24,684	19.81	1,246
1991	59,272.35	36,891	33,488	31,712	19.86	1,597
1992	8,515.24	5,223	4,741	4,626	19.91	232
1993	20,918.59	12,629	11,464	11,547	19.96	579
1994	47,601.28	28,276	25,667	26,694	20.00	1,335
1995	32,842.21	19,167	17,399	18,728	20.05	934
1996	7,888.55	4,520	4,103	4,574	20.09	228
1997	39,307.95	22,082	20,045	23,194	20.13	1,152
1998	36,092.93	19,856	18,024	21,678	20.17	1,075
2000	220,278.17	115,648	104,979	137,327	20.25	6,782
2001	80,313.26	41,097	37,305	51,039	20.28	2,517
2002	87,589.49	43,577	39,557	56,792	20.32	2,795
2003	449,809.25	217,178	197,142	297,648	20.35	14,626
2004	19,442.45	9,085	8,247	13,140	20.38	645
2005	58,696.50	26,469	24,027	40,539	20.41	1,986
2006	136,700.89	59,275	53,806	96,565	20.44	4,724
2007	9,402.09	3,903	3,543	6,799	20.47	332
2008	1,235,382.37	488,912	443,806	915,114	20.50	44,640
2009	33,080.49	12,406	11,261	25,127	20.53	1,224
2010	260,474.05	92,068	83,574	202,947	20.55	9,876
2011	207,057.24	68,329	62,025	165,738	20.58	8,053
2012	162,170.44	49,476	44,911	133,476	20.61	6,476
2013	833,481.18	232,279	210,850	705,980	20.63	34,221
2014	403,517.16	100,962	91,648	352,221	20.65	17,057
2015	58,779.92	12,891	11,702	52,956	20.68	2,561
2016	121,928.48	22,758	20,658	113,463	20.70	5,481
2017	28,603.44	4,323	3,924	27,540	20.72	1,329
2018	24,559.57	2,760	2,505	24,510	20.74	1,182
2019	180,560.89	12,715	11,542	187,075	20.76	9,011
2020	522,255.36	12,702	11,530	562,951	20.79	27,078
	6,180,882.95	2,316,845	2,103,099	4,695,872		229,512
YARMOUTH SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2039						
NET SALVAGE PERCENT.. -10						
1958	3,290.96	2,751	2,497	1,123	15.13	74
1961	3,942.12	3,255	2,955	1,382	15.42	90

NSTAR ELECTRIC COMPANY

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YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
YARMOUTH SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2039						
NET SALVAGE PERCENT.. -10						
1962	16,689.92	13,718	12,452	5,906	15.52	381
1963	263.16	215	195	94	15.61	6
1964	19,368.78	15,775	14,320	6,986	15.70	445
1967	1,139.44	915	831	423	15.95	27
1968	12,929.12	10,325	9,372	4,850	16.03	303
1970	7,245.82	5,725	5,197	2,774	16.18	171
1971	4,849.41	3,809	3,458	1,877	16.26	115
1972	1,839.42	1,437	1,304	719	16.33	44
1973	5,355.42	4,157	3,773	2,117	16.40	129
1974	364,731.63	281,441	255,476	145,729	16.46	8,854
1975	10,355.41	7,939	7,207	4,184	16.53	253
1976	57,098.51	43,487	39,475	23,333	16.59	1,406
1977	11,600.16	8,774	7,965	4,796	16.65	288
1978	12,552.04	9,427	8,557	5,250	16.71	314
1979	3,055.27	2,277	2,067	1,294	16.77	77
1980	3,475.15	2,571	2,334	1,489	16.82	89
1981	4,771.24	3,501	3,178	2,070	16.88	123
1982	4,680.14	3,406	3,092	2,056	16.93	121
1983	47,026.24	33,923	30,793	20,936	16.98	1,233
1984	4,743.49	3,392	3,079	2,139	17.02	126
1986	13,770.56	9,654	8,763	6,384	17.12	373
1987	1,474,714.58	1,023,291	928,885	693,301	17.16	40,402
1988	3,823.33	2,624	2,382	1,824	17.20	106
1989	29,040.63	19,706	17,888	14,057	17.24	815
1990	13,596.46	9,114	8,273	6,683	17.28	387
1991	3,531.72	2,337	2,121	1,763	17.32	102
1992	4,301.85	2,810	2,551	2,181	17.35	126
1993	213.59	138	125	110	17.39	6
1994	5,550.23	3,520	3,195	2,910	17.42	167
1995	14,825.40	9,255	8,401	7,907	17.45	453
1996	83,263.28	51,110	46,395	45,195	17.48	2,586
1997	2,475.68	1,492	1,354	1,369	17.51	78
1998	28,679.47	16,955	15,391	16,157	17.54	921
1999	46,371.98	26,852	24,375	26,634	17.57	1,516
2000	10,842.04	6,139	5,573	6,354	17.60	361
2001	25,232.71	13,952	12,665	15,091	17.62	856
2002	4,613.74	2,485	2,256	2,819	17.65	160
2003	100,357.69	52,579	47,728	62,665	17.67	3,546
2004	512,435.32	260,408	236,383	327,295	17.69	18,502
2005	532,553.96	261,622	237,485	348,324	17.72	19,657
2006	863,089.24	408,716	371,009	578,389	17.74	32,604

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
YARMOUTH SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2039						
NET SALVAGE PERCENT.. -10						
2007	187,688.09	85,364	77,489	128,968	17.76	7,262
2008	46,328.64	20,142	18,284	32,678	17.78	1,838
2009	8,777.55	3,629	3,294	6,361	17.80	357
2010	258,917.80	101,122	91,793	193,017	17.82	10,831
2011	90,994.65	33,290	30,219	69,875	17.84	3,917
2012	188,675.16	64,118	58,203	149,340	17.85	8,366
2013	38,403.67	11,963	10,859	31,385	17.87	1,756
2014	1,783.79	501	455	1,507	17.89	84
2015	51,231.14	12,662	11,494	44,860	17.91	2,505
2016	127,375.97	26,910	24,427	115,686	17.92	6,456
2017	44.01	8	7	41	17.94	2
2018	186,542.53	23,922	21,715	183,482	17.96	10,216
2019	1,828,942.52	148,292	134,611	1,877,226	17.97	104,464
2020	314,167.11	8,799	7,987	337,597	17.99	18,766
	7,704,158.94	3,187,701	2,893,612	5,580,963		315,213
SUMMIT OFFICE BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2072						
NET SALVAGE PERCENT.. -10						
1965	330,645.56	212,236	192,656	171,054	28.77	5,946
2001	130,939.97	40,010	36,319	107,715	42.25	2,549
2002	30,028,697.29	8,809,189	7,996,476	25,035,091	42.51	588,922
2003	493,413.62	138,739	125,939	416,816	42.75	9,750
2004	370,056.79	99,405	90,234	316,828	42.99	7,370
2005	149,668.77	38,243	34,715	129,921	43.23	3,005
2006	452,973.33	109,794	99,665	398,606	43.45	9,174
2007	511,256.93	116,987	106,194	456,189	43.67	10,446
2008	467,906.94	100,505	91,233	423,465	43.89	9,648
2009	112,041.29	22,464	20,392	102,854	44.10	2,332
2010	333,420.60	61,932	56,218	310,544	44.30	7,010
2011	132,568.75	22,620	20,533	125,292	44.50	2,816
2012	434,758.43	67,388	61,171	417,063	44.69	9,332
2013	108,132.68	15,030	13,643	105,303	44.87	2,347
2014	98,245.00	12,043	10,932	97,138	45.05	2,156
2015	56,590.78	5,961	5,411	56,839	45.23	1,257
2016	2,700,405.95	236,655	214,822	2,755,625	45.40	60,697
2017	1,958,103.75	135,977	123,432	2,030,482	45.56	44,567

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SUMMIT OFFICE BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2072						
NET SALVAGE PERCENT.. -10						
2018	1,925,098.11	96,775	87,847	2,029,761	45.73	44,386
2019	2,204,438.25	68,309	62,007	2,362,875	45.88	51,501
2020	658,236.87	6,857	6,224	717,836	46.04	15,592
	43,657,599.66	10,417,119	9,456,062	38,567,298		890,803
1165 MASS. AVE. SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2056						
NET SALVAGE PERCENT.. -10						
1984	12,716.48	7,057	6,406	7,582	29.24	259
1986	14,057,312.67	7,564,830	6,866,918	8,596,126	29.61	290,312
1987	1,358.00	719	653	841	29.78	28
1989	117,991.81	60,389	54,818	74,973	30.11	2,490
1990	665,361.38	334,367	303,519	428,378	30.27	14,152
1992	227,654.13	110,057	99,903	150,516	30.57	4,924
1993	23,443.14	11,098	10,074	15,713	30.72	511
1997	391,746.91	168,727	153,161	277,761	31.25	8,888
2000	11,974.50	4,731	4,295	8,877	31.61	281
2001	798,610.53	305,471	277,289	601,183	31.72	18,953
2002	284,226.67	104,978	95,293	217,356	31.83	6,829
2003	416,324.21	148,222	134,547	323,409	31.93	10,129
2004	624,863.70	213,690	193,976	493,375	32.03	15,404
2005	754,090.57	246,818	224,047	605,452	32.13	18,844
2006	1,498,073.64	467,998	424,822	1,223,059	32.22	37,960
2007	3,305,636.55	980,574	890,109	2,746,091	32.31	84,992
2008	1,081,878.74	303,265	275,287	914,780	32.40	28,234
2009	1,029,026.41	270,859	245,870	886,059	32.49	27,272
2010	1,404,083.75	344,777	312,969	1,231,523	32.57	37,812
2011	2,994,766.31	679,833	617,113	2,677,130	32.65	81,995
2012	4,914,343.43	1,020,881	926,697	4,479,081	32.73	136,849
2013	1,088,685.83	204,087	185,258	1,012,296	32.81	30,853
2014	746,458.90	124,200	112,742	708,363	32.88	21,544
2015	1,110,978.67	160,178	145,400	1,076,676	32.95	32,676
2016	1,705,914.06	206,359	187,321	1,689,185	33.02	51,156
2017	18,490,545.60	1,783,376	1,618,846	18,720,754	33.09	565,753

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1165 MASS. AVE. SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2056						
NET SALVAGE PERCENT.. -10						
2018	1,863,635.10	131,917	119,747	1,930,252	33.15	58,228
2019	2,874,652.03	125,251	113,696	3,048,422	33.22	91,765
2020	2,415,199.16	36,211	32,870	2,623,849	33.28	78,842
	64,911,552.88	16,120,920	14,633,645	56,769,063		1,757,935
SOMERVILLE SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2037						
NET SALVAGE PERCENT.. -10						
1930	46,753.82	43,322	39,325	12,104	10.89	1,111
1960	371.16	315	286	122	14.00	9
1963	207,572.41	174,225	158,151	70,178	14.22	4,935
1964	650,453.27	543,715	493,553	221,945	14.29	15,531
1965	9,932.39	8,267	7,504	3,421	14.36	238
1966	16,292.94	13,501	12,255	5,667	14.43	393
1967	209.28	173	157	73	14.50	5
1968	4,029.60	3,309	3,004	1,429	14.56	98
1972	11,027.26	8,874	8,055	4,075	14.80	275
1973	12,905.86	10,331	9,378	4,819	14.85	325
1974	248.91	198	180	94	14.90	6
1975	20,682.20	16,365	14,855	7,895	14.96	528
1976	2,550.00	2,006	1,821	984	15.01	66
1977	473.76	370	336	185	15.05	12
1978	416.24	323	293	165	15.10	11
1979	84,635.05	65,297	59,273	33,826	15.14	2,234
1981	94,943.97	72,194	65,534	38,905	15.23	2,554
1983	58,904.38	44,094	40,026	24,769	15.31	1,618
1985	28,813.00	21,207	19,250	12,444	15.38	809
1987	63,868.34	46,134	41,878	28,377	15.45	1,837
1988	62,476.61	44,677	40,555	28,169	15.48	1,820
1989	11,647.30	8,239	7,479	5,333	15.52	344
1991	45,398.72	31,383	28,488	21,451	15.58	1,377
1996	10,221.48	6,586	5,978	5,265	15.71	335
1997	389,971.06	247,090	224,294	204,674	15.73	13,012
1998	190,484.82	118,546	107,609	101,924	15.75	6,471
2000	411.63	246	223	229	15.79	15
2001	14,481.90	8,466	7,685	8,245	15.81	522
2002	677,235.67	386,299	350,660	394,299	15.83	24,908

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SOMERVILLE SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 70-R1.5						
PROBABLE RETIREMENT YEAR.. 6-2037						
NET SALVAGE PERCENT.. -10						
2003	137,311.03	76,276	69,239	81,803	15.85	5,161
2004	186,169.82	100,454	91,186	113,600	15.87	7,158
2005	275,813.16	144,182	130,880	172,514	15.89	10,857
2006	189,098.37	95,513	86,701	121,307	15.90	7,629
2007	140,584.36	68,321	62,018	92,625	15.92	5,818
2008	635,161.82	295,604	268,332	430,346	15.94	26,998
2009	29,102.14	12,910	11,719	20,293	15.95	1,272
2010	239,230.50	100,454	91,186	171,967	15.97	10,768
2011	167,285.10	66,063	59,968	124,045	15.98	7,763
2012	134,397.62	49,361	44,807	103,030	16.00	6,439
2013	72,147.29	24,359	22,112	57,250	16.01	3,576
2014	34,592.21	10,568	9,593	28,458	16.02	1,776
2015	105,369.78	28,459	25,833	90,073	16.04	5,616
2016	36,516.12	8,457	7,677	32,491	16.05	2,024
2017	42,134.67	7,979	7,243	39,105	16.06	2,435
2018	29,156.16	4,152	3,769	28,303	16.07	1,761
2019	71,641.93	6,432	5,839	72,968	16.09	4,535
2020	13,781.46	439	398	14,761	16.10	917
	5,256,906.57	3,025,735	2,746,588	3,036,009		193,902
OTHER MINOR STRUCTURES						
SURVIVOR CURVE.. IOWA 45-R1						
NET SALVAGE PERCENT.. -10						
1906	1,716.98	1,889	1,889			
1910	4,720.00	5,192	5,192			
1913	24,820.79	27,303	27,303			
1917	16,056.28	17,662	17,662			
1924	519.90	572	572			
1936	13,127.02	13,804	12,519	1,920	1.98	970
1938	877.29	908	823	142	2.64	54
1939	32.50	33	30	6	2.95	2
1940	1,771.44	1,808	1,640	309	3.25	95
1941	1,921.33	1,947	1,766	348	3.54	98
1942	2,047.15	2,060	1,868	384	3.84	100
1943	844.51	844	765	164	4.13	40
1946	48.48	47	43	11	5.04	2
1948	2,576.07	2,477	2,246	587	5.67	104
1950	4,424.10	4,184	3,795	1,072	6.31	170

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER MINOR STRUCTURES						
SURVIVOR CURVE.. IOWA 45-R1						
NET SALVAGE PERCENT.. -10						
1951	617.24	579	525	154	6.64	23
1952	1,928.26	1,793	1,626	495	6.97	71
1953	3,479.96	3,206	2,908	920	7.31	126
1954	337.00	308	279	91	7.65	12
1955	1,401.84	1,268	1,150	392	8.00	49
1956	1,928.75	1,727	1,566	555	8.36	66
1957	1,071.31	950	862	317	8.72	36
1958	1,825.00	1,602	1,453	555	9.09	61
1959	1,205.90	1,048	950	376	9.46	40
1960	6,195.01	5,324	4,829	1,986	9.84	202
1961	1,180.62	1,004	911	388	10.22	38
1962	7,558.05	6,354	5,763	2,551	10.61	240
1963	19,879.93	16,517	14,980	6,888	11.01	626
1965	766.45	622	564	279	11.82	24
1967	143,424.21	113,382	102,830	54,937	12.66	4,339
1968	316,688.43	247,024	224,034	124,324	13.09	9,498
1969	9,148.36	7,040	6,385	3,678	13.52	272
1970	17,179.98	13,035	11,822	7,076	13.96	507
1971	27,334.65	20,440	18,538	11,530	14.41	800
1972	11,272.16	8,302	7,529	4,870	14.87	328
1973	67,103.99	48,668	44,139	29,676	15.33	1,936
1974	68,688.04	49,011	44,450	31,107	15.81	1,968
1975	107,454.64	75,438	68,417	49,783	16.28	3,058
1976	158,281.09	109,224	99,059	75,051	16.77	4,475
1977	33,474.61	22,699	20,586	16,236	17.26	941
1978	32,252.13	21,468	19,470	16,007	17.77	901
1979	3,019.09	1,973	1,789	1,532	18.27	84
1980	227,163.25	145,540	131,995	117,885	18.79	6,274
1981	199,679.68	125,346	113,680	105,967	19.32	5,485
1982	182,465.44	112,176	101,736	98,976	19.85	4,986
1983	157,164.73	94,547	85,748	87,134	20.39	4,273
1984	36,571.29	21,518	19,515	20,713	20.93	990
1985	163,922.23	94,203	85,436	94,879	21.49	4,415
1986	280,837.40	157,550	142,887	166,034	22.05	7,530
1987	114,532.47	62,656	56,825	69,161	22.62	3,058
1988	60,195.25	32,077	29,092	37,123	23.20	1,600
1989	208,587.78	108,145	98,080	131,366	23.79	5,522
1990	175,813.99	88,618	80,370	113,025	24.38	4,636
1991	66,303.29	32,447	29,427	43,506	24.98	1,742
1992	59,678.50	28,315	25,680	39,967	25.59	1,562
1993	282,174.21	129,675	117,606	192,785	26.20	7,358
1994	3,770.66	1,676	1,520	2,628	26.82	98

NSTAR ELECTRIC COMPANY

ACCOUNT 390.00 STRUCTURES AND IMPROVEMENTS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER MINOR STRUCTURES						
SURVIVOR CURVE.. IOWA 45-R1						
NET SALVAGE PERCENT.. -10						
1995	148,337.56	63,637	57,714	105,457	27.45	3,842
1996	272,653.64	112,704	102,215	197,704	28.09	7,038
1997	327,251.67	130,153	118,040	241,937	28.73	8,421
1998	203,811.30	77,869	70,622	153,571	29.37	5,229
1999	13,674.31	5,007	4,541	10,501	30.02	350
2000	240,208.51	84,083	76,257	187,972	30.68	6,127
2001	3,252,658.62	1,086,115	985,032	2,592,893	31.34	82,734
2002	387,537.47	123,151	111,689	314,602	32.00	9,831
2003	380,097.37	114,561	103,899	314,208	32.67	9,618
2004	874,882.82	249,148	225,960	736,411	33.35	22,081
2005	212,929.37	57,150	51,831	182,391	34.02	5,361
2006	54,645.29	13,759	12,478	47,631	34.70	1,373
2007	937,958.61	220,341	199,834	831,920	35.39	23,507
2008	1,727,271.19	377,036	341,946	1,558,053	36.07	43,195
2009	1,056,523.95	212,806	193,000	969,176	36.76	26,365
2010	127,117.16	23,430	21,249	118,579	37.46	3,165
2011	394,890.71	66,121	59,967	374,413	38.15	9,814
2012	343,411.95	51,541	46,744	331,009	38.86	8,518
2013	819,596.49	108,989	98,846	802,711	39.56	20,291
2014	150,696.97	17,424	15,802	149,964	40.27	3,724
2015	5,157,059.52	505,500	458,454	5,214,312	40.99	127,209
2016	1,579,930.52	127,060	115,235	1,622,689	41.71	38,904
2017	373,437.88	23,460	21,277	389,505	42.43	9,180
2018	522,183.91	23,487	21,301	553,101	43.16	12,815
2019	1,501,594.48	40,749	36,957	1,614,797	43.89	36,792
2020	2,724,599.64	24,636	22,343	2,974,716	44.63	66,653
	27,124,021.62	6,035,142	5,478,355	24,358,069		684,022
	203,895,769.77	55,288,067	50,187,331	174,098,016		5,681,316

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 30.6 2.79

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
BOSTON SERVICE CENTER (HYDE PARK AVE.)						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 6-2033						
NET SALVAGE PERCENT.. 0						
1993	39,643.00	28,166	25,633	14,010	9.47	1,479
1997	224,644.00	149,593	136,138	88,506	10.35	8,551
1998	733,113.47	479,354	436,239	296,875	10.54	28,167
2000	73,945.72	46,538	42,352	31,594	10.86	2,909
2002	56,132.86	33,808	30,767	25,366	11.14	2,277
2003	587,836.84	345,560	314,479	273,358	11.26	24,277
2004	81,490.39	46,671	42,473	39,017	11.37	3,432
2005	137,786.07	76,696	69,798	67,988	11.47	5,927
2006	150,109.76	81,004	73,718	76,392	11.56	6,608
2007	167,466.37	87,278	79,428	88,039	11.65	7,557
2008	32,876.51	16,480	14,998	17,879	11.73	1,524
2010	249,763.58	114,142	103,876	145,888	11.87	12,290
2011	1,108,308.12	478,989	435,907	672,401	11.93	56,362
2012	87,024.99	35,259	32,088	54,937	11.98	4,586
2013	20,403.58	7,653	6,965	13,439	12.03	1,117
2015	18,527.93	5,659	5,150	13,378	12.12	1,104
2016	26,695.58	7,058	6,423	20,272	12.16	1,667
2017	116,198.05	25,325	23,047	93,151	12.20	7,635
2018	85,580.71	14,235	12,955	72,626	12.23	5,938
2019	4,809,256.85	511,753	465,724	4,343,533	12.26	354,285
2020	123,992.66	4,758	4,330	119,663	12.28	9,745
	8,930,797.04	2,595,979	2,362,486	6,568,311		547,437
WALTHAM SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 8-2041						
NET SALVAGE PERCENT.. 0						
1993	1,891.84	1,242	1,098	794	11.87	67
1997	49,506.92	29,310	25,912	23,595	13.83	1,706
1998	121,365.87	69,821	61,726	59,639	14.30	4,171
2000	106,841.45	57,890	51,179	55,663	15.17	3,669
2001	21,674.10	11,370	10,052	11,622	15.58	746
2002	495,680.08	251,359	222,218	273,462	15.97	17,123
2003	299,008.56	146,281	129,322	169,686	16.34	10,385
2004	74,238.22	34,966	30,912	43,326	16.69	2,596
2005	472,732.02	213,840	189,049	283,683	17.01	16,677
2006	497,868.09	215,512	190,527	307,341	17.32	17,745
2007	120,994.87	49,988	44,193	76,802	17.60	4,364

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WALTHAM SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 8-2041						
NET SALVAGE PERCENT.. 0						
2008	763,580.81	299,721	264,974	498,607	17.86	27,918
2009	8,450.52	3,136	2,772	5,678	18.10	314
2010	600,456.57	209,049	184,813	415,643	18.33	22,676
2011	76,465.64	24,801	21,926	54,540	18.54	2,942
2012	194,602.74	58,243	51,491	143,112	18.73	7,641
2013	35,221.39	9,605	8,491	26,730	18.91	1,414
2015	3,213.95	689	609	2,605	19.22	136
2016	61,294.85	11,165	9,871	51,424	19.35	2,658
2017	45,671.69	6,719	5,940	39,732	19.48	2,040
2018	174,551.24	19,042	16,834	157,717	19.60	8,047
2019	66,261.17	4,543	4,016	62,245	19.70	3,160
2020	7,060,647.29	167,126	147,751	6,912,897	19.80	349,136
	11,352,219.88	1,895,418	1,675,677	9,676,543		507,331
WALPOLE SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 3-2043						
NET SALVAGE PERCENT.. 0						
1997	100,803.55	58,979	41,586	59,217	14.19	4,173
2000	12,375.00	6,589	4,646	7,729	15.69	493
2002	121,530.20	60,341	42,547	78,984	16.60	4,758
2003	206,718.49	98,797	69,662	137,056	17.03	8,048
2004	161,103.73	74,006	52,182	108,922	17.43	6,249
2005	49,221.63	21,663	15,275	33,947	17.81	1,906
2006	277,260.22	116,563	82,189	195,071	18.17	10,736
2007	65,562.96	26,225	18,491	47,072	18.51	2,543
2008	427,781.01	162,163	114,342	313,439	18.82	16,655
2009	27,854.60	9,962	7,024	20,830	19.11	1,090
2010	37,339.75	12,506	8,818	28,522	19.38	1,472
2011	98,341.92	30,631	21,598	76,744	19.63	3,910
2012	119,898.12	34,368	24,233	95,665	19.86	4,817
2013	75,525.43	19,668	13,868	61,657	20.08	3,071
2015	38,361.83	7,798	5,498	32,863	20.46	1,606
2016	46,779.62	8,072	5,692	41,088	20.62	1,993
2017	81,918.76	11,373	8,019	73,900	20.78	3,556

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
WALPOLE SERVICE CENTER						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 3-2043						
NET SALVAGE PERCENT.. 0						
2018	125,299.29	12,896	9,093	116,206	20.92	5,555
2019	161,535.49	10,343	7,293	154,243	21.05	7,327
2020	200,578.28	4,447	3,136	197,443	21.17	9,327
	2,435,789.88	787,390	555,191	1,880,599		99,285
PRUDENTIAL BUILDING						
INTERIM SURVIVOR CURVE.. IOWA 35-R2.5						
PROBABLE RETIREMENT YEAR.. 11-2022						
NET SALVAGE PERCENT.. 0						
1999	2,659,027.57	2,432,744	2,556,627	102,401	1.89	54,180
2000	11,281.20	10,283	10,807	475	1.89	251
2004	1,662.10	1,485	1,561	101	1.90	53
2013	31,968.97	25,410	26,704	5,265	1.91	2,757
2015	55.48	41	43	12	1.91	6
2018	4,664.98	2,640	2,774	1,891	1.91	990
2019	158,898.66	69,896	73,455	85,443	1.91	44,735
	2,867,558.96	2,542,499	2,671,971	195,588		102,972
OTHER MINOR STRUCTURES						
SURVIVOR CURVE.. IOWA 35-R2.5						
NET SALVAGE PERCENT.. 0						
1968	55.20	50	55			
1975	160,754.13	138,845	160,527	227	4.77	48
1976	2,338.85	2,003	2,316	23	5.03	5
1977	8,366.10	7,099	8,208	159	5.30	30
1978	292.66	246	284	8	5.58	1
1979	1,417.91	1,179	1,363	55	5.89	9
1980	932.70	767	887	46	6.21	7
1982	3,518.84	2,824	3,265	254	6.91	37
1983	21,175.31	16,765	19,383	1,792	7.29	246
1985	8,862.71	6,802	7,864	999	8.14	123
1987	98,626.95	73,040	84,446	14,181	9.08	1,562
1988	391.65	284	328	63	9.59	7
1990	84,763.73	58,899	68,097	16,667	10.68	1,561
1991	3,498.61	2,373	2,744	755	11.26	67
1993	985.71	634	733	253	12.48	20

NSTAR ELECTRIC COMPANY

ACCOUNT 390.10 STRUCTURES AND IMPROVEMENTS - LEASEHOLDS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
OTHER MINOR STRUCTURES						
SURVIVOR CURVE.. IOWA 35-R2.5						
NET SALVAGE PERCENT.. 0						
1994	9,679.59	6,051	6,996	2,684	13.12	205
1996	6,247.61	3,668	4,241	2,007	14.45	139
1997	102,141.82	57,958	67,009	35,133	15.14	2,321
1998	213.02	117	135	78	15.85	5
2000	25,372.50	12,817	14,818	10,554	17.32	609
2002	223,355.41	103,125	119,229	104,127	18.84	5,527
2003	70,344.46	30,911	35,738	34,606	19.62	1,764
2004	310,976.39	129,634	149,877	161,099	20.41	7,893
2005	214,379.29	84,403	97,583	116,796	21.22	5,504
2006	479,698.51	177,628	205,366	274,333	22.04	12,447
2007	7,266.51	2,518	2,911	4,355	22.87	190
2008	248,650.34	80,207	92,732	155,918	23.71	6,576
2013	90,747.44	17,942	20,744	70,004	28.08	2,493
2015	361,272.00	52,850	61,103	300,169	29.88	10,046
2019	64,400.76	2,595	3,000	61,401	33.59	1,828
2020	4,210.62	57	66	4,145	34.53	120
	2,614,937.33	1,074,291	1,242,047	1,372,890		61,390
	28,201,303.09	8,895,577	8,507,372	19,693,931		1,318,415

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 14.9 4.68

NSTAR ELECTRIC COMPANY

ACCOUNT 390.30 STRUCTURES AND IMPROVEMENTS - HADLEY

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

INTERIM SURVIVOR CURVE.. IOWA 70-R1.5
PROBABLE RETIREMENT YEAR.. 6-2048
NET SALVAGE PERCENT.. -10

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
1988	56,656.12	33,102	62,322			
1990	56,525.34	32,033	62,178			
1991	25,500.00	14,221	28,050			
1993	53,019.84	28,543	58,322			
1995	4,515.18	2,338	4,967			
1997	37,104.99	18,391	40,815			
2001	1,843.03	822	2,027			
2002	30,369.19	13,130	33,406			
2005	42,951.11	16,641	43,323	3,923	25.62	153
2006	7,230.58	2,683	6,985	969	25.67	38
2008	162,837.77	54,702	142,409	36,713	25.77	1,425
2009	23,880.11	7,568	19,702	6,566	25.82	254
2010	2,707.50	804	2,093	885	25.87	34
2011	6,534.89	1,804	4,696	2,492	25.91	96
2012	34,865.33	8,844	23,024	15,328	25.96	590
2013	535,108.53	123,169	320,654	267,965	26.00	10,306
2014	869,839.75	178,696	465,211	491,613	26.04	18,879
2015	250,036.71	44,766	116,542	158,498	26.08	6,077
2016	2,188,267.80	330,687	860,899	1,546,196	26.12	59,196
2017	43,167.29	5,233	13,623	33,861	26.16	1,294
2018	1,623,317.54	145,888	379,801	1,405,848	26.19	53,679
2019	300,656.30	16,758	43,627	287,095	26.23	10,945
2020	100,112.54	1,936	5,040	105,084	26.26	4,002
	6,457,047.44	1,082,759	2,739,716	4,363,036		166,968

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 26.1 2.59

NSTAR ELECTRIC COMPANY

ACCOUNT 391.10 OFFICE FURNITURE AND EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2001	489,975.33	477,726	476,328	13,647	0.50	13,647
2002	4,906,693.46	4,538,691	4,525,410	381,283	1.50	254,189
2003	638,710.69	558,872	557,237	81,474	2.50	32,590
2004	132,500.89	109,313	108,993	23,508	3.50	6,717
2005	167,156.09	129,546	129,167	37,989	4.50	8,442
2006	109,714.07	79,543	79,310	30,404	5.50	5,528
2007	33,850.77	22,849	22,782	11,069	6.50	1,703
2008	722,102.02	451,314	449,993	272,109	7.50	36,281
2009	185,697.83	106,776	106,464	79,234	8.50	9,322
2010	226,493.02	118,909	118,561	107,932	9.50	11,361
2011	448,377.86	212,979	212,356	236,022	10.50	22,478
2012	1,305,569.56	554,867	553,243	752,327	11.50	65,420
2013	549,286.71	205,983	205,380	343,907	12.50	27,513
2014	639,969.57	207,990	207,381	432,589	13.50	32,044
2015	65,843.70	18,107	18,054	47,790	14.50	3,296
2016	1,048,821.52	235,985	235,295	813,527	15.50	52,486
2017	1,061,810.65	185,817	185,273	876,538	16.50	53,124
2018	1,322,451.01	165,306	164,823	1,157,628	17.50	66,150
2019	1,870,817.28	140,311	139,900	1,730,917	18.50	93,563
2020	919,463.08	22,987	22,920	896,543	19.50	45,977
	16,845,305.11	8,543,871	8,518,870	8,326,435		841,831

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 9.9 5.00

NSTAR ELECTRIC COMPANY

ACCOUNT 391.20 COMPUTER EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
FULLY ACCRUED						
NET SALVAGE PERCENT.. 0						
2000	7,870.70	7,871	7,871			
2001	67,092.19	67,092	67,092			
2002	35,208.62	35,209	35,209			
2003	219,956.56	219,957	219,957			
2004	156,529.98	156,530	156,530			
2005	121,048.97	121,049	121,049			
2006	8,301.52	8,302	8,302			
2007	53,289.74	53,290	53,290			
2008	3,707.34	3,707	3,707			
2009	281,005.42	281,005	281,005			
2010	117,826.92	117,827	117,827			
2011	18,726.08	18,726	18,726			
2012	81,162.25	81,162	81,162			
2013	8,260.91	8,261	8,261			
	1,179,987.20	1,179,988	1,179,987			
AMORTIZED						
SURVIVOR CURVE.. 7-SQUARE						
NET SALVAGE PERCENT.. 0						
2013	50,610.27	50,610	50,610			
2014	332,222.66	308,492	305,296	26,927	0.50	26,927
2015	4,130,360.86	3,245,266	3,211,645	918,716	1.50	612,477
2016	1,353,405.56	870,050	861,036	492,369	2.50	196,948
2017	402,676.60	201,338	199,252	203,424	3.50	58,121
2018	1,462,368.78	522,270	516,859	945,510	4.50	210,113
2019	538,694.05	115,437	114,241	424,453	5.50	77,173
2020	1,993,850.78	142,421	140,946	1,852,905	6.50	285,062
	10,264,189.56	5,455,884	5,399,885	4,864,305		1,466,821
	11,444,176.76	6,635,872	6,579,872	4,864,305		1,466,821

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 3.3 12.82

NSTAR ELECTRIC COMPANY

ACCOUNT 392.00 TRANSPORTATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 16-L2						
NET SALVAGE PERCENT.. +15						
2003	18,679.06	10,052	15,877			
2004	131,685.32	69,188	111,933			
2009	2,982,643.19	1,353,188	2,196,886	338,361	7.46	45,357
2010	27,283.57	11,827	19,201	3,990	7.84	509
2011	2,311,963.93	946,976	1,537,405	427,764	8.29	51,600
2012	1,217,499.57	465,052	755,007	279,868	8.81	31,767
2013	224,907.93	78,499	127,442	63,730	9.43	6,758
2014	157,974.53	49,179	79,842	54,436	10.14	5,368
2015	7,386,855.44	1,993,528	3,236,471	3,042,356	10.92	278,604
2016	13,763,745.96	3,100,284	5,033,277	6,665,907	11.76	566,829
2017	12,435,012.88	2,219,650	3,603,577	6,966,184	12.64	551,122
2018	13,681,568.05	1,773,473	2,879,214	8,750,119	13.56	645,289
2019	14,256,779.05	1,128,453	1,832,031	10,286,231	14.51	708,906
2020	19,925,102.77	529,261	859,249	16,077,088	15.50	1,037,231
	88,521,701.25	13,728,610	22,287,412	52,956,034		3,929,340

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 13.5 4.44

NSTAR ELECTRIC COMPANY

ACCOUNT 393.00 STORES EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 25-SQUARE						
NET SALVAGE PERCENT.. 0						
1996	7,527.42	7,377	7,377	150	0.50	150
2002	14,258.70	10,551	10,551	3,708	6.50	570
2007	14,455.06	7,806	7,806	6,649	11.50	578
2010	29,165.86	12,250	12,250	16,916	14.50	1,167
2011	31,528.46	11,981	11,981	19,547	15.50	1,261
2012	92,274.21	31,373	31,373	60,901	16.50	3,691
2013	77,035.50	23,111	23,111	53,924	17.50	3,081
2014	12,942.32	3,365	3,365	9,577	18.50	518
2015	253,387.61	55,745	55,745	197,643	19.50	10,136
2016	1,736,554.08	312,580	312,580	1,423,974	20.50	69,462
2017	605,460.87	84,765	84,765	520,696	21.50	24,218
2018	388,854.70	38,885	38,885	349,970	22.50	15,554
2019	926,378.61	55,583	55,583	870,796	23.50	37,055
2020	299,917.91	5,998	5,998	293,920	24.50	11,997
	4,489,741.31	661,370	661,370	3,828,371		179,438

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 21.3 4.00

NSTAR ELECTRIC COMPANY

ACCOUNT 394.00 TOOLS, SHOP AND GARAGE EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 25-SQUARE						
NET SALVAGE PERCENT.. 0						
1996	70,673.37	69,260	69,123	1,550	0.50	1,550
1997	137,835.01	129,565	129,309	8,526	1.50	5,684
1998	4,550.87	4,096	4,088	463	2.50	185
2000	20,930.38	17,163	17,129	3,801	4.50	845
2002	36,453.66	26,976	26,923	9,531	6.50	1,466
2003	155,355.28	108,749	108,534	46,821	7.50	6,243
2004	185,312.95	122,307	122,065	63,248	8.50	7,441
2005	149,666.13	92,793	92,610	57,056	9.50	6,006
2006	84,703.54	49,128	49,031	35,673	10.50	3,397
2007	1,205,224.11	650,821	649,535	555,689	11.50	48,321
2008	430,703.76	215,352	214,927	215,777	12.50	17,262
2009	1,561,623.08	718,347	716,928	844,695	13.50	62,570
2010	719,194.72	302,062	301,465	417,730	14.50	28,809
2011	1,213,183.15	461,010	460,099	753,084	15.50	48,586
2012	994,318.77	338,068	337,400	656,919	16.50	39,813
2013	1,139,591.52	341,877	341,201	798,391	17.50	45,622
2014	1,615,910.63	420,137	419,307	1,196,604	18.50	64,681
2015	606,870.60	133,512	133,248	473,623	19.50	24,288
2016	1,718,947.16	309,410	308,799	1,410,148	20.50	68,788
2017	1,461,246.01	204,574	204,170	1,257,076	21.50	58,469
2018	1,819,920.63	181,992	181,632	1,638,289	22.50	72,813
2019	2,109,646.68	126,579	126,329	1,983,318	23.50	84,397
2020	1,930,467.96	38,609	38,533	1,891,935	24.50	77,222
	19,372,329.97	5,062,387	5,052,385	14,319,945		774,458

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 18.5 4.00

NSTAR ELECTRIC COMPANY

ACCOUNT 395.00 LABRATORY EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2001	22,934.18	22,361	22,088	846	0.50	846
2002	9,647.40	8,924	8,815	832	1.50	555
2003	24,415.75	21,364	21,103	3,313	2.50	1,325
2004	8,995.27	7,421	7,330	1,665	3.50	476
2005	43,425.62	33,655	33,244	10,182	4.50	2,263
2006	19,901.38	14,429	14,253	5,648	5.50	1,027
2008	26,720.69	16,700	16,496	10,225	7.50	1,363
2009	44,015.86	25,309	25,000	19,016	8.50	2,237
2011	3,719.15	1,767	1,745	1,974	10.50	188
2012	84,139.88	35,759	35,323	48,817	11.50	4,245
2014	22,254.31	7,233	7,145	15,109	13.50	1,119
2020	8,589,353.61	214,734	212,113	8,377,241	19.50	429,602
	8,899,523.10	409,656	404,655	8,494,868		445,246

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 19.1 5.00

NSTAR ELECTRIC COMPANY

ACCOUNT 396.00 POWER OPERATED EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 20-L3						
NET SALVAGE PERCENT.. 0						
1972	383.28	383	383			
1973	2,493.20	2,487	2,493			
1974	102,117.79	100,586	102,118			
1975	4,119.50	4,023	4,120			
1976	27,025.48	26,147	27,025			
1977	1,421.92	1,362	1,422			
2007	31,923.73	19,058	24,568	7,356	8.06	913
2009	58,617.72	31,185	40,200	18,418	9.36	1,968
	228,102.62	185,231	202,329	25,774		2,881

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 8.9 1.26

NSTAR ELECTRIC COMPANY

ACCOUNT 397.00 COMMUNICATION EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 15-SQUARE						
NET SALVAGE PERCENT.. 0						
1996	246,288.02	246,288	246,288			
1997	118,758.57	118,759	118,759			
2001	173,519.22	173,519	173,519			
2002	1,266.40	1,266	1,266			
2004	18,197.88	18,198	18,198			
2005	133,829.24	133,829	133,829			
2006	3,347,396.23	3,235,828	3,174,297	173,099	0.50	173,099
2007	657,589.59	591,831	580,577	77,013	1.50	51,342
2008	805,826.44	671,519	658,750	147,076	2.50	58,830
2009	4,414,423.31	3,384,406	3,320,050	1,094,373	3.50	312,678
2010	1,744,396.55	1,221,078	1,197,858	546,539	4.50	121,453
2011	4,529,709.26	2,868,801	2,814,249	1,715,460	5.50	311,902
2012	16,739,474.69	9,485,758	9,305,381	7,434,094	6.50	1,143,707
2013	1,270,434.39	635,217	623,138	647,296	7.50	86,306
2014	4,399,489.47	1,906,431	1,870,179	2,529,310	8.50	297,566
2015	8,492,305.51	3,113,874	3,054,662	5,437,644	9.50	572,384
2016	14,063,038.39	4,218,912	4,138,687	9,924,351	10.50	945,176
2017	3,688,970.01	860,747	844,380	2,844,590	11.50	247,356
2018	1,372,837.43	228,811	224,460	1,148,377	12.50	91,870
2019	1,602,713.30	160,271	157,223	1,445,490	13.50	107,073
2020	642,276.90	21,407	21,000	621,277	14.50	42,847
	68,462,740.80	33,296,750	32,676,750	35,785,991		4,563,589

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 7.8 6.67

NSTAR ELECTRIC COMPANY

ACCOUNT 397.10 COMMUNICATION EQUIPMENT - GPS

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
FULLY ACCRUED						
NET SALVAGE PERCENT.. 0						
2015	385,273.46	385,273	385,273			
	385,273.46	385,273	385,273			
AMORTIZED						
SURVIVOR CURVE.. 5-SQUARE						
NET SALVAGE PERCENT.. 0						
2016	78,485.58	70,637	66,858	11,628	0.50	11,628
2017	163,010.06	114,107	108,002	55,008	1.50	36,672
	241,495.64	184,744	174,860	66,636		48,300
	626,769.10	570,017	560,133	66,636		48,300

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 1.4 7.71

NSTAR ELECTRIC COMPANY

ACCOUNT 397.20 COMMUNICATION EQUIPMENT - MICROWAVE

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. IOWA 40-S1						
NET SALVAGE PERCENT.. -5						
1950	97.51	96	83	19	2.57	7
1961	187.24	168	145	52	5.84	9
1970	2,853.77	2,335	2,015	981	8.83	111
1973	17,649.31	13,941	12,029	6,503	9.91	656
1978	228,453.46	168,993	145,810	94,066	11.82	7,958
1980	7,176.41	5,156	4,449	3,086	12.63	244
1982	4,535.14	3,157	2,724	2,038	13.48	151
1983	9,380.56	6,424	5,543	4,307	13.91	310
1985	32,619.36	21,578	18,618	15,632	14.80	1,056
1986	43,551.08	28,283	24,403	21,326	15.26	1,398
1987	448,636.01	285,820	246,611	224,457	15.73	14,269
1988	368,115.76	229,980	198,431	188,091	16.20	11,611
1989	390,206.84	238,763	206,009	203,708	16.69	12,205
1990	26,880.17	16,095	13,887	14,337	17.19	834
1991	15,567.29	9,113	7,863	8,483	17.70	479
1992	103,438.15	59,138	51,025	57,585	18.22	3,161
1993	179,233.34	99,932	86,223	101,972	18.76	5,436
1994	47,635.19	25,884	22,333	27,684	19.30	1,434
1995	560,379.07	296,258	255,617	332,781	19.86	16,756
1996	50,865.97	26,117	22,534	30,875	20.44	1,511
1998	36,254.95	17,483	15,085	22,983	21.63	1,063
1999	3,671.85	1,712	1,477	2,378	22.24	107
2000	225,293.41	101,247	87,358	149,200	22.88	6,521
2002	5,385.90	2,234	1,928	3,727	24.20	154
2003	13,952.58	5,538	4,778	9,872	24.88	397
2004	412,982.40	156,324	134,879	298,753	25.58	11,679
2005	7,490.84	2,694	2,324	5,541	26.30	211
2006	6,914.72	2,351	2,028	5,232	27.05	193
2007	13,780.54	4,410	3,805	10,665	27.81	383
2009	1,840,616.11	512,635	442,312	1,490,335	29.39	50,709
2010	294,560.59	75,698	65,314	243,975	30.21	8,076
2012	72,468.12	15,370	13,262	62,830	31.92	1,968
2015	938,903.68	132,104	113,982	871,867	34.64	25,169
2016	107,158.25	12,433	10,727	101,789	35.58	2,861
2017	204,757.73	18,597	16,046	198,950	36.54	5,445
	6,721,653.30	2,598,061	2,241,657	4,816,079		194,532

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 24.8 2.89

NSTAR ELECTRIC COMPANY

ACCOUNT 398.00 MISCELLANEOUS EQUIPMENT

CALCULATED REMAINING LIFE DEPRECIATION ACCRUAL
RELATED TO ORIGINAL COST AS OF DECEMBER 31, 2020

YEAR (1)	ORIGINAL COST (2)	CALCULATED ACCRUED (3)	ALLOC. BOOK RESERVE (4)	FUTURE BOOK ACCRUALS (5)	REM. LIFE (6)	ANNUAL ACCRUAL (7)
SURVIVOR CURVE.. 20-SQUARE						
NET SALVAGE PERCENT.. 0						
2002	16,692.50	15,441	15,441	1,252	1.50	835
2003	33,644.96	29,439	29,439	4,206	2.50	1,682
2004	13,343.43	11,008	11,008	2,335	3.50	667
2005	124,469.06	96,464	96,464	28,005	4.50	6,223
2006	289,894.58	210,174	210,174	79,721	5.50	14,495
2007	3,214.91	2,170	2,170	1,045	6.50	161
2008	817,492.67	510,933	510,934	306,559	7.50	40,875
2009	45,272.70	26,032	26,032	19,241	8.50	2,264
2010	119,174.16	62,566	62,566	56,608	9.50	5,959
2011	13,568.23	6,445	6,445	7,123	10.50	678
2012	708,761.67	301,224	301,224	407,538	11.50	35,438
2013	44,083.65	16,531	16,531	27,553	12.50	2,204
2014	30,023.25	9,758	9,758	20,265	13.50	1,501
2015	817,225.74	224,737	224,738	592,488	14.50	40,861
2016	188,434.77	42,398	42,398	146,037	15.50	9,422
2017	61,516.00	10,765	10,765	50,751	16.50	3,076
2018	287,231.07	35,904	35,904	251,327	17.50	14,362
2019	2,861.88	215	215	2,647	18.50	143
2020	1,545.34	39	39	1,506	19.50	77
	3,618,450.57	1,612,243	1,612,245	2,006,206		180,923

COMPOSITE REMAINING LIFE AND ANNUAL ACCRUAL RATE, PERCENT .. 11.1 5.00

NSTAR ELECTRIC COMPANY

COMPARISON OF PROPOSED ANNUAL DEPRECIATION EXPENSE vs CURRENT ANNUAL DEPRECIATION EXPENSE
AS OF DECEMBER 31, 2020

	ACCOUNT	ORIGINALCOST AS OF DECEMBER 31, 2020	PROPOSED ACCRUAL RATE	PROPOSED ACCRUAL AMOUNT	CURRENT ACCRUAL RATE	CURRENT ACCRUAL AMOUNT	INCREASE/ (DECREASE)
	(1)	(2)	(3)	(4)	(5)	(6)=(2)*(5)	(7)=(4)-(6)
	ELECTRIC PLANT						
	INTANGIBLE PLANT						
303.10	MISCELLANEOUS INTANGIBLE PLANT - 5 YEAR	4,162,555.18	*	0	*	231,156	(231,156)
303.20	MISCELLANEOUS INTANGIBLE PLANT - 10 YEAR	51,636,880.49	*	1,849,201	*	1,435,774	413,427
303.30	MISCELLANEOUS INTANGIBLE PLANT - 15 YEAR	14,476,008.18	*	691,464	*	1,601,996	(910,532)
	TOTAL INTANGIBLE PLANT	**70,275,443.85**		**2,540,665**		**3,268,926**	**(728,261)**
	OTHER PRODUCTION PLANT						
340.10	LAND RIGHTS - SOLAR	3,505,709.94	4.47	156,749	-	0	156,749
341.10	STRUCTURES AND IMPROVEMENTS - SOLAR	41,850,820.57	4.19	1,753,302	4.00	1,674,033	79,269
344.10	STATION EQUIPMENT - SOLAR	127,698,860.28	4.55	5,816,020	4.00	5,107,954	708,066
345.10	POLES, TOWERS AND FIXTURES - SOLAR	7,819,769.46	4.04	316,111	4.00	312,791	3,320
	TOTAL OTHER PRODUCTION PLANT	**180,875,160.25**	**4.45**	**8,042,182**	**3.92**	**7,094,778**	**947,404**
	DISTRIBUTION PLANT						
360.20	LAND RIGHTS	1,022,779.96	3.64	37,240	3.64	37,229	11
361.00	STRUCTURES AND IMPROVEMENTS	138,996,464.40	1.55	2,154,348	1.50	2,084,947	69,401
362.00	STATION EQUIPMENT	1,075,305,838.61	2.10	22,536,443	2.01	21,613,647	922,796
362.10	STATION EQUIPMENT - SOLAR	13,744,526.74	4.44	610,337	2.01	276,265	334,072
364.00	POLES, TOWERS AND FIXTURES	494,887,277.19	3.40	16,839,221	3.10	15,341,506	1,497,715
365.00	OVERHEAD CONDUCTORS AND DEVICES	980,625,301.49	2.60	25,498,761	3.09	30,301,322	(4,802,561)
366.00	UNDERGROUND CONDUIT	801,827,306.55	2.10	16,874,597	2.12	16,998,739	(124,142)
367.00	UNDERGROUND CONDUCTORS AND DEVICES	1,817,665,973.84	2.41	43,814,087	2.92	53,075,846	(9,261,759)
368.00	LINE TRANSFORMERS	723,797,136.25	3.03	21,898,997	3.21	23,233,888	(1,334,891)
369.10	SERVICES - OVERHEAD	131,126,077.08	2.56	3,361,307	2.65	3,474,841	(113,534)
369.20	SERVICES - UNDERGROUND	308,709,209.08	2.60	8,026,061	3.21	9,909,566	(1,883,505)
369.30	SERVICES - ELECTRIC VEHICLE CHARGIING	20,046,328.06	4.05	811,327	4.05	811,876	(549)
370.10	METERS (AMR)	211,713,647.95	8.62	18,241,681	5.88	12,448,762	5,792,919
370.20	METERS (NON-AMR)	73,832,834.43	6.92	5,110,773	5.88	4,341,371	769,402
370.30	METERING EQUIPMENT	40,092,562.20	6.38	2,558,519	5.88	2,357,443	201,076
371.00	INSTALLATIONS ON CUSTOMERS' PREMISES	11,364,366.46	5.86	666,457	8.02	911,422	(244,965)
371.10	INSTALLATIONS ON CUSTOMERS' PREMISES - ELECTRIC VEHICLE CHARGIN	145,268.73	13.15	19,108	13.15	19,103	5
373.00	STREET LIGHTING AND SIGNAL SYSTEMS	40,135,447.07	3.46	1,390,201	4.05	1,625,486	(235,285)
	TOTAL DISTRIBUTION PLANT	**6,885,038,346.09**	**2.77**	**190,449,465**	**2.89**	**198,863,259**	**(8,413,794)**
	GENERAL PLANT						
389.20	LAND RIGHTS	394.58	9.88	39	8.11	32	7
390.00	STRUCTURES AND IMPROVEMENTS						
	EAST SPRINGFIELD SERVICE CENTER	11,509,414.62	3.45	397,344	4.76	547,848	(150,504)
	GREENFIELD SERVICE CENTER	2,224,775.22	5.11	113,666	6.59	146,613	(32,947)
	PITTSFIELD SERVICE CENTER	6,281,759.67	3.82	240,023	4.97	312,203	(72,180)
	DOTY ROAD - VEHICLE REPAIR SHOP	1,362,370.08	3.64	49,637	4.31	58,718	(9,081)
	NEW BEDFORD FACILITY	27,682,327.56	2.92	809,259	4.17	1,154,353	(345,094)
	PLYMOUTH SERVICE CENTER	6,180,882.95	3.71	229,512	3.44	212,622	16,890
	YARMOUTH SERVICE CENTER	7,704,158.94	4.09	315,213	3.88	298,921	16,292
	SUMMIT OFFICE BUILDING	43,657,599.66	2.04	890,803	2.10	916,810	(26,007)
	1165 MASS. AVE. SERVICE CENTER	64,911,552.88	2.71	1,757,935	2.92	1,895,417	(137,482)
	SOMERVILLE SERVICE CENTER	5,256,906.57	3.69	193,902	3.55	186,620	7,282
	OTHER MINOR STRUCTURES	27,124,021.62	2.52	684,022	2.97	805,583	(121,561)
	TOTAL ACCOUNT 390	203,895,769.77	2.79	5,681,316	3.21	6,535,708	(854,392)
390.10	STRUCTURES AND IMPROVEMENTS - LEASEHOLDS						
	BOSTON SERVICE CENTER (HYDE PARK. AVE.)	8,930,797.04	6.13	547,437	7.55	674,275	(126,838)
	WALTHAM SERVICE CENTER	11,352,219.88	4.47	507,331	14.52	1,648,342	(1,141,011)
	WALPOLE SERVICE CENTER	2,435,789.88	4.08	99,285	16.35	398,252	(298,967)
	PRUDENTIAL BUILDING	2,867,558.96	3.59	102,972	14.53	416,656	(313,684)
	OTHER MINOR STRUCTURES	2,614,937.33	2.35	61,390	4.79	125,255	(63,865)
	TOTAL ACCOUNT 390.1	28,201,303.09	4.68	1,318,415	11.57	3,262,780	(1,944,365)
390.30	STRUCTURES AND IMPROVEMENTS - HADLEY	6,457,047.44	2.59	166,968	5.62	362,886	(195,918)
	TOTAL STRUCTURES AND IMPROVEMENTS	238,554,120.30	3.00	7,166,699	4.26	10,161,374	(2,994,675)
391.10	OFFICE FURNITURE AND EQUIPMENT	16,845,305.11	5.00	841,831	5.00	841,831	0
391.20	COMPUTER EQUIPMENT						
	FULLY ACCRUED	1,179,987.20	-	0	-	0	0
	AMORTIZED	10,264,189.56	14.29	1,466,821	14.29	1,466,821	0
	TOTAL COMPUTER EQUIPMENT	11,444,176.76	12.82	1,466,821	12.82	1,466,821	0
	TOTAL ACCOUNT 391.00	28,289,481.87	8.16	2,308,652	8.16	2,308,652	0
392.00	TRANSPORTATION EQUIPMENT	88,521,701.25	4.44	3,929,340	4.76	4,213,633	(284,293)
393.00	STORES EQUIPMENT	4,489,741.31	4.00	179,438	4.00	179,438	0
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT	19,372,329.97	4.00	774,458	4.00	774,458	0
395.00	LABORATORY EQUIPMENT	8,899,523.10	5.00	445,246	5.00	445,246	0
396.00	POWER OPERATED EQUIPMENT	228,102.62	1.26	2,881	4.65	10,607	(7,726)
397.00	COMMUNICATION EQUIPMENT	68,462,740.80	6.67	4,563,589	6.67	4,563,589	0
397.10	COMMUNICATION EQUIPMENT - GPS						
	FULLY ACCRUED	385,273.46	-	0	-	0	0
	AMORTIZED	241,495.64	20.00	48,300	20.00	48,300	0
	TOTAL COMMUNICATION EQUIPMENT - GPS	626,769.10	7.71	48,300	7.71	48,300	0

NSTAR ELECTRIC COMPANY

COMPARISON OF PROPOSED ANNUAL DEPRECIATION EXPENSE vs CURRENT ANNUAL DEPRECIATION EXPENSE
AS OF DECEMBER 31, 2020

	ACCOUNT	ORIGINALCOST AS OF DECEMBER 31, 2020	PROPOSED ACCRUAL RATE	PROPOSED ACCRUAL AMOUNT	CURRENT ACCRUAL RATE	CURRENT ACCRUAL AMOUNT	INCREASE/ (DECREASE)
	(1)	(2)	(3)	(4)	(5)	(6)=(2)*(5)	(7)=(4)-(6)
397.20	COMMUNICATION EQUIPMENT - MICROWAVE	6,721,653.30	2.89	194,532	1.95	131,072	63,460
	TOTAL ACCOUNT 397.00	75,811,163.20	6.34	4,806,421	6.26	4,742,961	63,460
398.00	MISCELLANEOUS EQUIPMENT	3,618,450.57	5.00	180,923	5.00	180,923	0
	TOTAL GENERAL PLANT	**467,785,008.77**	**4.23**	**19,794,097**	**4.92**	**23,017,324**	**(3,223,227)**
	UNRECOVERED RESERVE FOR AMORTIZATION						
391.10	OFFICE FURNITURE AND EQUIPMENT			(463,733) **		(316,483) ***	(147,250)
391.20	COMPUTER EQUIPMENT			(380,377) **		(180,949) ***	(199,428)
393.00	STORES EQUIPMENT			(2,228) **		(5,648) ***	3,420
394.00	TOOLS, SHOP AND GARAGE EQUIPMENT			(138,935) **		(80,531) ***	(58,404)
395.00	LABORATORY EQUIPMENT			87,306 **		61,840 ***	25,466
397.00	COMMUNICATION EQUIPMENT			789,534 **		750,041 ***	39,493
397.10	COMMUNICATION EQUIPMENT - GPS			13,662 **		8,835 ***	4,827
398.00	MISCELLANEOUS EQUIPMENT			(37,118) **		(22,110) ***	(15,008)
	TOTAL UNRECOVERED RESERVE FOR AMORTIZATION			**(131,889)**		**214,995**	**(346,884)**
	TOTAL DEPRECIABLE PLANT	**7,603,973,958.96**	**2.90**	**220,694,520**	**3.06**	**232,459,282**	**(11,764,762)**
	NONDEPRECIABLE PLANT AND ACCOUNTS NOT STUDIED						
340.00	LAND	2,571,139.52					
360.10	LAND	14,786,558.46					
389.10	LAND	14,087,402.67					
	TOTAL NONDEPRECIABLE PLANT AND ACCOUNTS NOT STUDIED	**31,445,100.65**					
	TOTAL ELECTRIC PLANT	**7,635,419,059.61**		**220,694,520**		**232,459,282**	**(11,764,762)**

* ASSETS IN THESE LOCATIONS ARE INDIVIDUALLY DEPRECIATED.
** 5-YEAR AMORTIZATION OF UNRECOVERED RESERVE RELATED TO UTILIZATION OF AMORTIZATION ACCOUNTING.
*** 8-YEAR AMORTIZATION OF UNRECOVERED RESERVE RELATED TO UTILIZATION OF AMORTIZATION ACCOUNTING.

Exhibit No. NSTAR-5

November 30, 2022 MDPU Order in D.P.U. 22-22.

The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 22-22 November 30, 2022

Petition of NSTAR Electric Company, doing business as Eversource Energy, pursuant to G.L. c. 164, § 94 and 220 CMR 5.00, for Approval of a General Increase in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Plan.

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XX. ORDER 548

I. INTRODUCTION

On January 14, 2022, NSTAR Electric Company d/b/a Eversource Energy ("NSTAR Electric" or "Company") filed a petition with the Department of Public Utilities ("Department") for an increase in its electric base distribution rates to generate $89,477,862 in additional revenues. The Company also proposed to transfer costs recovered through certain reconciling mechanisms, which totaled $58,184,827 in calendar year 2020, to base distribution rates.[1] Based on this proposal, the Company's initial proposed overall increase to distribution revenues was $147,662,689, which represented a 13.2 percent increase in distribution revenue. Based on changes made during the proceeding,[2] NSTAR Electric now proposes a general increase in base distribution rates of $93,443,489, a transfer of $46,794,254 in revenues recovered through reconciling mechanisms, and an overall net increase of $140,237,743.[3]

NSTAR Electric also proposes to implement a performance-based ratemaking ("PBR") mechanism that would allow the Company to adjust its base distribution rates on an annual basis through the application of a revenue-cap formula (Exh. ES-CAH/DPH-1, at 13).

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1 The Company's filing includes new tariffs designed to recover the proposed revenue increase (Exh. ES-RDC-6, Schs. 1 (clean), 2 (redlined)).

2 In providing its updated revenue requirement schedules, the Company labeled them by date. For ease of reference, the Department refers to them by revision number. Thus, the April 24, 2022, update is Rev. 1; the June 24, 2022, update is Rev. 2; the August 5, 2022, update is Rev. 3; and the September 27, 2022, update is Rev. 4.

3 Minor discrepancies in any of the amounts appearing in this Order are due to rounding.

NSTAR Electric proposes a ten-year PBR plan, and to implement a set of performance metrics to evaluate the Company's performance during the PBR plan's term (Exh. ES-CAH/DPH-1, at 8-11, 13, 15).[4]

NSTAR Electric bases its proposed base distribution rate increase on a calendar test year of January 1, 2020 through December 31, 2020 (Exh. ES-REVREQ-1, at 12). NSTAR Electric was last granted an increase in electric base distribution rates in 2017. NSTAR Electric Company and Western Massachusetts Electric Company, D.P.U. 17-05 (2017).[5] The Department docketed the instant petition as D.P.U. 22-22 and suspended the effective date of the tariffs until December 1, 2022, for further investigation.[6]

NSTAR Electric's service area comprises two geographic areas, designated as "EMA" (Eastern Massachusetts) and "WMA" (Western Massachusetts) (Exh. DPU 64-1, at 1). The service area designated as EMA encompasses the City of Boston and surrounding communities, extending west to Sudbury, Framingham, and Hopkinton, as well as

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4 NSTAR Electric's filing also contained proposals regarding the review and treatment of certain grid modernization investments and costs associated with the Company's resiliency tree work program. On March 9, 2022, the Department issued an Interlocutory Order and removed these proposals from consideration in this docket. D.P.U. 22-22, Interlocutory Order on Scope of Proceeding (March 9, 2022).

5 In D.P.U. 17-05, at 28-55, the Department approved the corporate consolidation of Western Massachusetts Electric Company with and into NSTAR Electric pursuant to G.L. c. 164, § 96. The legal name of Eversource Energy's electric distribution company in Massachusetts is NSTAR Electric Company d/b/a Eversource Energy.

6 The rates and charges established in this proceeding will be for electricity consumed on or after January 1, 2023.

communities in southeastern Massachusetts extending from Marshfield south through Plymouth, Cape Cod, and Martha's Vineyard, and west through New Bedford and Dartmouth (Exh. DPU 64-1, at 1). Within this geographic area, the Company serves approximately 1.2 million residential and commercial and industrial ("C&I") customers in approximately 80 communities (Exh. DPU 64-1, at 1). The service area designated as WMA encompasses the City of Springfield ("Springfield") and surrounding communities, extending west to the New York border and north to Greenfield and the Vermont border (Exh. DPU 64-1, at 1). Within this geographic area, the Company serves approximately 209,000 residential and C&I customers in approximately 59 communities (Exh. DPU 64-1, at 1).

II. PROCEDURAL HISTORY

On January 18, 2022, the Attorney General of the Commonwealth of Massachusetts ("Attorney General") filed a notice of intervention pursuant to G.L. c. 12, § 11E(a). On February 9, 2022, the Department granted the petition to intervene as a full party filed by the Massachusetts Department of Energy Resources ("DOER"). On February 15, 2022, the Department granted the petition to intervene as a full party filed by the Low-Income Weatherization and Fuel Assistance Program Network ("Low-Income Network"). On March 1, 2022, the Department granted the separate petitions to intervene as full parties filed by: (1) Acadia Center; (2) Cape Light Compact JPE ("Cape Light Compact" or "CLC"); (3) Conservation Law Foundation ("CLF"); (4) Massachusetts Electric Company and Nantucket Electric Company, d/b/a National Grid ("National Grid (electric)"); (5) Northeast Clean Energy Council, Inc. ("NECEC"); and (6) The Energy Consortium ("TEC").

D.P.U. 22-22, Hearing Officer Ruling on Petitions for Intervention at 3-4 (March 1, 2022). On the same day, the Department allowed PowerOptions, Inc. ("PowerOptions") to participate as a limited intervenor. D.P.U. 22-22, Hearing Officer Ruling on Petitions for Intervention at 4-5 (March 1, 2022). The Department also allowed NRG Home f/k/a Reliant Energy Northeast LLC, Direct Energy Services, LLC, Direct Energy Business, LLC, Direct Energy Business Marketing, LLC, Green Mountain Energy Company, Energy Plus Holdings LLC, and XOOM Energy Massachusetts, LLC, and Walmart, Inc. ("Walmart") to participate as limited participants. D.P.U. 22-22, Hearing Officer Ruling on Petitions for Intervention at 5-6 (March 1, 2022).

On March 11, 2022, the Department allowed the University of Massachusetts ("UMass") to intervene as a full party. D.P.U. 22-22, Interlocutory Order on Appeals of Hearing Officer's Ruling on Petitions to Intervene by University of Massachusetts and Walmart, Inc. at 6-7 (March 11, 2022). On April 12, 2022, the Department allowed the Town of Barnstable ("Town" or "Barnstable") to participate as a limited intervenor. D.P.U. 22-22, Hearing Officer Ruling on Town of Barnstable Petition for Intervention at 4-6 (April 12, 2022).

Pursuant to notice duly issued, and consistent with certain ongoing safety measures and precautions relating to in-person events as a result of the COVID-19 pandemic, the Department held virtual public hearings on March 29, 2022, March 31, 2022, and May 4,

2022.[7] The Department held 14 days of virtual evidentiary hearings from June 29, 2022 through July 27, 2022.

In support of its filing, NSTAR Electric sponsored the testimony of the following witnesses, all of whom were employed by Eversource Service Company ("ESC"):[8] (1) Craig Hallstrom, president of regional electric operations for Connecticut and Massachusetts; (2) Douglas P. Horton, vice president of distribution rates and regulatory requirements; (3) Digaunto Chatterjee, vice president of system planning; (4) Lavelle A. Freeman, director of distribution system planning; (5) Gerhard Walker, principal engineer of system planning; (6) Penelope M. Connor, executive vice president of customer experience and energy strategy;[9] (7) Catherine Finneran, vice president of sustainability and environmental affairs; (8) Paul Renaud, vice president of engineering; (9) Robert W. Frank, former director of revenue requirements – Massachusetts;[10] (10) Ashley N. Botelho, director of revenue

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7 The Department received oral and written comments during the public comment period.

8 ESC performs functions such as accounting, auditing, communications, rates, legal, regulatory affairs, information technology, and human resources for NSTAR Electric and other Eversource Energy subsidiaries (Exhs. AG 1-26, Atts.). See also D.P.U. 17-05, at 163; NSTAR Gas Company, D.P.U. 19-120, at 269 (2020).

9 Prior to evidentiary hearings, the Department was advised that Ms. Connor no longer would participate in the proceedings. Her testimony, supporting exhibits, and responses to information requests were adopted by Jared Lawrence, senior vice president, customer operations and digital strategy and chief customer officer.

10 Prior to evidentiary hearings, Mr. Frank retired and his testimony, supporting exhibits, and responses to information requests were adopted by Ms. Botelho.

requirements – Massachusetts; (11) Sasha Lazor, director of compensation; (12) Michael P. Synan, director of benefits strategy and human resources shared services; (13) Leanne M. Landry, director of budget and investment planning; (14) John G. Griffin, director of corporate performance management;[11] (15) Jennifer A. Schilling, vice president of grid modernization; (16) William A. Van Dam, director of vegetation management; (17) Richard D. Chin, manager of rates; (18) Emilie O'Neil, assistant treasurer and director of corporate finance and cash management; (19) Elizabeth A. Foley, director of corporate performance management; and (20) Dennis Moore, information technology director of business solutions. NSTAR Electric also sponsored the testimony of the following external consultant witnesses: (1) Mark E. Meitzen, Ph.D., senior consultant at Laurits R. Christensen Associates, Inc.; (2) Nicholas A. Crowley, senior economist at Laurits R. Christensen Associates, Inc.; (3) Lawrence R. Kaufmann, Ph.D., president of LKaufmann Consulting, Inc. and senior advisor at Pacific Economics Group Research LLC and Black and Veatch Management Consulting; (4) Vincent V. Rea, managing director at Regulatory Finance Associates, LLC; (5) John J. Spanos, president of Gannett Fleming Valuation and Rate Consultants, LLC; and (6) Bruce R. Chapman, vice president at Christensen Associates Energy Consulting, LLC.

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[11] Prior to evidentiary hearings, the Department was advised that Mr. Griffin no longer would participate in the proceedings. His testimony, supporting exhibits, and responses to information requests were adopted by Sean Noonan, vice president of the program management office and next-generation delivery.

The Attorney General sponsored the testimony of the following witnesses: (1) David E. Dismukes, Ph.D., consulting economist at Acadian Consulting Group; (2) David P. Littell, Esq., shareholder at Bernstein Shur Sawyer & Nelson; (3) David J. Effron, consultant; (4) David J. Garrett, managing member at Resolve Utility Consulting, PLLC; (5) Helmuth W. Schultz, III, senior regulatory consultant at Larkin & Associates, PLLC; (6) John Defever, regulatory consultant at Larkin & Associates, PLLC; (7) J. Randall Woolridge, professor of finance at the Pennsylvania State University; and (8) Timothy Newhard, financial analyst at the Attorney General's Office of Ratepayer Advocacy.

Cape Light Compact sponsored the testimony of John D. Wilson, research director at Resource Insight, Inc.; and Kevin F. Galligan, president of Galligan Energy Consulting, Inc. National Grid (electric) sponsored the testimony of Daniel R. Marceau, director of asset management and engineering performance, National Grid USA Service Company, Inc. TEC and PowerOptions jointly sponsored the testimony of James Bride, principal of Energy Tariff Experts, LLC. UMass sponsored the testimony of the following witnesses: (1) Eben Perkins, vice president at Competitive Energy Services, LLC; (2) Richard Silkman, Ph.D., chief executive officer at Competitive Energy Services, LLC; (3) Raymond Jackson, director of the physical plant division at the UMass Amherst campus; (4) James O'Day, director of utilities, energy management, and laboratories for facilities at the UMass Boston campus; and (5) James Jerue, associate vice chancellor of facility management at the UMass Dartmouth campus.

On August 19, 2022, the Attorney General, DOER, the Low-Income Network, Acadia Center, Cape Light Compact, CLF, National Grid (electric), TEC and PowerOptions, and UMass submitted initial briefs.[12] On September 2, 2022, the Company filed an initial brief. On September 19, 2022, the Attorney General, DOER, Acadia Center, Cape Light Compact, TEC and PowerOptions, and UMass submitted reply briefs. On the same day, the Low-Income Network and CLF each submitted a letter in lieu of a reply brief. On September 27, 2022, the Company filed a reply brief. The evidentiary record consists of approximately 4,000 exhibits and responses to 99 record requests.

III. COMPANY'S TEST YEAR

A. Introduction

NSTAR Electric's revenue requirement component is based on a test year ending December 31, 2020 (Exhs. ES-REVREQ-1, at 12; ES-REVREQ-2, Sch. 2 (Rev. 4)). The Company's test year coincides with the onset of the COVID-19 pandemic, a public health crisis that has been compared to the 1918 influenza pandemic.[13] The significant economic

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[12] The Attorney General filed a revised initial brief on August 24, 2022, to remove an errant header and add missing punctuation.

[13] In the 1918 influenza pandemic, an estimated 500 million people were infected globally (1/3 of the global population) with an estimated 50 million deaths, with 675,000 occurring in the U.S. https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/1918-pandemic-history.htm. In the COVID-19 pandemic, an estimated 642 million people have been infected globally with an estimated seven million deaths, with over one million deaths occurring in the U.S. https://www.worldometers.info/coronavirus (last visited: November 18, 2022).

disruption associated with the pandemic has adversely affected individuals as well as businesses, particularly small businesses. Inquiries of the Department of Public Utilities regarding the COVID-19 Pandemic, D.P.U. 20-58-D/D.P.U. 20-91, Interim Order on Ratemaking Proposal and Vote and Order Opening Investigation at 5 (December 31, 2020); D.P.U. 20-58, Order Opening Inquiry and Establishing Working Group at 2 (May 11, 2020).

The pandemic also has affected the financial position of jurisdictional electric, gas, and water distribution companies, and utilities throughout the country. D.P.U. 20-58-D/D.P.U. 20-91, Interim Order on Ratemaking Proposal and Vote and Order Opening Investigation at 5 (December 31, 2020). NSTAR Electric, as well as other utilities, face shifts in demand and usage, increased operational burdens, collections shortfalls, and voluntary and mandatory moratoriums on disconnections. These issues affect cash flow, which result in increased short-term borrowings amidst uncertain financial markets. D.P.U. 20-58-D/D.P.U. 20-91, Interim Order on Ratemaking Proposal and Vote and Order Opening Investigation at 5 (December 31, 2020).

B. Analysis and Findings

It is well-established Department precedent that base distribution rate filings are based on an historic test year, adjusted for known and measurable changes. NSTAR Gas Company, D.P.U. 14-150, at 45 (2015); Investigation into Rate Structures that Promote Efficient Deployment of Demand Resources, D.P.U. 07-50-A at 52-53 (2008); Massachusetts Electric Company, D.P.U. 18204, at 4 (1975); see also Massachusetts Electric Company v. Department of Public Utilities, 383 Mass. 675, 680 (1981). In establishing rates pursuant to

G.L. c. 164, § 94, the Department examines a test year on the basis that the revenue and expense figures adjusted for known and measurable changes, and rate base figures during that period, provide the most reasonable representation of a distribution company's present financial situation, and fairly represent its cost to provide service. Plymouth Water Company, D.P.U. 14-120, at 9 (2015); Ashfield Water Company, D.P.U. 1438/1595, at 3 (1984).

The selection of the test year is largely a matter of a distribution company's choice, subject to Department review and approval. Fitchburg Gas and Electric Light Company, D.P.U. 15-80/D.P.U. 15-81, at 145-146 (2016), citing D.P.U. 07-50-A at 51; Boston Edison Company, D.P.U. 1720, Interlocutory Order at 7-11 (January 17, 1984). The Department requires that the historic test year represent a twelve-month period that does not overlap with the test year used in a previous rate case unless there are extraordinary circumstances that render a previous Order confiscatory. D.P.U. 14-150, at 45 n.26; Massachusetts Electric Company, D.P.U. 19257, at 12 (1977). The test year is generally the most recent twelve-month period for which financial information exists. D.P.U. 14-150, at 45 n.26; Boston Edison Company v. Department of Public Utilities, 375 Mass. 1, 24, cert. denied, 439 U.S. 921 (1978). The Department has a strong preference for calendar test years. D.P.U. 17-05, at 28; Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 15-155, at 22 (2016); D.P.U. 14-120, at 16 & n.11.

In this case, the Company has selected a calendar 2020 test year. No party has objected to the Company's selected test year. While the use of a different test year, such as

a split test year,[14] may have mitigated some of the effects of the pandemic on the Company's rate filing, the societal and financial effects of the pandemic remain ongoing. Moreover, the use of an earlier test year such as 2019 for a rate increase that would take effect in 2023 would be fraught with its own challenges given the staleness of the data. On this basis, the Department concludes that there is no reasonable alternative test year that would insulate NSTAR Electric's operations from the effects of the pandemic.[15]

The Company has made numerous adjustments to its test-year revenues, expenses, and plant in preparing its rate filing (Exhs. ES-REVREQ-1, at 13-14; ES-REVREQ-2, Schs. 7, 9 (Rev. 4)). Such adjustments are a routine part of rate case proceedings. In reviewing these adjustments, the Department recognizes that some year-to-year variation is expected, even when comparing individual functions and accounts over corresponding time periods. Boston Gas Company, D.P.U. 20-120, at 16 (2021). As discussed in Section VII.H below, the Company has been deferring incremental expenditures related to COVID-19 response efforts (Exhs. ES-REVREQ-2, Sch. 9, at 1 (Rev. 4); DPU 3-2; AG 21-1, Att.; AG 1-34, Att. (h)

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[14] A test year that spans two calendar years, as opposed to a test year based on a calendar year, is often referred to as a "split" test year. D.P.U. 14-150, at 45 n.26; D.P.U. 14-120, at 12, 16. A test year, whether a calendar year test year or a "split" test year, comprises a period of twelve consecutive calendar months.

[15] In rare cases, the Department has relied on different test years than those proposed by the utility. McNamara Water System, D.P.U. 91-196, at 4-5 (1992); Hutchinson Water Company, D.P.U. 85-194, at 3-4 (1986). In these cases, however, the petitioners' cases-in-chief consisted of a few pages of prefiled testimony from a single witness. In contrast, NSTAR Electric's own case-in-chief consists of thousands of pages of prefiled testimony and exhibits from over 20 witnesses.

at 7, Att. (i) at 5). To the extent that the pandemic continues to affect the Company's operations, such as in lower C&I revenues, increased write-offs, and ongoing COVID-19 response expenditures, these issues are fully addressed in the respective sections of this Order.

Based on the foregoing analysis, the Department finds that while the effects of the pandemic upon NSTAR Electric's operations have added to the intricacies of the Company's rate filing, the Company's proposed test year is nonetheless reviewable and reliable. Therefore, the Department accepts NSTAR Electric's selection of a calendar year 2020 test year.

IV. PERFORMANCE BASED RATEMAKING PROPOSAL

A. Introduction

In D.P.U. 17-05, at 370-414, the Department approved a PBR mechanism with a five-year term for the Company. The PBR mechanism allowed NSTAR Electric to adjust its distribution rates annually through the application of a revenue-cap formula that accounts for, among other factors, inflation and events beyond the Company's control that have a significant effect on its revenue requirement ("exogenous events"), either positive or negative. D.P.U. 17-05, at 381-399. The PBR mechanism included a productivity offset, or "X factor," of -1.56 percent. D.P.U. 17-05, at 381-392. Further, the PBR mechanism included a 25-basis point (or 0.25 percent) consumer dividend as a deduction to the adjustment when inflation exceeded two percent. D.P.U. 17-05, at 394-395. The PBR mechanism also included an earnings-sharing mechanism ("ESM") that incorporated a

200-basis point threshold above the Company's authorized return on equity ("ROE") of 10.0 percent. D.P.U. 17-05, at 399-401, 713.[16]

As discussed in further detail below, in the instant proceeding, the Company proposes to renew its PBR plan with certain modifications. In its initial filing, NSTAR Electric proposed a PBR mechanism with a revenue cap formula and the following components: (1) a ten-year term with a five-year, mid-term "rate schedule filing" to meet the requirements of G.L. c. 164, § 94; (2) an X factor of -1.45 percent; (3) an annual inflation index based on the Gross Domestic Product Price Index ("GDP-PI");[17] (4) a proposed consumer dividend to provide a "stretch factor," applicable when inflation equals or exceeds two percent; (5) a rate base roll-in for 2021 and 2022 capital investments; (6) an ROE risk factor ("ROERA") triggered by significant changes up or down in Treasury rates; (7) cost treatment in the second five years of the PBR plan for critical infrastructure; (8) an ESM consistent with that approved for affiliate NSTAR Gas Company ("NSTAR Gas") in NSTAR Gas Company, D.P.U. 19-120 (2020); and (9) an exogenous cost provision that, in particular, would allow

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16 If the Company's calculated, earned distribution ROE was at or below the threshold (i.e., 12.0 percent), the Company was not required to share any earnings. D.P.U. 17-05, at 401. If the Company's earned distribution ROE exceeded the threshold, shareholders and ratepayers shared any earnings above the threshold at 25 percent and 75 percent, respectively. D.P.U. 17-05, at 401.

17 GDP-PI is a measure of inflation in the price of goods and services produced in the United States published quarterly by the U.S. Department of Commerce, Bureau of Economic Analysis.

for recovery for certain property tax and information technology ("IT") expenses (Exhs. ES-CAH/DPH-1, at 13, 62-93; ES-PBR/PLAN-1, at 4-14).

The Company's initial filing also included an alternative PBR plan proposal, which was modified during the proceeding (Exhs. ES-CAH/DPH-1, at 93; DPU 1-1; DPU 5-1). NSTAR Electric proposed that, for a five-year term, the following modifications would apply: (1) only capital additions completed through December 31, 2021 would be eligible for a rate-base roll-in and those additions would be included in base distribution rates set in this proceeding; (2) the ROERA would not apply;[18] (3) the ESM would be asymmetrical with upside sharing for customers but no downside adjustment for the Company (Exh. DPU 1-1). The remaining proposed PBR mechanism components applicable to a ten-year PBR term would apply to a five-year term (Exhs. ES-CAH/DPH-1, at 93; DPU 1-1; DPU 5-1).

As part of its rebuttal testimony, the Company revised its initial proposed PBR mechanism to address concerns raised by the Attorney General (Exh. ES-PBR-Rebuttal-1, at 41-50). The Company still proposed a revenue cap formula with a ten-year PBR plan term, but the initial proposal was modified to: (1) reduce the X factor to zero; (2) increase the consumer dividend; (3) cap eligible inflation as tracked by GDP-PI to five percent; (4) eliminate the cost treatment for the critical infrastructure; (5) eliminate the proposed

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[18] In Exhibit DPU 5-1, the Company stated that the ROERA would apply to a PBR plan with a five-year term. On brief, however, when summarizing the components of a five-year term, the Company did not include the ROERA in the proposal (see, e.g., Company Brief at 16 n.2, 19 n.6). In any event, as discussed in Section IV.D.5.f below, the Department disallows the proposed ROERA.

roll-in of 2022 capital additions; and (6) implement a "K-bar" formula approach (see n.21 below) for capital investment support between rate cases, beginning January 1, 2024, the date of the first PBR adjustment (Exh. ES-PBR-Rebuttal-1, at 45).[19] The Department discusses these proposals below.

B. PBR Mechanism Components

1. PBR Plan Term

The Company initially proposed a ten-year PBR term with a mid-term filing of rate schedules at the five-year mark (Exhs. ES-CAH/DPH-1, at 13, 93; ES-PBR/PLAN-1, at 13). Alternatively, the Company proposed a five-year plan term, with certain modifications to the ratemaking mechanisms (Exhs. ES-CAH/DPH-1, at 93; DPU 1-1; DPU 5-1). As noted above, during the proceedings the Company revised certain components of its proposed PBR plan. The Company, however, did not revise the term of its PBR plan and proposed to maintain the ten-year term (Exh. ES-PBR-Rebuttal-1, at 45).

2. Productivity Offset

The Company initially proposed a productivity offset, or X factor to be calculated as:

$X = [(\% \ TFP^R_1 - \% \ TFP_E) + (\% \ W_E - \% \ W_1)$, where

$\% \ TFP^R_1$ is the percentage change in electric distribution industry total factor productivity growth;

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[19] As discussed in Section V.B below, the Company also proposed a set of performance metrics to be implemented in conjunction with the PBR plan. The proposed PBR metrics are the same under both the initially proposed PBR plans (i.e., the plan with a ten-year or five-year term) and the revised proposed PBR plan with a ten-year term.

% TFP_E is the percentage change in economy wide total factor productivity growth;

% W_E is the percentage change in economy-wide input price growth; and

% W_1 is the percentage change in electric distribution industry input price growth.

(Exh. ES-PBR/TFP-1, at 15).

The X factor consists of a differential in a measure of the expected rate of productivity change between the electric distribution industry and the overall economy, and a differential in input price growth between the overall economy and the electric distribution industry (Exh. ES-PBR/TFP-1, at 12). To determine the proposed X factor, the Company conducted a productivity study of U.S. electric distribution total factor productivity ("TFP") and input price growth over the period 2006 through 2020 (Exh. ES-PBR/TFP-1, at 20). The Company used two different samples for its productivity study: (1) a sample of 65 electric distribution companies ("EDCs") intended to represent the overall U.S. electric distribution industry ("nationwide EDCs"); and (2) a sample of 17 EDCs intended to represent the electric distribution industry in the Northeast U.S. ("regional EDCs") (Exh. ES-PBR/TFP-1, at 20). For economy-wide TFP and input price growth, the Company used official U.S. government sources (Exh. ES-PBR/TFP-1, at 20).

The TFP is generally defined as the ratio of total output to total input (Exh. ES-PBR/TFP-1, at 13). Total output consists of all the services produced by the relevant unit of production (Exh. ES-PBR/TFP-1, at 13). Total input includes all resources used by the unit of production in providing those services (Exh. ES-PBR/TFP-1, at 13). The Company used number of customers as the sole productivity study output measure

(Exh. ES-PBR/TFP-1, at 13). The Company constructed a quantity index of total input for each firm and each year based on capital, labor, and materials (Exh. ES-PBR/TFP-1, at 13). The Company has also incorporated customer accounts and sales expenses and administrative and general costs into the TFP model (Exh. ES-PBR/TFP-1, at 17).

The results of the Company's study indicate that, for the period 2006 through 2020, the average growth in productivity for the regional EDCs was equal to -0.05 percent, while the average productivity growth for the nationwide EDCs was equal to 0.06 percent (Exh. ES-PBR/TFP-1, at 24-25). For the same period, the average input price growth for regional EDCs was equal to 3.11 percent, while the average input price growth for the nationwide EDCs was equal to 3.17 percent (Exh. ES-PBR/TFP-1, at 24-25). The Company's productivity study indicates that the economy-wide average productivity growth from 2006 through 2020 was 0.34 percent, and the average input price growth was 2.0 percent (Exh. ES-PBR/TFP-1, at 23).

The Company calculated its proposed productivity offset using the productivity and input price growth indices for the nationwide EDCs rather than the regional EDCs (Exh. ES-PBR/TFP-1, at 27). Inputting the results of the productivity study into the productivity formula, the Company calculated a proposed X factor of -1.45 percent (Exh. ES-PBR/TFP-1, at 24).

As noted above, during the proceeding, the Company proposed to modify certain components of the proposed PBR plan (Exh. ES-PBR-Rebuttal-1, at 44-45). In particular, the Company proposed to reduce the X factor to zero, as recommended by the Attorney

General (Exh. ES-PBR-Rebuttal-1, at 44-45, citing Exhs. AG-DED-PBR-1, at 3, 58; AG-DPL-1, at 12).

3. Inflation Index and Floor

The Company initially proposed to base the price inflation index included in the revenue cap formula on the GDP-PI as measured by the U.S. Commerce Department (Exhs. ES-CAH/DPH-1, at 67; ES-PBR/PLAN-1, at 5). Under the Company's proposal, the inflation index would be calculated as the percentage change between the current year's GDP-PI and the prior year's GDP-PI (Exhs. ES-CAH/DPH-1, at 67; ES-PBR/PLAN-1, at 5). For each year, the GDP-PI would be calculated as the average of the most recent four quarterly measures of GDP-PI as of the second quarter of the year (Exhs. ES-CAH/DPH-1, at 67; ES-PBR/PLAN-1, at 5). Additionally, the Company proposed an inflation "floor" equivalent to the X factor of -1.45 percent so that a negative PBR adjustment would not occur (Exh. ES-CAH/DPH-1, at 68).

In its rebuttal testimony, the Company proposed to modify the requested inflation factor. Specifically, NSTAR Electric proposed to cap the factor at five percent, and the Company stated that it would "make sense" to have the opportunity to file a base distribution rate case if reported earnings fall more than 400 basis points below the ROE authorized in the instant proceeding (Exhs. ES-PBR-Rebuttal-1, at 45; DPU 35-1).

4. Consumer Dividend

The Company initially proposed to include a consumer dividend of 15 basis points, or 0.15 percent, when inflation, as calculated in the proposed PBR formula, exceeds

two percent (Exhs. ES-CAH/DPH-1, at 72; ES-PBR/PLAN-1, at 38). The Company stated that its proposed consumer dividend was intended to share the financial benefits of increased productivity growth with customers, and that the continuance of an existing PBR plan warrants a lower consumer dividend than at the outset of a PBR plan (Exhs. ES-CAH/DPH-1, at 73; ES-PBR/PLAN-1, at 37, 44).

In its rebuttal testimony, the Company proposed to modify the requested consumer dividend. Specifically, the Company proposed to raise the consumer dividend to 25 basis points, or 0.25 percent, when inflation exceeds two percent (Exh. ES-PBR-Rebuttal-1, at 45).

5. Post-Test-Year Capital Additions

The Company initially proposed to include post-test-year capital additions into base distribution rates at two different intervals during the term of the proposed PBR plan (Exh. ES-CAH/DPH-1, at 74-75). First, the Company proposed that the base distribution rates effective January 1, 2023, would include in rate base plant additions placed into service through December 31, 2021 (Exh. ES-CAH/DPH-1, at 74-75). As part of this proposal the Company would adjust base distribution rates for depreciation expense, return on rate base, associated federal and state income taxes, property taxes, and revenues for all capital additions ending December 31, 2021 (Exh. ES-CAH/DPH-1, at 75). Second, the Company proposed as part of the first annual PBR plan filing for rates effective January 1, 2024, to

include in rate base the calendar year 2022 capital additions along with the associated accumulated depreciation (Exh. ES-CAH/DPH-1, at 75).[20]

In its rebuttal testimony, the Company modified its capital roll-in proposal. Specifically, the Company proposed to eliminate the roll-in of the 2022 calendar year capital additions from the first annual PBR plan filing (Exh. ES-PBR-Rebuttal-1, at 45). Further, the Company proposed as part of the revised PBR formula, a K-bar adjustment[21] that would allow additional revenues to be collected through the PBR adjustments, beginning January 1, 2024, to provide additional funding for capital investments (Exhs. ES-PBR-Rebuttal-1, at 45; DPU 63-3 & Atts.; RR-DPU-12 & Atts.). The K-bar approach would establish a level of eligible capital recovery based on a historical average of capital additions that went into service under operation of the Company's current PBR plan, approved in D.P.U. 17-05, for the years in which that I-X factor was applicable, escalated to current year dollars

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20 As noted above, under a five-year PBR plan, the Company proposed to roll-in only capital additions placed in service through December 31, 2021, and those additions would be included in base distribution rates set in this proceeding (Exh. DPU 1-1).

21 In 2016, the Alberta Utilities Commission ("AUC") developed a "K-bar" approach to supplemental capital funding for Alberta electric distribution utilities (Exh. DPU 35-5, at 3, citing AUC docket 20414-D01-2016 (December 16, 2016)). The AUC amended its K-bar method in 2018 (Exh. DPU 35-5, at 3, citing AUC docket 22394-D01-2018, (February 5, 2018)). Under this approach, the I-X PBR formula escalates historical average capital additions not subject to recovery through capital trackers to form the basis of future approved capital recovery (Exh. DPU 35-5, at 3-4). Recoverable capital expenditures are obtained from the differential between the utility's escalated historical capital needs and what each utility actually will collect under the I-X PBR formula for these types of capital additions (Exh. DPU 35-5, at 4). The AUC calls this differential the "K-bar" (Exh. DPU 35-5, at 4).

(RR-DPU-12). Specifically, under the Company's revised proposal, the K-bar revenue requirement would be calculated by rolling forward 2018 through 2022 plant additions, cost of removal, and retirements that occurred during the current PBR plan and then calculating a revenue requirement based on that theoretical rate base calculation (RR-DPU-12). The K-bar revenue requirement is then compared to the capital investment costs approved in the instant proceeding and adjusted to 2023 costs using the PBR mechanism approved in the instant proceeding to establish the incremental K-bar revenue support (RR-DPU-12).

6. ROERA Factor

The Company initially proposed to include in the PBR plan an ROERA mechanism to recover costs arising from changes in the capital markets during the ten-year PBR term (Exhs. ES-CAH/DPH-1, at 76; ES-PBR/PLAN-1, at 8). The ROERA would be triggered, and a rate adjustment would take place, if the yield on the ten-year Treasury bond reaches 200 basis points above or below the yield in effect at the start of the PBR plan (Exh. ES-CAH/DPH-1, at 76-77). The Company states that the ROERA adjustment would apply only to rate base approved at the outset of the PBR plan and not for additions made while the PBR plan is in effect (Exh. ES-PBR/PLAN-1, at 12).

The proposed adjustment would take place in accordance with the following formula:

$CAP(t) = [RB(t)*EQ_0 *(TB(t)-TB_0)] / (1-CT_0)$

CAP(t) is the capital cost adjustment in year t

RB_0 is the rate base in year zero (i.e., the outset of the PBR plan)

EQ_0 is equity's share of rate base in year zero

TB (t) is the yield to maturity on the ten-year Treasury bond in year t

TB_0 is the yield to maturity on the ten-year Treasury bond in year zero

CT_0 is the combined tax rate in year zero

(Exh. ES-PBR/PLAN-1, at 11-12).

As noted above, if a five-year PBR plan term is approved, the Company proposed that the ROERA would not apply (Exh. DPU 1-1). In its rebuttal testimony, the Company did not propose to revise or remove the proposed ROERA from the revised PBR plan (Exh. ES-PBR-Rebuttal-1, at 45).

7. Cost Treatment of Critical Infrastructure

In its initial filing, NSTAR Electric stated that forecasted customer demand and incremental electrification demand over the PBR term will necessitate the Company to make major critical infrastructure investments (Exh. ES-CAH/DPH-1, at 77). In particular, NSTAR Electric stated that it intended to complete "major infrastructure projects," including substations and new circuits across the Company's service territory, over the next ten years at an estimated cost of $956 million (Exhs. ES-CAH/DPH-1, at 79-80; ES-ENG-3). The Company stated that it could not commit to a ten-year PBR term without a plan for cost treatment of the revenue requirement associated with these projects (Exh. ES-CAH/DPH-1, at 81). Thus, the Company initially proposed as part of its PBR plan to file for recovery of these costs at three specific intervals over the course of the ten-year PBR term (Exh. ES-CAH/DPH-1, at 82). Under this proposal, the Company would collect the revenue

requirement associated with project costs that are reviewed and approved by the Department through a factor included in the PBR mechanism (Exh. ES-CAH/DPH-1, at 82-83).

In its rebuttal testimony, the Company proposed to eliminate the specific cost recovery factor associated with the aforementioned critical infrastructure projects (Exh. ES-PBRRebuttal-1, at 45). Instead, the Company proposed to receive investment support for the costs associated with these projects through the proposed K-bar adjustment (Exh. ES-PBR-Rebuttal-1, at 45).

8. ESM

The Company initially proposed to adopt an ESM consistent with the design approved for NSTAR Gas in D.P.U. 19-120 (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). Specifically, the proposed ESM would trigger a sharing with customers on a 75/25 percent basis (75 percent to customers and 25 percent to the Company) where the computed distribution ROE exceeds 100 basis points above the ROE authorized in this proceeding (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). If the computed distribution ROE is between 150 and 200 basis points below the authorized ROE, sharing with customers would be triggered on a 50/50 percent basis (50 percent to ratepayers and 50 percent to shareholders) (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). If the computed distribution ROE exceeds 200 basis points below the authorized ROE, sharing with customers would be triggered on a 75/25 percent basis (75 percent to customers and 25 percent to the Company) (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). The Company proposes that for any year in which the ROE is above or below the bandwidth, the percentage of

earnings that is to be shared with customers would be credited to customers in the succeeding year and that the impact of this prior year's adjustment would be excluded from the calculation of the subsequent year's sharing (Exh. ES-CAH/DPH-1, at 91). The Company acknowledged that any ESM adjustment would be subject to a full investigation in an adjudicatory proceeding (Exh. ES-CAH/DPH-1, at 92).

As noted above, if a five-year PBR term is approved, the ESM would be asymmetrical with upside sharing for customers, but no downside adjustment for the Company (Exh. DPU 1-1). In its rebuttal testimony, the Company did not propose to revise or remove the proposed ESM from the revised ten-year PBR plan (Exh. ES-PBR-Rebuttal-1, at 45).

9. Exogenous Cost Factor

NSTAR Electric initially proposed to include in the PBR adjustment formula an exogenous cost provision (or "Z factor"), which was defined as positive or negative changes to operating costs that are beyond the Company's control and not reflected in the GDP-PI or other elements of the PBR adjustment formula (Exhs. ES-CAH/DPH-1, at 83-84; ES-PBR/PLAN-1, at 7). The Company would calculate the exogenous cost factor as a percentage of the previous year's base revenues (Exh. ES-CAH/DPH-1, at 83).

The Company proposed that to be eligible for exogenous cost recovery the cost change must: (1) be beyond the Company's control; (2) arise from a change in accounting requirements or regulatory, judicial, or legislative directives or enactments; (3) be unique to the electric distribution industry as opposed to the general economy; and (4) meet a threshold

of "significance" for qualification (Exhs. ES-CAH/DPH-1, at 83-84; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). The Company anticipated two types of future costs that might apply for exogenous cost recovery: (1) incremental property taxes arising from a municipality's change in valuation method for assessing utility property; and (2) expenses incurred for certain Enterprise IT investments (Exh. ES-CAH/DPH-1, at 85-86). The Company proposed the significance threshold for exogenous costs to be set at $4 million in 2023 and adjusted annually by the change in GDP-PI, except for exogenous costs associated with Enterprise IT expenses, for which the initial threshold would be set at $6 million (Exhs. ES-CAH/DPH-1, at 84-86; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). The Company did not revise this aspect of the proposed PBR mechanism during the proceedings.

C. Positions of the Parties

1. Attorney General

The Attorney General raises a number of issues with the Company's initially proposed, and modified, PBR plans. First, the Attorney General argues that the Company's TFP results and resulting initially-proposed X factor are flawed (Attorney General Brief at 26). In particular, the Attorney General contends that the X factor approved in D.P.U. 17-05 has resulted in over-collection of $124 million in the past five years and, despite the Company's efforts to improve the TFP study in this proceeding, there is no accounting for this over-collection (Attorney General Brief at 26-27). The Attorney General also claims that NSTAR Electric's initially proposed X factor of -1.45 percent is overstated because the TFP study did not exclude costs that the Company proposes to remove from the

base rate revenue requirement and the PBR formula (Attorney General Brief at 27-30, citing Exh. ES-RDC-6, Sch. 1, at 127, 452-454; Tr. 4, at 323-327; RR-AG-8).[22] Further, the Attorney General asserts that the TFP study is not robust and, therefore, produces hypersensitive and exaggerated results (Attorney General Brief at 30). In addition, the Attorney General contends that the TFP study and resulting X factor are unreliable because the study inappropriately relies on customer count as an output, which she asserts is not an accurate indicator of cost causation (Attorney General Brief at 30-33).

Second, the Attorney General challenges the Company's benchmarking study and initially proposed consumer dividend of 0.15 percent (Attorney General Brief at 33-36). The Attorney General argues that the limited time frame of NSTAR Electric's benchmarking study (i.e., 2018 through 2020) produces more favorable results for the Company than would a more robust study that uses a longer time frame and more data points (Attorney General Brief at 33). In this regard, she contends that the longer time frame used in her witness's benchmarking study, which resulted in a consumer dividend of 0.25 percent, provides the Department with a more accurate comparison between NSTAR Electric's investment and cost performance and the Company's peers (Attorney General Brief at 33-34, citing Exh. AG/DED-4, Schs. 4, 5). Further, the Attorney General claims that the Company's lack

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22 These costs include those associated with energy efficiency, grid modernization and capital additions, advanced metering infrastructure, storm restoration, vegetation management, pension and post-retirement benefits other than pensions, substation capital additions, customer information systems, and IT additions (Attorney General Brief at 29).

of specific and measurable results to show improved efficiency, and the malleability of the Company's benchmarking study, are indicative of a misalignment with long-standing Department precedent (Attorney General Brief at 35-36, citing Incentive Regulation, D.P.U. 94-158, at 63 (1995)). Accordingly, the Attorney General recommends that the Department reject the initially proposed consumer dividend of 0.15 percent and adopt a 0.25-percent consumer dividend, in the event that the Department approves a PBR plan for the Company (Attorney General Brief at 35).

Third, the Attorney General argues that the Company's proposed K-bar adjustment will result in additional rate increases under the proposed PBR plan and will provide little incentive for cost control (Attorney General Brief at 23). Further, the Attorney General contends that a K-bar structured with a historical average based on the years 2018 through 2022 is flawed, because 2022 capital additions have not been subject to prudency review and the Company could improperly increase 2022 spending as a means to increase its future revenue under its K-bar (Attorney General Brief at 24). The Attorney Generals also claims that there is uncertainty regarding the historical capital plant additions used by NSTAR Electric to calculate its proposed K-bar formula (Attorney General Brief at 25). She asserts that NSTAR Electric's proposed K-bar adjustment includes $114 million in additional capital for the years 2018-2019 that was not reflected in the Company's TFP calculations (Attorney General Brief at 25). Based on these considerations, the Attorney General argues that, if the Department approves a PBR plan for the Company, a K-bar structured with a historical

average from the years 2017 through 2021 is the more appropriate option (Attorney General Brief at 24, 65).[23]

Fourth, the Attorney General raises concerns regarding the Company's proposed ROERA. In particular, the Attorney General argues that the proposed ROERA is unnecessary, as the Company already is compensated for changes in O&M expenses and capital costs via the annual rate increases provided by the I-X formula (Attorney General Brief at 36). Further, the Attorney General contends that the proposed ROERA is an attempt to expand the well-established definition of what qualifies as an exogenous cost event and allowing this adjustment along with a Z factor will dilute the original purpose behind "truly exogenous events" (Attorney General Brief at 37, citing D.P.U. 17-05, at 395-396). In addition, the Attorney General claims that the Company failed to provide any support for using the ten-year U.S. Treasury bond in calculating the ROERA adjustment, while the Attorney General's witnesses established that the 30-year U.S. Treasury Bond yield is a better representation of the long-run expectations of investors (Attorney General Brief at 38, citing Exhs. AG-JRW-1, at 13, 18, 58; ES-VVR-1, at 16, 17, 26, 55; ES-VV-5, at 1; Tr. 9, at 1012-1013). For these reasons, the Attorney General recommends that the Department reject the Company's proposed ROERA adjustment (Attorney General Brief at 38).

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[23] The Attorney General contends that the 2017 through 2021 average includes an additional $82 million in capital additions not reflected in the Company's TFP calculations (Attorney General Brief at 25).

Fifth, the Attorney General acknowledges that the Company needs to carefully undertake its future distribution system planning to accommodate the Commonwealth's emissions reduction goals and clean energy requirements (Attorney General Brief at 57). The Attorney General, however, argues that the Company's critical infrastructure projects are loosely defined and are only in the early stages of planning (Attorney General Brief at 58). Further, she contends that the circumstances surrounding when the Company could seek cost recovery for these projects are vague, lack meaningful restrictions or requirements, and present oversight challenges (Attorney General Brief at 58-59). Finally, the Attorney General argues that NSTAR Electric's proposal is unnecessary because legislative action already requires the Company to make various investments in reliability, resiliency, and general electrification and there likely will be overlap between these requirements and the Company's proposed capital investments (Attorney General Brief at 59, citing An Act Driving Clean Energy and Offshore Wind, St. 2022, c. 179, § 53, ("2022 Clean Energy Act")). For these reasons, the Attorney General asserts that the Company's initial proposal to include a cost recovery factor for critical infrastructure investments should be rejected (Attorney General Brief at 59).

Sixth, the Attorney General argues that the Department should reject the Company's proposed inclusion of certain Enterprise IT expenses in the exogenous cost factor (Attorney General Brief at 59). In support of this argument, the Attorney General contends that ESC, rather than the Company, will incur the costs for most of these investments (Attorney General Brief at 59). Further, she claims that the Company already is compensated for IT

costs through base distribution rates and the annual PBR adjustments (Attorney General Brief at 60). In addition, the Attorney General asserts that the Company does not recognize or net out any economic benefits that accrue as a result of the implementation of the new IT systems (Attorney General Brief at 60).

Next, the Attorney General makes several arguments, in the context of the proposed PBR plan and annual PBR adjustment, against the Company's request to transfer the Solar Expansion Program investments to base distribution rates (Attorney General Brief at 113-117, citing Exh. AG-TN-1, at 4-10).[24] In particular, she contends that the Company's proposal would provide a windfall to shareholders because the amounts collected from customers for the Solar Expansion Program investments would increase over time due to the PBR adjustment while the actual costs to the Company for those investments would decrease as the Company recovers its investment (Attorney General Brief at 113-116, citing Exh. AG-TN-1, at 4-8). Further, the Attorney General argues that the Solar Expansion Program costs are generation costs, not distribution costs (Attorney General Brief at 116-117, citing Exh. AG-TN-1, at 9). Thus, according to the Attorney General, these costs should not be included in the base distribution rate revenue requirement portion of the PBR rate formula and applying a PBR adjustment to these generation-related costs would be inappropriate (Attorney General Brief at 117, citing Exh. AG-TN-1, at 9-10).

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[24] The Attorney General raised similar arguments as to the Company's proposed SMART Program investments and Solar Program investments (Attorney General Brief at 113-117). The Department addresses these programs and the treatment of the investments in Section XIV below.

Finally, the Attorney General argues that numerous provisions in the Company's proposed PBR plan tariff should be revised to provide appropriate definitional and clarifying language (Attorney General Brief at 60-61). She asserts that each of her recommended changes should be adopted should the Department allow a PBR plan for the Company (Attorney General Brief at 61).

Based on the above considerations, the Attorney General argues that the Company's proposed PBR plans will impose unnecessary rate increases on customers and focus too heavily on meeting projected increased peak demand through increased capital expenditures (Attorney General Brief at 14-15, 18-26, 62-64). Thus, the Attorney General asserts that the Department should reject the PBR plan in lieu of an all-in capital tracker (Attorney General Brief at 10, 64-65; Attorney General Reply Brief 1-3). According to the Attorney General, the all-in capital tracker would: (1) fully compensate the Company for investments that the Company actually makes; (2) be simple to understand, account for, and administer; (3) consolidate into one filing all other capital costs currently being recovered through reconciling mechanisms; (4) incorporate the required cost recovery without additional filings for legislatively-mandated investments (Attorney General Brief at 8-10). Further, the Attorney General asserts that the Department has successfully used capital trackers in the past (Attorney General Brief at 9, citing D.P.U. 15-80/D.P.U. 15-81, at 44–55; Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 09-39, at 78-84 (2009)). Alternatively, if the Department approves a PBR plan for the Company, the Attorney General asserts that the plan should include the following modifications: (1) an X factor equal to

zero; (2) a consumer dividend of at least 25 basis points; (3) a cap on the inflation factor of five percent; (4) inclusion of a K-bar formula approach based on average historical capital expenditures for the five-year period of 2017 through 2021, and elimination of the 2022 capital roll-ins; and (5) elimination of the critical infrastructure cost recovery factor and exogenous cost treatment for Enterprise IT expenses (Attorney General Brief at 65).

2. DOER

DOER recommends approving a PBR plan for the Company, but with modifications (DOER Brief at 9-10). First, DOER argues that the Department should approve a five-year plan term and reject the Company's proposed ten-year term (DOER Brief at 9-10). DOER asserts that a ten-year PBR plan would carry significant risk and that it would inhibit the ability of regulators and legislators to ensure that rates are aligned with the needs of the clean energy transition (DOER Brief at 10-11). Further, DOER argues that the Company's involvement with multiple large-scale investment proceedings necessitates a shorter-term length so that ratemaking structures can be responsive to the needs of the clean energy transition (DOER Brief at 11-12). DOER also contends that NSTAR Electric's assumptions in modeling demand growth may require revision in the future and that a five-year term would better allow the Company and Department to adjust planned investments as needed (DOER Brief at 13). Additionally, DOER claims that a five-year term is more consistent with Department precedent (DOER Brief at 10). Finally, DOER asserts that the elimination of full revenue decoupling will need to be addressed in the near future, and that a five-year

term will enable the Company to be more responsive to this change than a ten-year term would be (DOER Brief at 13-14).

Second, DOER supports the Attorney General's proposal for a broad-based capital tracker mechanism to support the Company's critical infrastructure projects as an interim measure while a more fully developed and vetted K-bar formula can be developed (DOER Brief at 15-16; DOER Reply Brief at 4-5). DOER argues that the creation of multiple capital trackers and recovery mechanisms for the Company's investments is a non-sustainable practice (DOER Brief at 15). Rather, DOER contends that a formulaic approach with built-in cost containment mechanisms and performance incentives is an appropriate long-term solution to increasing capital investment demand (DOER Brief at 16-17).

Finally, DOER argues that the Department should modify the Company's initial proposed PBR to reduce rate shock for customers (DOER Brief at 17). In this regard, DOER supports the Company's revised proposal to cap the inflation factor in its PBR formula at five percent (DOER Brief at 17-18).

3. Acadia Center

Acadia Center argues that the Department should reject the Company's proposed ten-year PBR term and instead approve a five-year term, as this structure is more appropriate in light of the expected substantial capital investments over the next five years (Acadia Center Brief at 10-11, citing D.P.U. 20-120; Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 18-150 (2019)). Further, Acadia Center contends that the Company has acknowledged the significant risks involved with a ten-year PBR plan,

including unprecedented investment in climate adaptation and electrification (Acadia Center Brief at 12).

Acadia Center also argues that NSTAR Electric's current PBR plan, and specifically the negative X factor, has resulted in a financial windfall for the Company (Acadia Center Brief at 13). Acadia Center contends that the negative X factor is nationally unprecedented and reflects declining performance, which, in turn, provides little incentive for the Company to address its productivity issues (Acadia Center Brief at 13-14). Acadia Center asserts that utility compensation should be distinctively linked to measurable performance outcomes that benefit customers, and, therefore, the Department should reject a negative X factor in this proceeding (Acadia Center Brief at 14).

4. Cape Light Compact

Cape Light Compact argues that a ten-year PBR plan term would be too long given the likelihood of significant change in the electric industry in that timeframe (e.g., advanced metering, electrification) and the need to address other issues in the Company's next base distribution rate case (e.g., eliminating full revenue decoupling, continuing consolidation of EMA and WMA rates) (CLC Brief at 38; CLC Reply Brief at 12). Cape Light Compact also contends that NSTAR Electric's proposal to file "rate schedules" at the five-year point is unclear, as the Company does not specify what that filing would entail (CLC Brief at 38, citing Exhs. DPU 5-1; CLF 1-1). In addition, Cape Light Compact supports the Attorney General's recommendation for an all-in capital tracker (CLC Reply Brief at 10-11). According to Cape Light Compact, an all-in capital tracker offers the most balanced approach

for ratepayers and the Company, allows appropriate regulatory review and cost recovery, provides a more straightforward, easily understood alternative to PBR, and is administratively efficient (CLC Reply Brief at 10-11, citing Attorney General Brief at 8-9).

5. CLF[25]

CLF argues that the Company's proposed ten-year PBR plan term is unreasonably long and may prohibit necessary review in the future (CLF Brief at 5). Thus, CLF contends that the Company should conduct additional review and cost analysis to provide more accurate depictions of electrification costs over the next several years and should seek Department approval of moderate changes to base distribution rates as they become necessary (CLF Brief at 5). Further, CLF argues that the Company's proposed PBR plan is not in the public interest as it fails to limit recovery to reasonable costs and is insufficient to meet the ratemaking principles of fairness and equity (CLF Brief at 12-13). Accordingly, CLF recommends that the Department deny the Company's proposed PBR plan (CLF Brief at 5). Alternatively, if the Department approves a PBR plan for the Company, CLF recommends certain modifications (CFL Brief at 5). In particular, CLF argues that the Department should not approve rate increases associated with NSTAR Electric's critical infrastructure projects without first reviewing the specific details of the proposals, requiring the Company to engage

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[25] CLF's initial brief is, at times, difficult to understand. CLF appears to use the term "petition" interchangeably to describe both the Company's request for a base distribution rate increase and request for approval of a PBR plan. Our summary of CLF's arguments, as they pertain to the proposed PBR plan, relies on some assumptions as to which "petition" CLF refers. In future proceedings, a more clearly written brief would facilitate our consideration of the arguments.

with the community before filing for siting approval, and ensuring equitable distribution of burdens and benefits associated with the projects (CLF Brief at 15-16; CLF Letter in Lieu of Reply Brief at 1).

6. TEC and PowerOptions

TEC and PowerOptions argue that the Department should reject the Company's proposed ten-year PBR plan term and instead approve a five-year term that is inclusive of all capital projects (TEC/PowerOptions Brief at 13-14; TEC/PowerOptions Reply Brief at 8). TEC and PowerOptions contend that the historic pace of change currently occurring in the electric industry requires that the Department not relinquish its ability to supervise the Company for a period of ten years (TEC/PowerOptions Brief at 14). Further, TEC and PowerOptions assert that a five-year term is more congruous with the recent Department-approved PBR plans approved for National Grid's electric and gas operating companies in Massachusetts (TEC/PowerOptions Brief at 14).

TEC and PowerOptions also argue that the Company's proposed PBR plan should not include a separate cost recovery factor for the critical infrastructure projects or exogenous cost recovery for Enterprise IT projects, as both categories of projects represent core distribution investments (TEC/PowerOptions Brief at 13; TEC/PowerOptions Reply Brief at 8-9). Further, TEC and PowerOptions contend that the costs associated with the critical infrastructure projects could be evaluated in a base distribution rate proceeding at the end of a five-year PBR plan term, which also would allow for a timely review of mature substation capacity projects (TEC/PowerOptions Reply Brief at 8). Additionally, TEC and

PowerOptions claim that the proposed exogenous cost treatment for Enterprise IT expenses is incongruous with the premises of PBR plans, as, under a PBR plan, the Company is granted annual rate increases to allow for business operations (TEC/PowerOptions Reply Brief at 8). Moreover, TEC and PowerOptions assert that most software is purchased at the service company level, and that the Company's concerns surrounding IT expenses can be mitigated by a five-year PBR plan term (TEC/PowerOptions Reply Brief at 8-9).

TEC and PowerOptions also argue against the proposed roll-in of 2022 capital additions and assert that these additions are outside the scope of review for this proceeding (TEC/PowerOptions Brief at 15). Finally, TEC and PowerOptions support the proposed five-percent inflation cap, including allowing the Company to file a base distribution rate case if earnings fall more than 400 basis points below the ROE authorized in the instant proceeding (TEC/PowerOptions Reply Brief at 9).

7. UMass

UMass argues that the Company's proposed PBR plan should be denied until a better array of metrics is developed (UMass Brief at 47). UMass does not raise any specific arguments on brief about the components of the proposed PBR plan.

8. Company

a. Introduction

The Company asserts that its proposal to continue with a PBR plan is designed to provide funding for needed infrastructure projects and increasing operating expenses between base distribution rate cases (Company Brief at 14). The Company contends that its existing

PBR plan has proven that it is an innovative mechanism that is effective in promoting rigorous cost control, while also enabling investment in emerging technologies that will enhance reliability for residential and business customers and help Massachusetts meet its ambitious clean-energy goals, including the substantial investment in distribution automation, electric vehicle ("EV") infrastructure, and other clean energy capabilities (Company Brief at 14, citing Exh. ES-CAH/DPH-1, at 62).

According to NSTAR Electric, the existing PBR plan challenged the Company to find better, more innovative ways to achieve cost reductions while still providing customers with safe and reliable service, which benefits the overall system, whether in relation to the integration of distributed generation ("DG"), energy storage, or other electrification purposes (Company Brief at 14, citing Exh. ES-CAH/DPH-1, at 62). The Company asserts that during this time, it made total gross investments of over $2 billion in rate base, worked to contain its O&M expenses, did not over earn its authorized ROE, and provided benefits to customers through an overall lower impact to rates than what was forecasted in D.P.U. 17-05 (Company Brief at 19-21, citing Exhs. ES-CAH/DPH-1, at 19-22, 25-27; DPU 25-16). The Company asserts that the PBR construct was also effective at maintaining a level of rate stability and predictability by avoiding relatively larger rate changes that typically accompany a base distribution rate proceeding (Company Brief at 14, citing Exh. ES-CAH/DPH-1, at 62). For these reasons, the Company proposes to continue operating under a PBR Plan with a longer, ten-year term (Company Brief at 14).

NSTAR Electric reiterates its request for Department approval of the Company's initially proposed PBR plan (Company Brief at 15). The Company, however, also asserts that, in the alternative, the Department may allow a ten-year PBR plan with the several revisions proposed during the proceeding (Company Brief at 15, 53-57, citing Exhs. ES-PBR-Rebuttal-1, at 45-46; DPU 63-3). NSTAR Electric contends that its revised PBR plan has several benefits for customers by smoothing the impact of the January 1, 2024, adjustment and maintaining stability over the ten-year term of the PBR plan, while allowing the Company more adequate capital cost recovery (Company Brief at 15, citing RR-AG-7; RR-DPU-43, Tr. 12, at 1260).

b. PBR Plan Components[26]

NSTAR Electric argues that its requested PBR plan term is appropriate because it will create stronger incentives for the Company to maximize opportunities associated with electrification and grid modernization (Company Brief at 45, citing Exh. ES-PBR/PLAN-1, at 16). The Company rejects intervenor arguments that a ten-year PBR plan term is too long (Company Brief at 80-89). The Company argues that the revenue predictability from a ten-year PBR plan will aid its distribution system planning efforts and provide stronger efficiency incentives in doing so (Company Brief at 80). Further, the Company contends that

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26 The Company summarized the various components of its initial PBR plan proposal and the revised proposal offered during the proceeding (Company Brief at 21-57). In the interest of administrative efficiency, in this section we focus on the components of the proposals challenged by the intervenors and the Company's response to the issues raised by the intervenors.

a ten-year term will allow resources that would have otherwise been devoted to base distribution rate case filings to be put toward meeting future challenges (Company Brief at 80-81). In addition, the Company asserts that a ten-year PBR plan term would provide the flexibility and incentives needed to meet the Commonwealth's clean energy objectives (Company Brief at 82). Moreover, NSTAR Electric contends that approval of a ten-year PBR plan term would not amount to pre-approval of large infrastructure projects or excuse the Company from regulatory review of the prudency of the costs (Company Brief at 85).

NSTAR Electric also expresses confidence in its ability to assume the risk of a ten-year PBR plan term and claims that but for the expiration of its current PBR plan, the Company would not have filed the instant base distribution rate case (Company Brief at 81). Further, the Company argues that because of its unique operating environment and future obligations and requirements, it is inappropriate to allow a five-year PBR plan term simply because that duration was approved for other utilities (Company Brief at 88-89). Finally, the Company submits that it provided a clear outline for its proposed mid-term filing to satisfy the statutory requirements in G.L. c. 164, § 94 (Company Brief at 81).

The Company next argues that contrary to the Attorney General's claims, the TFP study is robust, appropriately designed, and supports the initially proposed X factor of -1.45 percent (Company Brief at 72). The Company rejects the notion that the TFP study should not include costs that are recovered through reconciling mechanisms outside of base distribution rates (Company Brief at 72). The Company asserts that the TFP study is a measure of productivity, not cost recovery, and that the study measures the total cost of

providing distribution service (Company Brief at 72-73). Further, the Company argues that the TFP study does not produce overstated results, and ultimately the difference between the TFP study in the instant proceeding and the TFP study performed for D.P.U. 17-05 is only four basis points, which indicates that the model is robust (Company Brief at 73-74). NSTAR Electric also contends that, contrary to Acadia Center's argument, a negative X factor is not indicative of underperformance, but rather is exogenous to the Company's performance, reflects the expected unit cost performance of an average firm in the industry, and indicates increasing capital needs among the industry while output declines or slows in the same period (Company Brief at 90). Additionally, the Company maintains that its current revenue deficiency is not due to imprudent business practices but instead due to unusually high storm costs, increased capital investments, increased enterprise IT costs, and the transfer of vegetation management costs to base distribution rates (Company Brief at 90).

NSTAR Electric argues that its initially proposed 15 basis-point (or 0.15 percent) consumer dividend is supported by Department precedent and two cost benchmarking studies performed by the Company's consultant (Company Brief at 37, citing Exh. ES-PBR/PLAN-1, at 38). The Company contends that the Department has previously found that benchmarking terms of three years apply equally to five- and ten-year PBR plan terms, and, as such, the Department should accept the use of a three-year period for benchmarking (Company Brief at 76). Thus, the Company asserts that it was not necessary to use a longer benchmarking term, as argued by the Attorney General (Company Brief at 76).

The Company also disagrees with the Attorney General's position regarding the proposed ROERA adjustment (Company Brief at 69-71). According to NSTAR Electric, the ROERA adjustment is necessary as the Company will be required to make large capital investments in the next ten years, and changes in capital markets do not presently qualify as exogenous events (Company Brief at 41, citing Exh. ES-CAH/DPH-1, at 76). Further, NSTAR Electric contends that the I-X formula will not appropriately compensate the Company for changes in capital market conditions, and that the risk of not being able to access capital markets is higher over a ten-year period (Company Brief at 42). In addition, the Company argues that it is inordinately affected by changes in capital market conditions as electric distribution is a capital-intensive industry, and financial risks are exacerbated by current inflation rates and the ensuing impact on debt and equity rates, which are not reflected in the TFP study (Company Brief at 42, 71).

Regarding the proposed exogenous cost provision, the Company disagrees with the Attorney General's contention that Enterprise IT costs should not be eligible for recovery (Company Brief at 78). The Company argues that it is becoming more cost-effective to utilize cloud computing, which results in more IT costs being incurred as expense rather than capital (Company Brief at 39, citing Exh. ES-CAH/DPH-1, at 86). Thus, the Company contends that it is necessary to treat these costs as exogenous under the PBR plan (Company Brief at 39). The Company asserts that if it does not incur these costs, as the Attorney General suggests, then there will be nothing to recover (Company Brief at 78). Further, the Company contends that it will have to demonstrate that any Enterprise IT costs sought for

exogenous recovery are incremental to amounts provided in base distribution rates (Company Brief at 78).

Next, NSTAR Electric argues that to make the proposed ten-year PBR plan term feasible, the Company should be allowed to roll-in 2021 and 2022 capital investments (Company Brief at 53, citing Exh. ES-CAH/DPH-1, at 74-75). Further, the Company contends that its proposal is consistent with the Department's approval of a ten-year PBR plan term for NSTAR Gas (Company Brief at 87, citing D.P.U. 19-120, at 72). Finally, NSTAR Electric claims that TEC and PowerOptions have not provided any basis for deviating from this precedent or any evidence that the requested capital roll-ins would not be necessary for the Company's PBR plan (Company Brief at 87, citing TEC/PowerOptions Brief at 15). Based on these considerations, the Company asserts that the Department should allow the roll-in of 2022 capital additions if the ten-year PBR plan term is approved (Company Brief at 87).

The Company agrees with many of the Attorney General's proposed tariff changes, and contends they represent suggestions to directly incorporate definitions that are contained in other referenced tariffs (Company Brief at 79). The Company, however, does take issue with several of the Attorney General's recommendations (Company Brief at 79).

Finally, the Company rejects the Attorney General's recommended "all-in capital tracker" (Company Brief at 59). NSTAR Electric argues that, due to the magnitude of the prospective filing, an all-in capital tracker would be more administratively burdensome than the proposed PBR plan for the Company, Department, and relevant stakeholders (Company

Brief at 59-60, citing Exh. DPU 25-13). Further, the Company contends that an all-in capital tracker would create poor incentives by encouraging capital expenditure, and therefore, such a tracker is not compatible with the Department's efficiency goals (Company Brief at 61). In addition, the Company claims that an all-in capital tracker would lead to increased regulatory costs as more frequent base distribution rate cases would be needed to roll the additions into base distribution rates (Company Brief at 61). According to the Company, its K-bar proposal is a better option, as it does not result in dollar-for-dollar recovery and the PBR adjustments are automatic, leaving intact both cost control incentives and administrative efficiencies (Company Brief at 56-57, 60-61).

D. Analysis and Findings

1. Introduction

In the sections below, we review our ratemaking authority and conclude that, pursuant to G.L. c. 164, § 94, the Department may implement PBR as an adjustment to cost of service/rate of return regulation. Further, we discuss the factors that the Department has applied to review incentive regulation proposals. Finally, we review the Company's initially proposed PBR plan and the proposed revised plan, and we determine whether allowing a PBR plan is in the public interest and will result in just and reasonable rates.

2. Department Ratemaking Authority

Pursuant to G.L. c. 164, § 94, the Legislature has granted the Department extensive ratemaking authority over electric and gas distribution companies.[27] The Supreme Judicial Court has consistently found that the Department's authority to design and set rates is broad and substantial. See, e.g., Boston Real Estate Board v. Department of Public Utilities, 334 Mass. 477, 485 (1956). Because G.L. c. 164, § 94 authorizes the Department to regulate the rates, prices, and charges that electric and gas distribution companies may collect, this authority includes the power to implement revenue adjustment mechanisms such as a PBR. Boston Gas Company v. Department of Telecommunications and Energy, 436 Mass. 233, 234-235 (2002); see also G.L. c. 164, § 1E (authorizes Department to establish PBR for jurisdictional electric and gas companies).

The Department is not compelled to use any particular method to establish rates, provided that the end result is not confiscatory (i.e., deprives a distribution company of the opportunity to realize a fair and reasonable return on its investment). Boston Edison, 375 Mass. 1, 19. The Supreme Judicial Court has held that a basic principle of ratemaking is that "the department is free to select or reject a particular method as long as its choice does not have a confiscatory effect or is not otherwise illegal." American Hoechest Corporation v. Department of Public Utilities, 379 Mass. 408, 413 (1980), citing Massachusetts Electric Company v. Department of Public Utilities, 376 Mass. 294, 302 (1978).

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[27] Pursuant to G.L. c. 165, § 2, the Department's ratemaking authority under G.L. c. 164, § 94 also applies to water distribution companies.

In addition, G.L. c. 164, § 76, grants the Department broad supervision over electric and gas distribution companies. Under G.L. c. 164, § 76C, the Department has the authority to establish reasonable rules and regulations consistent with G.L. c. 164, as needed, to carry out its administration of jurisdictional companies in the public interest. D.P.U. 07-50-B at 26-27. See also Cambridge Electric Light Company v. Department of Public Utilities, 363 Mass. 474, 494-496 (1973).

Although the Department traditionally has relied on cost of service/rate of return regulation to establish just and reasonable rates, there are many variations and adjustments in the specific application of this model to individual utilities as circumstances differed across companies and across time. D.P.U. 07-50, at 8. Over the years, electric and gas distribution companies subject to the Department's jurisdiction have operated under PBR or PBR-like plans. See, e.g., D.P.U. 19-120, at 58; D.P.U. 18-150, at 47; D.P.U. 17-05, at 371-372; Bay State Gas Company, D.T.E. 05-27, at 382 (2005); Boston Gas Company, D.T.E. 03-40, at 471 (2003); The Berkshire Gas Company, D.T.E. 01-56, at 10 (2002; Massachusetts Electric Company/Eastern Edison Company, D.T.E. 99-47, at 4-14 (2000).

Consistent with the discussion above, the Department reaffirms that we may implement PBR as an alternative to cost of service/rate of return regulation under the broad ratemaking authority granted to us by the Legislature under G.L. c. 164, § 94. In addition, the Department validates the propriety of the continued use of PBR as a meaningful regulatory format.

3. Evaluation Criteria for PBR

The Department must approach the setting of rates and charges in a manner that: (1) meets our statutory obligations under G.L. c. 164, § 94, to ensure rates that are just and reasonable, not unjustly discriminatory, or unduly preferential; and (2) is consistent with long-standing ratemaking principles, including fairness, equity, and continuity. D.P.U. 07-50, at 10-11. Further, the Department must establish rates in a manner that balances a number of these key principles to reflect and address the practical circumstances attendant to any individual company's base distribution rate case. D.P.U. 07-50-A at 28. The Department has implemented PBR plans or PBR-like mechanisms on a finding that such regulatory methods would better satisfy our public policy goals and statutory obligations. See, e.g., Boston Gas Company, D.P.U. 96-50 (Phase I) at 261 (1996); D.P.U. 94-158, at 42-43; New England Telephone and Telegraph Company, D.P.U. 94-50, at 139 (1995).

As part of our investigation of incentive ratemaking, the Department examined the criteria to evaluate PBR proposals for electric and gas distribution companies. D.P.U. 94-158, at 52-66. The Department found that, because incentive regulation acts as an alternative to traditional cost of service regulation, incentive proposals would be subject to the standard of review established by G.L. c. 164, § 94, which requires that rates be just and reasonable. D.P.U. 94-158, at 52; Attorney General v. Department of Telecommunications and Energy, 438 Mass. 256, n.13 (2002) (in determining the propriety of rates under G.L. c. 164, § 94, the Department must find that the rates are just and reasonable). Further, the Department determined that a petitioner seeking approval of an incentive regulation

proposal like PBR is required to demonstrate that its approach is more likely than current regulation to advance the Department's traditional goals of safe, reliable, and least-cost energy service and to promote the objectives of economic efficiency, cost control, lower rates, and reduced administrative burden in regulation. D.P.U. 94-158, at 57. Finally, a well-designed incentive mechanism should provide utilities with greater incentives to reduce costs than currently exist under traditional cost of service regulation and should result in benefits to customers that are greater than would be present under current regulation. D.P.U. 94-158, at 57.

In addition to these criteria, the Department established a number of additional factors that it would weigh in evaluating incentive proposals. D.P.U. 94-158, at 57. These factors provide that a well-designed incentive proposal should: (1) comply with Department regulations, unless accompanied by a request for a specific waiver; (2) be designed to serve as a vehicle to a more competitive environment and to improve the provision of monopoly services; (3) not result in reductions of safety, service reliability, or existing standards of customer service; (4) not focus excessively on cost recovery issues; (5) focus on comprehensive results; (6) be designed to achieve specific, measurable results; and (7) provide a more efficient regulatory approach, thus reducing regulatory and administrative costs. D.P.U. 94-158, at 58-64.

4. Rationale for PBR

There is a fundamental evolution taking place in the way electricity is produced and consumed in Massachusetts. This evolution has been driven, in large part, by a number of

legislative and administration policy initiatives designed to address climate change and to foster a clean energy economy through the promotion of energy efficiency, demand response, and DG, and the procurement of long-term contracts for renewable energy. See, e.g., 2022 Clean Energy Act; An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy, St. 2021, c. 8 ("2021 Climate Act"); The Massachusetts 2050 Decarbonization Roadmap[28]; An Act Relative To Green Communities, St. 2008, c. 169 ("Green Communities Act"); An Act Establishing the Global Warming Solutions Act, St. 2008, c. 298; An Act Relative to Competitively Priced Electricity in the Commonwealth, St. 2012, c. 209, § 36; Green Communities Expansion Act, § 83A; Executive Order No. 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (September 16, 2016). To varying degrees, this evolution is changing the operating environment for EDCs in Massachusetts.

As described above, the Company proposes to continue operating under a PBR plan for the next ten years (Exhs. ES-CAH/DPH-1, at 13, 63, 93; ES-PBR/PLAN-1, at 13; ES-PBR-Rebuttal-1, at 45). In addition to the arguments set forth above in Section IV.C.8, NSTAR Electric states that its operating dynamics will continue to evolve bringing even greater technological complexity, larger investment requirements, and a persistent need to

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28 The Massachusetts 2050 Decarbonization Roadmap defines eight decarbonization pathways, and the "All Options" pathway is the benchmark compliant decarbonization pathway using midpoint assumptions across most technical parameters (Massachusetts 2050 Decarbonization Roadmap at 15, found at: https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download).

find and develop skilled personnel to manage the Company and meet the expectations of customers on a day-to-day basis (Exh. ES-CAH/DPH-1, at 33). In particular, NSTAR Electric states that its fundamental challenge is a pressing need to complete system upgrades and improvements to meet growing customer expectations of reliability and resiliency; increase system demands in anticipation of electrification; and integrate DG, all in the face of stagnant sales volumes (Exh. ES-PBR-Rebuttal-1, at 5). Further, the Company notes that it is planning for the future with particular focus on building capabilities to meet future service requirements in an electrified environment (Exhs. ES-CAH/DPH-1, at 33; ES-ENG-1, at 10-21; ES-PBR-Rebuttal-1, at 5). According to NSTAR Electric, PBR is a critical factor in the Company's operating environment because it provides the Company with the latitude to focus on operations and to meet expectations, while providing the critical resources necessary to "make ends meet" (Exh. ES-CAH/DPH-1, at 33-34). In addition, the Company submits that PBR creates broad-based incentives for cost control because it applies across the entire utility operation and supports both capital investment and O&M costs (Exh. ES-PBR-Rebuttal-1, at 12). Further, NSTAR Electric expects that without a PBR plan, the Company likely would file up to four base distribution rate cases through the end of 2031 to keep up with the substantial capital outlay expected over a ten-year period (Exh. ES-PBR-Rebuttal-1, at 48).

As discussed above in Section IV.C, several intervenors argue against the Company's PBR plan proposals as not in the public interest, not tied to achievement of any specific, measurable results, or otherwise not appropriate for approval. Further, several of the

intervenors recommend changes to the Company's proposals, should the Department approve a PBR plan.

The Department finds that the Company has demonstrated that continuing its PBR plan is an appropriate alternative to traditional cost of service/rate of return ratemaking. During the current PBR term, approved in D.P.U. 17-05, the Company made over $2 billion in capital investments in new business and peak load growth, basic business requirements, and replacement of aging infrastructure (Exh. ES-CAH/DPH-1, at 19-25). In particular, the Company installed, expanded, or upgraded its infrastructure to accommodate electric demand growth and installed new or replaced old distribution equipment in an effort to reduce the number of outages experienced by customers. (Exh. ES-CAH/DPH-1, at 20). Further, during the current PBR term, the Company instituted a variety of cost containment initiatives, including implementation of robotic process automation; using data analytics to streamline and automate reliability reporting and other work processes; fleet standardization; contract renegotiations; and leveraging of supply chain partnerships and use of contractors of choice for engineering work (Exh. ES-CAH/DPH-1, at 18-19, 25-26). In addition, we find that NSTAR Electric has demonstrated that the current PBR plan has been effective in maintaining rate stability, delivery price predictability and avoiding relatively larger rate changes (Exhs. ES-CAH/DPH-1, at 18-19, 62; DPU 25-16).

The Department finds that allowing NSTAR Electric to continue to operate under a PBR plan will provide the Company more flexibility to address an evolving operating environment, such as changes in energy and climate policy; emerging technologies;

challenges in hiring, training, and retaining skilled personnel; replacing, upgrading, and maintaining aging infrastructure; increasing frequency and intensity of storms; and higher customer expectations (Exhs. ES-CAH/DPH-1, at 31-61; ES-PBR/PLAN-1, at 15-16, 31-34; ES-PBR-Rebuttal-1, at 23-32). Further, as part of the PBR plan, the Company has committed to refraining from filing rate schedules to put new base distribution rates into effect during the PBR plan term (Exh. ES-CAH/DPH-1, at 68 n.10, 86, 92). The Department accepts that this stay-out provision will result in diminished administrative burden and in efficiencies (Exh. ES-CAH/DPH-1, at 59).

In addition, the Department finds that, in this instance, a PBR plan is better suited to satisfy the Department's public policy goals and statutory obligations than the Attorney General's proposed all-in capital tracker. In particular, the Department finds an all-in tracker that provides dollar-for-dollar recovery for investments is inconsistent with the principle of spending efficiency that a PBR plan is intended to encourage. Further, as discussed below, the Department adopts a K-bar approach to capital spending within the approved PBR plan. The flexibility and revenue predictability provided by the K-bar approach will allow the Company to address a variety of future expenses without additional cost recovery filings. The K-bar approach is formulaic in nature, which provides for simplicity and a measure of administrative ease during the annual PBR filing review (Exh. DPU 35-5; RR-DPU-12, at 3). In contrast, the Attorney General's recommended all-in capital tracker would require annual review of all capital investments, which may be unduly burdensome and difficult to complete in a timely manner.

Finally, as discussed in Section V.D below, the Department has approved a variety of PBR-specific metrics to measure the Company's performance and the full range of benefits that will accrue under the PBR plan with the goal of assuring customers and stakeholders that standards of service are maintained or improved, and that meeting clean energy goals are advanced during the PBR term. As such, we are not persuaded by the Attorney General's argument that the Company's proposed PBR plan is overly focused on cost recovery.

Below, the Department addresses the specific components of the PBR plan and whether the PBR mechanism appropriately balances ratepayer and shareholder risk, is in the public interest, and will result in just and reasonable rates.

5. PBR Plan Components

a. PBR Plan Term

The Company initially proposed a ten-year PBR term with a mid-term filing of rate schedules at the five-year mark (Exhs. ES-CAH/DPH-1, at 13, 93; ES-PBR/PLAN-1, at 13). In its rebuttal testimony, the Company revised certain components of its proposed PBR plan. In offering some revisions to its PBR plan during the course of the proceeding, the Company, however, did not revise the term of PBR plan and proposed to maintain the ten-year term (Exh. ES-PBR-Rebuttal-1, at 45). The ten-year PBR term would commence on January 1, 2023, and expire on December 31, 2032, during which there would be nine annual PBR mechanism adjustments, taking effect each January 1, beginning in 2024 (Exh. ES-CAH/DPH-1, at 64-65, 93). In conjunction with the PBR term, NSTAR Electric proposed a stay-out provision whereby the Company may file a base distribution rate case

during the PBR term that would result in new base distribution rates going into effect no earlier than January 1, 2033 (Exh. ES-CAH/DPH-1, at 68 n.10, 86, 92).

The Department has found that a well-designed PBR plan should be of sufficient duration to give the plan enough time to achieve its goals and to provide utilities with the appropriate economic incentives and certainty to follow through with medium- and long-term strategic business decisions. D.P.U. 96-50 (Phase I) at 320; D.P.U. 94-158, at 66; D.P.U. 94-50, at 272. In addition, the Department has stated that one benefit of incentive regulation is a reduction in regulatory and administrative costs. D.P.U. 19-120, at 63; D.P.U. 18-150, at 53; D.P.U. 17-05, at 402; D.P.U. 96-50 (Phase I) at 320; D.P.U. 94-158, at 64.

Previous PBR plans approved by the Department have had terms of five and ten years. See, e.g., D.P.U. 20-120, at 72 (five years); D.P.U. 19-120, at 65 (ten years); D.P.U. 18-150, at 56 (five years); D.P.U. 17-05, at 404 (five years); D.T.E 05-27, at 399 (ten years); D.T.E. 03-40, at 495-496 (ten years); D.T.E. 01-56, at 10 (ten years); D.P.U. 96-50 (Phase I) at 320 (five years). The Department finds that the circumstances presented in the instant case do not support a PBR plan term of ten years. Instead, the Department approves a PBR plan term of five years with the possibility of a five-year extension, as discussed further below.

As noted above, the Company intends to undertake substantial capital investments over the next five- to ten-year period, such as the critical infrastructure projects and other investments necessary to comply with legislative and administration policy initiatives designed

to address climate change and to foster a clean energy economy (Exhs. ES-CAH/DPH-1, at 77-82; ES-PBR-Rebuttal-1, at 39-40; ES-ENG-1, at 7-8; ES-ENG-3). Due to these and other anticipated expenditures, the Department is hesitant to allow annual formulaic revenue adjustments over a longer term that likely will not align with capital investment requirements.

The Department reaffirms that a longer PBR term generally coincides with stronger economic incentives, a longer strategic planning horizon, and additional time to accrue administrative efficiencies, supporting the policy that a PBR term of up to ten years, under the right circumstances, is preferrable. D.P.U. 20-120, at 72. Our finding here of a five-year PBR term is grounded in the specific circumstances presented in this case. Further, the Department concludes that a five-year PBR term will allow for the resources and flexibility necessary for the Company to adjust its operations and investments efficiently, and, in turn, best ensures ratepayer benefits of increased operational efficiencies and improved service, and the opportunity for avoided administrative costs. In addition, a stay-out provision provides the important benefit to ratepayers of ensuring strong incentives for cost containment under the PBR. D.P.U. 19-120, at 65; D.P.U. 18-150, at 55; D.P.U. 17-05, at 403. Accordingly, the Department adopts a stay-out provision in conjunction with the five-year term.

In recognition of the Company's forecasted spending, and given our preference for longer term PBR plans, the Department finds it reasonable and appropriate to allow the Company, prior to the expiration of the five-year PBR plan term, to file a request to continue the PBR plan term for another five years. This request must be filed with the Department no

earlier than nine months and no later than six months prior to the termination of the initial PBR plan term. In the filing, the Company must demonstrate that it is in the public interest to continue the current PBR mechanism for another five years. NSTAR Electric must include testimony and supporting revenue requirement schedules that show the anticipated revenue deficiency would be if the Company were to file a base distribution rate case. The Company's filing also shall include a performance metrics proposal, as discussed in Section V.D.3 below. The Department will investigate the request and provide the Attorney General and other interested stakeholders an opportunity to comment on the filing. Balancing the best interests of ratepayers with the financial integrity of the Company, if the Department determines that continuing the PBR term is in the public best interest, the Company may continue the PBR plan for an additional five-year period, with no changes to the base distribution rates approved in the instant proceeding. If the Department determines that continuing the PBR plan term is not in the public interest, the stay-out provision shall be extended approximately one year, and the PBR plan approved in the instant case shall remain in place for one additional year to allow the Company sufficient time to prepare a base distribution rate filing.[29]

b. Productivity Offset

As noted above, the Company initially proposed an X factor of -1.45 percent (Exh. ES-PBR/TFP-1, at 24). In its rebuttal testimony, the Company proposed to reduce the

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[29] The Department may initiate procedural discussions with the Company and relevant stakeholders regarding the timing of the subsequent base distribution rate case filing.

X factor to zero, as recommended by the Attorney General (Exh. ES-PBR-Rebuttal-1, at 44-45, citing Exhs. AG-DED-PBR-1, at 3, 58; AG-DPL-1, at 12). The Department finds that the Company's revised proposed X factor of zero is appropriate, particularly when considering the other changes and modifications to the PBR plan approved herein. As such, we approve an X factor of zero.

c. Inflation Index and Floor

As noted above, the Company initially proposed to calculate the price inflation index based on the GDP-PI, with an inflation "floor" equivalent to the X factor of -1.45 percent so that a negative PBR adjustment would not occur (Exh. ES-CAH/DPH-1, at 68). In its rebuttal testimony, NSTAR Electric proposed to cap the inflation index at five percent, and the Company stated that it would "make sense" to have the opportunity file a base distribution rate case if reported earnings fall more than 400 basis points below the ROE authorized in the instant proceeding (Exhs. ES-PBR-Rebuttal-1, at 45; DPU 35-1).

In D.P.U. 94-50, at 141, the Department found that the GDP-PI is the most accurate and relevant measure of output price changes for the bundle of goods and services whose TFP growth is measured by the Bureau of Labor Statistics. In addition, the Department found that GDP-PI is: (1) readily available; (2) more stable than other inflation measures; and (3) maintained on a timely basis. D.P.U. 94-50, at 141. In the instant proceeding, no party disputes that the GDP-PI is an appropriate measure for inflation in a revenue cap PBR formula. The Department finds that the Company's use of GDP-PI as an inflation index in the PBR formula is reasonable and approves its use.

As described above, the Company has proposed to include an inflation cap of five percent in the revenue cap formula, meaning that if inflation rises above five percent, the Company will set the inflation component of the PBR formula at five percent (Exhs. ES-PBR-Rebuttal-1, at 45; DPU 35-1). The remaining parties do not oppose the proposed inflation index cap (Attorney General Brief at 65; DOER Brief at 17-18; TEC/PowerOptions Reply Brief at 9). Accordingly, the Department approves the Company's proposed inflation index cap of five percent. The Department, however, disallows including a provision in the Company's proposed PBR plan that would allow the Company the opportunity to file a base distribution rate case if reported earnings fall more than 400 basis points below the ROE authorized in this proceeding. The Department is not persuaded that, absent other extenuating circumstances, such a situation warrants terminating the PBR plan and the associated stay-out commitment.

Finally, the Company proposed an inflation floor equivalent to the X factor of -1.45 percent so that a negative PBR adjustment would not occur (Exh. ES-CAH/DPH-1, at 68). In support of this proposal, the Company stated that its cost of service would never decline, even in a deflationary period (Exh. ES-CAH/DPH-1, at 68). While the Company has not substantiated this claim, we, nevertheless, find that an inflation floor of zero, to correspond with the approved X factor, is a reasonable component of the PBR mechanism, particularly when coupled with the inflation index cap approved above. Accordingly, the Department approves an inflation floor of zero for the Company.

d. Consumer Dividend

The consumer dividend is intended to reflect expected future gains in productivity because of the move from cost-of-service ratemaking to incentive regulation. D.P.U. 96-50 (Phase I) at 165-166, 280. As a deduction to the PBR adjustment, the consumer dividend is designed to share these productivity gains with ratepayers (Exhs. ES-CAH/DPH-1, at 73; ES-PBR/PLAN-1, at 37). The Department has found that a consumer dividend represents an explicit, tangible ratepayer benefit. D.P.U. 18-150, at 60-61; D.P.U. 17-05, at 395.

As discussed above, the Company initially proposed to include a consumer dividend of 15 basis points, or 0.15 percent, when inflation, as calculated in the proposed PBR formula, exceeds two percent (Exhs. ES-CAH/DPH-1, at 72; ES-PBR/PLAN-1, at 38). In its rebuttal testimony, the Company proposed to raise the consumer dividend to 25 basis points, or 0.25 percent, when inflation exceeds two percent (Exh. ES-PBR-Rebuttal-1, at 45). The Department finds that the Company's revised proposed consumer dividend is appropriate, particularly when considering the other changes and modifications to the PBR plan approved herein. As such, we approve the Company's revised consumer dividend of 0.25 percent when inflation exceeds two percent.

e. Post-Test-Year Capital Additions

NSTAR Electric asserts that over the next several years the Company anticipates making significant capital additions to improve the resiliency of the distribution system and to ensure safe and reliable service as the Commonwealth pursues its electrification objectives (Exhs. ES-CAH/DPH-1, at 31-61; ES-PBR/PLAN-1, at 15-16, 31-34; ES-PBR-Rebuttal-1,

at 23-32). To address its prospective capital investments, the Company initially proposed to include post-test-year capital additions (i.e., 2021 and 2022 capital additions) in base distribution rates at two different intervals during the term of the proposed PBR plan and proposed to recover future critical infrastructure projects investments through the PBR mechanism (Exh. ES-CAH/DPH-1, at 74-75). In its rebuttal testimony, the Company proposed to eliminate the roll-in of the 2022 calendar-year capital additions from the first annual PBR plan filing and to eliminate its proposed rate treatment of future critical infrastructure projects (Exh. ES-PBR-Rebuttal-1, at 45). Instead, the Company proposed, as part of the revised PBR formula, a K-bar adjustment that would allow additional revenues to be collected through the PBR adjustments, beginning January 1, 2024, to provide additional funding for capital investments (Exhs. ES-PBR-Rebuttal-1, at 45; DPU 63-3 & Atts.; RR-DPU-12 & Atts.).

The Department recognizes that, during the PBR term, NSTAR Electric will need flexibility to address the evolving energy and climate policies governing EDCs, as well as to maintain aging infrastructure and enhance resiliency to address the impacts of climate change (Exhs. ES-CAH/DPH-1, at 31-61; ES-PBR/PLAN-1, at 15-16, 31-34; ES-PBR-Rebuttal-1, at 23-32). To address these issues and keep pace with the Commonwealth's growing electrification needs and ambitious climate targets, the Company likely will need significant capital investments to develop a dynamic and modern distribution network. The Department anticipates that the Company may identify several capital projects to achieve these objectives during the development of its electric sector modernization plans pursuant to G.L. c. 164,

§ 92B. The Department recognizes that required investments will go beyond the Company's grid modernization proposals approved in Second Grid Modernization Plans, D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B (November 30, 2022). The Department also finds that any capital investment program must encourage prudent investments while maintaining efficiencies and appropriate cost control measures. Further, while capital spending will be critical to achieve the Commonwealth's growing electrification needs and ambitious climate targets, a multi-year rate plan should have reasonable and predictable rate impacts for distribution customers, especially given the volatility of deregulated energy supply. Based on these considerations, the Department finds that the K-bar approach aligns more closely with the Company's objectives and needs than allowing a roll-in of the 2022 capital investments and the implementation of a separate recovery factor for critical infrastructure projects; therefore, and subject to the modifications below, the Department approves the incorporation of the K-bar in the Company's PBR mechanism.

The Department has reviewed both a fixed historical average and annual rolling-average K-bar approach (RR-DPU-12 & Atts.; RR-DPU-43 & Atts.; RR-DPU-44, Att.). For the reasons discussed below, the Department finds that implementing a rolling-average K-bar balances providing a reasonable level of funding for capital improvements while protecting ratepayers from rate increases that have no corresponding benefits. A fixed historical-average-based K-bar would provide the Company with a predictable level of funding each year of the PBR term regardless of the Company's actual capital investments. While the Department fully expects that NSTAR Electric will pursue

system improvements annually, we acknowledge that large-scale capital projects may be delayed for reasons beyond the Company's control, including difficulty in obtaining permitting and/or engineering studies (Exh. ES-CAH/DPH-1, at 81-82). Historically, ratepayers have been financially protected from delays in capital spending due to regulatory lag. Distribution companies generally may not recover costs associated with capital improvements until after the Department completes a prudency review and determines that the capital investments are used and useful to customers. D.P.U. 20-120, at 155; D.P.U. 19-120, at 161-162; D.P.U. 17-05, at 85. The Department is concerned that using a fixed historical average to determine the increase in capital costs could expose customers to rate increases with no corresponding benefit if the Company fails to place projects into service in a timely manner. Thus, as we evaluate the design of the K-bar, the Department is mindful of balancing the Company's capital needs with the important consideration of the level of annual rate adjustments for customers. Based on these considerations, we find that the annual rolling-average K-bar provides an appropriate incentive for the Company to undertake necessary capital projects to meet its system needs and to adequately address relevant environmental and equity issues, as well as provides the flexibility required to adjust to project cost changes and to complete projects in a timely manner (Exhs. ES-CAH/DPH-1, at 31-61, 78-82; ES-PBR/PLAN-1, at 15-16, 31-34; ES-PBR-Rebuttal-1, at 23-32; RR-DPU-43, at 6-7).

Further, while the Department finds that an annual rolling-average K-bar provides ratepayers protection from annual rate increases without associated capital investments, the

Department also finds it reasonable and appropriate to protect customers from substantial rate increases in the event that the Company makes significant capital investments in a single year without a full prudency review (see RR-DPU-43, Att. (g); RR-DPU-44). Accordingly, the Department will limit the amount of capital improvements that may be automatically included in the annual K-bar adjustment. Specifically, the Department allows the Company an annual capital spending constraint of up to ten percent from the annual capital spending forecasted in this proceeding ("Forecasted Budget") (Exh. AG 1-18, Att. (Supp.); RR-DPU-43, Att. (d)).[30] As noted above, we recognize the challenges in accurately forecasting capital spending, as well as the potential impacts on future capital spending from recent and anticipated changes in energy and climate policy. As such, the Department finds it appropriate to allow a modest amount of flexibility from the Company's Forecasted Budget in setting the expenditure restraint.

Beginning with the annual PBR adjustment effective January 1, 2024, the Company's actual capital costs[31] for the calendar year prior to the year of the annual PBR plan filing, will be allowed for inclusion in the calculation of the K-bar average capital cost to the extent

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30 The Forecasted Budget shall exclude capital projects that are eligible for recovery though rate mechanisms outside of base distribution rates (i.e., solar investments, meter-related capital as discussed in Section XV.C.2 below, and grid modernization investments).

31 Actual capital costs shall exclude capital projects that are eligible for recovery though rate mechanisms outside of base distribution rates (i.e., solar investments, meter-related capital as discussed in Section XV.C.2 below, and grid modernization investments).

that the actual capital costs do not exceed the Forecasted Budget by more than ten percent, with no prudence review necessary at that time. Rate base included in the revenue requirement approved by the Department in this proceeding shall be used in the K-bar calculations. The K-bar formula will calculate revenue support for the Company using the approved rate base associated with capital additions to determine the annual revenue support available in the respective PBR year. To the extent that the actual capital costs in the prior year, in aggregate, exceed the Forecasted Budget by more than ten percent, then the K-bar allowance shall be capped at the ten-percent variance[32] from the Forecasted Budget, by excluding the variance from the K-bar calculation (Exh. AG 1-18, Att. (Supp.); RR-DPU-43, Att. (d)). Projects with the lowest costs will be eligible for inclusion in the annual K-bar adjustment up to the ten-percent cap. The Department finds that this approach is fair to the interests of both ratepayers and to the Company, is administratively efficient, and will avoid the burdensome review of an annual capital tracker mechanism.[33]

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32 To determine the capital projects that exceed the ten-percent cap compared to the Forecasted Budget, the Company shall sum the actual capital costs from the prior year from least expensive to most expensive, for informational purposes. Based on this ranking, the Department may review the reasons for the budget overrun, and, if appropriate after notice, investigate prudence.

33 The Department notes that the approved K-bar relies on accurate forecasted capital spending by the Company. In this regard, the Department places NSTAR Electric on notice that we may investigate the Company's capital spending if the Department concludes that the Company inappropriately over-estimated its Forecasted Budget and is lagging too far behind on investing into the distribution system. Further, the Department may investigate the prudency of any capital investment project included in the K-bar at any time and make any adjustment necessary if Company expenditures are determined to be imprudent.

In its 2023 PBR adjustment filing, the Company shall calculate the K-bar adjustment for effect January 1, 2024 using the five-year average of actual plant additions placed in service from 2018 through 2022[34] with the 2022 and 2023 bridge years both calculated using the five-year average of actual plant additions placed in service from 2017 through 2021 and carried forward to January 1, 2024, using the I-X formula in the PBR mechanism approved in the instant proceeding (RR-DPU-43, at 5-7 & Att. (d) at 4, line 25; at 7, lines 20, 28). The K-bar adjustment for effect January 1, 2025, will calculate the K-bar using the five-year average of plant additions placed in service from 2019 through 2023 (RR-DPU-43, at 5). The PBR adjustment for effect January 1, 2026, will calculate the K-bar using the five-year average of plant additions placed in service from 2020 through 2024 (RR-DPU-43, at 5). The five-year average will be updated in the same manner for each subsequent year that the K-bar remains in effect (RR-DPU-43, at 6-7). For the K-bar calculation, the deprecation rate shall be calculated by dividing the depreciation expense approved in the instant proceeding by the gross plant approved in the instant proceeding. The property tax rate shall be the property tax expense approved in the instant proceeding divided by the net utility plant in service approved in the instant proceeding. The return on rate base shall be the rate of return as shown in Schedule 5 below.

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[34] Given that plant additions placed in service in 2018 may be considered under the PBR plan approved in D.P.U. 17-05, we find it appropriate, and consistent with the Alberta approach, to use a five-year period that begins with 2018 and not with 2017 to derive the initial level of average spending (RR-DPU-12).

The Department finds that K-bar design approved above will bring several benefits to customers over the Company's proposal. First, using a rolling average will reduce the K-bar revenue if NSTAR Electric does not timely complete and place in-service projects prior to the next K-bar adjustment. The prospect of less K-bar revenue should incentivize the Company to complete projects in a timely manner and will limit customer exposure to costs associated only with projects actually completed. Further, the spending cap will benefit customers by limiting potential rate increases. Finally, a rolling K-bar is administratively efficient, as the Company no longer will need to request to roll-in 2022 capital additions through the PBR mechanism (Exh. ES-PBR-Rebuttal-1, at 45; RR-DPU-12, at 3).

The Department finds that the rolling-average K-bar mechanism will, given prudent management and decision making, provide the Company with adequate levels of revenue to support the capital investment that will be required in the coming years, while adhering to PBR principles. With the approval of the K-bar mechanism, the Department expects a reasonable level of stability in NSTAR Electric's capital project spending over the PBR plan term, as opposed to a disproportionate amount of spending in certain years, such as a proposed test year, should the Company choose to file a new base distribution rate case upon expiration of the PBR plan term (see Section IV.D.5.a above). The burden will be on the Company to manage expenditures and plan accordingly to keep pace with capital investment while developing and building a distribution network capable of supporting the Commonwealth's decarbonization goals. Finally, as part of its annual PBR filings, the Company shall file a forecast of its capital investment projects planned to go into service in

the subsequent year, and the associated costs of those projects, for informational purposes. In addition, once available, the Company shall file, for informational purposes, its actual capital investment projects for the year of its annual PBR filing. For example, in its 2023 annual PBR filing, the Company shall file its forecasted 2024 planned capital investment projects. Then, in its 2024 annual PBR docket, the Company shall make an informational filing of its actual 2024 capital investment projects in the first quarter of 2025. These informational filings will assist the Department and stakeholders to monitor NSTAR Electric's progress on achieving the Commonwealth's 2050 climate targets, as well as increase transparency to stakeholders, provide a measure of accountability in the Company's decision making, and provide a check on the accuracy of the Company's projected capital spending.

f. ROERA Factor

As discussed above, the Company initially proposed to include in the PBR plan an ROERA mechanism to recover costs arising from changes in the capital markets during the proposed ten-year PBR term (Exhs. ES-CAH/DPH-1, at 76; ES-PBR/PLAN-1, at 8). The ROERA would be triggered, and a rate adjustment would take place, if the yield on ten-year Treasury bonds reaches 200 basis points above or below the yield in effect at the start of the PBR plan (Exh. ES-CAH/DPH-1, at 76-77). Given that the Department has approved a five-year PBR term, and in light of the other components of the PBR plan approved herein,

we find that it is inappropriate to approve an ROERA adjustment.[35] We note that changes in the required cost of capital would be recovered, to a considerable extent, through the operation of the inflation index factor and the appropriate shifts in the Company's capital structure. Further, the Department also finds that the Company's ESM provides an additional layer of insulation from the kind of financial risk that the ROERA is designed to mitigate. Based on these considerations, the Department is not persuaded that the proposed ROERA is a necessary component to successful operation of the PBR plan. Accordingly, the Department rejects the Company's proposed ROERA.

g. Cost Treatment of Critical Infrastructure Projects

In its initial filing, NSTAR Electric proposed to recover costs associated with its critical infrastructure projects through a separate recovery factor at three intervals during the proposed ten-year PBR plan term (Exh. ES-CAH/DPH-1, at 82). In its rebuttal testimony, the Company proposed to eliminate the specific cost recovery factor associated with the critical infrastructure projects and instead would recover the costs associated with these projects through the K-bar adjustment (Exh. ES-PBR-Rebuttal-1, at 45). As discussed above, the Department has approved a K-bar adjustment as part of the Company's PBR plan, which would include recovery of costs associated with these projects. As such, a separate cost recovery factor associated with the critical infrastructure projects is unnecessary. Accordingly, the Company shall remove this factor from the PBR mechanism.

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[35] As noted in n.18 above, it appears that the Company acknowledges that the ROERA would not apply to a five-year PBR plan term.

h. ESM

The Company initially proposed an ESM that would trigger a sharing with customers on a 75/25 percent basis (75 percent to customers and 25 percent to the Company) where the computed distribution ROE exceeds 100 basis points above the ROE authorized in this proceeding (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). If the computed distribution ROE is between 150 and 200 basis points below the authorized ROE, sharing with customers would be triggered on a 50/50 percent basis (50 percent to customers and 50 percent to the Company) (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). If the computed distribution ROE exceeds 200 basis points below the authorized ROE, sharing with customers would be triggered on a 75/25 percent basis (75 percent to customers and 25 percent to the Company) (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). The Company proposed that for any year in which the ROE is above or below the bandwidth, the percentage of earnings that is to be shared with customers would be credited to customers in the succeeding year and that the impact of this prior year adjustment would be excluded from the calculation of the subsequent year's sharing (Exh. ES-CAH/DPH-1, at 91). In its rebuttal testimony, the Company did not propose to revise or remove the proposed ESM from the revised ten-year PBR plan (Exh. ES-PBR-Rebuttal-1, at 45).

The Department has found that ESMs may be integral components of incentive regulation plans, as they provide an important backstop to the uncertainty associated with setting the productivity factor. D.P.U. 17-05, at 400; D.P.U. 96-50 (Phase I) at 325; D.P.U. 94-50, at 197 & n.116. An ESM offers an important protection for ratepayers in the

event that expenses increase at a rate much lower than the revenue increases generated by the PBR. D.P.U. 18-150, at 70; D.P.U. 17-05, at 400; Western Massachusetts Electric Company, D.P.U. 10-70, at 8 n.3 (2011); D.T.E. 05-27, at 404-405. For this reason, the Department finds that there is a significant benefit to implementing an ESM as part of the PBR mechanism adopted in this case.

The Company developed the proposed ESM in alignment with Department precedent for a ten-year PBR term (Exhs. ES-CAH/DPH-1, at 90; ES-PBR/PLAN-1, at 12). The Department has traditionally found that a PBR term of five years warrants an asymmetrical ESM with upside sharing with customers but no downside adjustments. D.P.U. 18-150, at 70-71; D.P.U. 17-05, at 400-401. Further, the Department has approved ESMs with deadbands of 100 basis points or greater. D.P.U. 19-120, at 89; D.P.U. 18-150, at 71-72; D.P.U. 17-05, at 401; D.T.E. 05-27, at 405; D.T.E. 03-40, at 500; D.P.U. 96-50 (Phase I) at 326. Moreover, as noted above, the Company proposed that, if a five-year PBR term is approved, the ESM would be asymmetrical with upside sharing for customers, but no downside adjustment for the Company (Exh. DPU 1-1).

In this Order, the Department has approved a PBR plan term of five years for NSTAR Electric. As such, we find it appropriate to approve an asymmetrical ESM with no downward adjustment. Specifically, the ESM will have a deadband of 100 basis points above the Company's authorized ROE. If the Company's actual ROE exceeds the authorized ROE by more than 100 basis points, the earnings above the deadband will be shared 75 percent with customers and 25 percent with the Company.

i. Exogenous Cost Factor

As noted above, NSTAR Electric initially proposed to include in the PBR adjustment formula an exogenous cost provision (or "Z factor"), in particular to address incremental property taxes arising from a municipality's change in valuation method for assessing utility property and for expenses incurred for certain Enterprise IT investments (Exhs. ES-CAH/DPH-1, at 83-86; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). The Company proposed that to be eligible for exogenous cost recovery the cost change must: (1) be beyond the Company's control; (2) arise from a change in accounting requirements or regulatory, judicial, or legislative directives or enactments; (3) be unique to the electric distribution industry as opposed to the general economy; and (4) meet a threshold of "significance" for qualification (Exhs. ES-CAH/DPH-1, at 83-84; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). The Company proposed the significance threshold for exogenous costs to be set at $4 million in 2023 and adjusted annually by the change in GDP-PI, except for exogenous costs associated with Enterprise IT expenses, for which the initial threshold would be set at $6 million (Exhs. ES-CAH/DPH-1, at 84-86; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). In its rebuttal testimony, the Company did not propose any revisions to the exogenous cost provision.

In D.P.U. 94-158, at 62, the Department recognized that there may be exogenous costs, both positive and negative, that are beyond the control of a company and, because the company is subject to a stay-out provision, these costs may be appropriate to recover (or return) through the PBR mechanism. The Department has defined exogenous costs as

positive or negative cost changes that are beyond a company's control and are not reflected in the GDP-PI. D.P.U. 94-50, at 172-173. These include incremental costs resulting from: (1) changes in tax laws that uniquely affect the relevant industry; (2) accounting changes unique to the relevant industry; and (3) regulatory, judicial, or legislative changes uniquely affecting the industry. D.P.U. 96-50 (Phase I) at 291; D.P.U. 94-50, at 173. The Department has cautioned against expansion of these categories to a broader range. D.P.U. 96-50 (Phase I) at 290-291; D.P.U. 94-158, at 61-62. The Company proposed to adopt a definition of exogenous costs that is consistent with the definition adopted by the Department in D.P.U. 94-50 (Exhs. ES-CAH/DPH-1, at 83-84; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch.1, at 455). Accordingly, the Department finds that the Company's proposed definition of exogenous costs in this instance is appropriate.

In D.P.U. 96-50 (Phase I) at 292-293, the Department found that to avoid a costly regulatory process over minimal dollars, exogenous cost recovery must be subject to a significance threshold that is noncumulative (i.e., exogenous costs cannot be lumped together into a single total for purposes of determining whether the threshold has been met). See also D.T.E. 01-56, at 22-23; Boston Edison Company, D.T.E. 99-19, at 26 (1999). The Department notes that recently, in very limited circumstances, we have considered the total exogenous costs that occurred in a single year arising out of a change in regulatory guidance that induced a significant number of municipalities to change the method of valuing property for tax purposes. Eversource Gas Company of Massachusetts, D.P.U. 22-122, at 8-11 (October 31, 2022); NSTAR Gas Company, D.P.U. 22-121, at 12 (October 31, 2022);

NSTAR Gas Company, D.P.U. 21-107-A at 19-20 (October 28, 2022). The Department did not intend for these decisions to represent a wholesale shift in our standard that exogenous cost recovery must be subject to a significance threshold that is noncumulative. Therefore, the Department finds that NSTAR Electric must revise its proposed tariff to specify that the significance threshold is noncumulative, subject to the very limited circumstances noted above.[36]

As noted above, the Company proposed an exogenous cost significance threshold of $4 million for calendar year 2023, subject to annual adjustments thereafter based on changes in GDP-PI (Exhs. ES-CAH/DPH-1, at 84-86; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). Although the Department must consider the facts and circumstances of each case, the Department has previously found that an exogenous cost significance threshold was reasonable where it was equal to a multiple of 0.001253 times a company's total operating revenues. D.P.U. 20-120, at 97; D.P.U. 19-120, at 93-94; D.P.U. 18-150, at 66-67; D.P.U. 17-05, at 397; D.T.E. 03-40, at 491; D.T.E. 01-56, at 22-46; D.P.U. 96-50 (Phase I) at 293. Consistent with our precedent and facts of this case, the Department finds that $4 million is a reasonable exogenous cost significance threshold for the Company, which has total operating revenues of $3,136,349,876, and is implementing a multi-year PBR plan

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[36] For example, the tariff could read: The significance threshold for Exogenous Costs is set at $4 million for each individual event in calendar year 2023. The significance threshold must be noncumulative, subject to a finding that the exogenous costs arise from the same type of exogenous event addressed by the Department in NSTAR Gas Company, D.P.U. 21-107-A at 17-20 (October 28, 2022) and interpreted in subsequent decisions.

with the overall design approved herein (Exhs. ES-CAH/DPH-1, at 84-85; ES-REVREQ-2, Sch. 6 (Rev. 4)).[37]

In addition, the Company has proposed that the exogenous cost significance threshold be subject to annual adjustments based on changes in GDP-PI as measured by the U.S. Bureau of Economic Analysis (Exh. ES-CAH/DPH-1, at 85). The Department is satisfied that this proposal appropriately considers the effects that inflation will have on the threshold in the later years of the PBR term. D.P.U. 19-120, at 94; D.P.U. 18-150, at 67; D.P.U. 17-05, at 398; D.T.E. 01-56, at 11-14; Eastern Enterprises/Colonial Gas Company, D.P.U. 98-128, at 56-57 (1999). Accordingly, we set the Company's threshold for exogenous cost recovery at $4 million for each individual event in the first PBR year, ending December 31, 2023, subject to annual adjustments thereafter based on changes in GDP-PI as used in the PBR mechanism. Based on the foregoing analysis, the Department approves the Company's proposed exogenous cost factor, subject to our finding below as to Enterprise IT expenses.

Exogenous cost recovery requires that a company provide supporting documentation and rationale to the Department for a determination as to the appropriateness of the proposed exogenous cost. D.T.E. 99-19, at 25; D.P.U. 98-128, at 55; Bay State Gas Company, D.T.E. 98-31, at 17-18 (1998). Additionally, any company seeking recovery of an exogenous cost bears the burden of demonstrating the propriety of the exogenous cost and

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[37] Multiplying NSTAR Electric's total operating revenue of $3,136,349,876 by the factor of 0.001253 equals $3,929,846.

that the proposed exogenous cost change is not otherwise reflected in the GDP-PI. D.P.U. 96-50 (Phase I) at 292-293; D.P.U. 94-50, at 171. For these reasons, the Department does not prejudge the qualification of any future events as exogenous costs and will consider each proposal for recovery of exogenous costs on a case-by-case basis. At the time that it seeks exogenous cost recovery, the Company must demonstrate that the event meets both the definition and threshold for exogenous costs approved herein.

As noted above, the Company proposes to utilize the exogenous cost provision to recover the costs of certain Enterprise IT expenses, for which the initial threshold would be set at $6 million (Exhs. ES-CAH/DPH-1, at 84-86; ES-PBR/PLAN-1, at 7; ES-RDC-6, Sch. 1, at 455). The Attorney General argues that NSTAR Electric's proposed inclusion of certain Enterprise IT expenses in the exogenous cost factor should be rejected because ESC will incur these costs, and that the Company already is compensated for IT costs through base distribution rates and the annual PBR adjustments (Attorney General Brief at 59-60). Further, the Attorney General asserts that the Company does not recognize or net out any economic benefits that accrue as a result of the implementation of the new IT systems (Attorney General Brief at 60). TEC and PowerOptions also argue that these expenses should be excluded from the exogenous cost provision (TEC/PowerOptions Brief at 13; TEC/PowerOptions Reply Brief at 8-9).

The Company's justification for including Enterprise IT expenses in the exogenous cost provision is tied to the proposed ten-year PBR plan term (Exh. ES-CAH/DPH-1, at 88-89). The Company acknowledges that a level of Enterprise IT expense will be

collected through base distribution rates and that will be subject to the annual PBR adjustment (Exh. ES-CAH/DPH-1, at 88). NSTAR Electric states, however, that over the proposed ten-year PBR term, the Company will be adding new systems and other systems will become fully amortized and drop off (Exh. ES-CAH/DPH-1, at 88). According to NSTAR Electric, it will be difficult for the Company to assess whether the amount of Enterprise IT expense that will be locked into base distribution rates will keep pace with actual costs and, therefore, the exogenous cost relief may be necessary (Exh. ES-CAH/DPH-1, at 89). Given that the Department has approved a five-year PBR plan term, we find that an exogenous cost provision applicable to Enterprise IT costs is unnecessary. Moreover, we find that the nature of the costs sought for exogenous cost treatment are inconsistent with the definition of exogenous costs approved herein. Thus, we deny this aspect of the Company's proposal. In its compliance filing, NSTAR Electric shall revise its PBR tariff accordingly.

j. PBR Adjusted Revenues

As noted above, the Attorney General argues that Solar Expansion Program investments should not be included in the base distribution rate revenue requirement portion of the PBR rate formula (Attorney General Brief at 117, citing Exh. AG-TN-1, at 9-10). In Section XIV.B.4 below, the Department approves the transfer of the unrecovered balance of these investments into base distribution rates. Here, the Department finds that it is appropriate to remove these costs from the PBR mechanism adjustment calculation and maintain the revenues associated with these solar facilities at the level approved in this proceeding until the Company's next base distribution rate case. The Solar Expansion

Program costs represent power generation costs, rather than distribution costs. Further, the costs associated with the Solar Expansion Program fall outside the Company's regular operations of safely and reliably delivering electricity to customers. Accordingly, the Company is not obligated to replace these assets when they retire, but it could continue to collect a revenue target that increases annually by the PBR mechanism. The Department has found it suitable to modify PBR plans or simplified incentive plans to exclude adjustments for certain types of costs. D.P.U. 18-150, at 73 (excluding solar facility costs from PBR adjustment); NSTAR Electric Company, D.P.U. 18-101 (2018), Exhs. NSTAR-DPH at 18; NSTAR-DPH-1, at 1 (certain storm costs excluded from PBR adjustment); D.P.U. 17-05, at 392 (removal of certain grid modernization investments); NSTAR Electric Company and NSTAR Gas Company, D.P.U. 08-56/D.P.U. 09-96, at 18-19 (2010) (removal of certain pension/post-retirement benefits other than pension ("PBOP") costs). The Department, therefore, directs the Company to revise the definition of PBR revenue to exclude the costs of the Solar Expansion Program approved in this proceeding, as well as other solar facilities that were approved in previous proceedings (see Section XIV.B.4 below).

6. PBR Tariff Provisions

As noted above, the Attorney General argues that, should the Department allow a PBR plan for NSTAR Electric, numerous provisions in the Company's proposed tariff should be revised to provide appropriate definitional and clarifying language (Attorney General Brief at 60-61). The Attorney General identifies 16 proposed revisions to the tariff (Attorney General Brief at 60-61).

Eight of the proposed revisions are no longer necessary given the Department's findings above regarding the PBR plan components. They are identified in the Attorney General's initial brief as proposed revisions (2), (5), (6), (7), (8), (9), (14) and (15). The Department approves five of the remaining proposed revisions that were agreed-upon by the Company. They are identified in the Attorney General's brief as proposed revisions (1), (4), (10), (11) and (16). The Company is directed to revise these provisions accordingly in the compliance filing.

Three contested proposed revisions remain. In proposed revision (3), the Attorney General argues that the definition of "Distribution Common Equity" in the proposed PBR plan tariff should reflect the removal of common equity associated with any: (1) unamortized acquisition premium and/or goodwill; and (2) non-distribution service investments and services (Attorney General Brief at 60-61). The Company disagrees with the Attorney General, "based on the Department's prior approvals, and method for calculating an ROE for earnings sharing purposes, as approved in D.P.U. 14-150, D.P.U. 17-05, and D.P.U. 19-120" (Company Brief at 79). The Company also asserts that its methodology in reporting the distribution-only ROE remains unchanged from what was approved in D.P.U. 17-05 as part of the existing PBR plan (Company Brief at 79). The Department finds that the definition of "Distribution Common Equity" in NSTAR Electric's proposed PBR plan tariff (Exh. ES-RDC-6, Sch. 2, at 235) is substantially similar to the language in the Company's current PBR plan tariff, M.D.P.U. No. 59E, § 1.04 (8). Further, the minor differences in the language between the two versions do not and should not be interpreted to

impact the method used to derive distribution common equity for purposes of the PBR plan. The Attorney General does not provide any additional support for her argument, and we see no compelling reason to revise the definition as proposed. As such, we decline to adopt the Attorney General's recommendation.

In proposed revision (12), the Attorney General argues that the definition of "Transmission Net Income" does not account for any changes in the net income that might arise from refunds to customers as a result of any contested charges at Federal Energy Regulatory Commission ("FERC") (Attorney General Brief at 61). The Company argues that no revisions are necessary because the "calculation of ROE remains unchanged from D.P.U. 17-05" (Company Brief at 79). The definition of Transmission Net Income" in the proposed PBR plan tariff (Exh. ES-RCD-6, Sch. 2, at 237) is unchanged from the definition approved in the Company's current PBR plan tariff, M.D.P.U. No. 59E, § 1.04 (20). Nevertheless, we find that it is reasonable for the Company to include clarifying language that the transmission net income will account for any refunds to customers resulting from favorable FERC decisions as to contested charges. We direct the Company to revise the language accordingly in the compliance filing.

Finally, in proposed revision (13), the Attorney General argues that the X factor should be defined as "the sum of the Productivity Trend differential and the Input Price Trend," without the addition of "negative 1.45 percent ..." (Attorney General Brief at 61). The Company argues that the language in this definition will depend on the X factor approved in this proceeding (Company Brief at 79-80). In Section IV.D.5.b above, the

Department approved an X factor of zero. The Attorney General does not provide any additional support for her argument, and we find that the X factor should be expressly stated in this section of the tariff. Accordingly, we direct the Company to revise the relevant tariff language in the compliance filing to set the X factor at zero.

7. Conclusion

In the sections above, the Department has reviewed the Company's PBR plan proposals and has found that, as approved, the PBR plan is more likely than current regulation to advance the Department's goals of safe, secure, reliable, equitable, and least-cost service and to promote the objectives of economic efficiency, cost control, lower rates, and reduced administrative burden in regulation. G.L. c. 25, § 1A. In addition, the Department has found that the PBR plan, as approved, will provide the Company with greater incentives to reduce costs than currently exist and should result in benefits to customers that are greater than would be present under current regulation. Further, the Department has found that the PBR plan, as approved, better satisfies our public policy goals and statutory obligations, including promotion of a safe and reliable electric distribution system, and of the Commonwealth's clean energy goals and mandates.[38]

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[38] The Department notes that many cost recovery mechanisms need to be considered to ensure that EDCs comply with policy goals and statutory obligations effective since the development of revenue decoupling. See D.P.U. 07-50-A at 10. With the discontinuance of full revenue decoupling, EDCs no longer would have a disincentive to pursue strategic electrification because they now would be able to retain the sales from increased load, which may also obviate the need for some capital trackers. Nonetheless, we remind NSTAR Electric that with an approved PBR plan with a

With the modifications required herein, the Department finds that the PBR plan appropriately balances ratepayer and shareholder risk, is in the public interest, and will result in just and reasonable rates pursuant to G.L. c. 164 § 94. Accordingly, the Department approves a PBR plan for the Company, subject to the modifications above. The Company, in its compliance filing, shall submit a revised PBR plan tariff consistent with the findings in this Order.

Further, the Company shall submit an annual PBR adjustment filing, including all information and supporting schedules necessary for the Department to review the proposed PBR adjustment for the subsequent rate year. Such information shall include the results and supporting calculations of the PBR adjustment factor formula, descriptions and accounting of any exogenous events, and an earnings sharing calculation for the year, two years prior to the rate adjustment. In addition, the Company shall file revised summary rate tables reflecting the impact of applying the base distribution rate changes provided in the PBR adjustment filing. The Company is directed to submit its annual PBR adjustment filing on or before September 15 of each year, commencing in 2023 and continuing for the five-year term of the PBR. Consistent with our findings above, the PBR shall continue in effect for a total of five consecutive years starting January 1, 2023, with the last adjustment taking effect on January 1, 2027, subject to the findings set forth above.

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stay-out provision, the Company may not seek to terminate its effective PBR plan in order to discontinue revenue decoupling.

V. PBR PERFORMANCE METRICS

A. Introduction

The Company proposed a set of metrics as a component of its PBR proposal (Exhs. ES-CAH/DPH-1, at 10-11; ES-PBR-PLAN-1, at 4-5). The Company states that its proposed metrics are designed to provide transparency associated with the achievement of clean energy and customer service goals and to further the Company's mission of ensuring safe and reliable delivery of electric service (Exhs. ES-CAH/DPH-1, at 10-11; ES-METRICS-1, at 11). Further, the Company states that the proposed metrics are designed to further current Commonwealth policy goals (Exhs. ES-CAH/DPH-1, at 10-11; ES-METRICS-1, at 11). NSTAR Electric's proposed metrics were based initially on metrics developed for the Company's current PBR plan, following the Department's directive in D.P.U. 17-05, at 412, to develop metrics in three categories: (1) improvements to customer satisfaction and engagement; (2) reductions to system peak demand; and (3) strategic planning for climate adaptation and mitigation (Exh. ES-METRICS-1, at 10, 13). The Company proposed additional metrics to account for changes to the Commonwealth's policy goals, namely metrics for solar developer satisfaction, community solar access, electrification, and equity (Exh. ES-METRICS-1, at 41-42). During the proceeding, the Company proposed significant changes to its initially proposed set of metrics (Exhs. ES-METRICS-Rebuttal-1, at 9-32; ES-METRICS-Rebuttal-2).

By the close of the record in this proceeding, the Company proposed a total of ten reporting metrics, three penalty/incentive metrics, and two planning frameworks, across

eleven categories (customer satisfaction, customer engagement, producer satisfaction, producer/developer engagement, operations, peak demand reduction, greenhouse gas ("GHG") reduction, electrification, equity/low-income, and resiliency) (Exh. ES-METRICS-Rebuttal-2; Company Brief at App. A). The Company proposes to report results on each metric as part of the annual PBR plan filings (Exh. ES-CAH/DPH-1, at 64-65). In addition, the Company proposes to provide a PBR performance report as part a five-year mid-term filing that summarizes performance on the metrics and recommendations for continuing, modifying, or augmenting the metrics (Exh. ES-CAH/DPH-1, at 93).

B. Company Proposal

1. Customer Satisfaction, Customer Engagement, and Operations Metrics

a. Introduction

The Company proposes the following five metrics in the categories of customer satisfaction and engagement and operations: (1) overall customer satisfaction in the Commonwealth (customer satisfaction); (2) transactional customer satisfaction (customer satisfaction); (3) customer usage of an outage map (customer engagement); (4) digital engagement (customer engagement); and (5) new customer connects (operations) (Exhs. ES-METRICS-1, at 22-27; ES-METRICS-Rebuttal-2, at 1-2).

b. Overall Customer Satisfaction Metric

The overall customer satisfaction metric is based on a survey conducted by J.D. Power that measures customer satisfaction using six factors: (1) power quality and reliability; (2) price; (3) billing and payment; (4) corporate citizenship; (5) communications;

and (6) customer service (Exhs. ES-METRICS-1, at 17; ES-METRICS-Rebuttal-2, at 1). Customer responses to these separate segments are compiled into one final index score (Exh. ES-METRICS-Rebuttal-2, at 1). NSTAR Electric states that during the current PBR term, the Company consulted with J.D. Power to set a target for the customer satisfaction score of 720 by the end of 2022 (Exh. ES-METRICS-1, at 17-18).[39] NSTAR Electric reports that by 2020 it had achieved a score of 739; the Company proposes a target of 759 for 2027 (Exh. ES-METRICS-1, at 21-23). NSTAR Electric states that it set these targets based on the score needed to achieve first quartile ranking among eastern large utility group companies in 2021, and the Company proposes to adjust the targets to maintain that ranking (Exh. ES-METRICS-1, at 23 & n.4).

c. Transactional Customer Satisfaction Index

NSTAR Electric proposes a customer satisfaction index that is designed to measure customer satisfaction associated with: (1) unplanned outages; (2) planned outages; (3) website satisfaction; and (4) contact center (Exh. ES-METRICS-Rebuttal-1, at 19-20). The proposed index score would be developed by summing the scores of survey responses from customers following each type of transaction and dividing by the sum of all respondents

[39] In the current PBR term, NSTAR Electric has tracked customer satisfaction for both the entire Eversource Energy organization and the Company separately (Exh. ES-METRICS-1, at 16, 22). Going forward, the Company proposes to limit the metric to only its operations (Exh. ES-METRICS-1, at 16, 22).

(Exhs. ES-METRICS-Rebuttal-1, at 20; ES-METRICS-Rebuttal-2, at 1).[40] The Company proposes to include this metric in the Service Quality ("SQ") penalty framework, described below (Exhs. ES-METRICS-Rebuttal-1, at 18-19; ES-METRICS-Rebuttal-2, at 1).[41]

d. Use of Outage Map Metric

The Company's outage map provides customers with information such as estimated time of restoration, outage cause, and outage size so that customers can remain informed and make plans in the event of an outage (Exh. ES-METRICS-1, at 25-26). In prior years, the outage map usage metric has measured the total number of customer views of the outage map during both "blue sky" conditions and when the Company's Emergency Response Plan ("ERP") is triggered (Exh. ES-METRICS-1, at 25-26). In this proceeding, the Company proposes to report only on views during ERP events and to report engagements with the outage map as a percentage of total inbound customer communications during these events, rather than reporting a total count of interactions (Exh. ES-METRICS-1, at 25-26). The Company proposes that the calculation will be done on a per-ERP event basis and then

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40 The Company proposes to weight the transaction type by the associated number of survey responses (Exh. ES-METRICS-Rebuttal-1, at 20).

41 The Company does not propose to apply the SQ penalty/incentive framework to the overall customer satisfaction metric because this measure is not necessarily representative of actual interactions with the Company (Exh. ES-METRICS-Rebuttal-1, at 19). NSTAR Electric states that for many customers, their interactions with the Company are limited to billing issues, and that these limited interactions can skew customer satisfaction based on factors that are outside the Company's control (e.g., rising energy costs or increased demand due to weather) (Exh. ES-METRICS-Rebuttal-1, at 19).

averaged across all ERP events for the year, which is intended to account for annual variances in weather (Exhs. ES-METRICS-1, at 26; ES-METRICS-Rebuttal-2, at 1-2). NSTAR Electric reports that in 2020, 58 percent of customer engagements during ERP events were with the outage map, and the Company proposes a customer engagement target of 75 percent by 2027 (Exhs. ES-METRICS-1, at 26; ES-METRICS-Rebuttal-2, at 1).

e. Digital Engagement Metric

The Company's digital engagement metric is designed to track the percentage of total customer engagements that are digital (Exh. ES-METRICS-1, at 27). Digital interactions include bill pay, outage reporting, text message interactions, mobile app interactions, outage status checks, and others, while non-digital customer engagements include customer service phone calls and manual payments (Exhs. ES-METRICS-1, at 27; ES-METRICS-Rebuttal-2, at 2). NSTAR Electric reports that 88 percentage of total customer engagements were digital in 2020, and the Company proposes a target of 91 percent by 2027 (Exhs. ES-METRICS-1, at 27; ES-METRICS-Rebuttal-2, at 2).

f. New Customer Connects Metric

NSTAR Electric proposes a new metric for the percentage of new customer connects completed in accordance with Company targets for timeliness of new service connections (Exhs. ES-METRICS-1, at 44; ES-METRICS-Rebuttal-2, at 3). Specifically, the new customer connects metric will measure the time from the creation of a work order to the point of installation of the customer's meter in number of business days, excluding hold

days[42] (Exh. ES-METRICS-1, at 44). The Company proposes to calculate the metric as the percentage of new customer connects that meet certain performance targets out of the total number of new customer connects (Exh. ES-METRICS-1, at 44). The Company and stakeholders developed and agreed upon performance targets that vary depending on the type of service (i.e., simple services, residential developments, complex residential, commercial developments, and commercial service) (Exh. ES-METRICS-1, at 45).[43] The Company proposes a target of 80 percent of connections within the agreed-upon range in year one and to increase the target by 2.5 percent each year until 90 percent is reached in year five (Exh. ES-METRICS-1, at 45-46). Finally, the Company proposes to include the new customer connects metric in the SQ Guidelines penalty framework,[44] as described below (Exhs. ES-METRICS-Rebuttal-1, at 21, 23; ES-METRICS-Rebuttal-2, at 3).

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42 Hold days are delays that are defined as being outside of the Company's control, in the form of waiting for customer payment or waiting for customer permits or easements (Exh. ES-METRICS-1, at 44).

43 Performance target ranges were developed during the Department's Working Group Meetings for Improving and Expediting the Process for new Electric and Gas Interconnections and range from five to eight business days for simple service to 63-121 days for residential developments (Exh. ES-METRICS-1, at 45).

44 The SQ Guidelines refer to the guidelines adopted in Order Adopting Revised Service Quality Standards, D.P.U. 12-120-D (2015) and set forth at D.P.U. 12-120-D, Attachment A.

2. Producer Satisfaction and Producer/Developer Engagement Metrics

a. Introduction

The Company proposes metrics specifically related to the satisfaction and engagement of producer customers ("producers"), which the Company defines as customers that install a solar system (Exh. ES-METRICS-1, at 27-28). The Company proposes the following three producer satisfaction metrics: (1) a producer satisfaction survey (producer satisfaction); (2) hosting capacity map usage (producer/developer engagement); and (3) a solar development timeline (producer/developer engagement) (Exhs. ES-METRICS-1, at 27-28; ES-METRICS-Rebuttal-2).

b. Producer Satisfaction Survey

The Company states that the producer satisfaction survey will measure producer satisfaction associated with: (1) ease of enrollment; (2) ease of connection; (3) timeliness; and (4) helpfulness and communication during the interconnection process (Exh. ES-METRICS-Rebuttal-2, at 2-3). The survey was developed collaboratively by the Company and J.D. Power and is comprised of two surveys, one sent 65 days after the customer is interconnected and another sent 365 days after the customer is interconnected (Exhs. ES-METRICS-1, at 28; DPU 42-3). NSTAR Electric reports that, on a scale of one to ten, the Company scored an average of 7.01 in producer satisfaction in 2019, and the Company sets a target average of 7.5 producer satisfaction for 2027 (Exhs. ES-METRICS-1, at Table 1; ES-METRICS-Rebuttal-2, at 2-3).

c. Hosting Capacity Map Usage Metric

NSTAR Electric states that the hosting capacity map usage metric will measure the sum of visits to the Company's DG hosting capacity websites (Exhs. ES-METRICS-1, at 28-29; ES-METRICS-Rebuttal-2, at 3). The maps provide solar developers with information about remaining capacity at both the circuit and substation level and allow developers to make more informed decisions about the feasibility of adding DG to the distribution system (Exh. ES-METRICS-1, at 28-29). NSTAR Electric reports that it recorded 9,193 visits to the maps in 2020, and the Company proposes a target of over 18,000 visits by 2027 (Exhs. ES-METRICS-1, at 29; DPU 13-5).

d. Solar Development Timeline Metric

The Company states that the solar development timeline metric will measure the duration in business days from creation of a solar installation work order to completion (excluding hold days), and then will calculate the percentage of solar installations meeting certain timeline performance targets by dividing the number of solar installations that meet the targets by the total number of solar installations (Exhs. ES-METRICS-Rebuttal-1, at 20-21; ES-METRICS-Rebuttal-2, at 3). The Company proposes to include the solar development timeline metric in the SQ penalty framework (Exh. ES-METRICS-Rebuttal-1, at 20-21).

3. Proposed Incorporation of Three Metrics into SQ Penalty Framework

The Company proposes to include penalties and incentives for a subset of metrics, determining that such a framework would create transparency and accountability that can be

objectively measured (Exh. ES-METRICS-Rebuttal-1, at 22-24). The Company proposes to replace three metrics that also currently are required to be reported under the Department's SQ Guidelines (consumer complaints, consumer credit cases, and service appointments kept), with three of the proposed metrics discussed above (new customer connects, transactional customer satisfaction index, and the solar development timeline) (Exhs. ES-METRICS-Rebuttal-1, at 23; ES-METRICS-Rebuttal-2, at 1, 3).[45] The Company's proposed substitution would take place after three year of data is collected to establish a benchmark for each metric, after which the penalty threshold for each metric would be set at the mean plus one standard deviation, based on the data (Exh. ES-METRICS-Rebuttal-1, at 23).[46] The Company also proposes for a symmetrical incentive to apply to the metrics that are incorporated into the SQ framework (Exh. ES-METRICS-Rebuttal-1, at 23-24). The Company states that the SQ penalty framework is familiar to the stakeholders in this proceeding, as the SQ Guidelines have been extensively vetted before adoption by the Department (Exh. ES-METRICS-Rebuttal-1, at 24).

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45 NSTAR Electric states that it will continue to report on the original SQ Guidelines metrics to ensure that its performance does not diminish (Exh. ES-METRICS-Rebuttal-1, at 24).

46 The Company proposes to apply the same methodology pursuant to the SQ Guidelines; specifically, the threshold benchmark would be set at the Company-specific mean plus one standard deviation using historical, Company-specific data with the benchmark adjusting every three years based on a rolling average until the tenth year when the benchmark becomes fixed (Exh. ES-METRICS-Rebuttal-1, at 23). In addition, under the Company's proposal, the three metrics would each be allocated a 15-percent weight in the SQ penalty framework (Exh. ES-METRICS-Rebuttal-1, at 23).

4. Peak Demand Reduction Metric

The Company proposes to track peak demand reductions from six measures: (1) energy efficiency programs; (2) demand response programs; (3) company-owned storage; (4) company-owned solar; (5) upgrades to standard technologies; and (6) volt/volt-ampere reactive optimization ("VVO") (Exhs. ES-METRIC-Rebuttal-2, at 4-6; DPU 49-1, at 3-4). The Company explains that the measures target reductions to different, non-coincident peaks (e.g., demand response targets ISO New England Inc. ("ISO-NE") system peak, and VVO targets a substation peak) (Exhs. DPU 41-3; DPU 68-9). Therefore, NSTAR Electric does not propose to aggregate the reductions across measures or set a common target based on system peak, but rather the Company intends to set separate baselines and targets for each peak reduction measure (Exh. ES-METRIC-Rebuttal-2, at 4-6; Tr. 5, at 404-407).

5. Climate Adaptation and Mitigation Plan

NSTAR Electric proposes to pursue an updated enterprise-wide[47] climate adaptation and mitigation plan, which focuses on bringing renewable energy to the region and reducing the Company's own emissions (Exhs. ES-METRICS-1, at 39; ES-METRICS-2, at 3; DPU 23-2). In addition, the Company proposes to adopt a goal of reducing emissions by ten percent from a 2022 baseline by 2027 (Exhs. ES-METRICS-1, at 39-40; ES-METRICS-Rebuttal-2, at 6). NSTAR Electric states that emissions reductions will focus on enabling a cleaner mix of energy on the grid, improving efficiencies in distribution

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[47] Enterprise-wide includes all of the utility operating companies in the Eversource Energy holding company system.

infrastructure to reduce system losses, reducing electricity and fuel use at facilities by upgrading heating ventilating air conditioning ("HVAC") equipment and lighting to be more efficient, updating fleet vehicles with electric and hybrid models and using alternative fuel sources, and reducing sulphur hexafluoride leaks (Exhs. ES-METRICS-1, at 39-40; ES-METRICS-2, at 4-6).[48]

The climate adaptation and mitigation plan also includes hardening the Company's electric power system to withstand climate change impacts and engaging and supporting stakeholders to pursue a clean energy future (Exhs. ES-METRICS-1, at 39; ES-METRICS-2, at 3). Specifically, under the climate adaptation and mitigation plan, NSTAR Electric proposes continued development of a substation flood vulnerability model, evaluation of new equipment to improve performance in flooding conditions, and augmentation of the Company's outage prediction model to include climate impacts (Exh. ES-METRICS-1, at 40).

6. Equity and Electrification Planning Frameworks

a. Introduction

Two metrics initially proposed by the Company related to equity and electrification objectives were ultimately reproposed as planning frameworks (Exhs. ES-METRICS-1, at 42,

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48 The Company also notes that, as proposed, emission reductions measured against the target will also come from reducing methane leaks in the natural gas distribution system, as the Company's emissions targets are enterprise-wide and include all operating companies across three states (Exhs. ES-METRICS-1, at 39; ES-METRICS-2, at 5; DPU 23-2).

46-49; ES-METRICS-Rebuttal-1, at 10-11).[49] As planning frameworks, the Company proposes to commit to a set of principles regarding electrification and equity consistent with the Commonwealth's policy priorities (Exh. ES-METRICS-Rebuttal-1, at 10). The Company's proposed planning frameworks include commitments to meet policy objectives and to increase transparency through annual reporting (Exh. ES-METRICS-Rebuttal-1, at 11, 17). Both planning frameworks would apply to capital investment projects of $20 million or greater (Exh. ES-METRICS-Rebuttal-1, at 12).[50] As planning frameworks, the Company proposes not to measure a baseline or set targets (Exh. ES-METRICS-Rebuttal-1, at 11-12).

b. Electrification Enabling Investment Framework

The proposed electrification enabling investment framework ("electrification framework") guides future infrastructure to be sized to facilitate the Commonwealth's "All Options" pathway for meeting 2050 decarbonization goals (Exh. ES-METRICS-Rebuttal-1, at 13). See The Massachusetts 2050 Decarbonization Roadmap. Specifically, the electrification framework includes the following planning standards for future bulk station projects: (1) to enable 80 percent of the expected EV load for light duty vehicles based on

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[49] The Company determined that the concepts of clean energy/electrification and equity are not well suited to a quantitative metric at this time (Exh. ES-METRICS-Rebuttal-1, at 10). Further, the Company also removed from its proposal a community solar access metric because the Department has not yet approved a community solar program (Exh. ES-METRICS-Rebuttal-1, at 10 & n.3).

[50] NSTAR Electric proposed the $20-million threshold because this level is the minimum cost of substation expansion; the threshold is therefore intended to capture every substation expansion that would be needed for electrification enablement (Tr. 5, at 383).

unmanaged charging behavior; (2) to enable 50 percent of charging for medium and heavy duty EVs; (3) to provide four fast charging stations at 150 kilowatt hour ("kWh") each for every 50 miles of interstate roadway covered within the Company's service area with a 75-percent utilization; and (4) to enable conversion of 100 percent of residential and 78 percent of commercial heating load to heat pumps, and 22 percent of commercial heating load to electric heating (Exh. ES-METRICS-Rebuttal-1, at 13-14). The Company proposes to include in its annual PBR filing a report on any bulk station project initiated during the PBR plan term and how it complies with the electrification framework (Exh. ES-METRICS-Rebuttal-1, at 14).[51]

c. Equity Framework

NSTAR Electric proposes an equity framework that would be applied to projects in all Environmental Justice ("EJ") communities (Exhs. ES-METRICS-Rebuttal-1, at 14-16; ES-METRICS-Rebuttal-3; RR-DPU-21).[52] NSTAR Electric states that the equity framework consists of initial steps toward increased efforts to integrate equity considerations in the Company's decision making and in community engagement (Exh. ES-METRICS-Rebuttal-1, at 15). The Company identifies the following five methods for increasing stakeholder

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51 The Company also proposes to include an explanation for how its bulk station project is sized to meet the proposed criteria in the need assessment supporting an application for approval to site the project (Exh. ES-METRICS-Rebuttal-1, at 14).

52 The Company will adopt the Commonwealth's definition of EJ Community as defined in Chapter 8 of the 2021 Climate Act, using the Executive Office of Energy and Environmental Affairs' population criteria, or another definition promulgated by the Commonwealth (RR-DPU-21).

engagement on equity issues that will be applied through the framework: (1) rigorous EJ mapping; (2) identification of stakeholders and focused outreach to those stakeholders; (3) language translation and live interpretation services; (4) public engagement utilizing a variety of communication channels and in multiple languages, as applicable; and (5) collection of feedback (Exhs. ES-METRICS-Rebuttal-1, at 16-17; ES-METRICS-Rebuttal-3). NSTAR Electric proposes to include in its annual PBR filing a description of the Company's actions to implement the planning framework (Exh. ES-METRICS-Rebuttal-1, at 17-18).

7. Resiliency Metrics

In response to intervenor and Department requests, the Company developed two metrics related to system resiliency. First, based a recommendation by TEC and PowerOptions, the Company proposes a reporting metric on Momentary Average Interruption Frequency Index ("MAIFI"), and states that such reporting will be limited to devices with SCADA[53] visibility until advanced metering infrastructure ("AMI") meters are deployed (Exh. ES-METRICS-1, at 25-26; Company Brief at 123-124, App. A at 7).[54] Second, in response to a Department record request, the Company proposes "all-in" System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index

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53 SCADA refers to the Supervisory Control and Data Acquisition system that monitors substations, transformers, and other electrical assets.

54 The Company states that following deployment of AMI meters, momentary data from each customer will be integrated into the momentary outage dashboard to provide a more accurate MAIFI score (Exhs. METRICS-Rebuttal-1, at 26; DPU 68-7).

("SAIFI") metrics as part of its annual PBR metric reporting to measure system resiliency (RR-DPU-16). The Company states that, unlike current measures that exclude certain major event days, its proposed all-in metrics will capture all customer interruptions and customer interruption duration without excluding major event days (RR-DPU-16). NSTAR Electric states that by creating parallel SAIDI and SAIFI evaluations that include major events, the Company's understanding and accounting of the impact of resiliency measures on reliability will improve (RR-DPU-16). Further, NSTAR Electric states that the all-in SAIDI and SAIFI metrics will remain reporting-only metrics until sufficient data has been collected to establish a baseline and target (RR-DPU-16).

8. Low-Income Terminations Metric

In response to a request from the Low-Income Network, the Company proposes to include a metric that will provide reports on low-income customer service terminations (for nonpayment and for accounts with past due balances at levels eligible for disconnect) by census tract (Exhs. ES-METRICS-Rebuttal-1, at 31; LI-ES 2-1). The Company proposes to report data starting pre-pandemic with the 2019 calendar year (Exhs. ES-METRICS-Rebuttal-1, at 31; LI-ES 2-1).

C. Positions of the Parties

1. Attorney General

a. Introduction

The Attorney General argues that the Company is generally proposing to reuse the metrics proposed in NSTAR Electric Company, D.P.U. 18-50, which have not yet been

approved and were shown by the Attorney General and other intervenors to be deeply flawed (Attorney General Brief at 65-66).[55] Further, the Attorney General contends that the Company's additional, new metrics proposed for the 2023-2027 PBR term are either flawed or underdeveloped and cannot measure or ensure whether the Company's proposed PBR plan delivers any benefits to ratepayers that would be attributable to the PBR mechanism (Attorney General Brief at 66; Attorney General Reply Brief at 10-11). In particular, the Attorney General claims that NSTAR Electric's proposed metrics are overly focused on incentivizing spending rather than achieving performance goals, and would, therefore, trigger increases in required revenues and customer rates (Attorney General Brief at 77, citing Exh. AG-DPL-PBR-Surrebuttal-1, at 13). According to the Attorney General, the Department should not approve any extension or replacement PBR plan for NSTAR Electric unless and until the Company identifies and corroborates meaningful benefits to ratepayers that can be attributed directly to, or enabled by, the substantial increase in annual revenues occasioned by the PBR plan and can be adequately measured and verified (Attorney General Brief at 66). Thus, the Attorney General asserts that the Department, the Company, and affected stakeholders all need to devote more thought and creativity to identify meaningful performance goals for a PBR plan – in terms of measurable performance outputs – before approving a PBR mechanism for NSTAR Electric (Attorney General Brief at 66).

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[55] Additionally, the Attorney General contends that the Company is unable to show that it has met its metrics for the 2018 to 2022 PBR term (Attorney General Brief at 66, 68).

Alternatively, if the Department approves NSTAR Electric's proposed PBR plan, the Attorney General argues that implementation of the PBR term should be delayed until the Company develops, and stakeholders review and comment on, metrics that ensure accountability, and will measure benefits that can be attributed to or enabled by the annual increase in PBR revenues (Attorney General Brief at 65-66). The Attorney General further asserts that the Department should require the Company and affected stakeholders to collaborate to identify documented outcomes that ensure progress in the clean energy transition and require the Company to document and demonstrate progress towards agreed-upon milestones and benchmarks (Attorney General Reply Brief at 13).

b. Overall Customer Satisfaction Metric

The Attorney General argues that the Company's proposed overall customer satisfaction metric does not represent a commitment to improve customer service and would not incentivize performance gains (Attorney General Brief at 70). The Attorney General contends that the customer satisfaction metric is the only customer-service-related metric that includes an objective, quantifiable target (Attorney General Brief at 68 n.73).[56] Further, the Attorney General claims that score improvements in prior years with and without a PBR plan in place indicate that a PBR plan is not essential to improve customer service (Attorney General Brief at 69). Finally, the Attorney General argues that the Company's proposed

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[56] The Attorney General cites to the Eversource Energy organization's score of 711, which she argues fell short of the 2022 target of 720 set for the Company's current PBR term (Attorney General Brief at 69 n.74, citing Exh. ES-METRICS-1, Table 1).

2027 target score of 759 represents what it could achieve conducting business as usual and that it is unlikely to result in a first quartile ranking among industry peers in 2027 (Attorney General Brief at 70, citing Exh. ES-METRICS-1, at 23 n.4).

c. Customer Total Satisfaction Index and Solar Development Timeline

The Attorney General contends that while customer service improvements and adherence to a solar development timeline are important performance areas that the Department should track and measure, including these two measures in the existing SQ reporting is highly problematic (Attorney General Brief at 75, citing Exh. AG-DPL-PBR-Surrebuttal-1, at 9). First, the Attorney General argues that replacing the metrics would necessitate a consideration of whether the current cap placed on SQ penalties remains appropriate, considering potential asymmetry between the cost risk against ratepayers and the penalty risk for the Company (Attorney General Brief at 75, citing Exh. AG-DPL-PBR-Surrebuttal-1, at 11-12). Second, the Attorney General asserts that adding performance measures to the SQ Guidelines may weaken the existing penalty on the established SQ metrics if the Department were to make room for new metrics under the penalty cap (Attorney General Brief at 75). Finally, the Attorney General contends that including these prospective performance measures would be a departure from the Department's practice of reviewing its SQ Guidelines holistically and developing uniform metrics across all companies (Attorney General Brief at 75-76). Thus, the Attorney General asserts that further stakeholder consideration is needed before these metrics are implemented (Attorney General Brief at 76).

d. Peak Demand Reduction Metric

The Attorney General argues that NSTAR Electric's proposed peak demand reduction metric measures only the demand reduction results achieved under programs initiated prior to the Company's current PBR, rather than complying with the Department's directive in D.P.U. 17-05 to propose metrics that track peak demand reductions directly attributable to investments enabled by the PBR itself (Attorney General Brief at 70-71; Attorney General Reply Brief at 13, citing D.P.U. 17-05, at 409-410). Further, the Attorney General contends that the demand reduction targets (e.g., energy efficiency, company-owned solar, upgraded technology investments, and initiation of VVO) are all programs, initiatives, and results that already have been separately funded by ratepayers through explicit customer surcharges and cost recovery mechanisms (Attorney General Brief at 71-72). Thus, the Attorney General asserts that the Company cannot claim these reductions as ratepayer benefits from a PBR plan (Attorney General Brief at 72). Finally, according to the Attorney General, the Company has failed to implement the one metric that the Department ordered that could assess performance under the PBR, namely the percent demand reduction enabled by investments under the PBR plan (Attorney General Brief at 72-73, citing D.P.U. 17-05, at 410; Attorney General Reply Brief at 13).

e. Climate Adaptation and Mitigation Plan

The Attorney General argues that the Company's proposed climate adaptation and mitigation plan is simply a list of routine operations changes and not future commitments to mitigate emissions or harden infrastructure enabled by the PBR plan (Attorney General Brief

at 76). According to the Attorney General, the facilitation of new sources of renewable energy supply, company-owned solar, grid modernization investments in voltage reduction and VVO, and more aggressive vegetation management are already separately funded and incentivized by ratepayers, and certain storm hardening improvements are standard construction practices (Attorney General Brief at 76-77). Thus, the Attorney General rejects any notion that these measures are attributable to the Company's performance under a PBR plan (Attorney General Brief at 77).

f. Equity and Electrification Planning Frameworks

The Attorney General argues that the Company's proposals to develop frameworks for assessing progress on clean energy transition and electrification and an improvement of EJ contain no substantive measures (Attorney General Brief at 73, citing Exh. AG-DPL-PBR-Surrebuttal-1, at 6-9). The Attorney General maintains that the proposed electrification framework would shift significant risk of potential overbuilding and overspending onto ratepayers (Attorney General Brief at 73-74, 77-78, citing Exh. AG-DPL-PBR-Surrebuttal-1, at 8, 10).[57] Further, the Attorney General asserts that the proposed planning frameworks merit broader inquiry and examination and encourages the

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[57] The Attorney General explains that if the Company were directed through an output-focused PBR metric to target 90 percent of future EV charging load as managed load rather than its currently proposed electrification framework that projects to plan all future bulk station upgrades to accommodate up to 80 percent of unmanaged EV charging load, it would enable substantial capital savings and far more capable systems for the Company and its ratepayers (Attorney General Brief at 77-78; Attorney General Reply Brief at 12-13, citing Exh. AG-DPL-PBR Surrebuttal-1, at 9-11).

Department to create a stakeholder review process before the Department allows the Company's proposed PBR plan (Attorney General Brief at 74). Moreover, the Attorney General contends that the electric sector modernization plan development process, required by the 2022 Clean Energy Act, will address the issues that the Company's electrification framework seeks to address, and, therefore, the Department should not approve new planning standards in advance of this legislatively mandated process (Attorney General Brief at 74).

Regarding the Company's proposed equity framework, the Attorney General argues that, if approved, the Department should make clear that demonstrating compliance with the framework does not necessarily satisfy any Company obligation to address EJ or other equity issues in proceedings before the Department (Attorney General Brief at 74 n.77).

2. DOER

a. Introduction

DOER contends that by changing some of its proposed metrics throughout the proceeding, NSTAR Electric demonstrated that the development of effective performance metrics should not only be the Company's responsibility, but rather should involve a broader, more transparent stakeholder process (DOER Brief at 20-21). Further, DOER claims that the Company's proposed metrics do not appropriately incentivize support for clean energy goals, nor do they measure progress under the PBR plan (DOER Brief at 19; DOER Reply Brief at 2).

Despite these concerns, DOER asserts that the proposed metrics should be approved (DOER Brief at 19). DOER, however, recommends that the Department convene a

stakeholder proceeding involving the EDCs to develop, over the next five years, more robust performance metrics that include performance incentives and direct benefits to ratepayers of the clean energy transition (DOER Brief at 10, 19-20; DOER Reply Brief at 2-3). In this regard, DOER asserts that the Grid Modernization Advisory Council could be the forum for coordination with stakeholders regarding comprehensive metrics (DOER Brief at 24; DOER Reply Brief at 3). Finally, DOER argues that approval of the Company's proposed metrics may provide additional information that can help develop more effective metrics, but that the Department should not consider the proposed metrics as the end goal (DOER Brief at 20).

b. Equity and Electrification Planning Frameworks

As noted above, the Company initially proposed two metrics related to equity and electrification, but later modified the proposals as planning frameworks (Exhs. ES-METRICS-1, at 42, 46-49; ES-METRICS-Rebuttal-1, at 10-11). DOER disagrees with the Company's position that equity and electrification are not well-suited to a quantitative metric and contends that tracking the benefits of the Company's investments on EJ populations and on electrification goals is both possible and necessary (DOER Brief at 22, citing Exh. ES-METRICS-Rebuttal-1, at 10). DOER supports the Department's approval of the equity and electrification frameworks but asserts that they should be further developed before the next PBR filing (DOER Brief at 21-23).

c. MAIFI

DOER supports the reporting on MAIFI and asserts that these outages will become increasingly important as residential electrification accelerates (DOER Reply Brief at 8, citing

Exh. TEC/PO-JDB-1, at 17; TEC Initial Brief at 12). Further, DOER contends that this metric and any subsequently refined metrics should be consistently applied to all EDCs in future proceedings (DOER Reply Brief at 8-9).

d. Low-Income Terminations Metric

DOER supports approval of the low-income terminations reporting metric (DOER Brief at 21). DOER asserts that maintaining this data would assist the Company and stakeholders in better understanding the scale of low-income ratepayer's service disconnections and assist in identifying potential new policies and programs that would support low-income ratepayers' avoiding disconnections (DOER Brief at 21, citing Exhs. ES-METRICS-Rebuttal-1, at 31; LI-ES 2-1).

3. Low-Income Network

The Low-Income Network supports implementation of the Company's proposed low-income terminations metric (Low-Income Network Letter in Lieu of Reply Brief at 1). According to the Low-Income Network, the reporting requirement associated with this metric will provide invaluable guidance about the many efforts that the Company is making to maintain affordable bills for low-income customers (Low-Income Network Letter in Lieu of Reply Brief at 1, citing Exh. LI-ES 2-1).

4. Acadia Center

Acadia Center argues that the Company's metrics do not meet the Department's standards and lack financial incentives and consequences (Acadia Center Brief at 15). In particular, Acadia Center contends that the proposed metrics do not go far enough, and that

they over-emphasize grid-side capital investment and ignore demand-side flexibility and management (Acadia Center Brief at 16, citing Exhs. AG-DLP-Surrebuttal-1, at 4; AG-DPL-1, at 3). Further, Acadia Center contends that the metrics do not measure benefits attributable to the PBR plan (Acadia Center Brief at 16, citing Exh. UMASS-EP/RS-1, at 59). In addition, Acadia Center asserts that the Department should adopt metrics that meaningfully reduce energy burdens, promote equity, help to accelerate decarbonization of buildings, and reward a utility for ensuring that consumers below the poverty level are on income-eligible rates (Acadia Center Brief at 16). Finally, Acadia Center suggests that a shared savings mechanism that pushes the Company to implement more non-wires alternatives may be useful (Acadia Center Brief at 16).

5. Cape Light Compact

a. Introduction

Cape Light Compact argues that the Department should expedite issuance of its Order in D.P.U. 18-50 to provide due process to intervenors, as the lack of a final decision is unfair to the parties who participated in that docket, and creates confusion as to how those issues will be considered in light of the Company's proposed changes to its metrics in the instant case (CLC Brief at 33-34). Further, Cape Light Compact contends that given the uncertainty over what measures the Company would use for emissions reductions in its climate adaptation and mitigation plan metric and uncertainty regarding how this proceeding interplays with D.P.U. 18-50, the Department should direct a compliance phase or

stakeholder review regarding the proposed metrics (CLC Reply Brief at 13-14, citing Attorney General Brief at 74, 78).

b. Climate Adaptation and Mitigation Plan

Cape Light Compact argues that light emitting diode ("LED") lighting replacement should not be included in the Company's climate adaptation and mitigation plan because the Company confirmed that it will complete such replacements by the end of 2022 and LED lighting has become industry standard (CLC Brief at 35-36, citing Exhs. ES-METRICS-Rebuttal-1, at 30; CLC-KFG-1, at 13; CLC-KFG-4; Tr. 5, at 366-367; CLC Reply Brief at 13, citing Company Brief at 124). Cape Light Compact asserts that if the Department approves the Company's climate adaption and mitigation plan with LED lighting replacement included, then it should direct NSTAR Electric to expand its LED replacements to non-LED Rate S-1 (Company-owned) lighting to further reduce emissions (CLC Brief at 33, 36; CLC Reply Brief at 13-14). Finally, Cape Light Compact contends that, despite being outside of the Company's intended scope of Company facility-related emissions, the climate adaption and mitigation plan should be allowed to evolve to where emissions reductions are necessary (CLC Brief at 36, citing Tr. 5, at 373).

6. CLF

CLF also argues that the use of LED lighting is now an industry standard (CLF Brief at 13). As such, CLF asserts that NSTAR Electric should not be rewarded for such measures and that LED lighting replacement should not be included as part of the climate adaptation and mitigation plan (CLF Brief at 13, citing Exh. CLC-KFG-1, at 13-15).

7. TEC and PowerOptions

TEC and PowerOptions argue that the Department should approve reporting on MAIFI as a PBR metric once AMI meters are deployed and also in the interim on an as-available basis (TEC/PowerOptions Brief at 12-13, citing Exhs. ES-METRICS-Rebuttal-1, at 26; DPU 68-7). TEC and PowerOptions assert that a MAIFI metric should have no associated penalties, since the goal is to improve visibility into the operation of the distribution system (TEC/PowerOptions Brief at 12-13).

8. UMass

a. Summary

UMass argues that establishing effective metrics is critical to an effective PBR plan but is difficult and requires stakeholder involvement and focused consideration (UMass Brief at 47). With respect to the Company's proposed metrics, UMass contends that they do not measure benefits that ratepayers may receive that are attributable to the PBR plan, and, therefore, they do not encourage the Company to leverage the PBR plan to customers' benefit (UMass Brief at 51, citing Exh. UMASS-EP/RS-1, at 59; Tr. 5, at 375-376). Further, UMass contends that although the Company's proposal to incorporate financial incentives for performance is a significant and potentially positive step, the proposal was made so late in the proceeding that it has not been fully developed with robust stakeholder engagement and requires refining to align the financial incentives with customer benefits (UMass Brief at 52, citing Exh. UMASS-EP/RS-1, at 59-60).

UMass asserts that the Department should deny NSTAR Electric's proposed PBR plan pending development of acceptable metrics, and then expedite a separate proceeding to finalize metrics (UMass Brief at 48). In this regard, UMass contends that it is the Company's burden to establish adequate metrics, including developing a sufficient record, and that the Department has the authority to reject rate changes if a company fails to meet its burden (UMass Reply Brief at 12 (internal citations omitted)). UMass asserts that delaying the implementation of the proposed PBR plan would not prevent the Department from approving new rates to address the Company's revenue deficiency, but rather would delay automatic rate increases associated with the PBR plan (UMass Reply Brief at 12).

b. Overall Customer Satisfaction Metric

UMass argues that NSTAR Electric's overall customer satisfaction metric should include the Company's ranking relative to peer companies instead of just the Company's absolute numerical score (UMass Brief at 53, citing Exh. UMASS-EP/RS-1, at 62-63, 67).[58] UMass contends that the Company's recent customer satisfaction scores are low compared to other comparable utilities in the region, and that reporting on relative rankings of customer satisfaction would drive the Company to provide a higher level of service (UMass Brief at 53, citing Exh. UMASS-EP/RS-1, at 63-64).

Additionally, UMass argues that NSTAR Electric should also report on the overall satisfaction of its business customers instead of just its residential ones, as business customers

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[58] UMass asserts that the Company is amenable to reporting relative rankings (UMass Brief at 53, citing Tr. 5, at 399).

have different interests and priorities than residential customers (UMass Brief at 53, citing Exh. UMASS-EP/RS-1, at 62-64, 67). Finally, UMass supports the Company's transactional customer satisfaction metric, as it is more directly focused on the improvement of specific services to customers (UMass Brief at 53, citing Exhs. ES-METRICS-Rebuttal-1, at 18-20; ES-METRICS-Rebuttal-2, at 1; Tr. 5 at 390). However, UMass asserts that this metric alone does not remedy the absence of reporting on business customer satisfaction and relative rankings of customer satisfaction (UMass Brief at 53).

c. Peak Demand Reduction Metric

UMass argues that the Company's peak demand reduction metrics are inadequate since they would not track how the PBR plan resulted in peak demand reduction, but instead only report on the beneficial effects of programs unrelated to the PBR plan (UMass Brief at 53-54, citing Exhs. UMASS-EP/RS-1, at 64-65; ES-METRICS-Rebuttal-2, at 4-6; Tr. 5, at 408, 412-415, 417, 424).

d. Climate Adaptation and Mitigation Plan

UMass argues that because the Company's baselines are inconsistent with the Commonwealth's 1990 baseline, it is unclear whether NSTAR Electric's GHG emissions reduction targets align with Massachusetts policy or whether the Company's GHG reduction efforts are in any way connected to the PBR plan (UMass Brief at 54, citing Exh. UMASS-EP/RS-1, at 65-66; Tr. 5, at 401-402, 403). As such, UMass asserts that the Department should require the Company to present an analysis demonstrating how its own

emission reduction targets compare to the Commonwealth's targets and policy (UMass Brief at 54, citing Exh. UMASS-EP/RS-1, at 65-66, 68).

e. Electrification Framework

UMass asserts that the proposed electrification metrics are too open-ended and should instead focus on ensuring that the Company expeditiously delivers the information, and ultimately the implementation, needed for interested customers to convert to electrification (UMass Brief at 52, citing Exh. UMASS-EP/RS-1, at 60-61). According to UMass, the Company should provide annual reporting on customer upgrade requests for electrification that include information on the customer, upgrade, timeline, and load impact (UMass Brief at 52-53, citing Exh. UMASS-EP/RS-1, at 61-62, 67).

9. Company

a. Introduction[59]

The Company rejects the notion that additional process is needed to further develop the metrics, and contends that the intervenors have been unwilling to provide concrete feedback during the instant proceeding (Company Reply Brief at 15, citing Attorney General Reply Brief at 10-13; Cape Light Compact Reply Brief at 13-14; UMass Reply Brief at 11-12).[60] Despite this contention, NSTAR Electric claims that the numerous iterations of

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59 On brief, the Company discusses the metrics proposed in its initial filing and the changes made during the proceeding (Company Brief at 95-117). In the interest of administrative efficiency, the focus of this section will be the Company's response to the issues raised by the intervenors.

60 In response to Cape Light Compact, the Company further notes that any adjustments made to the proposed metrics based on the record in D.P.U. 18-50 should only apply

the proposed metrics throughout the proceeding reflect the Company's effort to take feedback seriously and to incorporate it into its final proposals (Company Reply Brief at 16). The Company recommends that any further process should be conducted during the five-year PBR term, and that the Department should not delay implementation of the PBR plan (Company Reply Brief at 15). In response to DOER's recommendation for a stakeholder process that would address metrics for all EDCs, the Company notes that there are important differences across utilities that need to be considered when developing metrics, and, therefore, company-specific metrics are more appropriate than uniform metrics (Company Reply Brief at 17-18, citing DOER Brief at 3; Exh. DPU 63-4).

In response to intervenor arguments that metrics should be directly tied to PBR adjustments, the Company argues that the PBR mechanism is not designed to recover specific categories of costs, but rather is a formula designed to provide adequate support to meet policy goals (Company Brief at 117, citing Exh. DPU 13-10; Company Reply Brief at 17, 20). As such, the Company contends that it has designed metrics that can measure progress related to policy goals (Company Brief at 118). Further, the Company claims that progress on cost efficiency will not be determined through metrics, but rather based on a review of the drivers of a future request for rate increases (Company Reply Brief at 17, 20, citing Exh. DPU 13-1, at 1 n.1). Therefore, the Company asserts that the intervenors' arguments

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on a prospective basis (Company Reply Brief at 19, citing Cape Light Compact Reply Brief at 14).

are insufficient to reach a conclusion that the proposed metrics are deficient (Company Reply Brief at 17, 19-20, citing Attorney General Brief at 12-13; UMass Reply Brief at 11-12).

b. Overall Customer Satisfaction Metric

In response to the Attorney General's arguments, NSTAR Electric contends that Eversource Energy's failure to meet the enterprise-wide customer satisfaction target was due to circumstances beyond the Company's control that affected affiliates outside of Massachusetts (Company Brief at 119; citing Attorney General Brief at 69; Exh. ES-METRICS-1, at 22). Thus, the Company claims that an enterprise-wide measure for judging the efficacy of the Company's PBR plan is inappropriate (Company Brief at 119).

Further, the Company disagrees with the Attorney General's assertion that the Company's overall customer satisfaction target represents a "business as usual" level of service (Company Brief at 119, citing Attorney General Brief at 69-70). NSTAR Electric argues that even if its 2027 target score will not result in a first quartile ranking, it still represents a measure of improvement, and it is appropriate to select a target based on the score currently necessary to get a first quartile ranking (Company Brief at 119, citing Exh. ES-METRICS-1, at 23).

c. Peak Demand Reduction Metric

The Company rejects the notion that energy efficiency and demand reduction measures are not enabled by the PBR plan (Company Brief at 121). In response to the Attorney General, NSTAR Electric contends that the programs included in the peak reduction metric represent a substantial portion of the Company's peak load management efforts and

removing them would provide an incomplete picture of the Company's peak reduction efforts (Company Brief at 121, citing Attorney General Brief at 70).

d. Climate Adaptation and Mitigation Plan

In response to the Attorney General's position that the proposed climate adaptation and mitigation plan reflects only what would otherwise be achieved without a PBR plan, NSTAR Electric reiterates that the objective of the PBR plan is to enable long-term planning that aligns with policy objectives, and that the Company's plan to reduce emissions is consistent with such Commonwealth policy objectives (Company Brief at 122, citing Attorney General Brief at 76; Tr. 7, at 477-478).

NSTAR Electric does not disagree with Cape Light Compact's assertions that LED lighting is industry standard practice, and that the Company will have completed its LED replacements by the end of 2022 (Company Brief at 124, citing Exh. DPU 68-22). NSTAR Electric, however, disagrees that LEDs, as a source of emissions reductions, should be removed from the climate adaption and mitigation plan (Company Brief at 124). The Company argues that it has been transparent about how to achieve its emissions reductions, and if it completes installation of LED bulbs, it will increase reliance on other measures to achieve its emissions reductions (Company Brief at 124-125, citing Cape Light Compact Brief at 34; Company Reply Brief at 19, citing Cape Light Compact Reply Brief at 13; Tr. 5, at 367). Further, NSTAR Electric disagrees with Cape Light Compact's recommendation to include non-LED Rate S-1 lighting in the climate adaption and mitigation plan (Company Brief at 125). According to the Company, including non-LED lighting would

result in a cost to ratepayers if completed prior to full depreciation, which is expected in approximately two years, at which point the non-LED lighting would be replaced with LEDs (Company Brief at 125, citing Exh. CLC-ES 2-4; RR-CLC-1).

e. Equity and Electrification Planning Frameworks

NSTAR Electric asserts that additional work is needed to gather information through direct communications with EJ communities, and, therefore, the Company proposed to replace its initially proposed equity index metric with the equity framework (Company Brief at 109, citing Exh. ES-METRICS-Rebuttal-1, at 15). Further, NSTAR Electric contends that by proposing equity and electrification frameworks (as opposed to metrics), the Company will have additional time to work with stakeholders to ensure that future metrics to measure progress on these objectives are robust and consistent with the evolving legislative landscape and regulatory and policy developments (Company Brief at 108, 110-111, citing Exh. ES-METRICS-Rebuttal-1, at 11, 14; RR-DPU-17; RR-DPU-18).

NSTAR Electric disagrees with the Attorney General that by converting the metrics into planning frameworks the Company eliminated substantive measures for equity and electrification (Company Brief at 121, citing Attorney General Brief at 73). NSTAR Electric argues that, although it will not be setting a target, the frameworks still will ensure that the Company consistently takes action to meet equity and electrification objectives (Company Brief at 121). Moreover, NSTAR Electric contends that, in lieu of these metrics, the Company has proposed new metrics not included in the initial filing and a penalty/incentive mechanism (Company Brief at 121). Thus, according to the Company, the conversion of two

metrics to frameworks did not diminish the accountability created by the proposed metrics (Company Brief at 121). Finally, NSTAR Electric asserts that the electrification framework ensures that the Company's ten-year planning process is in line with the Commonwealth's All Options pathway and does not encourage overspending, as suggested by the Attorney General (Company Brief at 122, citing Attorney General Brief at 78).

f. MAIFI

In response to TEC and PowerOptions' arguments regarding MAIFI reporting, the Company agrees to report MAIFI data for devices with SCADA visibility, so long as this metric would not be subject to penalties (Company Brief at 124). Further, the Company asserts that following deployment of AMI meters, MAIFI from each customer will be integrated into a momentary outage dashboard (Company Brief at 124, citing DPU 68-7).

D. Analysis and Findings

1. Review Criteria

As discussed in Section IV.D.5.a above, the Department has approved a PBR plan for NSTAR Electric with a five-year term. To measure the full range of benefits that will accrue under the PBR plan, the Department finds that it is appropriate to establish a set of broad performance metrics that are tied to the goals of the PBR plan and are consistent with the Department's regulatory objectives.

2. Proposed Metrics

a. Customer Satisfaction, Customer Engagement, and Operations Metrics

The Company proposes a total of five metrics in the categories of customer satisfaction, customer engagement, and operations. First, the overall customer satisfaction metric utilizes J.D. Power's residential customer satisfaction score (Exh. ES-METRICS-1, at 17). The Department finds that the overall customer satisfaction metric appropriately creates a focus on customer service and that J.D. Power is an appropriate independent source for this information (Exhs. ES-METRICS-Rebuttal-2, at 1; ES-CAH/DPH-1, at 112). As suggested by intervenors, the Department finds that the Company's annual target should be a first quartile ranking instead of a specific numerical score (Attorney General Brief at 70; UMass Brief at 53). This measurement will encourage NSTAR Electric's customer satisfaction to improve at rates above the average pace in the industry. If the Company fails to meet the first quartile ranking, NSTAR Electric should explain the aspect(s) of the score (i.e., a low category score in power quality and reliability, price, billing and payment, communications) that impacted the Company's ability to do so. Further, the Department agrees with the UMass's assertion that the Company's J.D. Power business customer satisfaction ranking also should be reported (UMass Brief at 53). Accordingly, the Department directs the Company to include annual reporting on its J.D. Power business customer satisfaction survey results and to target a first quartile ranking.

Second, the transactional customer satisfaction metric will report the results of a customer survey focused on their satisfaction with the Company's: (1) unplanned outages;

(2) planned outages; (3) website; and (4) the contact center (Exh. ES-METRICS-Rebuttal-1, at 19-20). The Company proposes to incorporate the metric into the SQ penalty framework, with a symmetrical incentive (Exh. ES-METRICS-Rebuttal-1, at 19). NSTAR Electric states that the proposed index, unlike the J.D. Power metric, reduces the effect on customer satisfaction of factors outside of the Company's control, such as rising energy costs or increased demand due to weather (Exh. ES-METRICS-Rebuttal-1, at 19). The Department finds that a customer satisfaction metric that removes the impact of certain energy cost increases that are outside of the Company's control is reasonable and useful, as it focuses more directly on improving specific services to customers. In addition, the Department finds that the interactions upon which customers will be surveyed are reasonable and important for the Company to track and target improvement. For these reasons, the Department approves the Company's transactional customer satisfaction metric. The Department, however, rejects the Company's proposal to incorporate this metric into the SQ penalty framework, as discussed in further detail below.

Third, the customer usage of an outage map metric will track the number of unique views during ERP events and report engagements with the outage map as a percentage of total inbound customer communications during these events, rather than reporting a total count of interactions (Exh. ES-METRICS-1, at 25-26). No intervenors commented on the use of outage map metric. The Department recognizes the benefits to customers of accessing service outage status, expected downtime, and the cause of the outage during ERP events. Accordingly, we approve the Company's use of the outage map metric.

Fourth, the digital engagement metric will measure the percentage of customer interactions that are digital (Exh. ES-METRICS-1, at 27). No intervenors commented on the digital engagement metric. The Department recognizes that customers rely on digital interactions to pay bills, report outages, receive service updates, etc. As such, there are benefits to providing convenient and accessible digital tools to customers and doing so can improve customer experience and education. It stands to reason that tracking the percentage of digital engagements is an important component in this process. Accordingly, the Department approves the Company's digital engagement metric.

Finally, the new customer connects metric is the percentage of new customer connections that meet the target timelines for different types of connections, excluding hold days (Exh. ES-METRICS-1, at 44). The Company is proposing to incorporate this metric into the SQ penalty framework, with a symmetrical incentive (Exhs. ES-METRICS-Rebuttal-1, at 21, 23; ES-METRICS-Rebuttal-2, at 3). No intervenors commented on the new customer connects metric. The Department recognizes the role that electrification will play in meeting the climate goals of the Commonwealth, thus ensuring timely connections for new customers is an important goal. Accordingly, the Department approves the new customer connects metric. We also direct the Company to report data on the number of hold days, and the reason for the hold days. The Department, however, disallows its inclusion in the SQ penalty framework, as discussed in further detail below.

b. Producer Satisfaction and Producer/Developer Engagement Metrics

The Company proposes a total of three metrics in the categories of producer satisfaction and producer/development engagement. The producer satisfaction survey metric will survey interconnecting customers 65 and 365 days after interconnection, and the hosting capacity map usage metric will track the number of hits to the hosting capacity map webpages (Exhs. ES-METRICS-1, at 28-29; ES-METRICS-Rebuttal-2, at 2-3; DPU 42-3). No intervenors commented on these producer satisfaction metrics. The Department acknowledges the increasing role of DER on the electric distribution system. We find that these two metrics are reasonable and appropriate to gauge the services provided to and satisfaction of producers. As such, we allow these metrics.

The third metric is the solar development timeline metric, which will measure the duration from creation of a solar installation work order to completion in business days (excluding hold days), and then will calculate the percentage of solar installations meeting certain timeline performance targets by dividing the number of solar installations that meet the targets by the total number of solar installations (Exhs. ES-METRICS-Rebuttal-1, at 20-21; ES-METRICS-Rebuttal-2, at 3). The Company proposes to incorporate the metric into the SQ penalty framework, with a symmetrical incentive (Exh. ES-METRICS-Rebuttal-1, at 20-21). No intervenors commented on the solar development timeline metric. We recognize the important role that solar power will play in meeting the Commonwealth's energy goals, and that timely connection of solar installations is important component in achieving these goals. Accordingly, the Department approves the

Company's proposed solar development timeline metric. The Department, however, disallows the metric's inclusion in the SQ penalty framework, as discussed in further detail below.

c. Incorporation of Three Metrics into SQ Penalty Framework

The Company proposes to incorporate the new customer connects, transactional customer satisfaction index, and the solar development timeline metrics into the Department's SQ Guidelines (Exhs. ES-METRICS-Rebuttal-1, at 23; ES-METRICS-Rebuttal-2, at 1, 3). The Company also proposes that a symmetrical incentive apply to the PBR metrics that are incorporated into the SQ penalty framework (Exh. ES-METRICS-Rebuttal-1, at 23-24). Several intervenors assert that effective metrics should include incentives and/or penalties (Attorney General Reply Brief at 11-12; DOER Brief at 10, 19-21; Acadia Center Brief at 15; UMass Brief at 52). The Department finds that, in some instances, incentives and penalties are important to the development of meaningful metrics. We recognize, however, that altering the SQ penalty formula may have unintended implications, such as weakening the penalties on existing SQ metrics. Further, the proposal to incorporate these three metrics into the SQ framework was introduced relatively late in the proceeding, and we conclude that the metrics may need refining over time to align the financial incentives with customer benefits. Based on these considerations, we find that the Company's proposal to incorporate these three metrics into the SQ framework warrants more focused attention. Further, we find it prudent for other stakeholders to have an opportunity to propose different potential methods of incorporating penalties and incentives into these metrics. To advance the effort of

developing appropriate PBR incentive and penalty metrics, the Company shall track and report the three metrics, without making the proposed changes to the SQ Guidelines. For developing a baseline and target for the transactional customer satisfaction and solar development timeline metrics, the Company should apply the SQ method for establishing a baseline and a target.[61] As discussed in further detail below, the Department finds that tracking and reporting will inform a continued stakeholder dialog on metrics.

d. Peak Demand Reduction Metric

The Company proposes to track peak demand reductions from six programs and initiatives (Exhs. ES-METRICS-Rebuttal-2, at 4-6; DPU 49-1, at 3-4). Several intervenors contend that the proposed metric does not track the impact of investments enabled by the PBR plan, as the Department directed in D.P.U. 17-05 (Attorney General Brief at 70-71; Attorney General Reply Brief at 13; UMass Brief at 53-54). In D.P.U. 17-05 at 409-410, the Department identified system peak demand reduction as an important objective. We find that the Company's proposed peak demand reduction metric is an appropriate starting point for developing a more advanced system peak reduction metric. In particular, we find that reporting on the proposed peak demand reduction metric will provide important data to facilitate the evaluation of benefits associated with energy efficiency programs, demand response programs, company-owned storage, company-owned solar, upgrades to standard

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61 NSTAR Electric proposed a baseline and a target based on previous years data for the new customer connects metric, and the Department approves that baseline and target (Exh. ES-METRICS-1, at 45-46).

technologies, and VVO. Based on these considerations, the Department approves this proposed metric. As the Company and stakeholders continue to develop a set of metrics, as discussed below, the parties should consider first whether peak demand reduction is a priority objective, and second, how to develop a robust measure for reductions to system peak demand that are under the Company's control.

e. Climate Adaptation and Mitigation Plan

As noted above, NSTAR Electric proposes to pursue an updated enterprise-wide climate adaptation and mitigation plan, which focuses on bringing renewable energy to the region and reducing the Company's own GHG emissions (Exhs. ES-METRICS-1, at 39; ES-METRICS-2, at 3; DPU 23-2). In particular, the Company proposes to adopt a goal of reducing emissions ten percent from a 2022 baseline by 2027 (Exhs. ES-METRICS-1, at 39-40; ES-METRICS-Rebuttal-2, at 6). The Company states that its proposed metrics are to be designed to create consistency with current Commonwealth policy goals (Exhs. ES-CAH/DPH-1, at 10-11; ES-METRICS-1, at 11). As such, the Company's GHG emissions reduction targets should align with decarbonization objectives in the 2021 Climate Act, and applicable sector-specific interim targets and sub-limits established pursuant to G.L. c. 21N, § 3A. The Company states that it tracks emissions at an enterprise-wide level, including its operating companies in its New Hampshire, Connecticut, and Massachusetts service territories (Exh. DPU 23-2). We conclude, however, that to align with Massachusetts decarbonization goals, it is more appropriate for the Company's emissions reduction goal to reflect GHG emissions and reductions in the Massachusetts service territory

only. Similarly, the Company's investments and programs during the PBR term must reflect an appropriate level of climate adaptation. Therefore, while we approve the climate adaption and mitigation plan, we direct the Company in its annual PBR filing to include a demonstration of how the plan is aligned with the objectives of the Commonwealth's decarbonization policies, including applicable sector-specific interim targets and sub-limits established pursuant to G.L. c. 21N, § 3A.

Finally, as discussed above, Cape Light Compact argues that LED lighting replacement should not be included in the Company's climate adaptation and mitigation plan (CLC Brief at 35-36, citing Exhs. ES-METRICS-Rebuttal-1, at 30; CLC-KFG-1, at 13; CLC-KFG-4; Tr. 5, at 366-367; CLC Reply Brief at 13, citing Company Brief at 124). Alternatively, Cape Light Compact asserts that, if the Department approves the Company's climate adaption and mitigation plan with LED lighting replacement included, then it should direct NSTAR Electric to expand its LED replacements to non-LED Rate S-1 (Company-owned) lighting to further reduce GHG emissions (CLC Brief at 33, 36; CLC Reply Brief at 13-14). The Company states that by the end of this calendar year, all Eversource Energy facilities will have undergone a lighting upgrade replacing inefficient fixtures with energy saving LEDs (Exh. DPU 68-22). In addition, the Company reports that it expects non-LED S-1 lighting to be phased out and replaced by LED streetlights in approximately two years (Exh. CLC-ES 2-4). Given these timeframes, the Department finds that it is unnecessary to include LED lighting replacement as part of the climate adaption and mitigation plan. In its annual PBR filings, the Company shall report on its compliance with

these timelines; if the Company does not meet these timelines, it shall report on the percentage of S-1 lighting categories of (a) LED and (b) non-LED.

f. Equity and Electrification Planning Frameworks

The Company proposes two planning frameworks through annual reporting, one for equity and one for electrification, applicable to capital investment projects of $20 million or greater and designed to provide commitments to policy objectives and increase transparency (Exh. ES-METRICS-Rebuttal-1, at 10-12, 17). The Attorney General argues that the planning frameworks lack substantive measures and require further examination through a stakeholder process (Attorney General at 73). DOER supports the Department's approval of the frameworks but recommends tracking benefits of the Company's investments in a quantitative manner (DOER Brief at 22).

The Department expects our understanding of how to advance equity as an objective in the oversight of regulated utilities to evolve over time. The Department finds that the proposed framework would benefit from continued development and incorporation of stakeholder feedback to assist in this evolution. The proposed equity framework represents a first step, and is a reasonable and appropriate means, to collect useful data to inform future metrics. As such, the Department approves the equity framework. We note, however, that the Company's compliance with the framework would not necessarily satisfy any obligation to address EJ or other equity issues in proceedings before the Department.

Regarding the proposed electrification framework, the Attorney General contends that the proposal may create a risk of overbuilding and overspending that will be borne by

ratepayers, and that the Department should not approve new planning standards ahead of the legislatively mandated process prescribed in the 2022 Clean Energy Act (Attorney General Brief at 74). The Department acknowledges that the Company's planning standards for future bulk station projects have merit, and we recognize that the Company will need to conform with planning criteria that enable a decarbonized future. However, the Legislature's intent is for the comprehensive design and implementation of such standards within the electric sector modernization process outlined in 2022 Clean Energy Act, Section 92B. As such, we decline to approve a prescriptive planning framework related to long-term investments in advance of any legislatively mandated process. Accordingly, we do not approve the Company's electrification framework.

g. Resiliency Metrics and Low-Income Terminations Metric

The Company proposes metrics that were developed based on intervenor feedback, namely two metrics for resiliency (MAIFI and an all-in measure of SAIDI and SAIFI) and a low-income terminations reporting metric (Exhs. ES-METRICS-Rebuttal-1, at 31; LI-ES 2-1; RR-DPU-16; Company Brief at 124, App. A at 7). Intervenors support the approval of the MAIFI-related resiliency metric (DOER Reply Brief at 8-9; TEC/PowerOptions Brief at 12-13) and the low-income terminations metric (DOER Brief at 21; Low-Income Network Letter in Lieu of Reply Brief at 1). No intervenors commented on the all-in measure of SAIDI and SAIFI metric. The Department finds that each of the resiliency metrics and the low-income terminations metric are reasonable, reflects important policy goals, and reports

data in a way that promotes transparency. Accordingly, the Department approves the resiliency metrics and the low-income terminations metric.[62]

3. Conclusion

Subject to the findings above, the Department approves the Company's proposed metrics, the proposed equity framework, and the proposed climate adaption and mitigation plan. We deny the Company's proposal to incorporate three proposed metrics into the SQ penalty framework. Further, the Department does not approve the Company's electrification framework. The Department finds that the approved suite of metrics will provide a means of monitoring both the Company's performance and progress toward achieving important policy goals of the Department and the Commonwealth.[63]

The Department appreciates the participation and feedback offered by multiple intervenors. In particular, we acknowledge that several intervenors argued that the Company's metrics would benefit from additional stakeholder feedback, outside of a base distribution rate case proceeding (Attorney General Brief at 65; Attorney General Reply Brief at 13; DOER Brief at 20-21; DOER Reply Brief at 2-3; Cape Light Compact Reply Brief at 13-14; UMass Brief at 48). We recognize that the development of meaningful

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62 The Department confirms that it is not approving any penalty associated with the MAIFI-related metric (Company Brief at 124).

63 The metrics approved in this proceeding supersede those presented in D.P.U. 18-50. As no meaningful issues would remain in D.P.U. 18-50 and in the interest of administrative efficiency, the Department will conclude its investigation in D.P.U. 18-50 and close that docket.

performance metrics should not be the sole responsibility of the Company and should involve a broader, more transparent stakeholder process that will benefit from sharing data and assumptions. The Department also acknowledges that some metrics should incorporate financial incentives and consequences. Thus, while the Department is satisfied that the metrics proposed herein should be approved, subject to the findings above, we direct the Company to coordinate an inclusive stakeholder process over the course of the PBR term to continue to refine the metrics approved herein.

The first step of the stakeholder process should be to define a set of guiding objectives. Then, through the stakeholder process, the Company should refine the metrics approved here, as well as develop a narrow set of new metrics, as needed, to arrive at a comprehensive set of metrics that meet the Department's review criteria and that target improvements to the stakeholder group's stated objectives. Finally, while some reporting-only metrics are valuable for monitoring performance and sharing information and data, at least a subset of key metrics should be tied to incentives and penalties. As a general guideline, incentive/penalty mechanisms should be symmetrical.

The Department directs the Company to report on the progress of the metrics development process in the annual PBR filings. Specifically, the Company shall report on the number of stakeholder meetings held, a list of the stakeholders that participated, and meeting agendas and minutes. The Company shall report on any proposed mutually-agreed upon changes to the metrics approved herein, any new metrics, and any areas of disagreement among the stakeholders. The Department will consider the proposed metrics

during our review of the annual PBR filings based on the outcomes of the stakeholder process. The Department's expectation is that the Company and relevant stakeholders will reach agreement on a set of meaningful metrics that, if adopted by the Department, will remain in place should the Company decide to request an extension of the PBR plan term (see Section IV.D.5.a above). To the extent that NSTAR Electric seeks to continue the PBR plan approved herein after the five-year term expires, it shall submit a proposal that lists and defines the metrics that the Company and stakeholders have developed, reports on all other proposals that were considered, and summarizes the final positions of stakeholders on each metric. If the metrics are quantitative, the metrics may include symmetrical incentives and penalties for Department consideration. This proposal shall be filed at least six months in advance of the end of the PBR plan term.

Finally, the Department will consider opening a generic proceeding to direct the development of a common set of electric utility metrics or guidelines, by which future PBR plans can be guided. If a generic proceeding is opened, the Department may modify the foregoing directives relative to NSTAR Electric's stakeholder process.

VI. RATE BASE

A. Introduction

As of December 31, 2021, NSTAR Electric had a rate base of $4,286,717,212 (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)). From this amount, the Company subtracted

$191,528,926 to remove grid modernization, Solar Program investments,[64] and the associated deferred income tax for a total proposed rate base of $4,095,188,286 (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)).[65] NSTAR Electric's total proposed rate base consists of: (1) $5,304,246,946 in net utility plant in service; (2) $57,121,673 in materials and supplies; and (3) $54,964,283 in cash working capital, less (1) $744,331,898 in accumulated deferred income taxes ("ADIT"); (2) $532,319,565 in net FAS 109 regulatory liabilities; and (3) $44,493,152 in customer deposits and advances (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)).

B. Plant Additions

1. Introduction

As of December 31, 2021,[66] NSTAR Electric proposes a utility plant in service balance of $7,900,933,940 (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)). The reserve for depreciation balance as of the same date was $2,596,686,994, yielding a net plant balance of $5,304,246,946 (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)).

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64 The Company removed Solar Program costs associated with the former WMECo's solar facilities pursuant to G.L. c. 164, § 1A(f), as added by the Green Communities Act, and approved in a stipulation agreement in Western Massachusetts Electric Company, D.P.U. 09-05 (2009) (see n.165 below). The Department has allowed inclusion in rate base of the Solar Expansion Program investments, pursuant to our findings in Section XIV.B.4 below.

65 NSTAR Electric's pro forma adjustment includes a decrease of $201,017,135 in net utility plant less $9,488,209 in accumulated deferred income taxes (Exh. ES-REVREQ-2, Sch. 29 (Rev. 4)).

66 In Section IV.D.5.e above, the Department approved NSTAR Electric's proposal to include the Company's 2021 plant additions in rate base without regard to the size of the plant additions in relation to rate base.

2. Project Documentation

NSTAR Electric manages its capital authorization process in accordance with a project authorization policy (Exhs. ES-ADDITIONS-1, at 16; ES-ADDITIONS-11). The project authorization policy sets forth classifications based on the size and nature of a project and sets documentation requirements for each classification (Exh. ES-ADDITIONS-11E at 121-124). Specific projects are those that exceed or are expected to exceed certain cost thresholds (Exh. ES-ADDITIONS-11E at 121).[67] Each specific project requires a project authorization form, which includes: (1) a project description and objectives; (2) a scope and justification; (3) a financial evaluation; (4) a risk assessment; (5) alternatives considered; (6) a technology assessment (for information system projects only); (7) a project schedule; (8) project milestones; and (9) an implementation plan (Exh. ES-ADDITIONS-1, at 16-17). Annual programs, also known as blanket programs, consist of projects and work orders that are similar, small, or routine capital jobs performed over the course of a year with costs below the specific project thresholds (Exhs. ES-ADDITIONS-1, at 13; ES-ADDITIONS-11E,

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[67] For most distribution operations projects placed in service between 2016 and 2021, the specific project threshold is $100,000 in direct costs. For distribution operations projects placed in service between 2016 and 2017 in WMA, however, the threshold is $100,000 in total costs. For transmission and shared services projects, the specific project threshold is $500,000 (Exh. ES-ADDITIONS-1, at 34). Effective January 1, 2022, the Company increased the specific project threshold for all distribution operations projects from $100,000 in direct costs to $500,000 in total costs, aligning the requirements of distribution, transmission, and shared services projects (Exhs. ES-ADDITIONS-1, at 20; ES-ADDITIONS-11F at 154). The project authorization form threshold change does not pertain to any capital additions proposed for inclusion in rate base in this proceeding.

at 121). One project authorization form is prepared for the projects under an annual program (Exh. ES-ADDITIONS-11E, at 121).

For the purposes of documentation provision, NSTAR Electric provided several listings of its capital additions, including: (1) a summary of its total capital additions by year; (2) NSTAR Electric's plant in service by year reconciled to the respective FERC Form 1 accounts; and (3) a chronological list of all NSTAR Electric projects and work orders for specific projects with direct charges over $100,000 and blanket work orders/programs, which includes cost estimates, revised estimates, actual direct costs, and cost variances (Exhs. ES-ADDITIONS-1, at 30-32; ES-ADDITIONS-2 & Supp.; ES-ADDITIONS-3 (East) & Supp.; ES-ADDITIONS-3 (West) (Rev.) & (Supp.); ES-ADDITIONS-4 (East) & Supp.; ES-ADDITIONS-4 (West) & Supp.). The Company further organizes its plant additions into the project classifications that reflect distinct documentation requirements, including: (1) specific projects with direct charges over $100,000; (2) blanket work orders/programs with direct charges over $100,000; (3) specific projects over $50,000; (4) blanket programs over $50,000; (5) specific projects under $50,000; (6) blanket work orders and programs under $50,000; and (7) shared services and transmission projects with total costs over $500,000 (Exh. ES-ADDITIONS-1, at 27). To support the costs of the capital additions included in these listings, the Company provided copies of the project authorization forms,

supplemental project authorization forms,[68] variance analyses, delegate of authority approvals, and closing reports (Exhs. ES-ADDITIONS-1, at 33; ES-ADDITIONS-5 & Supp.).

3. Positions of the Parties

The Company argues that it has properly supported the net plant-in-service through December 31, 2021, with actual computations and thousands of pages of supporting documentation (Company Brief at 292). According to the Company, the supporting documentation includes project cover sheets, approved amounts, actual costs, cost variance information, and closure papers (Company Brief at 292, citing Exhs. ES-ADDITIONS-1, at 30-33; ES-ADDITIONS-4 (East) and (West) & Supps.; ES-ADDITIONS-5 & Supp.; ES-ADDITIONS-7 & Supp.; ES-ADDITIONS-12(b)). NSTAR Electric contends that the record demonstrates that the Company's capital additions submitted for approval in this case are prudently incurred and used and useful in providing service to customers (Company Brief at 292). Additionally, the Company argues that its capital budgeting and authorization process assures cost containment (Company Brief at 294, citing Exh. ES-ADDITIONS-1, at 12-18). Thus, NSTAR Electric asserts that its capital projects through December 31,

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68 The Company requires supplemental project authorization forms when project costs exceed or are expected to exceed the initially authorized budgeted amount by thresholds set based on the size of the project (Exh. ES-ADDITIONS-1, at 17-18).

2021, should be included in rate base (Company Brief at 300). No other party commented on the prudence of NSTAR Electric's plant additions on brief.[69]

4. Standard of Review

For costs to be included in rate base, the expenditures must be prudently incurred, and the resulting plant must be used and useful to ratepayers. Western Massachusetts Electric Company, D.P.U. 85-270, at 20 (1986). The prudence test determines whether cost recovery is allowed at all, while the used and useful analysis determines the portion of prudently incurred costs on which the utility is entitled to a return. D.P.U. 85-270, at 25-27.

A prudence review involves a determination of whether the utility's actions, based on all that the utility knew or should have known at that time, were reasonable and prudent in light of the extant circumstances. Such a determination may not properly be made on the basis of hindsight judgments, nor is it appropriate for the Department merely to substitute its own judgment for the judgments made by the management of the utility. Attorney General v. Department of Public Utilities, 390 Mass. 208, 229-230 (1983). A prudence review must be based on how a reasonable company would have responded to the particular circumstances and whether the company's actions were in fact prudent in light of all circumstances that were known, or reasonably should have been known, at the time a decision was made. Boston Gas Company, D.P.U. 93-60, at 24-25 (1993); D.P.U. 85-270, at 22-23; Boston

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69 In Section XIV.A.3 and XIV.B.3 below, we address the Attorney General's position concerning NSTAR Electric's proposal to include costs in rate base associated with the Company's SMART Program and Solar Expansion Program investments.

Edison Company, D.P.U. 906, at 165 (1982). A review of the prudence of a company's actions is not dependent upon whether budget estimates later proved to be accurate but rather upon whether the assumptions made were reasonable, given the facts that were known or that should have been known at the time. Massachusetts-American Water Company, D.P.U. 95-118, at 39-40 (1996); D.P.U. 93-60, at 35; Fitchburg Gas and Electric Light Company, D.P.U. 84-145-A at 26 (1985).

The Department has cautioned utility companies that, as they bear the burden of demonstrating the propriety of additions to rate base, failure to provide clear and cohesive reviewable evidence on rate base additions increases the risk to the utility that the Department will disallow these expenditures. Massachusetts Electric Company, D.P.U. 95-40, at 7 (1995); D.P.U. 93-60, at 26; The Berkshire Gas Company, D.P.U. 92-210, at 24 (1993); Metropolitan District Commission v. Department of Public Utilities, 352 Mass. 18, 24 (1967). In addition, the Department has stated that:

> In reviewing the investments ...that were made without a cost benefit analysis, the [c]ompany has the burden of demonstrating the prudence of each investment proposed for inclusion in rate base. The Department cannot rely on the unsupported testimony that each project was beneficial at the time the decision was made. The [c]ompany must provide reviewable documentation for investments it seeks to include in rate base.

D.P.U. 92-210, at 24.

5. Analysis and Findings

To demonstrate its cost control efforts, NSTAR Electric provided information regarding its capital planning and authorization process and project documentation, which included the Company's current and previous project authorization policies and corresponding

levels of documentation by project type and dollar threshold, as described above (Exhs. ES-ADDITIONS-1, at 32; ES-ADDITIONS-5). In addition, the Company responded to several Department information requests seeking more information on and clarification of the supporting documentation (e.g., Exhs. DPU 6-1 through DPU 6-10; DPU 17-1 through DPU 17-8; DPU 47-1 through DPU 47-9). Further, in addition to maintaining the project documentation required by the project authorization policy, the Company's project managers review invoices and labor costs charged to projects monthly to ensure that all associated costs are properly charged and senior management reviews the scope, size, design, and status of each ongoing project monthly (Exhs. ES-ADDITIONS-1, at 22-25; AG 9-4).

Based on our review of the Company's testimony, policies, and documentation, the Department finds that NSTAR Electric's cost control measures were reasonable and appropriate.[70] In addition, the record evidence demonstrates that the project costs associated with the Company's plant additions through December 31, 2021, were prudently incurred and

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[70] As noted above, the Company revised its project authorization form threshold for specific projects from $100,000 in direct costs to $500,000 in total costs effective January 1, 2022. As there are no project costs subject to the new policy included in the Company's rate base and, therefore, no basis in this proceeding upon which to consider the impact of the Company's policy change, nothing in this Order shall be construed as a finding or determination on the reasonableness or appropriateness of the revised project authorization form threshold. The Department cautions NSTAR Electric that, while its project authorization form threshold has increased, projects of lower values remain subject to scrutiny and the requirement that a company maintain adequate documentation to support the prudence of its capital additions. D.P.U. 14-150, at 54-55.

the resulting plant additions are used and useful in providing service to ratepayers. As such, the Department allows these investments in the Company's plant in service.

6. Conclusion

Based on our findings above, the Department finds that the costs of NSTAR Electric's plant additions were prudently incurred, and the resulting plant is used and useful in providing service to the Company's customers. The Department allows a net plant balance of $5,095,400,897. The allowed net plant balance reflects adjustments pursuant to Section XV.C.2 below and is shown on Schedule 4 below.

C. Cash Working Capital Allowance

1. Introduction

The purpose of conducting a cash working capital lead-lag study is to determine a company's "cash in-cash out" level of liquidity in order to provide the company an appropriate allowance for the use of its funds. Western Massachusetts Electric Company, D.P.U. 87-260, at 22-23 (1988). Such funds are either generated internally or through short-term borrowing. See D.P.U. 96-50 (Phase I) at 26. Department policy permits a company to be reimbursed for costs associated with the use of its funds and for the interest expense incurred on borrowing. D.P.U. 96-50 (Phase I) at 26; D.P.U. 87-260, at 22. The Department requires all electric and gas companies serving more than 10,000 customers to conduct a fully developed and reliable O&M lead-lag study. Fitchburg Gas and Electric Light Company, D.P.U. 11-01/D.P.U. 11-02, at 164 (2011). In the event that the lead-lag factor is not below 45 days, a company will face a high burden to justify the reliability of

such a study and the reasonableness of the steps the company has taken to minimize all factors affecting cash working capital requirements within its control, such as the collections lag. D.P.U. 11-01/D.P.U. 11-02, at 164.

2. Company Proposal

NSTAR Electric conducted a lead-lag study to determine its cash working capital requirements (Exhs. ES-REVREQ-1, at 147; ES-REVREQ-5). Consistent with the lead-lag study approved in D.P.U. 17-05, at 121, the cash working capital associated with purchased power expense will be recovered through the Company's basic service cost adjustment provision, and the cash working capital associated with other operating expenses will be recovered through inclusion in the Company's rate base (Exh. ES-REVREQ-1, at 147). Each component uses revenue lag days and expense lead days to determine the cash working capital requirement (Exh. ES-REVREQ-1, at 148). NSTAR Electric conducted its lead-lag study using in-house personnel to update the net lag days associated with each component of its proposed cash working capital allowance (Exh. ES-REVREQ-1, at 147-156).

NSTAR Electric calculated a revenue lag to be used in both the O&M and basic service cash working capital net lag factors. The revenue lag consists of a "meter reading or service lag," "collection lag," and a "billing lag" (Exh. ES-REVREQ-1, at 149). The sum of the days associated with these three lag components is the total revenue lag experienced by NSTAR Electric (Exh. ES-REVREQ-1, at 149). NSTAR Electric calculated a meter reading or service lag of 15.21 days (Exhs. ES-REVREQ-1, at 149; ES-REVREQ-5, Sch. WC-2, at 1). This lag was derived by dividing the number of billing days in the test year by twelve

months and then in half to arrive at the midpoint of the monthly service periods (Exhs. ES-REVREQ-1, at 149; ES-REVREQ-5, Sch. WC-2, at 1). The collection lag, which reflects the time delay between the mailing of customer bills and the receipt of the billing revenues from customers, totaled 26.00 days (Exhs. ES-REVREQ-1, at 149-150; ES-REVREQ-5, Sch. WC-2, at 1). The collection lag was obtained by dividing the average daily accounts receivable balance by the average daily revenue amount to arrive at the collection lag (Exhs. ES-REVREQ-1, at 150; ES-REVREQ-5, Sch. WC-2, at 1). Finally, NSTAR Electric applied a billing lag of one day, based on the fact that most of its customers are billed the day after meters are read (Exhs. ES-REVREQ-1, at 150; ES-REVREQ-5, Sch. WC-2, at 1).[71] Based on the foregoing, NSTAR Electric calculated a total revenue lag of 42.21 days by adding the number of days associated with each of the three revenue lag components (Exhs. ES-REVREQ-1, at 151; ES-REVREQ-5, Sch. WC-2, at 1).

NSTAR Electric's O&M cash working capital is comprised of O&M expense, payroll taxes, and property taxes (Exh. ES-REVREQ-1, at 152). NSTAR Electric pays these expenses to finance the activities conducted in service to customers before the Company receives payment from customers for those services (Exh. ES-REVREQ-1, at 152). To calculate the O&M expense lead period, NSTAR Electric disaggregated its O&M expense into eight major cost categories: net payroll; regulatory commission expenses; corporate insurance; other O&M; property taxes; FICA & Medicare; federal unemployment tax; and

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[71] NSTAR Electric made no adjustment in the lead-lag study to account for customers for which additional time is required to process bills (Exh. ES-REVREQ-1, at 150).

state unemployment tax (Exhs. ES-REVREQ-1, at 153; ES-REVREQ-5, Sch. WC-4). NSTAR Electric reviewed test-year payments and calculated the lead days for each category based on either all payments or a sampling of payments (Exh. ES-REVREQ-1, at 153). Once NSTAR Electric determined lead days for each category, it used the sum of the lead days weighted by dollars to arrive at an O&M expense lead of 9.27 days (Exh. ES-REVREQ-5, Sch. WC-4). NSTAR Electric then subtracted the expense lead of 9.27 days from the revenue lag of 42.21 days to produce a net O&M expense lag of 32.95 days (Exhs. ES-REVREQ-1, at 155; ES-REVREQ-5, Sch. WC-1). NSTAR Electric derived an O&M expense cash working capital factor of 9.03 percent by dividing the net lag days of 32.95 by 365 days (Exh. ES-REVREQ-5, Sch. WC-1). The Company multiplied this factor by the total costs applicable to cash working capital[72] of $608,860,793 to calculate a cash working capital allowance of $54,964,283 (Exhs. ES-REVREQ-1, at 155; ES-REVREQ-2, Sch. 34 (Rev. 4)).

3. Positions of the Parties

On brief, NSTAR Electric summarizes its lead-lag study calculations and cash working capital requirements and asserts that the Company's calculations are consistent with Department precedent (Company Brief at 139-141). No other party addressed NSTAR Electric's proposed cash working capital calculations.

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[72] These costs are comprised of total O&M expense, less uncollectible accounts, plus taxes other than income taxes (Exh. ES-REVREQ-2, Sch. 34 (Rev. 4)).

4. Analysis and Findings

The Department has reviewed the evidence in support of NSTAR Electric's lead-lag study, and we conclude that NSTAR Electric properly calculated the total revenue lag of 42.21 days to be applied to both the O&M and basic service expense leads (Exhs. ES-REVREQ-1, at 151; ES-REVREQ-5(a), Sch. WC-2, at 1). Further, the Department finds that NSTAR Electric properly calculated the O&M expense lead of 9.27 days and the resulting net lag of 32.95 days (Exhs. ES-REVREQ-1, at 155; ES-REVREQ-5(a), Schs. WC-1, WC-4). NSTAR Electric's proposed O&M net lag factor of 32.95 days is lower than the Department's 45-day convention (Exhs. ES-REVREQ-1, at 155; ES-REVREQ-5(a), Sch. WC-1). Additionally, we find that NSTAR Electric's decision to perform a lead-lag study with in-house personnel was a cost-effective means to determine its cash working capital requirement (Exh. ES-REVREQ-1, at 147). See Bay State Gas Company, D.P.U. 12-25, at 97 (2012). For these reasons, the Department accepts NSTAR Electric's lead-lag study and the resulting O&M cash working capital factor of 9.03 percent (32.95 days/365 days).

Application of the O&M cash working capital factor of 9.03 percent to the level of O&M and taxes other than income tax expense authorized by this Order produces a cash working capital allowance of $51,347,443. The derivation of this cash working capital allowance is provided in Schedule 6 of this Order.

D. Accumulated Deferred Income Taxes

1. Introduction

NSTAR Electric proposes an ADIT balance of $744,331,898, comprising its total ADIT balance of $1,266,840,909, less: (1) $513,020,802 in ADIT associated with transmission service; (2) $4,368,022 in ADIT related to grid-modernization-related investments; and (3) $5,120,187 in ADIT associated with solar investments at the end of 2021 (Exh. ES-REVREQ-2, Sch. 1, at 4, Sch. 32 (Rev. 4)).[73]

The Company's proposed ADIT balance includes property- and non-property-related ADIT (Exhs. ES-REVREQ-3, WP 32 (Rev. 4); AG 4-4; AG 24-3). Initially, the Company's non-property-related ADIT included a debit balance of $19,268,711 in ADIT associated with what the Company identifies as "other pension expense" (Exhs. AG 13-8; AG 21-6). Of this amount, $3,435,606 was associated with accelerated pension contributions; $298,750 was associated with transmission-related pension expense; ($6,123) was associated with amortization of plan loss; and $15,540,478 was associated with a reclassification of property- and non-property-related ADIT that the Company represents was required for financial reporting purposes in compliance with Accounting Standards Update ("ASU") 2017-07 (Exhs. ES-RR/CCP/Comp-Rebuttal-1, at 38; AG 21-6; Tr. 1, at 122-124).

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[73] In its initial filing, NSTAR Electric proposed an ADIT balance of $733,301,500 based on an adjusted test-year-end balance that included ADIT associated with estimated plant additions during 2021 (Exhs. ES-REVREQ-1, at 146; ES-REVREQ-2, Sch. 1, at 4, Sch. 32). During the proceeding, NSTAR Electric updated all of its rate base line items to reflect balances as of December 31, 2021 (Exh. ES-REVREQ-2, Sch. 1, at 4, Sch. 32 (Rev. 1)).

The Company subsequently revised its proposed "other pension expense" ADIT debit balance amount from $19,268,711 to $3,605,623 by removing the reclassified amount of $15,540,478 from the calculation and revising the remaining amounts as follows: $3,509,996 associated with accelerated pension contributions; $103,087 associated with transmission-related pension expense; and ($7,460) associated with amortization of plan loss (Exh. AG 24-5).

2. Positions of Parties

a. Attorney General

The Attorney General contends that the Company has not explained why its ADIT balances associated with "other pension expense" should be included in rate base and, therefore, did not justify including in rate base the proposed debit balance of $3,509,996 in ADIT associated with accelerated pension contributions (Attorney General Brief at 181-183, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 38; AG 21-6; AG 24-5; Attorney General Reply Brief at 46-47).[74] The Attorney General argues that related to "other pension expense" ADIT should be excluded from rate base, and she calculates a rate base adjustment of $2,448,102[75] based on the Company's allocation to its distribution operations (Attorney

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[74] The Attorney General pointed out that the only significant remaining item to decrease the Company's proposed ADIT is $3,509,996 while the rest of the items are either eliminated after her recommended adjustment or are immaterial (Attorney General Reply Brief at 47).

[75] In her rebuttal testimony, Attorney General calculated the adjustment as $2,361,907 (Exh. AG-DJE-Surrebuttal-1, Sch. DJE-3S).

General Brief at 181-183, citing Exhs. AG-DJE-1, at 12-14; AG 24-5; Attorney General Reply Brief at 46-47).

In support of her position, the Attorney General contends that while NSTAR Electric initially proposed the inclusion of $15,540,478 in its "other pension expense" balance based on the requirements of ASU 2017-07, the Company properly removed it, but still did not sufficiently explain the remaining ADIT items associated with "other pension expense" (Attorney General Brief at 182, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 38; AG 24-5; Attorney General Reply Brief at 47). More specifically, the Attorney General asserts that NSTAR Electric does not attempt to explain or justify the inclusion in rate base of the remaining $3,509,996 "other pension expense" associated with accelerated pension contributions, and instead offers what the Attorney General considers to be an irrelevant description of the elements of its pension adjustment mechanism ("PAM") (Attorney General Reply Brief at 47 & n. 24). According to the Attorney General, the list of PAM elements is irrelevant to the issue of whether it is appropriate to include in rate base the ADIT related to accelerated pension contributions (Attorney General Reply Brief at 47 & n. 24).

b. Company

The Company argues that it adequately explained that the remaining ADIT items related to other pension expense are not recovered through the PAM, and, therefore, these items are appropriately included in the base distribution ADIT (Company Brief at 221-222, citing Exhs. AG 21-6; AG 24-5; Tr. 1, at 122-125; Company Reply Brief at 64). First, regarding the $3,509,996 in ADIT associated with accelerated pension contribution, the

Company contends that it does not recover contributions to the pension plan through the PAM, and instead, it recovers only actual pension and PBOP O&M-related costs (Company Brief at 222, citing Exhs. ES-RDC-6, Sch. 2; AG 24-5). Further, the Company claims that because it recovers carrying charges on the pension and PBOP prepaid or liability balances net of deferred taxes through the PAM, pension-related contributions are not recoverable through the PAM (Company Brief at 222; Company Reply Brief at 64). In addition, NSTAR Electric asserts that because a portion of its pension and PBOP costs are capitalized, there would be an associated ADIT included in rate base (Company Brief at 221, citing Tr. 1, at 122-125).

Next, the Company argues that the amount of ADIT related to "amortization of plan losses" is included in base distribution ADIT because it is not recovered through the PAM (Company Brief at 222; Company Reply Brief at 65). Finally, the Company asserts that amounts attributable to "transmission" represent unadjusted test-year amounts that are further adjusted in its revenue requirement workpapers (Company Brief at 221-222, citing Exh. ES-REVREQ-3, WP 32, Cols. (F), (H); Company Reply Brief at 65). Therefore, NSTAR Electric contends that its transmission-related ADIT would be adjusted twice if the Department adopts the Attorney General's recommended adjustment (Company Brief at 222; Company Reply Brief at 65).

3. Analysis and Findings

Deferred income taxes arise because of the differences between the tax and book treatment of certain transactions, including the use of accelerated depreciation and the

treatment of certain operating expenses for income tax purposes. Fitchburg Gas and Electric Light Company, D.T.E. 99-118, at 33 (2001); Essex County Gas Company, D.P.U. 87-59, at 27 (1987). This difference accumulates and becomes a source of interest-free funds provided by ratepayers and available to the utility to further invest until it is needed to fund the taxes due and payable in the later years. Therefore, ADIT represents an offset to rate base. D.P.U. 87-59, at 63; AT&T Communications of New England, D.P.U. 85-137, at 31 (1985); Boston Edison Company, D.P.U. 1350, at 42-43 (1983); Boston Edison Company, D.P.U. 18200, at 33-34 (1975).

Regarding the Company's revised "other pension expense" ADIT debit balance, if an expense has been deferred on the utility's books and ratepayers were not burdened with the costs, the expense does not exist for ratemaking purposes. Commonwealth Electric Company, D.P.U. 89-114/90-331/91-80 (Phase One) at 24-30 (1991); Massachusetts Electric Company, D.P.U. 89-194/195, at 66 (1990). As such, merely categorizing the deferred income taxes as "other pension expenses" that are not recovered through the PAM does not automatically justify their inclusion in the Company's distribution-related rate base. Therefore, in this instance, the Department examines each item associated with the Company's reported other pension expense ADIT debit balance.

First, the Department finds that the Company has appropriately excluded the debit balance of $103,087 in transmission-related other pension expense ADIT from its proposed ADIT (Exhs. ES-REVREQ-3, WP 32 (Rev. 4); AG 24-5). Next, the Department examines the amortization of pension plan loss related ADIT balance of ($7,460) (Exh. AG 24-5).

According to the Company's annual returns filed to the Department, NSTAR Electric's defined pension costs are accounted for in accordance with accounting guidelines, and this treatment is consistent with the Department-approved PAM (Exh. AG 1-2, Att. (1)(d) at 100).[76] Moreover, this liability or asset is remeasured annually and amortized as the actuarial gains and losses and net periodic benefit cost for the pension, which is consistent with the provisions set forth in the PAM (Exh. AG 1-2, Att. (1)(d) at 100). See NSTAR Electric Company and NSTAR Gas Company, D.P.U. 21-132 (2021). The financial statements of the Company's Annual Returns filed with the Department also note that the unamortized portion of above-mentioned liability or asset is amortized through accumulated other comprehensive income to "Other Income" (Exh. AG 1-2, Att. (1)(d) at 134). The record also shows that the Company recorded the net deferred tax asset as of December 31, 2020 (Exh. AG 1-2, Att. (1)(d) at 134). Through this reclassification process, the Company recognizes the defined pension plan related gain or loss annually. In addition, the record shows that NSTAR Electric recorded other income increase of $5.8 million in 2020 and $10.9 million in 2021 from PAM (Exh. AG 1-2, Att. (1)(d) at 60; AG 1-2 (Supp.), Att. (1)(d) at 61). Moreover, the PAM increases the Company's overall earnings for financial reporting purposes though increasing "Other Income" to meet its pension obligation

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76 Specifically, the liability or asset recorded to recognize the funded status of the Company's retiree benefit plans is offset by a regulatory asset or liability in the case of a benefit plan asset in lieu of a charge to Accumulated Other Comprehensive Income/(Loss), reflecting ultimate recovery from customers through rates (Exh. AG 1-2, Att. (1)(d) at 134).

(Exh. AG 1-2, Att. (1)(d) at 45, 57). Based on the evidence discussed above, there is insufficient information to support the pension plan loss ADIT (Exh. AG 1-2, Att. (1)(d)). Further, the Company neither explained its pension plan loss nor provided justification for inclusion of other pension expense ADIT in rate base ADIT other than it is not recovered through the PAM (Exhs. AG 21-6; ES-RR/CPP/Comp-Rebuttal-1, at 38; Tr. 1, at 122). Therefore, the Department declines to include the ADIT for pension plan loss in the Company's ADIT balance.

Finally, the Department addresses whether the ADIT debit balance of $3,509,996 associated with accelerated pension contributions should be included in rate base. According to the Company, the reason this ADIT balance needs to be included in rate base is because it is not recoverable in the PAM (Exhs. AG 21-6; Company Brief at 222). The Company, however, has not explained the costs associated with accelerated pension contributions that appear in the record in this proceeding (Exhs. AG 21-6; AG 24-5; Tr. 1, at 122).[77] While the label "accelerated pension contributions" suggests increased amount of pension contributions, it does not provide the reason in context such as the triggers of these accelerated payments and whether they are burdens of the customers. Therefore, the Department finds that the Company has not provided clear and cohesive reviewable evidence

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[77] For example, the Company provided information about accelerated share-based compensation and provided the ADIT amount attributable to the CEO and CFO who were vested as of January 1, 2021, according to the Company's long-term incentive plan (RR-DPU-25 & Att.). The Company could have provided similar information on its executive pension contributions policies to support its proposed accelerated pension contributions ADIT.

to support the ADIT associated with accelerated pension contributions. In proceedings brought under G.L. c. 164, § 94, the petitioning utility bears the burden of proof by presenting a clear and reasonable analysis. D.T.E. 99-118, at 7, citing Fryer v. Department of Public Utilities, 374 Mass. 685, 690 (1978); Fitchburg Gas and Electric Light Company v. Department of Public Utilities, 375 Mass. 571, 578-579 (1978); see also Metropolitan District Commission, 352 Mass. 18, 24.[78] Therefore, the Department disallows the inclusion of ($7,460) associated with the accelerated pension contributions in the Company's ADIT balance.

Based on the evidence, the ADIT amounts reviewed above are the unadjusted balance at the end of 2021 (Exhs. ES-REVREQ-3, WP 32 (Rev. 4); AG 4-4; AG 4-5; AG 13-8; AG 24-3; AG 24-4; AG 24-5). The unadjusted disallowance totals $3,502,536 (i.e., $3,509,996 + ($7,460)). The Department will derive the representative amount of this total attributable to transmission expense (Exh. ES-REVREQ-3, WP 32 (Rev. 4)). This is accomplished by taking the rate-year total non-property rate base ADIT of $102,452,015, divided by the total adjusted test-year ADIT of $129,108,171 to derive a factor of 79.35 percent reflecting the portion of ADIT net of that related to transmission

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78 The burden of proof is the duty imposed upon a proponent of a fact whose case requires proof of that fact to persuade the factfinder that the fact exists or, where a demonstration of non-existence is required, to persuade the factfinder of the non-existence of that fact. D.T.E. 03-40, at 52; D.T.E. 01-56-A at 16; D.T.E. 99-118, at 7.

(Exh. ES-REVREQ-3, WP 32 (Rev. 4)).[79] Based on the above, the unadjusted disallowance total of $3,502,536 multiplied by the factor of 79.35 percent, results in an adjusted disallowance amount of $2,779,262. Accordingly, the Department increases the Company's rate base ADIT by $2,779,262.

VII. OPERATION AND MAINTENANCE EXPENSES

A. Employee Compensation and Benefits

1. Introduction

When determining the reasonableness of a company's employee compensation expense, the Department reviews the company's overall employee compensation expense to ensure that its compensation decisions result in a minimization of unit-labor costs. Boston Gas Company, Essex Gas Company, and Colonial Gas Company, D.P.U. 10-55, at 234 (2010); D.P.U. 96-50 (Phase I) at 47; Cambridge Electric Light Company, D.P.U. 92-250, at 55 (1993). This approach recognizes that the different components of compensation (e.g., wages and benefits) are, to some extent, substitutes for each other and that different combinations of these components may be used to attract and retain employees. D.P.U. 92-250, at 55. In addition, the Department requires a company to demonstrate that its total unit-labor cost is minimized in a manner supported by its overall business strategies. D.P.U. 92-250, at 55.

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[79] The total adjusted test-year ADIT is derived from the unadjusted test-year amount minus the non-rate base ADIT (Exh. ES-REVREQ-3, WP 32, Cols. (D), (E), (H) (Rev. 4)).

A company is required to provide a comparative analysis of its compensation expenses to enable a determination of reasonableness by the Department. D.P.U. 96-50 (Phase I) at 47. The Department evaluates the per-employee compensation levels, both current and proposed, relative to the companies in the utility's service territory and utilities in the region that compete for similarly skilled employees. D.P.U. 96-50 (Phase I) at 47; D.P.U. 92-250, at 56; Bay State Gas Company, D.P.U. 92-111, at 103 (1992); Massachusetts Electric Company, D.P.U. 92-78, at 25-26 (1992).

NSTAR Electric's employee compensation program is based on a total rewards philosophy and includes base pay, variable compensation, and employee benefits (Exh. ES-SL-1, at 3-6). During the test year, NSTAR Electric booked $164,257,262 net of capitalization in payroll expense for union and non-union personnel, including base wages of $144,810,736 and overtime pay of $19,446,526 (Exh. ES-REVREQ-2, Sch. 10, at 4-5 (Rev. 4)). After a normalization adjustment and removal of transmission-related costs, the Company proposed a total test-year adjusted union and non-union payroll expense of $144,958,862 (Exh. ES-REVREQ-2, Sch. 10 (Rev. 4)). NSTAR Electric proposes to increase its union and non-union payroll expense by $13,138,311, which is net of a rate-year transmission increase allocation of $1,772,843 (see Exh. ES-REVREQ-2, Sch. 10 (Rev. 4)).

2. Non-Union Wages

a. Introduction

NSTAR Electric proposes to increase the test-year adjusted non-union payroll expense based on: (1) a non-union wage increase of three percent effective April 1, 2021; (2) a

non-union wage increase of three percent effective April 1, 2022; and (3) a non-union wage increase of three percent effective April 1, 2023 (Exhs. ES-SL-1, at 12; ES-REVREQ-2, Sch. 10, at 3, 4 (Rev. 4)).

The Company determined its non-union wage increases based on a comparative analysis of non-union base salaries and total compensation against median base salaries and total compensation in the energy/utility and general industry sectors in the Northeast, using studies performed by Towers Watson (Exhs. ES-SL-1, at 13-16; ES-SL-5; ES-SL-6). The Company also analyzed whether its actual and proposed merit wage increases were in line with the market by surveying the actual and projected wage increases in the energy/utility and general industry sectors (Exhs. ES-SL-1, at 14, 23; ES-SL-7). In addition, the Company provided a historical comparison of non-union base wage increases to union base wage increases (Exhs. ES-SL-1, at 21; ES-SL-5).

b. Positions of the Parties

NSTAR Electric asserts that its non-union employees' compensation costs are reasonable because the Company establishes the base pay for each position in NSTAR Electric and ESC against similar jobs at other employers in the same competitive market (Company Brief at 225, citing Exhs. ES-SL-1, at 10; ES-SL-5; ES-SL-6; ES-SL-7). The Company claims to set the base pay range between 90 percent and 110 percent of the median market rate for its managers to differentiate base compensation among employees with varied skills, experiences, and level of responsibility (Company Brief at 225, citing Exh. ES-SL-1, at 11). The Company also contends that its job-scope level structure along with base pay

provides a total cash compensation that is competitive to the energy/utility and general industry sectors (Company Brief at 222-223, 225, citing Exhs. ES-SL-1, at 4; AG 8-75; AG 8-78; AG 8-78; DPU 22-1; DPU 22-2; DPU 22-3; DPU 22-4; DPU 61-1; DPU 61-3; RR-DPU-23; RR-DPU-24; RR-DPU-25; RR-DPU-28; Tr. 5, at 506-507; Tr. 6 at 643, 645-646, 648-650). According to the Company, increases to base pay may take place through merit increases, promotions, progressions on job-scope levels, and market adjustment when deemed necessary (Company Brief at 225-226). With respect to the 2023 payroll increase to non-union employees, the Company claims that management made a commitment to provide the raise on April 1, 2023 (Company Brief at 226, citing RR-DPU-50). Based on these considerations, the Company asserts that it has demonstrated the non-union employee compensation is reasonable and, therefore, should be approved (Companies Brief at 225). No other party addressed this issue on brief.

c. Analysis and Findings

The Department has reviewed the test-year payroll amount and we find that it is verifiable and provides an appropriate basis upon which the Company developed the proposed rate-year non-union payroll expense (Exhs. ES-REVREQ-2, Sch. 10, at 2, 4-5 (Rev. 4); DPU 18-8, Atts. (a), (b); DPU 18-9 & Att.; DPU 40-7 & Att.). The Department's well-established standard for post-test year non-union payroll adjustments requires a company to demonstrate that: (1) the non-union salary increase is scheduled to become effective no later than six months after the date of the Department's Order; (2) if the increase has not occurred, there is an express commitment by management to grant the increase; (3) there is a

historical correlation between union and non-union raises; and (4) the non-union increase is reasonable. Boston Edison Company, D.P.U. 85-266-A/85-271-A at 107 (1986); D.P.U. 96-50 (Phase I) at 42; D.P.U. 95-40, at 21; Fitchburg Gas and Electric Light Company, D.P.U. 1270/1414, at 14 (1983).

Two of the Company's proposed non-union wage increases occurred before the issuance of the Department's Order, one on April 1, 2021, and the other on April 1, 2022 (Exhs. ES-SL-1, at 12; ES-REVREQ-4, Sch. 13). Additionally, on August 2, 2022, the Company provided a management commitment letter stating that at least a three-percent payroll increase for non-union employees will take place for the scheduled wage increase in 2023 (Tr. 6, at 616-617; RR-DPU-50). Based on this information, the Department finds that non-union salary increases are scheduled to become effective no later than six months after this Order, and there is a commitment by management to grant the 2023 increase that has not yet occurred.

In addition, Eversource provided a historical correlation of non-union and union wage increases and demonstrated that it has awarded non-union and union pay increases every year since 2013 (Exh. AG 1-41, Att.). Between 2013 and 2020, union wage increases were between 2.5 percent and 3.25 percent, and non-union wage increases were 3.0 percent (Exh. AG 1-41, Att.). Based on this information, the Department finds that a sufficient correlation exists between union and non-union wage increases. See Fitchburg Gas and Electric Light Company, D.P.U. 07-71, at 76 (2008); Essex County Gas Company, D.P.U. 85-59-A at 18 (1988).

With respect to the reasonableness of the non-union wage increases, the Company annually reviews their current and projected salary levels against external energy/utility companies and the general industry to determine if they are competitive to the market median (Exh. ES-SL-1, at 13; Tr. 6, at 618). Specifically, NSTAR Electric compared its current and projected annual base salaries for non-union employees against median annual salaries for comparable positions in the Northeast by using survey data from a Towers Watson study (Exhs. ES-SL-1, at 14-17; ES-SL-5; ES-SL-6; ES-SL-7; AG 32-4; AG 32-5; AG 32-6). This comparison showed that non-union base salary and total cash compensation are two percent above market median for NSTAR Electric, and one percent above market median for ESC (Exhs. ES-SL-1, at 15-16; ES-SL-5; ES-SL-6). The result of the comparison also demonstrated that the non-union employees merit increase of three percent is consistent with the energy industry practice (Exhs. ES-SL-1, at 17-19; ES-SL-7; AG 32-10, Att. at 37). The Department finds that the Company has demonstrated that its total proposed compensation is competitive with the market median and, therefore, is reasonable.

Based on the above, the Department finds that Eversource has demonstrated: (1) non-union salary increases are scheduled to become effective no later than six months after the Department's Order; (2) there is an express management commitment to grant a three percent non-union wage increase that is scheduled to occur after the date of this Order; (3) there is a historical correlation between union and non-union payroll increases; and (4) the non-union wage increases are reasonable. Accordingly, we allow the Company's adjusted non-union payroll expense.

3. Union Wages

a. Introduction

NSTAR Electric proposes to increase the test-year adjusted union payroll expense based on: (1) Local 12004 union wage increases of three percent effective April 1, 2021, April 1, 2022, and April 1, 2023; (2) Local 369 union wage increases of three percent effective June 2, 2021, June 2, 2022, and June 2, 2023; and (3) Local 455 union wage increases of three percent effective October 1, 2021, and October 1, 2022 (Exhs. ES-SL-1, at 10; ES-REVREQ-2, Sch. 10, at 3, 4 (Rev. 4)).

b. Positions of the Parties

The Company asserts that the union employee wages are primarily negotiated through the collective-bargaining process (Company Brief at 226). Further, NSTAR Electric claims that it determines the competitiveness of the union employees' compensation by analyzing the hourly wages of its union employees against median hourly wages of other Companies' employees in the Northeast (Company Brief at 226, citing Exhs. ES-SL-1, at 8; ES-SL-2). As such, the Company asserts that it has demonstrated its union employees' wages are reasonable and that the Department should approve them (Company Brief at 226). No other party addressed this issue on brief.

c. Analysis and Findings

The Department has reviewed the test-year payroll amount and we find that it is verifiable and provides an appropriate basis upon which the Company developed the proposed rate-year union payroll expense (Exhs. ES-REVREQ-2, Sch. 10, at 2, 4-5 (Rev. 4);

DPU 18-8, Atts. (a), (b); DPU 18-9 & Att.; DPU 40-7 & Att.). The Department's standard for post-test-year union payroll adjustments requires that three conditions be met: (1) the proposed increase must take effect before the midpoint of the first twelve months after the date of the Department's Order; (2) the proposed increase must be known and measurable (i.e., based on signed contracts between the union and the company); and (3) the proposed increase must be reasonable. D.P.U. 11-01/D.P.U. 11-02, at 174; D.P.U. 96-50 (Phase I) at 43; D.P.U. 95-40, at 20; D.P.U. 92-250, at 35.

The Company's proposed union payroll adjustments appropriately include only those increases that have been granted before July 1, 2023, the midpoint of the first twelve months after the Department's Order in this proceeding (Exhs. ES-REVREQ-2 (Rev. 3), Sch. 10, at 3, 4). The union payroll increases that occurred in 2021 and 2022, as well as those scheduled to occur in 2023 are based on signed collective bargaining agreements between the Company and the respective unions (Exhs. ES-SL-1, at 9-10; ES-SL-3; AG 1-41, Att.; AG 1-42, Atts. (c), (f), (i); AG 1-43, Att.). Thus, the Department finds that the proposed union wage increases are known and measurable.

Further, with respect to the reasonableness of the union wage increases, the Company submitted a comparison of their average union wages with other employers in the Northeast (Exhs. ES-SL-1, at 9; ES-SL-2). The analysis provided demonstrates that hourly rates paid to the Company's union employees are comparable to the median hourly rates other employers in the region pay for the union employees (Exhs. ES-SL-2; AG 32-2; AG 32-3).

Thus, we find that the Company has demonstrated the reasonableness of the union wage increases. Accordingly, we allow the Company's adjusted union payroll expense.

4. Incentive Compensation

a. Introduction

NSTAR Electric's incentive compensation expense represents the portion of wages and salaries paid to non-union employees as part of the total cash compensation, and it is paid in March or April for performance in the prior year (Exh. ES-SL-1, at 21-23). During the test year, NSTAR Electric booked $16,503,810 in incentive compensation expense, net of a transmission allocation and a normalizing adjustment (Exh. ES-REVREQ-2, Sch. 11, at 1, 2 (Rev. 4)). NSTAR Electric proposes $9,682,635 for target-level incentive compensation expense in the rate year (Exhs. ES-REVREQ-1, at 70; ES-REVREQ-2, Sch. 11, at 1, 2 (Rev. 4)). Under the Company's proposal, the rate-year amount includes the test-year incentive compensation expense at the target level of $8,877,981 and a payroll escalation adjustment of $804,654 (Exhs. ES-REVREQ-1, at 69; ES-REVREQ-2, Sch. 11, at 2 (Rev. 4); Tr. 14, at 1529).

NSTAR Electric states that the proposed rate-year incentive compensation expense is lower than the test year because the Company: (1) normalized the test-year level of expense to remove out-of-period and non-recurring items; (2) reduced the revenue requirement to reflect incentive compensation at target levels; and (3) removed the cash incentive for both

the chief executive officer ("CEO") and chief financial officer ("CFO"), consistent with the Department's findings in D.P.U. 17-05 and D.P.U. 19-120 (Exh. ES-REVREQ-1, at 68).[80]

b. Positions of the Parties

The Company asserts that its incentive compensation program is designed to award employees based on individual performance against the predetermined goals once the incentive pool is established after reaching its business objectives (Company Brief at 227). NSTAR Electric contends that to ensure its employees are committed to meeting customers' needs, it sets employee performance goals based on providing safe and reliable services at reasonable costs to customers (Company Brief at 227). Further, NSTAR Electric claims that its total compensation approach is designed to be competitive in the energy/utility and general industrial sectors, thus the incentive compensation remains a necessary mechanism for the Company to stay competitive in the labor market (Company Brief at 222, 227). In addition, NSTAR Electric argues that the incentive compensation included in the revenue requirement is at target level despite the payout exceeding the target level, and that the Company has removed the cash incentive compensation attributable to the Company's CEO and CFO consistent with the Department's previous findings in D.P.U. 17-05 and D.P.U. 19-120 (Company Brief at 228). Therefore, the Company asserts that it has demonstrated its

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80 The Department recognizes that Eversource Energy's incentive compensation contains non-cash share-based incentive compensation in addition to the cash incentive compensation (Exh. DPU 61-7; RR-DPU-25). The Department directs the Company to include as part of its proposed revenue requirement in its next base distribution rate case, clearly identifiable information and contemporaneous records on share-based incentive compensation.

incentive compensation expense is reasonable and that the Department should approve it (Company Brief at 227-228). No other party addressed this issue on brief.

c. Analysis and Findings

The Department has traditionally allowed incentive compensation expenses to be included in a utility's cost of service if: (1) the expenses are reasonable in amount, and (2) the incentive plan is reasonably designed to encourage good employee performance. D.P.U. 07-71, at 82-83; D.P.U. 89-194/195, at 34. For an incentive plan to be reasonable in design, it must both encourage good employee performance and result in benefits to ratepayers. D.P.U. 93-60, at 99.

The Department first considers whether the Company's incentive compensation plan is reasonable in design. The record shows that the incentive compensation program for non-union employees is based on individual performance as collaboratively determined by the employee and the employee's supervisor for goals to achieve safety, reliability, and reasonable costs of service to NSTAR Electric's customers (Exh. ES-SL-1, at 22-24; Tr. 6, at 656-667). Each employee's incentive compensation depends on the employee's individual performance and achievement of predetermined goals each year (Exh. ES-SL-1, at 23). Specifically, every February, Eversource Energy holds a compensation committee meeting to review the performance for the previous year and set out the incentive pool available for award (Tr. 6, at 657). An employee's incentive compensation is then tied to the result of the employee's performance review within the team, i.e., an employee can earn up to 200 percent of the target level if the performance review rating is "top achiever," while

another employee on the same team would not receive an incentive award if the performance review rating results in a "did not meet expectations" determination (Exh. ES-SL-1, at 23; Tr. 6, at 665-671).[81] This performance review process creates a competitive environment for employees to commit to meeting their goals of providing safe and reliable services at reasonable costs to customers (Exh. ES-SL-1, at 28; Tr. 6, at 665-667). Therefore, the Department finds NSTAR Electric's incentive compensation plan is reasonable in design.

Next, the Department considers whether the Company's incentive compensation expenses are reasonable in amount. NSTAR Electric asserts that it: (1) reduced the incentive compensation expense to the target level of $8,877,981; and (2) added a payroll escalation adjustment of $804,654 to reflect the rate year expense (Exhs. ES-REVREQ, at 69; ES-REVREQ-2, Sch. 11, at 2 (Rev. 4); Tr. 14, at 1529). According to the Company, test-year incentive compensation at target before transmission adjustment was $9,984,671 (Exh. ES-REVREQ-2, Sch. 11, at 2 (Rev. 4)).[82] However, in response to an information request, the Company provided total incentive compensation payout in 2020 of $9,450,872 (Exh. DPU 61-6, Att.).[83] Thus, although the Company maintains that it has been paying the

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81 A performance review has five levels: top achiever, exceed expectations, meet expectations, improvement needed, and did not meet expectations (Tr. 6, at 670).

82 The $9,984,671 amount excludes the incentive compensation amount of $555,360 for the CEO and CFO (Exhs. ES-REVREQ-2, Sch. 11, at 2 (Rev. 4); DPU 22-4).

83 The total accrual and payout analysis provided by the Company shows that the total payout of incentive compensation in 2020 is the sum of $7,806,768 and $1,644,104 (Exh. DPU 61-6, Att.).

incentive compensation above target every year since 2010, the actual amount paid in 2020 (i.e., $9,450,872) is less than the target level amount it proposes to include in its revenue requirement (i.e., $9,984,671) (Tr. 6, at 629).

The Department has reviewed the record to determine the derivation of the Company's incentive compensation at target level. The Company states that incentive compensation is a percentage of fixed salary (Tr. 6, at 620-621, 663; Tr. 14, at 1529). NSTAR Electric's test-year incentive compensation amount at target, however, is presented in the Company's revenue requirement exhibit as a hard coded number rather than a percentage multiplying by fixed salary (Exh. ES-REVREQ-2, Sch. 11, at 2 (Rev. 4); Tr. 6, at 620-621, 663; Tr. 14, at 1529). NSTAR Electric attributes this presentation to difficulty in producing information based on the various incentive compensation payout percentages applied to different employee levels and employee groups, so the Company instead relies on the test-year booked expense (Tr. 14, at 1525). Similarly, incentive compensation allocated to NSTAR Electric from ESC based on the Company's accounting records through a cost allocation process and not is determined by multiplying the base salary by the target incentive percentage applicable to each position (Exh. AG 1-36 & Att.(a); Tr. 14, at 1511-1528).

Moreover, the Company presented allocated incentive compensation at target for some employees that exceeds 100 percent of the allocated base salary, e.g., incentive compensation at target amount of $3,028 on a base salary of $38; $5,936 on $29; and $6,860 on $1.29 (Exh. AG 1-36, Att. (a), lines 62, 255, 472). In addressing this irregularity, the Company suggested the Department examine the total amount allocated to NSTAR Electric instead of

evaluating individual records, as the allocation method relies on the actual expenses (Tr. 14, at 1517).

Upon examining the evidence, the Department is unable to confirm the accuracy and reasonableness the Company's proposed test-year target level incentive compensation amount. At most, the record shows that the Company's incentive compensation expense is initially budgeted and accrued at target level each year based on percentages of fixed salary, and then adjusted upward around November or December once the mid-year management review determines that the incentive pool will be above the target level (Exhs. AG 1-36, Atts. & Supps.; DPU 22-4, Att.; Tr. 6, at 620-621; 658-659; 663; 668-669). The record, however, does not explain why the total incentive compensation payout is less than the target amount the Company proposes to include in its revenue requirement. Thus, the Department is not convinced that the test-year incentive compensation expense accurately represents the incentive compensation expense at target level. As such, the Department will not rely on the Company's proposed target level of incentive compensation to determine the allowed incentive compensation expense.

In determining the correct incentive compensation expense at target, the Department relies on the Company's derivation method of incentive compensation at target, i.e., multiplying the base salary by the target incentive percentages (Exh. AG 1-36; Tr. 6, at 663; Tr. 14, at 1529). In light of the various target incentive percentages assigned to different level of employees, the Department finds it necessary to calculate a weighted average percentage for NSTAR Electric and ESC respectively in calculating the

representative target level of incentive compensation expense (Tr. 14, at 1524-1525). According to information provided by the Company, the overall weighted average percentage is the sum of each employee category's derived weighted average percentage, i.e., the ratio of number of employees to the number of total employees multiplied by the percentage of the target incentive compensation (see RR-DPU-51 & Atts. (b), (c)). This calculation produces a weighted average of 9.98 percent for NSTAR Electric and 9.47 percent for ESC, and when multiplied by the Department approved non-union employee[84] base salaries for the rate year, $20,565,307 for NSTAR Electric and $55,631,228 for ESC, produce the incentive compensation at target level of $2,052,418 for NSTAR Electric and $5,268,227 for ESC, which total $7,320,695 (Exh. ES-REVREQ-2, Sch. 10, at 3 (Rev. 4); RR-DPU-51 & Atts. (c), (b)).[85] Finally, because base salaries include a transmission portion, the Department adjusts the incentive compensation expense to exclude transmission related expense (Exh. ES-REVREQ-2, Sch. 10, at 2, 5 (Rev. 4)). The transmission-related payroll expense of $21,333,143 divided by the total rate-year payroll expense of $179,430,316 derives the factor of 11.89 percent, and when multiplied by the Department-calculated total incentive compensation at target level of $7,320,695, reflects $870,431 of transmission

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84 The Company offers the incentive compensation plan to non-union employees only (Tr. 14, at 1512-1514; RR-DPU-51, at 1).

85 The Company includes the incentive compensation at target percentage information for employees of NSTAR Electric and ESC and excludes ESC employees whose salaries are never allocated to NSTAR Electric as well as the incentive compensation attributable to the CEO and CFO (Tr. 14, at 1523-1524; RR-DPU-51 & Atts. (b), (c)).

related incentive compensation (Exh. ES-REVREQ-2, Sch. 10, at 2 (Rev. 4)). Therefore, the total distribution related incentive compensation expense at target level is $6,450,264 (Exh. ES-REVREQ-2, Sch. 10, at 2 (Rev. 4)). Accordingly, the Department approves a total incentive compensation expense of $6,450,264 and reduces the proposed incentive compensation by $3,232,371.[86]

5. Employee Health Care Benefits

a. Introduction

NSTAR Electric's health care benefit program includes comprehensive medical, dental, vision, and prescription drug benefits that the Company states are designed to maintain the health of employees and their eligible dependents (Exh. ES-MPS-1, at 4). In conjunction with health benefits, NSTAR Electric also offers wellness programs to help manage and improve employee health, which the Company states helps to moderate health benefit costs over time (Exh. ES-MPS-1, at 4). The Company also sponsors retirement income and health programs to contribute to employees' future financial security (Exh. ES-MPS-1, at 4). The Company states that these benefits are provided in the form of a defined contribution plan and, for a closed group of employees, a defined benefit pension plan (Exh. ES-MPS-1, at 4). Upon retirement, employees who meet certain age and service milestones are also eligible to participate in post-retirement medical plans (Exh. ES-MPS-1, at 4).

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[86] $9,682,635 - $6,450,264 = $3,232,371.

NSTAR Electric presents an adjusted test-year employee benefits expense of $15,617,670, net of capitalization (Exh. ES-REVREQ-2, Sch. 13, at 1 (Rev. 4)). The Company proposes to increase employee benefits expense by $8,119,338 (Exh. ES-REVREQ-2, Sch. 13, at 1 (Rev. 4)). The Company determines the increases through adjustments of two categories of benefits: (1) medical, dental, and vision expense; and (2) expense exclusion related to pension and PBOP (Exh. ES-REVREQ-1, at 71-72). The proposed increases of employee benefits expense are supported by a 4.8 percent and 4.7 percent annual working rate increase for 2021 and 2022 respectively (Exhs. ES-MPS-2; DPU 51-6). A "working rate" represents the per-employee expected insurance claim levels for the following year and is provided by the Company's benefits consultants and external vendor partners, Cigna and Express Scripts (Exhs. ES-DPH-1, at 58; DPU 45-34).

b. Positions of the Parties

NSTAR Electric argues that the Department should approve its employee health care benefits cost because: (1) the proposed costs are reasonable; (2) the Company has taken appropriate steps to control health care expense of the employees; and (3) the post-test-year adjustments based on the working rate are known and measurable (Company Brief at 228-237). No other party addressed this issue on brief.

c. Analysis and Findings

To be included in rates, health care expenses must be reasonable. D.P.U. 92-78, at 29-30. In addition, any post-test-year adjustments to health care expense must be known and measurable. D.T.E. 01-56, at 60; D.P.U. 96-50 (Phase I) at 46; D.P.U. 92-78, at 29;

North Attleboro Gas Company, D.P.U. 86-86, at 8 (1986). Further, companies must demonstrate that they have acted to contain their health care costs in a reasonable, effective manner. D.T.E. 01-56, at 60; D.P.U. 96-50 (Phase I) at 46; Nantucket Electric Company, D.P.U. 91-106/91-138, at 53-54 (1991).

As an initial matter, the Company derives its rate-year employee benefits costs using the number of active employees participating in the benefits program, which effectively excludes costs related to pension/PBOP from distribution rates (Exhs. ES-REVREQ-1, at 71; ES-REVREQ-2, Schs. 8, at 2; 13, at 3 (Rev. 4); DPU 26-3). This treatment is consistent with Department precedent. D.P.U. 17-05, at 324; D.P.U. 14-150, at 155.

Next, the Department finds that NSTAR Electric's employee benefits costs are reasonable, and that the Company has implemented reasonable and effective measures to contain these costs (Exhs. ES-MPS-1, at 8-11; AG 1-52). For example, the Company introduced a high deductible health plan that encourages consumerism (Exhs. ES-MPS-1, at 8; AG 1-52). The Company also offers opt-out credits to those employees who have alternative health care coverage and elect not to participate in the plans (Exh. AG 1-52). Further, NSTAR Electric consolidated medical carriers so over 98 percent of employee claims are on in-network basis that are more cost effective (Exh. ES-MPS-1, at 7). In addition, the Company negotiated a three-year agreement with a single pharmacy benefit manager coupled with step therapy programs, which provides deeper discounts for prescription drugs, lower administration fees, larger rebates, and utilization-management programs such as step therapy program that encourages the use of lower-cost generic

medications (Exh. ES-MPS-1, at 9-10). NSTAR Electric also put its medical and prescription drug programs out to bid to ensure competitive pricing, resulting in all medical plans administered by Blue Cross and Blue Shield of Massachusetts and all prescription drug plans administered by Express Scripts effective January 1, 2019, which yields estimated $1.1 million in savings each year (Exhs. ES-MPS-1, at 11; AG 1-52).

Finally, the Department finds the proposed employee benefits expense based on the working rates developed by the Company's benefits consultant is known and measurable because they are derived from its total plan expense and actual claim data (Exhs. ES-MPS-1, at 11-12; ES-MPS-2; DPU 26-11; DPU 51-6, Att.). The working rates are calculated based on the Company's actual insurance claims and cost trends experienced in the two years prior to the rate year, and, therefore, we conclude that the Company's working rates are sufficiently correlated to its own experience rather than broad-based insurance entities (Exh. DPU 51-6). D.P.U. 18-150, at 241-242; Boston Gas Company and Colonial Gas Company, D.P.U. 17-170, at 103 (2018); D.P.U. 17-05, at 154; D.P.U. 15-155, at 176-177. Based on the foregoing, the Department accepts the Company's proposed health care benefit expenses.

6. Employee Service Awards

a. Introduction

During the test year, the Company recorded $20,727 in employee service awards to residual O&M expense (Exhs. DPU 61-5; AG 8-22, Att.). Under the award program, eligible employees are each presented with a paper certificate and an opportunity to choose a

non-monetary service award gift in recognition of their service (Exh. AG 8-22; Tr. 6, at 676). The value of the award starts at $50 for five years of service and the maximum value is $275 for 50 years of service (Exh. AG 8-22).

b. Positions of Parties

i. Attorney General

The Attorney General argues that NSTAR Electric failed to demonstrate the employee service award provides any direct benefits or value to ratepayers (Attorney General Brief at 125, citing Exh. AG 8-22; Tr. 1, at 87; Tr. 6, at 677; Attorney General Reply Brief at 37). Further, the Attorney General contends that the Company failed to support its claim that employee service awards increase employee retention (Attorney General Brief at 125, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 16–18). In particular, she claims that there is insufficient evidence to establish that selecting a non-cash award from a third-party vendor influences an employee's decision to remain with the Company (Attorney General Brief at 125, citing Tr. 6, at 89).[87] In addition, the Attorney General argues that the Company failed to justify the costs are reasonable even if the employee service awards theoretically benefit ratepayers or are standard in the market (Attorney General Reply Brief at 38). In this regard, the Attorney General notes that the Company does not separately

[87] The Attorney General contends that during the evidentiary hearings, the Company's witness could not recall receiving an award separate from the paper certificate, or even if she went to the vendor website to choose the award (Attorney General Brief at 125, citing Tr. 1, at 89).

identify costs for the paper certificate and the non-cash award (Attorney General Reply Brief at 38, n. 19).

Based on these considerations, the Attorney General asserts that the Company is free to recognize its employees' service to the Company, either with paper certificates or other awards, but ratepayers should not pay for the expense (Attorney General Brief at 126; Attorney General Reply Brief at 38). Accordingly, the Attorney General recommends removing the entire amount of employee service award costs from the Company's proposed cost of service (Attorney General Brief at 126; Attorney General Reply Brief at 38).

ii. Company

The Company argues that Attorney General's claims regarding employee service awards are inaccurate and should be disregarded (Company Brief at 170-173). First, NSTAR Electric contends that the employee service awards are standard in the market and must be viewed as part of a complete compensation and benefits package designed to ensure the Company's offering is competitive (Company Brief at 171-172, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 18; Tr. 1, at 87; Tr. 6, at 678-679). Based on surveys the Company relied upon, it claims that 70 percent of industries offer employee service awards to retain employees (Company Reply Brief at 43, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 16).

Second, NSTAR Electric contends that, contrary to the Attorney General's assertion, the Company has demonstrated that customers benefit from the retention of skilled and highly qualified employees to provide safe and reliable service (Company Reply Brief at 44, citing

Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 16-18; AG 8-22). NSTAR Electric states long-term employees acquire institutional knowledge and share it with newer employees, thereby facilitating the learning curves and ensuring effective and efficient customer assistance (Company Brief at 172). In addition, the Company maintains that it is reasonable and prudent to encourage employees who are approaching retirement age to stay in their positions as part of its standard succession planning (Company Brief at 172).

Finally, NSTAR Electric takes issue with Attorney General's claim that the Company failed to demonstrate the employee service awards have an influence on an employee's decision to remain with the Company (Company Brief at 172-173). In this regard, the Company maintains that its witness testified regarding the importance of being acknowledged for her ten years of work in providing safe and reliable service to customers (Company Brief at 172-173, citing Tr. 1, at 87, 90-91; Tr. 6, at 678-679).

c. Analysis and Findings

The Company bears the burden of demonstrating that proposed employee service award costs benefit Massachusetts ratepayers, are reasonable, and were prudently incurred. D.P.U. 11-01/D.P.U. 11-02, at 323; D.T.E. 03-40, at 140-141; Oxford Water Company, D.P.U. 1699, at 13 (1984). This standard applies whether the expenses were incurred at the parent level or at the service company level. D.T.E. 03-40, at 140-141.

The Company explained that the employee service award program is designed to recognize service, to keep employees engaged, and to retain skilled employees to operate the electric and customer service systems and pass along institutional knowledge to newer

employees (Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 16-18; AG 8-22; Tr. 1, at 87; Tr. 6, at 678). While the prospect of receiving an employee service award alone may not achieve these results, the recognition is part of an overall compensation and benefit package intended attract quality employees who will best serve the Company, and, by extension, customers (Exh. ES-RR/CPP/Comp-Rebuttal-1, at 18; Tr. 1, at 87; Tr. 6, at 678). The Department finds that attracting and maintaining skilled employees ultimately benefits customers through the sustained provision of safe and reliable service (Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 16-18; AG 8-22; Tr. 1, at 87). We are not persuaded by the Attorney General's arguments to the contrary.

Further, the Department finds that the modest costs of the employee service award program are reasonable and prudently incurred (Exhs. DPU 26-5, Att.; DPU 61-5; Tr. 1, at 88). Cf. D.P.U. 10-55, at 454-455 & n.288 (expenditures related to shipping executives' wine collection and private school tuition found to be the type of expenses that would not have met Department standard for recovery). In this regard, given the overall costs, we find that it was unnecessary for the Company to segregate the costs of the paper certificate and the award as a prerequisite for recovery. Based on the foregoing considerations, the Department allows the Company to include $20,727 in its proposed cost of service.

B. Depreciation Expense

1. Introduction

During the test year, NSTAR Electric booked $214,446,872 in depreciation expense (Exhs. ES-REVREQ-1, at 112; ES-REVREQ-2, Sch. 25). The Company initially proposed a

rate-year depreciation expense of $231,820,683, based on the application of proposed accrual rates resulting from its depreciation study to the Company's projected account balances of depreciable plant as of December 31, 2021 (Exhs. ES-REVREQ-1, at 111-114; ES-REVREQ-2, Sch. 1, at 3, Sch. 25). During the proceeding, the Company updated its proposed depreciation expense to $224,693,975 to reflect the most up-to-date balances of plant in service (Exhs. ES-REVREQ-2, Sch. 1, at 3, Sch. 25 (Rev. 4); ES-REVREQ-3, WP 25 (Rev. 4)).

NSTAR Electric's proposed depreciation accrual rates are the result of a depreciation study as of December 31, 2020, for all electric plant (Exhs. ES-JJS-1, at 2, 5; ES-JJS-2, at 6, 9; ES-JJS-3). The Company estimated the service life and net salvage[88] characteristics for depreciable plant accounts, and next used the service life and net salvage estimates to calculate composite remaining lives and annual depreciation accrual rates for each account (Exhs. ES-JJS-1, at 7-8; ES-JJS-2, at 9). To determine service lives, the Company used the retirement rate method to create life tables, which, when plotted, show an original survivor curve that is then compared to Iowa Curves[89] to determine an average service life for each

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88 Net salvage is the resulting difference between the gross salvage of an asset when it is disposed less its associated cost of removal from service (Exh. ES-JJS-1, at 13).

89 Iowa Curves are frequency distribution curves initially developed at the Iowa State College Engineering Experiment Station during the 1920s and 1930s; 18 curve types were initially published in 1935, and four additional survivor curves were identified in 1957 (Exhs. ES-JJS-1, at 9-10; ES-JJS-2, at 15). Boston Edison Company/Cambridge Electric Light Company/Commonwealth Electric Company/Canal Electric Company, D.T.E. 06-40, at 66-67 n. 44 (2006). These curves are widely accepted in determining average life frequencies for utility plant.

plant account (Exhs. ES-JJS-1, at 8-10; ES-JJS-2, at 15, 21). To determine net salvage values, the Company reviewed its actual historical salvage and cost of removal data through 2020 (Exh. ES-JJS-1, at 8, 13-14).

With the exception of general plant assets, the Company relied on the straight-line remaining life method and average service life procedure to determine depreciation accrual rates (Exhs. ES-JJS-1, at 15-16; ES-JJS-2, at 6). For general plant accounts 391.10, 391.20, 393.00, 394.00, 395.00, 397.00, and 389.00, the Company used the straight-line amortization method (Exhs. ES-JSS-1, at 15-16; ES-JJS-3, at 2). Additionally, NSTAR Electric proposed a five-year amortization for its unrecovered reserve (Exhs. ES-JJS-1, at 16; ES-JJS-3, at 2). As part of the depreciation study, the Company also proposed to recover the remaining book value of automated meter reading ("AMR") meters in account 370.10 by year end 2028, to align with the Company's AMI deployment plan and proposal (Exhs. ES-REVREQ-1, at 203; ES-AMI-1, at 21; ES-JJS-1, at 19). To accomplish this, NSTAR Electric proposed a terminal retirement date of 2028, resulting in a proposed accrual rate for account 370.10 of 8.62 percent (Exhs. ES-REVREQ-1, at 203; ES-AMI-1, at 21; ES-JJS-2, at 51, 256; ES-JJS-3, at 1).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Department should reject the Company's proposed depreciation accrual rates and instead accept those proposed by her depreciation witness (Attorney General Brief at 143, citing Exh. AG-DJG-1; Attorney General Reply

Brief at 44). The Attorney General contends that NSTAR Electric underestimates service lives associated with five accounts and asserts that the Company has failed to prove that its depreciation accrual rates are not excessive (Attorney General Brief at 144, 153). The Attorney General argues her proposed depreciation rates are reasonable, based on accepted methodologies, and supported by empirical evidence (Attorney General Brief at 144-145, citing Exh. AG-DJG-1, at 7-9; Attorney Reply Brief at 43-44). Further, the Attorney General rejects the notion that her proposed service lives are only based on mathematical curve fitting, and she contends that while mathematical curve fitting was given primary consideration, visual fitting and professional judgment were also relied upon (Attorney General Reply Brief at 43-44).

Specifically, the Attorney General proposes longer average service lives for accounts 361, 362, 365, 366, and 370.20 (Attorney General Brief at 144, 146-151, 152-153). For Account 361 (Structures and Improvements), Account 362 (Station Equipment), Account 365 (Overhead Conductors and Devices), and Account 366 (Underground Conduit), the Attorney General argues that her proposed curves and average service lives provide a better mathematical fit to the Company's historical retirement data (Attorney General Brief at 146-151, citing Exh. AG-DJG-1, at 17-24; Attorney General Reply Brief at 44). For Account 370.20 (AMI Meters), the Attorney General asserts that a longer average service life of 25 years is more consistent with meter manufacturer and Company representations than NSTAR Electric's proposed average service life of 15 years (Attorney General Brief at 152-153). With respect to Account 370.10 (AMR Meters), the Attorney General proposes

the same curve and average service life determined by the Company's depreciation study; however, she rejects the application of a terminal retirement date of 2028 and argues that the Company's proposal is driven by an incentive to increase cash flow (Attorney General Brief at 151-152).

Finally, the Attorney General argues the Company has not met its burden of demonstrating that its proposed depreciation expense is not excessive (Attorney General Brief at 153). Based on the above arguments, the Attorney General recommends that the Department approve her proposed depreciation accrual rates and reduce the Company's depreciation expense by approximately $17 million (Attorney General Brief at 153, citing Exh. AG-DJG-1, at 4).

b. Company

NSTAR Electric argues its depreciation study was based on historic plant data and informed by supplemental information from management and personnel, field reviews of the Company's property, estimates used by other utilities, and expert judgment (Company Brief at 238-239). NSTAR Electric asserts that the Attorney General relies exclusively on statistical analysis of the historical data and mathematical fitting, and the Company maintains that such exclusive reliance is inconsistent with authoritative depreciation texts (Company Brief at 239, 243-244, 250; Company Reply Brief at 49-50). As such, the Company argues that the Attorney General's proposed service lives and resulting depreciation accrual rates are flawed and should be rejected (Company Brief at 244, 250).

For Account 361.00 (Structures and Improvements), the Company contends its proposed 75-R3 curve is more realistic and representative of future expectations, and that the Attorney General's proposal ignores the change in asset mix from cement block structures to prefabricated steel and modular structures over time (Company Brief at 245). For Account 362.00 (Station Equipment), NSTAR Electric argues the Attorney General's proposal not only ignores more recent data and changes in substation equipment, but that her proposed curve assumes some assets will survive up to 120 years, which the Company claims is unreasonable (Company Brief at 245-256). With respect to Account 365.00 (Overhead Conductors and Devices), the Company asserts the Attorney General's proposed curve is not representative of the underlying assets, claiming her proposed curve unreasonably assumes assets with lifecycles of over 130 years (Company Brief at 246; Company Reply Brief at 50). Moreover, the Company argues the selection of the O1 type curve for Account 365.00 is problematic as it assumes the same level of retirements by age and ignores wear and tear and other influences on asset retirement and replacement (Company Brief at 246-247). Regarding Account 366.00 (Underground Conduit), the Company argues that the insufficient retirement history makes strict mathematical fitting and reliance solely on statistical results irresponsible (Company Brief at 247; Company Reply Brief at 50). Instead, NSTAR Electric contends the Department should maintain the currently approved 73-R3 curve for this account (Company Brief at 247; Company Reply Brief at 50-51).

Regarding the Company's metering accounts, NSTAR Electric avers that a retirement date of 2028 is appropriate and reasonable for Account 370.10 (AMR Meters) because all

AMR assets will be replaced with newer AMI assets by December 31, 2028 (Company Brief at 247-248). NSTAR Electric argues that if the Department rejects the proposed terminal retirement date but approves the Company's AMI plan, the Company would have approximately $55.7 million in stranded costs in 2028 (Company Brief at 248-249, citing Exh. ES-JJS-Rebuttal-1, at 20-21). The Company further contends this would lead to intergenerational inequity, as future customers would have to pay for assets that are no longer providing service (Company Brief at 248-249). For Account 370.20 (AMI Meters), NSTAR Electric argues a 15-year average service life is appropriate based on existing data and what other electric utilities use (Company Brief at 249, citing Exh. AG 25-2, Att. (a) at 7-8; Tr. 2, at 190, 196-197). The Company insists that AMI meters are technologically different than AMR meters and, therefore, they should have different service lives (Company Brief at 249, citing Exhs. AG 25-1; AG 25-2; Tr. 2, at 192-193). Further, NSTAR Electric claims that its proposed average service life for this account is consistent with its experience and industry practice and should be approved (Company Brief at 250). The Company further clarifies that an average service life of 15 years will have some meters lasting up to 28 years, which it claims is consistent with manufacturer representations (Company Brief at 250).

In conclusion, NSTAR Electric asserts that the Department should adopt the Company's proposed composite accrual depreciation rate of 2.91 percent as it is based on a combination of statistical analyses from a depreciation study, application of the depreciation expert's judgment, and current industry standards (Company Brief at 251). NSTAR Electric argues the Attorney General made no effort in her reply brief to rebut the Company's

position and was unable to cite to any evidence that would suggest she relied on anything other than mathematical curve fitting (Company Reply Brief at 49-51).

3. Analysis and Findings

a. Standard of Review

Depreciation expense allows a company to recover its capital investments in a timely and equitable fashion over the service lives of the investments. Fitchburg Gas and Electric Light Company, D.T.E. 98-51, at 75 (1998); D.P.U. 96-50 (Phase I) at 104; Milford Water Company, D.P.U. 84-135, at 23 (1985); D.P.U. 1350, at 97. Depreciation studies rely not only on statistical analysis but also on the judgment and expertise of the preparer. The Department has held that when a company reaches a conclusion about a depreciation study that is at variance with that witness's engineering and statistical analysis, the Department will not accept such a conclusion absent sufficient justification on the record for such a departure. D.P.U. 92-250, at 64; The Berkshire Gas Company, D.P.U. 905, at 13-15 (1982); Massachusetts Electric Company, D.P.U. 200, at 21 (1980).

The Department recognizes that the determination of depreciation accrual rates requires both statistical analysis and the application of the preparer's judgment and expertise. Fitchburg Gas and Electric Light Company, D.T.E. 02-24/25, at 132 (2002); D.P.U. 92-250, at 64. Because depreciation studies rely by their nature on examining historic performance to

assess future events, a degree of subjectivity is inevitable.[90] Nevertheless, the product of a depreciation study consists of specific accrual rates to be applied to specific account balances associated with depreciable property. A mere assertion that judgment and experience warrant a particular conclusion does not constitute evidence. Eastern Edison Company, D.P.U. 243, at 16-17 (1980); D.P.U. 200, at 20-21; Lowell Gas Company, D.P.U. 19037/19037-A at 23 (1977).

It thus follows that the reviewer of a depreciation study must be able to determine, preferably through the direct filing and at least in the form of comprehensive responses to well-prepared discovery, the reasons why the preparer of the study chose one particular life-span curve or salvage value over another. The Department will continue to look to the expert witness for interpretation of statistical analyses but will consider other expert testimony and evidence that challenges the preparer's interpretation and expects sufficient justification on the record for any variances resulting from the engineering and statistical analyses. D.P.U. 89-114/90-331/91-80 (Phase One) at 54-55. To the extent a depreciation study provides a clear and comprehensive explanation of the factors that went into the selection of accrual rates, such an approach will facilitate Department and intervenor review.

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90 Subjectivity is especially relevant in the calculation of net salvage factors where the cost to demolish or retire facilities cannot be established with certainty until the actual event occurs. D.P.U. 92-250, at 66; D.P.U. 1720, at 44; D.P.U. 1350, at 109-110.

b. Accrual Rates

i. Account 361.00 (Structures and Improvements)

The current accrual rate for Account 361 is 1.50 percent, based on a 65-R2.5 curve for the former Western Massachusetts Electric Company ("WMECo") and a 70-R3 curve for NSTAR Electric (Exhs. ES-JJS-3; AG 7-9, Att.). The Company proposes a 75-R3 curve, which results in an accrual rate of 1.55 percent, while the Attorney General proposes an 80-R3 curve with an accrual rate of 1.44 percent (Exhs. ES-JJS-3; AG-DJG-1, at 4, 16-17; AG 7-9, Att.). While the Attorney General argues her curve provides a better mathematical fit with a sum of squared differences ("SSD")[91] of 0.0701 compared to the Company's curve exhibiting an SSD of 0.2142, it is important to note that the Company's analysis looks at two experience bands of data for this account, one from 1901 to 2020 and one from 2001 to 2020, while the Attorney General's analysis only compares her curve to the larger experience band (Exhs. ES-JJS-2, at 70-76; AG-DJG-1, at 16-17). The Company's proposal considers both bands and provides a balance between the two sets of data, whereas the Attorney General's proposal ignores more recent trends in the retirement history (Exh. ES-JJS-2, at 70). The asset's materials in Account 361 have also changed over the years, moving away from cement block structures to prefabricated and modular steel structures, which have been shown to have shorter service lives (Exhs. ES-JJS-Rebuttal-1, at 14-16; Tr. 2, at 202).

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91 SSD is a measure of the distance between the proposed Iowa Curve and the observed life table, such that a lower SSD signifies a better mathematical fit (Exh. AG-DJG-1, at 17).

Moreover, in a review of curve-life combinations used by other utilities, no company uses an average service life for Account 361.00 greater than 75 years, and most appear to use an average service life of 65 years (Exh. DPU 8-2, Att.). Based on the foregoing analysis, the Department finds the Company's proposed 75-R3 curve is reasonable and appropriate. Thus, we approve an accrual rate of 1.55 for Account 361.00 (Structures and Improvements).

ii. Account 362.00 (Station Equipment)

The current accrual rate for Account 362.00 is 2.01 percent, based on a 47-S0 curve for WMECo and a 60-R2.5 curve for NSTAR Electric (Exhs. ES-JJS-3; AG 7-9, Att.). The Company proposes a 62-R2.5 curve, which results in an accrual rate of 2.10 percent, while the Attorney General proposes a 69-R2.5 curve with an accrual rate of 1.86 percent (Exhs. ES-JJS-3; AG-DJG-1, at 4, 18-19; AG 7-9, Att.). Comparing the two curves, the Attorney General's curve has an SSD of 0.0592, and the Company's curve has an SSD of 0.0687, both of which could be considered a reasonable fit (Exh. AG-DJG-1, at 19-20). As with Account 361.00, here the Attorney General compares her proposed curve to only one experience band of data, while the Company's proposal considers two experience bands and attempts to strikes a balance between them to capture temporal shifts in retirement trends (Exhs. ES-JJS-2, at 77-83; AG-DJG-1, at 19). From a visual fitting perspective based on the graphs provided by the Attorney General, the 69-R2.5 curve overshoots most of the data points through age 65, while the Company's curve better approximates these data points (Exh. AG-DJG-1, at 19). Furthermore, the Company's proposed 62-R2.5 curve is consistent with the average service lives utilized by comparable utilities (Exh. DPU 8-2, Att.). Based

on the foregoing analysis, the Department finds the Company's proposed 62-R2.5 curve is reasonable and appropriate. Thus, we approve an accrual rate of 2.10 percent for Account 362.00 (Station Equipment).

iii. Account 365.00 (Overhead Conductors and Devices)

The current accrual rate for Account 365.00 is 3.09 percent, based on a 55-R0.5 curve for WMECo and a 48-R0.5 curve for NSTAR Electric (Exhs. ES-JJS-3; AG 7-9, Att.). The Company proposes a 60-R0.5 curve, which results in an accrual rate of 2.60 percent, while the Attorney General proposes a 66-O1 curve with an accrual rate of 2.22 percent (Exhs. ES-JJS-3; AG-DJG-1, at 4, 20-21; AG 7-9, Att.). The Attorney General's curve has an SSD of 0.1008, and the Company's curve has an SSD of 0.1768 (Exh. AG-DJG-1, at 21). Similar to Accounts 361.00 and 362.00, here the Attorney General compares her proposed curve to only one experience band of data, while the Company's proposal considers three experience bands for this account (Exhs. ES-JJS-2, at 96-105; AG-DJG-1, at 21). While the Attorney General's proposed curve provides a better mathematical fit to the larger experience band, the Company's proposal more accurately incorporates trends from more recent experience bands and considers the full set of retirement data points (Exh. ES-JJS-Rebuttal-1, at 19). Additionally, the Company's proposal is consistent with the curve-life combinations used by other utilities, as most utilize average service lives between 45 and 60 years for Account 365, and none use an O-type curve (Exh. DPU 8-2, Att.). As NSTAR Electric points out, the use of an O1 curve assumes the same level of retirements by age, unaffected by other forces of retirement such as wear and tear, which would be an unreasonable

assumption (Exh. ES-JJS-Rebuttal-1, at 18-19). Based on the foregoing analysis, the Department finds the Company's proposed 60-R0.5 curve is reasonable and appropriate. Thus, we approve an accrual rate of 2.60 percent for Account 365 (Station Equipment).

iv. Account 366.00 (Underground Conduit)

The current accrual rate for Account 366.00 is 2.12 percent, based on a 65-R1.5 curve for WMECo and a 75-R3 curve for NSTAR Electric (Exhs. ES-JJS-3; AG 7-9, Att.). The Company proposes a 75-R3 curve, which results in an accrual rate of 2.10 percent, while the Attorney General proposes an 80-R3 curve with an accrual rate of 1.95 percent (Exhs. ES-JJS-3; AG-DJG-1, at 4, 22-24; AG 7-9, Att.). The Attorney General's curve has an SSD of 0.0887, and the Company's curve has an SSD of 0.1998 (Exh. AG-DJG-1, at 24). While the Attorney General's proposed curve provides a better mathematical fit based on the SSD, the retirement history and data points available for Account 366.00 are limited, with less than 15 percent of plant experiencing retirement (Exhs. ES-JJS-2, at 106-112; ES-JJS-Rebuttal-1, at 17). The Department has previously held that when an account has insufficient retirement history mathematical fitting may not be adequately relied upon to suggest a departure from a currently approved average service life and curve combination. D.P.U. 18-150, at 303. Here with a limited number of retirements, the Department does not find a compelling reason to change the 75-R3 curve that is currently used for NSTAR Electric for this account (Exhs. ES-JJS-2, at 106; AG 7-9, Att.). Further, in a review of other utilities it appears most utilize average service lives for Account 366.00 of 75 years or less, with only two out of 89 utilities using an 80-year average service life for this account

(Exh. DPU 8-2, Att.). Based on the Company's limited data and the practices of other utilities, the Department finds it is reasonable to keep the 75-R3 curve currently utilized for Account 366.00. Thus, we approve an accrual rate of 2.10 percent.

v. Account 370.10 (AMR Meters)

The current accrual rate for Account 370.10 is 5.88 percent, based on a 18-L1.5 curve for WMECo and a 23-R1.5 curve for NSTAR Electric (Exhs. ES-JJS-3; AG 7-9, Att.). While the Company's depreciation study and Attorney General both identify the 24-S0.5 curve as best matching the historical data, the Company proposes a terminal retirement date of 2028, which results in a depreciation accrual rate of 8.62 percent (Exhs. ES-JJS-2, at 142; ES-JJS-3; AG-DJG-1, at 4, 24; AG 7-9, Att.). The Attorney General states the terminal retirement date is not appropriate and proposes a depreciation accrual rate of 4.15 percent for Account 370.10 (Exh. AG-DJG-1, at 4, 24; Attorney General Brief at 151-152). The Attorney General acknowledges the Company's planned retirement of AMR meters and suggests it would not be unreasonable to apply a terminal life span to Account 370.10 if all assets are indeed retired by 2028 (Exhs. DPU-AG 2-4; Tr. 11, at 1209, 1217). The Attorney General insists, however, that the Company's proposal with respect to AMR meters is biased and simply a means to increase cash flow (Attorney General Brief at 151-152, citing Exh. AG-DJG-1, at 25-26).

The Department approved NSTAR Electric's AMI implementation plan and model tariff in D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B. The Company's proposal to utilize a terminal life span retirement date of 2028 for Account 370.10 (AMR Meters) is

consistent with the AMI implementation plan approved by the Department and helps ensure that customers pay for utility assets that are in-service, while limiting intergenerational inequity. Therefore, the Department approves the Company's proposed accrual rate of 8.62 percent for Account 370.10 (AMR Meters).

vi. Account 370.22 (AMI Meters)

For Account 370.22 (AMI Meters) the Company proposes a 15-S2.5 curve, which results in a depreciation accrual rate of 6.92 percent (Exhs. ES-JJS-3; AG 7-9, Att.). The Attorney General did not contest the curve-life combination in testimony, but for the first time on brief suggests that an average service life of 25 years is more appropriate for this account (Attorney General Brief at 152-153). The Attorney General contends that a 25-year average service life is more consistent with manufacturer and Company representations that AMI meters will last 20 years or more (Attorney General Brief at 152-153, citing Tr. 7, at 709, 712). While the Company and meter manufacturers acknowledge an estimated life of 20 years or more for AMI meters, NSTAR Electric accurately points out that utilizing a 15-year average service life for these assets means that some meters will last beyond 20 years, with some lasting up to 28 years (Exhs. ES-JJS-2, at 146; AG 35-1; Tr. 2, at 193, 197-199). Further, with the Company's own limited history for this account, the curve-life combinations used by other utilities can provide a relevant benchmark for industry standards. Currently, no electric utility uses an average service life of 25 years for AMI meters (Exh. DPU 8-2, Att.). Of those utilities with AMI meters, the range of average service lives is 10 to 20 years, with most using a 15-year curve (Exh. DPU 8-2, Att.). Based on the

presently available information and the comparison to other electric utilities, the Department finds that a 15-S2.5 curve and corresponding accrual rate of 6.92 percent is appropriate for Account 370.22 (AMI Meters).

c. AMR and AMI Assets

As discussed in Section XV.A below, NSTAR Electric proposes a Company-specific AMI tariff consistent with the AMI implementation plan and model tariff approved in D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B at 9-10, 234, 238-239, 285-286. In the instant proceeding, the Department investigated concerns regarding potential over- or under-collection of metering costs, the tracking of costs, and the potential for recovering all meter-associated costs through the Company's proposed AMI factor ("AMIF") (Exhs. DPU 9-1; DPU 33-3; DPU 43-1; DPU 46-3; RR-DPU-29; RR-DPU-33). As set forth in Section XV.C.2 below, the Department has determined the most prudent course of action is to recover all meter-related capital through the annual reconciling mechanism. As such, the depreciation expense associated with meters (Account 370.10, Account 370.21, Account 370.22, and Account 370.30) must be removed from base distribution rates. The Department reduces the Company's depreciation expense by $26,909,787 to reflect the removal of these assets from rate base (Exh. ES-REVREQ-3, Workpaper 25 (Rev. 4)).[92]

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[92] $26,909,787 represents the total depreciation expense associated with metering accounts and is the sum of $17,099,862 associated with Account 370.10 (AMR Meters), $1,047,243 associated with Account 370.21 (Non-AMR Meters – Old Technology), $7,660,959 associated with Account 370.22 (AMI Meters), and $1,101,723 associated with Account 370.30 (Metering Equipment) (Exh. ES-REVREQ-3, WP25 (Rev. 4)).

d. Land and Land Rights

As part of NSTAR Electric's proposed depreciation expense, the Company includes a total of $177,948 in depreciation expense associated with Land and Land Rights (Exh. ES-REVREQ-3, WP 25 (Rev. 4)).[93] The Department has consistently found that the purpose of depreciation is to recover the cost of a capital investment in order to replace a retired asset, and, therefore, there is no need to depreciate an asset that will not be retired. D.P.U. 93-60, at 188. See Berkshire Gas Company, D.P.U. 19580, at 16 (1978). Accordingly, the Department does not permit depreciation of land, land rights, or rights-of-way. D.T.E. 03-40, at 295; D.P.U. 93-60, at 188-189; D.P.U. 92-111, at 122; D.P.U. 19580, at 16; Western Massachusetts Electric Company, D.P.U. 18252, at 12 (1975). In the instant proceeding the Company does not provide a compelling argument to deviate from longstanding Department precedent, but simply presents a definition of "depreciation" from the Uniform System of Accounts (Exh. DPU 16-3). Therefore, the Department rejects the inclusion of $177,948 in depreciation expense associated with Land and Land Rights. Accordingly, we reduce NSTAR Electric's proposed depreciation expense by $177,948.

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[93] $177,948 represents the sum of depreciation expense associated with Account 340.00 ($140,680), Account 360.00 ($37,229), and Account 389.00 ($39) (Exh. ES-REVREQ-3, WP 25 (Rev. 4)).

e. Conclusion

The Department has reviewed NSTAR Electric's depreciation study and supporting workpapers, and we find that the Company properly supported the proposed service lives and survivor curves (Exhs. ES-JJS-1; ES-JJS-2; ES-JJS-3; DPU 8-1; DPU 8-2, Att.; DPU 8-6, Att.). Based on the analysis above, the Department finds it appropriate to reduce the Company's proposed depreciation expense by $27,087,735, for a rate-year depreciation expense of $197,606,240 (see Exh. ES-REVREQ-3, WP 25 (Rev. 4)).

C. Insurance Expense

1. Introduction

During the test year, NSTAR Electric booked $4,035,454 in insurance expense and injuries and damages expense (Exh. ES-REVREQ-2, Sch. 15 (Rev. 4)). The Company proposes to increase its test-year insurance expense by $2,171,572, resulting in a proposed insurance expense of $6,207,026 (Exh. ES-REVREQ-2, Sch. 15 (Rev. 4)). In particular, during the test year, the Company booked $357,088 in Directors and Officers liability insurance ("D&O liability insurance") coverage expense (Exh. ES-REVREQ-2, Sch. 15 (Rev. 4)). The Company proposes to increase D&O liability insurance expense by $194,489, resulting in a proposed D&O liability insurance expense of $551,578 (Exh. ES-REVREQ-2, Sch. 15 (Rev. 4)). Further, the Company did not include in its proposed insurance expense credits from its liability insurance carriers such as Nuclear Electric Insurance Limited ("NEIL") and Energy Insurance Mutual ("EIM") (Exhs. AG 8-45; AG 11-13).

2. Positions of the Parties

a. Attorney General

The Attorney General raises two issues with respect to the Company's insurance expense. First, the Attorney General argues that the Company should not be allowed to recover the full amount of D&O liability insurance coverage expense (Attorney General Brief at 123-125). Second, the Attorney General argues that the Company failed to reflect future NEIL and EIM credits in its rate year (Attorney General Brief at 126-127, citing Exhs. AG-LA-1, at 28-30; AG 8-45; AG 11-13).

Regarding the D&O liability insurance coverage expense, the Attorney General claims that the cost of these policies should not be fully borne by the ratepayers because the majority of the benefits resulting from D&O liability insurance coverage, which protects the Company's officers and directors from lawsuits arising from their own decisions, accrue to the Company and its shareholders (Attorney General Brief at 123). The Attorney General contends that the burden rests with the Company to demonstrate that ratepayers will receive measurable benefits in exchange for the costs of its D&O liability insurance coverage, and that the Company failed to make such a showing (Attorney General Brief at 123, citing Town of Hingham v. Department of Telecommunications and Energy, 433 Mass. 198, 213-214 (2001), citing Metropolitan District Commission, 352 Mass. 18, 24; Wannacomet Water Company v. Department of Public Utilities, 346 Mass. 453, 463 (1963); D.T.E. 99-118, at 7 n.5).

The Attorney General, however, recognizes that the D&O liability insurance policies may assist the Company in attracting higher-quality personnel (Attorney General Brief at 124, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 9-10; Western Massachusetts Electric Company, D.P.U. 86-280-A, at 92 (1987)). Thus, the Attorney General argues that, despite the Company's failure to meet its burden of proof, shareholders and ratepayers should share the cost of these insurance expenses (Attorney General Brief at 124, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 9-10; D.P.U. 86-280-A, at 92). Specifically, the Attorney General recommends that shareholders bear 75 percent, while ratepayers bear 25 percent, of the allocated D&O liability insurance coverage costs (Attorney General Brief at 124). The Attorney General notes that her recommendation is consistent with rulings by the Connecticut Public Utilities Regulatory Authority ("CT PURA") and other public utilities commissions (Attorney General Brief at 124, citing United Illuminating Company, CT PURA Docket No. 16-06-04, at 36 (2016); Ni Florida, LLC, FL PSC Docket No. 160030-WS, Order No. PSC-16-0525-PAA-WS, at 8 (2016); Connecticut Natural Gas Corporation, CT PURA Docket No.13-06-08, at 27 (2014); Entergy Arkansas, Inc., Arkansas PSC Docket No. 06-101-U, Order No. 10, at 70, (2007); Centerpoint Energy Resources Corp., Arkansas PSC Docket No. 04-121-U, Order No. 16, at 40 (2005); Southwest Gas Corporation, CPUC Application 02-02-012, Decision 04-03-034, at 34-35 (2004)). Therefore, the Attorney General recommends reducing the Company's proposed cost of service by $335,135 to

represent a 75/25 sharing of these costs between shareholders and ratepayers, respectively (Attorney General Brief at 124-125, citing Exh. AG-LA-2, Sch. 4).[94]

Regarding the NEIL and EIM insurance credits, the Attorney General argues that the Company failed to reflect future credits in its rate year (Attorney General Brief at 126-127, citing Exhs. AG-LA-1, at 28-30; AG 8-45; AG 11-13). The Attorney General posits that while the NEIL and EIM credits are not guaranteed to occur, it is very likely that they will occur in the future based on the Company's insurance historical records (Company Brief at 126-127, citing Exhs. AG-LA-Surrebuttal-1, at 8; ES-RR/CPP/Comp-Rebuttal, at 26). The Attorney General asserts that the historical record shows that the Company has received NEIL and EIM insurance credits from 2017 through 2021, and there is no reason to assume that these credits will not occur in the future (Attorney General Brief at 127, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 26). Further, she argues that the Company will reap a financial windfall if the Company is allowed to keep these credits to the detriment of ratepayers (Attorney General Brief at 126-127, citing Exh. AG-LA-Surrebuttal-1, at 8). Therefore, the Attorney General argues that it is appropriate and important to include these credits as part of the Company's pro forma rate-year adjustment (Attorney General Brief at 127). Because the amounts of these credits fluctuate over time, the Attorney General recommends that the Company include a five-year average of credits in the pro forma

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[94] The Attorney General's proposed adjustment appears to be based on the Company's initial proposed test-year pro forma amount of D&O liability insurance expense, and the not the final amount proposed for recovery (Exhs. ES-REVREQ-2, Sch. 15; ES-REVREQ-2, Sch. 15 (Rev. 4)).

test-year amount (Attorney General Brief at 126-128, citing Exhs. AG-LA-2, Schs. 8, 9; AG 1-61, Att. I (Supp. 1)). Thus, the Attorney General asserts that the Department should reduce NSTAR Electric's proposed insurance expense by $50,575 and $449,835 to reflect NEIL and EIM insurance credits, respectively (Attorney General Brief at 126-128, citing Exhs. AG-LA-2, Schs. 8, 9; AG 1-61, Att. I (Supp. 1)).

b. Company

NSTAR Electric asserts that the Attorney General's arguments and conclusions regarding the D&O liability insurance expense are flawed, against recent Department precedent, and should be disregarded (Company Brief at 179-180, citing D.P.U. 20-120, at 302-304). The Company contends that it has taken steps to control costs associated with this insurance coverage, which is a direct benefit to customers (Company Brief at 180-181, citing Exhs. ES-REVREQ-1, at 87-90; ES-RR/CPP/Comp-Rebuttal-1, at 8; DPU 15-8; DPU 15-10; DPU 55-3; AG 1-61 & Supp.; AG 1-63 & Supp.; AG 8-18). Further, the Company claims that the primary purpose of the D&O liability insurance coverage is not to cover bad faith actions of its directors and officers (Company Brief at 181, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 9; DPU 55-3). Instead, NSTAR Electric asserts that D&O liability insurance coverage protects its management should they be personally exposed to liability claims for the business decisions and actions they make while operating the Company, thus enabling its leadership to make business decisions confidently without the fear of personal financial loss (Company Brief at 181, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 9).

NSTAR Electric also contends that D&O liability insurance coverage benefits customers by ensuring that the Company is able to attract and retain skilled, experienced officers and trustees with long-term ties to the electric distribution industry who use their specialized areas of knowledge and expertise to provide safe and reliable service to customers (Company Brief at 181-182, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 9-10). Finally, NSTAR Electric argues that the Attorney General's recommended cost sharing of D&O liability insurance expenses is arbitrary and unsupported by any analysis and, therefore, should be rejected (Company Brief at 182 & n.59, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 8 n.2).

Regarding the NEIL and EIM insurance credits, NSTAR Electric argues that the Department should reject the Attorney General's recommendation because there is no guarantee that these credit distributions, prior years' distribution notwithstanding, will occur in the future (Company Brief at 182-183). In support of its position, the Company contends that it is unknown whether any NEIL and EIM insurance credit distributions will occur in the future and, therefore, the Attorney General's proposal is unmeasurable (Company Brief at 183). Further, the Company claims that it is inappropriate to utilize the five-year average of credit distributions because the annual distributions tend to fluctuate significantly (Company Brief at 183).

NSTAR Electric also argues that, adhering to the Department's regulatory principles, it would not propose to include speculative costs in the revenue requirement that do not pass the Department's known and measurable standard (Company Brief at 183). Thus, the

Company argues that any reduction to the Company's insurance expense should not be based on speculation, and therefore, the Department should reject the Attorney General's recommendation (Company Brief at 182-183).

3. Analysis and Findings

Rates are designed to allow for recovery of a representative level of a company's revenues and expense based on a historic test year adjusted for known and measurable changes. D.P.U. 10-55, at 274; Bay State Gas Company, D.P.U. 09-30, at 218 (2009); D.T.E. 02-24/25, at 161; D.P.U. 92-250, at 106. The Department will include the most current cost of liability and property insurance, based on a signed agreement, as a reasonable cost of service. D.P.U. 10-55, at 276; D.P.U. 09-30, at 218; D.T.E. 02-24/25, at 161; D.P.U. 86-86, at 8-10; Colonial Gas Company, D.P.U. 84-94, at 44 (1984). The Department requires companies to provide evidence that they undertook reasonable measures to control property and liability insurance expenses. New England Gas Company, D.P.U. 08-35, at 119-120 (2009); D.T.E. 05-27, at 133-134; D.T.E. 03-40, at 184-185.

As noted above, the Attorney General contends that the Company should not be allowed to fully recover D&O liability insurance expense, and instead should share these costs with ratepayers (Attorney General Brief at 123-125). We disagree. In evaluating the Company's D&O liability insurance coverage, the Department considers whether the primary purpose of the policy is to cover bad faith actions and whether ratepayers receive measurable benefits. D.P.U. 20-120, at 302; D.P.U. 87-260, at 72-73; Commonwealth Gas Company, D.P.U. 87-122, at 51, 53-54 (1987); D.P.U. 87-59, at 41-42. In determining ratepayer

benefits, the Department considers whether ratepayers would otherwise be required to pay for damages and legal fees arising out of such suits brought against the Company's directors and officers in the event the Company did not have such insurance. D.P.U. 20-120, at 302-303; D.P.U. 87-260, at 73. The record in this case demonstrates that the purpose of the Company's D&O liability insurance policy is to protect its directors and officers should they be personally exposed to liability claims for the business decisions and actions they make while employed by the Company or serving as a trustee, and to protect the personal assets of trustees and officers in a related lawsuit (Exh. DPU 55-3).

The record does not support a finding that the primary purpose of the D&O liability insurance policy is to protect the utility against bad faith actions of its directors and officers. In fact, such actions are expressly excluded by the policy (Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 8-9; DPU 55-3 & Att.).[95] Thus, the Department finds that coverage by the D&O liability insurance policy primarily involves actions where the costs could be included in the Company's cost of service absent D&O liability insurance and, as such, the policy offers ratepayer benefits. D.P.U. 20-120, at 303. As such, we find that the costs associated with the Company's D&O liability insurance coverage are properly included in rates. D.P.U. 20-120, at 303-304; D.P.U. 87-260, at 73; D.P.U. 87-122,

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[95] For instance, the policy excludes claims in the event that a director or officer: (1) used their position to gain personal profit, financial advantage, or remuneration to which they were not entitled; or (2) committed a deliberately fraudulent or criminal act or omission or any intentional violation of any law, statute, or regulation (Exh. DPU 55-3, Att.).

at 53-54; D.P.U. 87-59, at 41-42. Based on these findings, we need not address the merits of the Attorney General's recommended cost sharing approach.

Regarding the NEIL and EIM insurance credits, the record shows that NEIL made policy surplus distributions or insurance credits during the test year and in each of the prior five years (Exhs. AG 8-45; AG 1-61, Att. (e) (Supp. 1)). Likewise, EIM made similar policy surplus distributions during the test year and in each of the prior five years (Exhs. AG 11-13; AG 1-61, Att. (e) (Supp. 1)). Given this consistent history of credit receipts from NEIL and EIM, we are not persuaded by the Company's argument that there is no guarantee that these surplus distributions will occur in the future, and, therefore, are not known and measurable. D.P.U. 17-05, at 246-246. Further, the Department has found that EIM's policy surplus distributions are analogous to those made by NEIL. See D.P.U. 87-260, at 26-36. As a mutual non-profit carrier, NEIL makes policyholder distributions to recognize a return of a portion of the policy's surplus. The Department has required participants to credit policyholder distributions and other adjustments to customers in a manner approved by the Department. New England Power Company/Montaup Electric Company, D.P.U. 1251, at 10 (1983); Western Massachusetts Electric Company, D.P.U. 990-A at 10 (1982); D.P.U. 990, at 4; Western Massachusetts Electric Company, D.P.U. 147-B at 2-3 (1981); Boston Edison Company, D.P.U. 376-A at 2 (1981); D.P.U. 376, at 15-16. The Department has historically treated such credits as an offset against the current NEIL premium for ratemaking purposes because "policyholder distribution is a known and measurable change that should be included as an offset to the

Company's current NEIL premiums." D.P.U. 87-260, at 38-39.[96] Consistent with the treatment of NEIL surplus distributions in prior cases, the Department finds that, for the reasons explain above, it is also appropriate to adjust the Company's test year pro-forma cost of service to recognize the refund of the insurance proceeds from EIM, as well. D.P.U. 17-05, at 246.

Between 2017 and 2021, NEIL credits per year have ranged from a low of $4,472 in 2017 to a high of $105,590 in 2020, and EIM credits per year have ranged from a low of $217,583 in 2017 to a high of $767,872 in 2019 (Exh. AG-LA-2, Schs. 9 & 10). Thus, the test-year level of NEIL and EIM credits are not necessarily representative. Therefore, the Department finds that it is appropriate to normalize test-year NEIL and EIM credits by applying a five-year average to determine a representative level to be included in rates. See D.P.U. 09-39, at 149. Normalization is not intended to ensure dollar-for-dollar recovery of a particular expense or credit; rather it is intended to include in the cost of service as a representative annual level. D.P.U. 10-55, at 339; D.T.E. 05-27, at 163; D.T.E. 03-40, at 163-164; D.T.E. 02-24/25, at 191; D.P.U. 96-50 (Phase I) at 77.

Based on the above considerations, the Department will adjust the Company's cost of service. In this regard, the Department accepts the Attorney General's calculation of the five-year credit averages, based on information provided by the Company (Exhs. AG-LA-2,

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96 This ratemaking treatment is similar in concept to patronage refunds associated with CoBank, a lending institution that focuses on water systems, where the refunds serve to reduce the effective cost of the loan. Whitinsville Water Company, D.P.U. 08-33, at 14 (2008).

Schs. 8 and 9; AG 1-61, Att. (e) (Supp. 1)). Accordingly, the Department reduces NSTAR Electric's proposed cost of service by $500,410 ($50,575 + $449,835) (Exhs. AG-LA-2, Schs. 8 and 9; AG 1-61, Att. (e) (Supp. 1)).

The Department has reviewed NSTAR Electric's remaining insurance policies and supporting documentation. We find that the test-year insurance costs were reasonable, and the insurance expense premiums and proposed adjustments are based on actual policy rates and are thus known and measurable (Exhs. ES-REVREQ-1, at 88-92; ES-RR/CPP/Comp-Rebuttal-1, at 34-36; AG-DJE-1, at 9-12; AG-DJE-Surrebuttal-1, at 5-7; ES-REVREQ-2, Sch. 15 (Rev. 4); DPU 15-7, DPU 15-10; DPU 15-11; DPU 15-13, Supp. & Atts.; DPU 69-11 & Atts.; AG 1-61 & Atts. & Supps.; AG 4-19 & Att.; Tr. 1, at 145-146; RR-DPU-4 & Atts.; RR-AG-3). Further, the Department finds that NSTAR Electric has taken reasonable measures to control the costs of its insurance expense (Exh. DPU 15-8). Thus, with the exception of the adjustments set forth above, the Department accepts the Company's proposed insurance expense.

D. Board of Director Expenses

1. Introduction

Eversource Energy is governed by an eleven-member board of trustees, of whom ten are independent and one is a member of management (Exh. AG 1-2, Att. (5)(e) at 11). Each independent trustee receives an annual base retainer of $115,000, with additional amounts for serving as lead trustee and committee chairs, along with $160,000 in restricted stock units ("RSUs") (Exh. AG 1-2, Att. (5)(e) at 38). NSTAR Electric itself has a board of directors

consisting of five Company officers who receive no additional compensation for their director responsibilities (Exhs. DPU 52-2; AG 1-2, Att. (6)(e) at 12 (Supp. 1)).[97] During the test year, the Company booked $930,151 in board fees and meeting costs to its distribution operations (Exhs. DPU 52-2; AG 8-4, Att.; AG 21-7, Att.).[98] These costs include the Company's allocated portion of cash retainers and RSUs paid to the independent members of Eversource Energy's board of trustees[99] (Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 5; DPU 52-2; AG 1-2, Att. (5)(e) at 38; AG 21-7, Att.; Tr. 6, at 642).

2. Positions of the Parties

a. Attorney General

The Attorney General asserts that the Department has made it clear that for costs to be recovered from ratepayers, a company must demonstrate that there is a link between the costs and ratepayer benefits (Attorney General Brief at 121, citing D.P.U. 20-120, at 224; D.P.U. 93-60, at 201; D.P.U. 92-111, at 127). The Attorney General contends that while

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97 For purposes of this Order, the Department uses "board of trustees" when referring to Eversource Energy's governing body, "board of directors" when referring to the Company's own governing board, and "board" when referring to both the board of trustees and board of directors.

98 While the Company did not propose an explicit adjustment to its test-year board expenses, the Company's proposed inflation allowance incorporates an increase to these expenses of $138,795, representing inflation of 14.909 percent from the midpoint of the test year to the midpoint of the rate year (see Exhs. ES-REVREQ-3 WP 24 (Rev. 4); AG 8-4, Att.).

99 The Company is only seeking rate recovery of trustee retainers and RSUs, and no other expenses trustees may incur in their duties such as travel expenses (Exh. AG 21-7, Att.; Tr. 6, at 642).

the existence of the Company's board of trustees logically produces some tangential benefits to ratepayers, the Company's shareholders are the major beneficiaries associated with the proposed board fees and associated meeting costs (Attorney General Brief at 121-122, citing Exhs. AG-LA-1, at 11-12; ES-RR/CPP/Comp-Rebuttal-1, at 6).

The Attorney General argues that to better reflect the balance of benefits arising from a board of trustees between the Company and ratepayers, the Department should disallow 75 percent of board fees and meeting costs, resulting in what she calculates as a reduction of $751,267 (i.e., the inflation-adjusted pro forma expense of $1,001,689 x 75 percent) (Attorney General Brief at 122, citing Exhs. AG-LA-1, at 12; AG-LA-2, Sch. 2, Att.).[100] The Attorney General asserts that this ratemaking treatment is consistent with rulings from other jurisdictions, such as in Connecticut, where the CT PURA has allocated 75 percent of board of director costs to shareholders (Attorney General Brief at 122, citing Connecticut Water Company, CT PURA Docket No. 20-12-30, at 12-14 (2021); United Illuminating Company, CT PURA Docket No. 13-01-19, at 73 (2013)).

b. Company

NSTAR Electric argues that to recover board fees in cost of service, the Department requires a company to demonstrate a link between those fees and customer benefits (Company Brief at 184, citing D.P.U. 20-120, at 329). The Company challenges what it considers to be the Attorney General's attempt to create a new standard for recovery of board

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[100] The Attorney General's calculations are based on the Company's initially-proposed inflation factor of 7.691 percent (Exhs. AG-LA-2; AG 8-4, Att.).

fees based on a requirement that ratepayers must be the majority or sole beneficiaries of these expenditures (Company Brief at 184).

The Company argues that the Attorney General has mischaracterized the customer benefits associated with board fees (Company Brief at 184). While NSTAR Electric acknowledges that Eversource Energy's board of trustees is tasked with representing shareholder interests, the Company contends that the Attorney General fails to recognize that actions taken to meet the board's obligations to shareholders also directly, and not tangentially, benefit customers (Company Brief at 184, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 6). NSTAR Electric points to the organization of the board of trustees and various standing committees, as well as Eversource Energy's shift in accordance with nationwide trends from a per-meeting fee structure to providing a cash retainer and stock award in the form of RSUs (Company Brief at 185, citing Exhs. AG 1-2, Att. (5)(e) at 22-28; AG 21-7; Tr. 3, at 284-287; Tr. 6, at 637).[101] The Company contends that the board's organization and compensation structures ensure that board members have a stake in Eversource Energy (and by extension the Company), take a hands-on approach in executing their duties as board members, and are actively involved in managing the direction of the Company (Company Brief at 185-186, citing Tr. 7, at 639-640). NSTAR Electric also maintains that in protecting shareholder interests, the board of trustees ensures that the

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[101] The Company relies on a national benchmark in setting trustee compensation, including a review of peer utilities, and contends that it targets the median level (Company Brief at 186, citing Tr. 7, at 637-640).

Company's assets, including those used to provide safe and reliable service to customers, are in good working order, as well as demonstrates to the financial markets and prospective shareholders that the Company is a solid and attractive financial investment (Company Brief at 184-185, citing Exh. ES-RR/CCP/Comp-Rebuttal-1, at 6). The Company argues that by attracting new shareholders, the board of trustees ensures that the Company benefits from a revenue stream that is used to fund capital projects that provide safe and reliable service to customers (Company Brief at 185, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 6).

NSTAR Electric goes on to argue that even if there is no connection between board fees and benefits to customers, the Attorney General has failed to provide any analysis to support her recommended 75 percent disallowance beyond a brief reference to a similar conclusion by the CT PURA (Company Brief at 186, citing Exh. AG-LA-1, at 13-14 (Rev.)). The Company contends that a review of the PURA orders relied upon by the Attorney General demonstrates that the CT PURA's decisions were not based on any analysis, and that the Attorney General's recommendation is based on an arbitrary determination of costs and benefits (Company Brief at 186).

3. Analysis and Findings

The Department recognizes that a company incurs certain costs related to the operations of its board of directors, such as director fees and other expenses. Aquarion Company/Aquarion Water Company of Massachusetts/New England Service Company/Mountain Water Systems/Colonial Water Company, D.P.U. 21-54, at 26 (2021); Aquarion Water Company of Massachusetts, D.P.U. 08-27, at 88-92 (2009); D.T.E. 03-40,

at 206-207; D.P.U. 92-111, at 147-148. While the Attorney General does not oppose the recovery of expenses related to the board on a per se basis, she proposes a sharing of these costs between the Company and its ratepayers on the basis of her benefits evaluation (Exh. AG-LA-1, at 13-14 (Rev.)).

A board of trustees or directors does not exist merely to satisfy legal governance requirements. Rather, it contributes to and shapes a company's culture, strategic focus, and financial performance, all of which are essential elements for any organization. While it is certainly true that neither Eversource Energy's board of trustees nor the Company's own board of directors are elected by ratepayers, the fiduciary duties of a regulated utility's governing body extend well beyond interests of shareholders. Specifically, a regulated utility is obligated to act in the best interest of ratepayers as part of that company's public service obligation to provide safe, reliable, and least-cost service. See D.P.U. 10-70, at 234 n.125; D.P.U. 07-50, at 5; D.P.U. 94-158, at 3; Boston Edison Company, D.P.U. 94-49, at 115-116 (1995); Boston Edison Company, D.P.U. 86-71, at 15-16 (1986). Consequently, decisions made by a utility's management and governing body cannot, and must not, prioritize shareholder interests over those of ratepayers. See Mergers and Acquisitions, D.P.U. 93-167-A at 22-23 (1994); Bay State Gas Company, D.P.U. 90-40, at 9-11 (1990).[102] The Department also notes that, unlike business organizations whose directors are chosen on

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[102] Utilities that fail to recognize this fundamental principle do so at their own peril. D.P.U. 85-266-A/85-271-A at 6-15.

the basis of the prestige they may provide to the enterprise,[103] Eversource Energy's board of trustees actively participates in the operations of Eversource Energy and its subsidiaries both collectively and through their active participation in various committees (Exh. AG 1-2, Att. (5)(e) at 22-28; Tr. 3, at 284-287; Tr. 6, at 637-640). Given the distinct public service obligations of a regulated utility's board of trustees or directors and the active participation of Eversource Energy's board of trustees in its operations, the record does not support a finding that the primary purpose of the board of trustees is to serve the interests of Eversource Energy's shareholders.[104] Based on these findings, we need not address the merits of the Attorney General's proposed allocation method.

Based on the foregoing analysis, the Department concludes that Eversource Energy's board of trustee activities benefit ratepayers.[105] Accordingly, the Department accepts

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103 As a case in point, the now-defunct blood testing equipment manufacturer Theranos had a board of directors consisting of former cabinet members, congressmen, and military officials. While these directors may have sterling reputations in their respective fields, they do not appear to have been sufficiently involved in Theranos' medical technology business to engage in effective oversight.

104 To assume otherwise sets the entire concept of utility regulation back to the days of Framingham Gas, Fuel, and Power Company, a "notoriously slovenly and corrupt affair" where one of the last corporate acts of previous management, at the onset of an investigation by the Board of Gas and Electric Light Commissioners, was to "lose" their entire body of records. Manufactured Gas Plant Remediation: A Case Study, Allen W. Hatheway and Thomas B. Speight, CRC Press (2018) at 381.

105 The Department reminds Eversource Energy and the board of trustees of the importance of keeping customer benefits in mind during this upcoming winter season of anticipated high utility prices. While we recognize that Eversource Energy has little control over commodity prices, it does control other aspects of utility operations, such as customer shut-offs and arrearage management. We expect Eversource Energy

NSTAR Electric's proposal to include the Company's share of expenses associated with Eversource Energy's board of trustees in the Company's cost of service.

E. Dues and Memberships

1. Introduction

NSTAR Electric maintains memberships in various industry and non-industry trade associations and organizations (Exhs. ES-REVREQ-1, at 70; ES-REVREQ-3, WP 12 (Rev. 4); AG 8-19, Att.). The Company refers to "industry" memberships as specific only to the utility industry and "non-industry" memberships as everything else (i.e., not specific to the utility industry) (Exh. DPU 53-1). NSTAR Electric proposes $442,380 for industry dues expense and $359,967 in non-industry dues expense, for a total test year pro forma amount of $802,347 in dues and memberships expense (Exhs. ES-REVREQ-2, Sch. 12 (Rev. 4); ES-REVREQ-3, WP 12 (Rev. 4); DPU 53-2, Att.).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Department should not allow the recovery of certain non-industry dues and membership expenses because the Company has not demonstrated a clear link between those costs and ratepayer benefits (Attorney General Brief at 128-130; Attorney General Reply Brief at 39). The Attorney General claims that for the majority of the non-industry organizations for which the Company seeks to recover dues, it

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and the board, to take those necessary actions to protect ratepayers during the challenging winter season.

has offered only generalized ratepayer benefits without support for its assertions, and therefore, these costs should not be recovered from ratepayers (Attorney General Brief at 128-129, citing Exhs. AG-LA-1, at 19; DPU 15-1).

The Attorney General also argues that the Company, on brief, provides additional explanations and cites to information that it had not provided as record evidence in this proceeding, including describing organizations such as the International Energy Credit Association and ORC HSE Strategies, LLC, and citing to five organizations' websites (Attorney General Reply Brief at 39, citing Company Brief at 164-165). According to the Attorney General, NSTAR Electric bears the burden of demonstrating the link between the dues for which it seeks cost recovery and ratepayer benefits, and the Company's citing to this additional information as information that the Attorney General should have considered attempts to shift that burden (Attorney General Reply Brief at 39). The Attorney General also maintains that Company's attempt to shift the burden proves that the Company failed to meet its burden for cost recovery (Attorney General Reply Brief at 39).

Further, the Attorney General disputes the Company's inclusion of two entries for the same organization, i.e., Associated Industries of Massachusetts ("AIM") (Attorney General Brief at 129 & n.98). The Attorney General maintains that the double entry is a result of the Company paying dues for two calendar years in the test year, which is not a representative amount for this expense in a given year; therefore, one of the entries should be excluded from the revenue requirement (Attorney General Brief at 129 & n.98, citing Exh. DPU 53-2; RR-AG-11). Based on the above arguments, the Attorney General recommends a

disallowance of $347,854 in non-industry dues expense as well as one of the AIM entries (Attorney General Brief at 129; Attorney General Reply Brief at 39).[106]

b. Company

NSTAR Electric argues that the Department should reject the Attorney General's recommendation as it ignores record evidence that demonstrates the link between the various organizations and customer benefits (Company Brief at 163). Further, NSTAR Electric rejects the distinction between "industry" and "non-industry" dues and memberships, and the Company asserts that it belongs to these organizations because membership provides access to industry experts and professionals, insight, data, research, and information used to address emergent issues facing the industry and to identify and incorporate relevant information and best practices into the provision of safe and reliable service to its customers (Company Brief at 163-165, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 13-16; DPU 38-1; DPU 53-2; Tr. 5, at 494; Company Reply Brief at 45).

For example, NSTAR Electric contends that membership in organizations such as the Chambers of Commerce allows the Company to interact with its customers, learn about local issues impacting customers, and shape the way the Company services these customers; therefore, there is a direct link between membership and customer benefits (Company Brief

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106 The Attorney General notes that its recommended disallowance excludes adjusted test-year amounts for four organizations (American Benefits Council, the Drug and Alcohol Testing Industry Association, the Electric Utility Industry Sustainable Supply Chain Alliance, and the Northeast Human Resources Association) that the Company discussed in the benefits section of its surrebuttal testimony (Attorney General Brief at 129-130, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 13-16; DPU 53-2, Att.).

at 164, citing Tr. 5, at 494). Moreover, NSTAR Electric maintains that memberships in other non-industry categories such as ORC HSE Strategies, LLC, provides the Company access to industry experts and helps it develop processes and procedures to identify and reduce or remove potential workplace hazards and to train employees for accident prevention and response (Company Brief at 165). The Company contends that workplace safety is a key component of the provision of safe and reliable service, which benefits customers (Company Brief at 165).

In response to the Attorney General's assertion that the Company provided new evidence to demonstrate that certain dues are appropriate for cost recovery, NSTAR Electric contends that each of the organizations referenced in its initial brief were included in the Company's responses to information requests in this proceeding (Company Reply Brief at 44, citing Exhs. DPU 38-1; DPU 53-2). NSTAR Electric asserts that by including these organizations in these responses, the Company determined that they met the Department's standard for recovery (i.e., there is a link between the dues and customer benefits) (Company Reply Brief at 44-45, citing D.P.U. 20-120, at 329; Bay State Gas Company, D.P.U. 92-111, at 127 (1992); Milford Water Company, D.P.U. 92-101, at 54 (1992); The Berkshire Gas Company, D.P.U. 90-121, at 151 (1990)). Further, according to the Company, the missions of these organizations and their connection to providing customers with safe and reliable service are objective facts that are capable of definitive verification and are readily available to the Department and the Attorney General (Company Reply Brief at 45 & n.7).

For all of the above reasons, NSTAR Electric claims that it met the Department's standard for inclusion of these costs, and the Department should reject the Attorney General's recommendations (Company Brief at 166, citing Exhs. ESRR/CPP/Comp-Rebuttal-1, at 13-16; AG 22-2; AG 38-1; DPU 15-1, DPU 53-1; Company Reply Brief at 45). Finally, the Company agrees with the Attorney General that the Department should remove one of the double entries associated with AIM, a reduction of $15,312 from its proposed cost of service (Company Brief at 165-166).

3. Analysis and Findings

The Department requires that the Company demonstrate a link between non-industry dues and memberships and ratepayer benefits for the costs to be recoverable in rates. See, e.g., D.P.U. 92-111, at 127; D.P.U. 92-101, at 54; D.P.U. 90-121, at 151. In support of its position that the costs should be recoverable, the Company generally states that all of the organizations offer insight, expertise, industry data, publications, and best practices that the Company uses to provide safe and reliable service (Company Brief at 163-165, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 13-16; DPU 38-1; DPU 53-2; Tr. 5, at 494; Company Reply Brief at 45). The Department asked the Company to outline specific, direct customer benefits related to each of its non-industry dues and memberships, and the Company's response was in the form of brief, general explanations, noting vague benefits such as input to inform the Company's efforts to provide service to customers and the opportunity to meet with business customers to exchange ideas to facilitate the Company's

service to customers (Exhs. DPU 15-1; DPU 53-1).[107] While the Department recognizes that some of these memberships may help provide insight to NSTAR Electric on issues relevant to its business, the Company has not demonstrated that there is a clear link between the Company's memberships in the majority of these non-industry organizations and meaningful benefits to customers, or that these memberships are necessary to the provision of electric distribution service to customers.

Specifically, the Department finds that the Company sufficiently demonstrated direct and distinct benefits to ratepayers for four of the non-industry organizations for which it seeks to recover dues and membership costs – the American Benefits Council, the Drug and Alcohol Testing Industry Association, the Electric Utility Industry Sustainable Supply Chain Alliance ("EUISSCA"), and the Northeast Human Resources Association (e.g., the Company's membership in EUISSCA helps it to address supply chain issues) (Exh. ESRR/CCP/Comp-Rebuttal-1, at 13-16). On brief, the Company offers additional detailed explanations of benefits for other non-industry organizations, such as ORC HSE Strategies, LLC (Company Brief at 164-165; Company Reply Brief at 44-45). The evidentiary record, however, contains only the names of these organizations, and not detailed explanations (Exhs. ESRR/CCP/Comp-Rebuttal-1, at 13-16; DPU 15-1& Att.; DPU 38-1 &

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107 In contrast, the Company provided clear, specific, and detailed customer benefits related to each of its proposed industry dues and memberships (Exh. AG 38-1, at 1-6). For example, Eversource Energy's participation on the Advanced Energy Economy's Utility Advisory Committee fosters understanding of generation and storage solutions to incorporate into long term system planning and supports a clean energy future at the Company (Exh. AG 38-1, at 5).

Att.; DPU 53-1; DPU 53-2 & Att.; AG 8-19, Att.; AG 22-2; AG 38-1). As noted above, it is the Company's burden to establish that these non-industry dues and memberships benefit customers. See, e.g., D.P.U. 92-111, at 127; D.P.U. 92-101, at 54; D.P.U. 90-121, at 151. Simply listing the organizations in a response to an information request seeking substantive information does not satisfy that burden. Nor is it the Department's role to independently verify the nature of each organization and attempt to discern the link between their function and customer benefits.

Based on the foregoing considerations, the Department allows recovery of the costs associated with the four aforementioned organizations for which the Company demonstrated a clear link between costs and ratepayer benefits. The total cost proposed in the Company's cost of service for the American Benefits Council, the Drug and Alcohol Testing Industry Association, EUISSCA, and the Northeast Human Resources Association is $12,113 (Exh. ES-REVREQ-3, WP 12 (Rev. 4)). We disallow recovery of the costs associated with the remaining non-industry memberships, as we conclude that it is inappropriate for ratepayers to fund the costs of non-industry dues and memberships for which the Company has not established a clear and direct link to ratepayer benefits on the record. D.P.U. 20-120, at 329-330. Finally, the Department allows recovery of NSTAR Electric's industry dues and memberships, with the exception of one of the double entries associated with the Company's AIM membership, a reduction of $15,312 (Exh. ES-REVREQ-3, WP 12 (Rev. 4); DPU 53-2, Att.; AG 38-1). Accordingly, the Department reduces the Company's

proposed cost of service by $363,166 ($347,854 in disallowed non-industry dues + $15,312 in disallowed industry dues).

F. Caregiver Program

1. Introduction

During the test year, NSTAR Electric booked $85,432 for the Caregiver Program included in its proposed residual O&M expense (Exh. AG 8-10, Att.). Eversource Energy's operating companies implemented the Caregiver Program on July 1, 2019, in response to employee-requested support on storm days (RR-AG-14; Tr. 6, at 686).[108] Under this program, Eversource Energy makes quarterly payments of $51,000, or approximately $20 per employee, to the contractor Care.com for a total pool of 300 backup days available annually for employees (Tr. 6, at 681-682). The Company states that these backup days are available for care of an employee's dependents up to ten days per employee per year in the event of an emergency (Exh. AG 8-10). As part of this benefit, employees also receive a free membership to Care@Work to connect to a network of caregivers for dependent care (Exh. AG 8-10).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Company failed to justify that the Caregiver Program costs are reasonable, prudently incurred, and benefit ratepayers (Attorney General

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108 Employees of NSTAR Electric and Eversource Energy have storm restoration support roles during emergency storm days (Tr. 6, at 683).

Brief at 130; Attorney General Reply Brief at 37, citing Fitchburg Gas and Electric Light Company, 375 Mass. 571, 582-583). She also contends that the Caregiver Program is not standard in the market (Attorney General Reply Brief at 37).

Further, the Attorney General argues that although the Company pays a single flat fee to provide the pool of 300 backup days to all employees, most employees do not use it (Attorney General Reply Brief at 37, citing Tr. 6, at 681). She asserts that the employees only used 18 days in 2019, 210 days in 2020, 90 days in 2021, and, as of July 15, 2022, 49 days in 2022 (Attorney General Reply Brief at 37, citing RR-AG-14). In particular, the Attorney General contends that the Company's employees only used a fraction of the backup days during the COVID-19 pandemic in 2020 (Attorney General Reply Brief at 37). She also claims that the flat fee is only the membership fee and does not cover the actual backup dependent care costs, which employees pay for themselves (Attorney General Reply Brief at 37-38, citing Tr. 6, at 685-686).

Moreover, the Attorney General argues that the Company has not provided documentation or evidence to support its claim that customers benefit from a stable workforce, which the Caregiver Program facilitates (Attorney General Brief at 130, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 12). The Attorney General asserts that because NSTAR Electric does not track the number of missed workdays or employees who have left their jobs due to dependent care issues, the Company failed to demonstrate the Caregiver Program provides any impact on employee productivity or employee retention (Attorney General Brief at 130, citing Tr. 6, at 686).

b. Company

The Company argues that the Caregiver Program benefits customers because it provides a safety net that ensures trained employees can perform their work duties to provide safe and reliable service to customers (Company Brief at 173). According to the Company, a recent childcare report issued by the Massachusetts Taxpayer Foundation determined that, due to inadequate childcare, individuals and families lose $1.7 billion in wages from missing work or reducing their hours; employers lose $812 million due to lower productivity and turnover/replacement costs; and Massachusetts forgoes $188 million in tax revenues due to lower earnings and lost wages (Company Brief at 173, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 11). NSTAR Electric asserts that the Caregiver Program also benefits customers by facilitating a stable workforce, as the program reduces the number of day employees miss from work when primary care is temporarily unavailable (Company Brief at 173-174). Further, NSTAR Electric contends that 31 percent of large employers offered subsidized caregiving programs like the Company's Caregiver Program to their employees in 2021, and between 25 and 30 percent of the utility companies offer subsidized childcare to their employees (Company Brief at 173, citing Tr. 6, at 695; Company Reply Brief at 41).

The Company also rejects the Attorney General's contention that most employees are not using the Caregiver Program. According to the Company, employees use the Caregiver Program in the event of emergencies to ensure that they are available to report to storm restoration support roles during ERP events (Company Reply Brief at 41, 42, citing Tr. 6,

at 683). Finally, NSTAR Electric contends that it has met its burden of proof and burden of production in demonstrating that the costs associated with the Caregiver Program benefit customers, are reasonable, and were prudently incurred (Company Reply Brief at 43).

3. Analysis and Findings

The Company bears the burden of demonstrating that proposed costs benefit Massachusetts ratepayers, are reasonable, and were prudently incurred. D.P.U. 11-01/D.P.U. 11-02, at 323; D.T.E. 03-40, at 140-141; D.P.U. 1699, at 13. This standard applies whether the expenses were incurred at the parent level or at the service company level. The Department has previously stated that the Department may consider allowing Caregiver Program costs if the Company provides convincing evidence substantiating the relationship between the benefit program and ratepayer benefits, and that these benefits are common industry practice and necessary for the Company to stay competitive in attracting skilled employees. D.P.U. 20-120, at 225.

The Company represents that it implemented the Caregiver Program in response its employees' need for dependent care during emergency storm response (Tr. 6, at 683, 686, 696). Most of Eversource Energy employees have a secondary responsibility in storm restoration support roles, in addition to their normal role, during a storm event, such as coordinating food and lodging for the storm restoration team (Tr. 6, at 683, 696). The frequency and severity of major storm events has increased noticeably since 2009, and such storms may arise on short notice when regular dependent care is unavailable (Tr. 6, at 696).

Massachusetts Electric Company, Nantucket Electric Company, and NSTAR Electric

Company, D.P.U. 21-75/D.P.U. 21-76, at 22 (2021). The Department finds that by providing backup care during emergency storm response, the Caregiver Program creates stability in the workforce, and therefore provides benefits to ratepayers by enabling the Company to provide safe and reliable service to its customers. Regarding the availability of this benefit across the industry, the Company states that approximately 25 to 30 percent of utility companies offer subsidized childcare to their employees (Tr. 6, at 695). While this percentage may not rise to the level of common industry practice, in this instance, given the importance of providing a stable workforce during emergency storm response and the resulting benefits to customers, the Department allows the $85,432 of costs associated with the Caregiver Program in the Company's residual O&M.

G. Enterprise Information Technology Expense

1. Introduction

Enterprise IT expense represents charges billed to NSTAR Electric for ESC's investments in IT systems that support more than one of the Eversource Energy operating companies (Exh. ES-REVREQ-1, at 72). Enterprise IT projects that support more than one company are installed at the service company level to efficiently implement one integrated solution to be used on a shared basis and to efficiently charge the costs of shared infrastructure across multiple entities (Exh. ES-REVREQ-1, at 72-73). Accordingly, Enterprise IT projects are capitalized by ESC and charged to the operating companies as expense through the general service company overhead rate (Exhs. ES-REVREQ-1, at 53-54, 72-73, 79-80; DPU 48-1; DPU 48-5; AG 1-28 & Att. (c); AG 1-92). ESC's revenue

requirement for the Enterprise IT projects is comprised of depreciation expense and a return on ESC's gross investment base less accumulated depreciation and ADIT (Exhs. ES-REVREQ-2, Sch. 14 (Rev. 4); ES-REVREQ-4, Sch. 5(b) (Rev. 3)). ESC allocates 32.44 percent of Enterprise IT costs to NSTAR Electric, which represents the Company's proportionate share of net income and gross plant assets (Exhs. ES-REVREQ-1, at 81; DPU 48-5). This percentage allocator is a total Company allocator that includes transmission; therefore, the Company applies an additional adjustment to remove the portion of the expense attributable to transmission (Exhs. ES-REVREQ-1, at 81; ES-REVREQ-2, Sch. 14 (Rev. 4)). Finally, because ESC employees perform both capital and expense functions for the Company related to the Enterprise IT projects, an ESC expense ratio of 64.05 percent is applied against the total cost for NSTAR Electric, with the remainder charged to capital or other balance sheet accounts and not included in the revenue requirement (Exhs. ES-REVREQ-1, at 81; ES-REVREQ-2, Sch. 14 (Rev. 4); ES-REVREQ-4, Sch. 5(b) (Rev. 3)).

During the test year, the Company booked $33,020,432 in Enterprise IT projects expense (Exh. ES-REVREQ-2, Sch. 14). The Company initially proposed a pro forma increase in Enterprise IT expense of $10,869,443 based on the total estimated revenue requirement associated with: (1) expected changes in Enterprise IT expense through December 31, 2021; and (2) the post-test-year Oracle Utilities Analytics ("OUA")[109] and

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[109] The Company explains that the OUA project will replace the current FocalPoint reporting systems (Exhs. ES-ADDITIONS-1, at 60-61; ES-REVREQ-1, at 75). The implementation of OUA will address outage reporting system limitations by providing

Network Management System ("NMS")[110] capital projects undertaken by ESC in 2022 (Exhs. ES-REVREQ-1, at 73-74; ES-REVREQ-2, Sch. 14). During the proceeding, the Company reduced its proposed Enterprise IT pro forma adjustment to $7,906,029 based on: (1) a revised calculation of ESC's return on the test-year and post-test-year investments to reflect NSTAR Electric's proposed weighted average cost of capital ("WACC") and (2) updates to Enterprise IT project expense for actual 2022 ESC plant activity for the OUA and NMS projects (Exh. ES-REVREQ-2, Sch. 14 (Rev. 1 through 3)). Thus, the Company proposes a total Enterprise IT expense of $40,926,462 (Exh. ES-REVREQ-2, Sch. 14 (Rev. 4)).

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a single, enterprise outage reporting system that is architected to integrate with ESC's enterprise outage management system to provide outage related data in near real-time through a robust, high performance outage reporting platform (Exhs. ES-ADDITIONS-1, at 61; ES-REVREQ-1, at 75-76; AG 12-43).

110 The Company explains that the NMS project will upgrade the current NMS system to the latest Oracle software version 2.4 in conjunction with the implementation of new server hardware that will enhance system performance and reliability to provide a modernized, technically current software/hardware platform that is fully vendor supported through 2023 (Exhs. ES-ADDITIONS-1, at 63; ES-REVREQ-1, at 77; AG 12-44). Additionally, four high business-value system enhancements, which include Training Simulator, Outage Mobile Application, Automated Single Outage No Light Closeout, and Automated Overlay Google Map Satellite Imagery, will be implemented as part of the NMS project to deliver significant new business capability that directly support and advance operational excellence across ESC (Exhs. ES-ADDITIONS-1, at 63; ES-REVREQ-1, at 77).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that NSTAR Electric failed to timely provide project closure reports to support its Enterprise IT expense, despite the Company's awareness of the Department's specific filing requirements (Attorney General Brief at 131-132, citing Exhs. ES-ADDITIONS-1, at 56-57; AG 15-21 through AG 15-25; D.P.U. 18-150, at 275). The Attorney General contends that the Company acknowledged the delay in providing the closing reports but claimed that all of the required documentation had been provided within six months of the initial filing (Attorney General Brief at 132, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 40).

The Attorney General also claims that there are deficiencies with the variance analyses provided by the Company (Attorney General Brief at 132). In particular, the Attorney General asserts that the Company's purported variance analyses contains estimates, revisions, actuals, and the variance amount, but provide no actual analytical detail such as the reason for the variance or which costs contributed to the variance (Attorney General Brief at 132, citing Exh. DPU 69-12, Att. (a); Tr. 1, at 28-30).

The Attorney General argues that NSTAR Electric's failure to provide timely documentation that substantively complies with the Department's filing standards left insufficient time to conduct a meaningful review of costs and raised doubt about the accuracy of the Company's filing (Attorney General Brief at 132-133). Although the Attorney General does not recommend a specific disallowance of costs, she contends that the Department

should enforce its existing standards and institute and enforce strong administrative safeguards to prevent similar issues in the future, such as the automatic disallowance of costs for projects for which mandated documentation is not provided with a Company's initial filing (Attorney General Brief at 132-133, citing D.P.U. 18-150, at 274-275). The Attorney General also asserts that the Department should require the following information in variance analyses: (1) original estimates, (2) any updated estimates and the related causes, and (3) detailed explanations for both the causes and amounts of any variances, including proper identification of which costs caused the variance (Attorney General Brief at 133).

The Attorney General argues that, despite the Company's position to the contrary, her recommendations are appropriate as they only seek enforcement of the Department's existing standards (Attorney General Reply Brief at 39-40). Finally, the Attorney General rejects any notion that her recommendations would penalize the Company for circumstances beyond its control (Attorney General Reply Brief at 40). The Attorney General contends that the information required to be submitted with the initial filing includes basic, essential Company-generated and maintained project documentation, and the Department's standard allows for additional supporting documentation to be provided through discovery in a timely fashion no later than the close of discovery (Company Reply Brief at 40, citing D.P.U. 18-150, at 275).

b. Company

NSTAR Electric asserts that it will examine the issues experienced with document production in this proceeding to refine and improve its processes for future filings; however,

the Company argues that the automatic disallowance of costs without a showing of imprudence as suggested by the Attorney General is inappropriate and should be rejected (Company Brief at 210). NSTAR Electric contends that the Attorney General's recommendation is impermissibly punitive and could ultimately penalize the Company for circumstances beyond its control, such as when a vendor fails to provide an invoice in a timely fashion for its inclusion in the initial filing (Company Brief at 210). In addition, NSTAR Electric argues that the Attorney General's automatic disallowance recommendation ignores the Department's criteria in D.P.U. 18-150 that requires the Company to produce documentation throughout the course of the discovery period (Company Brief at 210).

Regarding the sufficiency of the information produced in this proceeding, NSTAR Electric claims that it has provided all project documentation supporting its Enterprise IT projects from 2016 through 2021, including Project Authorization Forms and any supplements, approvals, and the appropriate variance analyses for these projects, consistent with the Company's Capital Authorization Policy (Company Brief at 211, citing Exhs. ES-ADDITIONS-11, Atts. (a) through (f); DPU 69-12, Att. (c); RR-AG-11).

Further, NSTAR Electric asserts that it has met the Department's standard for the inclusion of the post-test-year OUA and NMS projects (Company Brief at 209). Specifically, NSTAR Electric contends that both projects are in service and used and useful, the projects advanced the ESC IT strategy and long-term investment plan, project costs were prudently incurred, and no party argued that the costs associated with the projects were imprudent or contrary to the Company's Capital Authorization Policy (Company Brief at 209, citing

Exhs. DPU 48-1; DPU 69-12). In addition, NSTAR Electric claims that the costs were fairly allocated from ESC to the Company (Company Brief at 209, citing Exhs. ES-REVREQ-1, at 72-73, 79-80; DPU 48-1 & Att.; DPU 48-5; AG 1-28 & Att.(c); AG 1-92). While the Company acknowledges that there were delays in providing documentation regarding these projects, the Company maintains that it ultimately provided a comprehensive, consolidated version of the Enterprise IT project documentation during discovery to aid in review of these projects (Company Brief at 209, citing Exhs. ES-REVREQ/CPP/Comp-Rebuttal-1, at 40; DPU 69-12).

3. Standard of Review

The standard for the inclusion of IT expense is comprised of three elements.[111] First, the investments underlying the IT expense must be in service and used and useful. D.P.U. 18-150, at 274, citing D.P.U. 95-118, at 42. Second, the underlying IT investments must be prudently incurred. D.P.U. 18-150, at 274, citing D.P.U. 95-118, at 42. Third, the underlying IT investments must be fairly allocated to the company, with an explanation of how the company and its ratepayers benefit from the investment. D.P.U. 18-150,

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[111] Historically, the Department reviewed a petitioning company's proposed IT expense under the standard of review for lease expense (i.e., reasonableness), as the affiliated service company included IT expense in its lease charges to the petitioning company. D.P.U. 18-150, at 273; D.P.U. 15-155, at 308; D.P.U. 09-39, at 159-159. In D.P.U. 18-150, the Department found that, in conjunction with the increasing importance of IT in business functions, the size and scope of IT investments had become more significant and that this trend likely would continue. D.P.U. 18-150, at 272-273 & n.125. Based on these considerations, the Department found that the lease expense standard of review was no longer sufficient to satisfy the burden of proof necessary for IT-related expense. D.P.U. 18-150, at 273.

at 274-275, citing Hingham Water Company, D.P.U. 88-170, at 21 (1989); Housatonic Water Works Company, D.P.U. 86-93, at 18 (1987); see also Milford Water Company, D.P.U. 12-86, at 11 (2013) (the Department must carefully scrutinize affiliate transactions because the exercise of control and the absence of arm's-length bargaining between affiliated companies can lead to "excessive charges for services, construction work, equipment and materials") (citations omitted); Public Utility Holding Company Act of 1935, P.L. No. 333, 49 Stat. 803, § 1(b)(2), (3) (1935) (Congress recognized concern with allocation of costs within public utility holding company as reason for legislative/regulatory control of holding companies where subsidiary company accounting practices and rates are affected); Report of the Special Commission on Control and Conduct of Public Utilities (1930 H. 1200), at 46 (March 1930) (consumers suffer from excessive charges by affiliates to operating companies). In addition, as part of their initial filings requesting new base distribution rates, petitioning companies must submit the following documentation for each service-company-allocated IT investment: (1) project sanctioning papers; (2) project closure reports; (3) variance analyses explaining the reasons for cost overruns and for demonstrating prudency; (4) project descriptions, including completed analyses enumerating ratepayer benefits and the investment's advancement of company IT strategy; and (5) the company's long-term investment plan. D.P.U. 18-150, at 275. Petitioning companies are also required to amend their initial filing to include documentation associated with post-test-year investments, if applicable. D.P.U. 18-150, at 275.

4. Analysis and Findings

The Department has reviewed the testimony and supporting documentation for the Company's test-year and post-test-year Enterprise IT investments, as well as updates provided during the proceeding, including initial and supplemental project authorization forms, project approvals, project costs, project closing reports, descriptions of ratepayer benefits, and variance analyses (Exhs. ES-REVREQ-1, at 72-73, 79-80; ES-ADDITIONS-1, at 52-65; ES-RR/CPP/Comp-Rebuttal-1, at 39-43; ES-ADDITIONS-8A & Supp.; ES-ADDITIONS-8B & Supp.; ES-ADDITIONS-11; DPU 15-2; DPU 48-1 & Att.; DPU 48-5; DPU 69-5, Att. & Supp. 1; DPU 69-6, Att. & Supp.; DPU 69-12 & Atts. (a) through (f)[112]; AG 1-28 & Att. (c); AG 1-92; Tr. 1, at 21-39, 65-68; RR-AG-1). We find that the test-year and post-test-year Enterprise IT projects are in-service, used and useful, the costs were prudently incurred, and the Company provided a reasonable explanation of the benefits to ratepayers (Exhs. DPU 48-1; DPU 69-12, Atts. (a), (c, parts 1-21)). For example, customers benefit from the proposed Enterprise IT investments because the systems are necessary for the provision of electric service to customers and they are less expensive for any individual operating company, including NSTAR Electric, when the systems undertaken within a cost-sharing framework (e.g., undertaken by ESC on behalf of the

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112 At the Company's request, Exh. DPU 69-12, Att. (a) replaces Exhs. ES-ADDITIONS-9 & Rev.; Exh. DPU 69-12, Att. (b) replaces Exhs. ES-ADDITIONS-9 (Supps. 1 and 2); and Exh. DPU 69-12, Att. (c), parts 1 through 28 replace Exhs. ES-ADDITIONS-10, ES-ADDITIONS-10A, and ES-ADDITIONS-10 (Supps. 1 and 2).

operating companies on a shared basis) (Exh. DPU 48-1). In addition, the Company's post-test-year OUA and NMS projects are in service, used and useful, and the costs of these projects were prudently incurred, with actual costs through June 30, 2022, being less than the estimated costs for these projects (Exhs. ES-ADDITIONS-8A & Supp; ES-ADDITIONS-8B & Supp.; DPU 69-5, Att. (Supp. 1); DPU 69-6, Att. (Supp. 1); DPU 69-12, Atts. (b), (c, parts 22-28); Tr. 1, at 30-31, 38).[113]

Further, we find that the test-year and post-test-year Enterprise IT project costs were fairly allocated to NSTAR Electric based on the Company's proportionate share of net income and gross plant assets (Exhs. ES-REVREQ-1, at 80-81; ES-REVREQ-2, Sch. 14 (Rev. 4); DPU 48-5; AG 1-28 & Att. (c); AG 1-92). The allocation is based on the Company's operations portfolio designation, which is largely asset driven and uses the referenced allocator (Exh. DPU 48-5). Lastly, the Company provided a summary of its IT long-term investment plan (Exh. DPU 48-1, Att.).

The Company acknowledges its challenges and delays in providing project documentation for Enterprise IT projects throughout this proceeding and concedes that it bears the burden to fully support its requests for cost recovery with appropriate

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113 The Company outlines numerous business and operational benefits associated with the implementation of the OUA and NMS systems (Exhs. ES-REVREQ-1, at 76, 78-79; ES-ADDITIONS-1, at 61-62, 63-64). Any potential savings resulting from these systems would be recognized in the future, and, therefore, they are not currently quantifiable or included in the cost of service (see Exh. AG 14-6). The Department expects NSTAR Electric to reflect potential future savings in the Company's next base distribution rate case.

documentation (Company Brief at 210). The Department recognizes that there are acceptable circumstances when not all required documentation may be available at the time of a company's initial filing. For example, as described above, two of NSTAR Electric's Enterprise IT projects in the instant proceeding were placed in service several months following its initial filing, and, therefore, the Company was unable to provide closing reports for these projects with the initial filing (Tr. 1, at 30-31, 38). Our standard for the inclusion of IT expense costs recognizes that petitioners are required to amend their initial filing to include documentation associated with post-test-year investments, if applicable. D.P.U. 18-150, at 275.

The Department notes, however, that while NSTAR Electric ultimately provided the required documentation to support the recovery of the costs associated with its Enterprise IT projects, the Company did not provide all the required documentation with its initial filing, was required to submit supplements and revisions to numerous exhibits, inadvertently omitted certain information from exhibits, and often requested multiple extensions of time to respond to information requests regarding Enterprise IT projects (see, e.g., Exhs. ES-ADDITIONS-8A & Supp.; ES-ADDITIONS-8B & Supp.; ES-ADDITIONS-9 & Rev., Supps.; ES-ADDITIONS-10 & Supps.; ES-ADDITIONS-10A; DPU 69-12 & Atts.). Further, the Company's need to develop a "roadmap" mid-proceeding to facilitate the Department's and intervenors' review of the Enterprise IT documentation highlights the Company's difficulties in providing complete information in a timely, organized manner (Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 40-41; DPU 69-12 & Atts.).

Despite the Company's shortcomings in providing the Enterprise IT projects supporting documentation, we find that the Attorney General and other parties nevertheless had sufficient opportunity to review the documentation, issue discovery, conduct meaningful cross-examination at the evidentiary hearings, and present any objections to cost recovery for Department consideration (see, e.g., Exhs. AG-LA-1, at 4-8; AG 14-5; AG 14-6; AG 4-18; AG 12-43; AG 12-44; AG 24-6, AG 24-7; Tr. 1, at 21-39, 65-68; RR-AG-1; Attorney General Brief at 131-133; Attorney General Reply Brief at 39-40). As such, in this instance, we will not disallow any test-year or post-test-year Enterprise IT investments. Further, we are not persuaded that additional directives are necessary for future filings, such as the automatic disallowance of costs recommended by the Attorney General.

The Department does, however, reaffirm our requirements related to IT project documentation and reminds companies that it is critical for complete and detailed IT-related investment documentation to be submitted in a timely fashion so that the Department and intervenors have sufficient time for review. Specifically, as part of initial filings requesting new base distribution rates, petitioning companies must submit the following documentation for each service company-allocated IT investment: (1) project sanctioning papers; (2) project closure reports; (3) variance analyses explaining the reasons for cost overruns and for demonstrating prudency; (4) project descriptions, including completed analyses enumerating ratepayer benefits and the investment's advancement of company IT strategy; and (5) the petitioning company's long-term investment plan. D.P.U. 18-150, at 275. Further, variance analyses must contain original estimates, any updated estimates, detailed explanations for

both the causes and amounts of variances, and identification of which costs caused the variance. Petitioning companies can amend initial filings to include documentation associated with post-test-year investments, if applicable. All additional supporting documentation provided through discovery should be produced in a timely fashion and no later than at least one week prior to the close of discovery.

Finally, consistent with Department precedent, for the return component of the Company's Enterprise IT project expenses, the Department calculates the WACC using the capital structure and ROE approved in this Order. D.P.U. 20-120, at 293-294; D.P.U. 19-120, at 255-256; D.P.U. 18-150, at 270-271. Using the capital structure and ROE approved in this proceeding produces an overall WACC of 7.06 percent and a pre-tax WACC of 9.02 percent. Application of the Company's approved pre-tax WACC to ESC's allocation of Enterprise IT expense results in a decrease of $52,095 to the proposed rate year expense (see Exh. ES-REVREQ-2, Sch. 14, at 2 (Rev. 4)). Accordingly, the Department decreases the Company's proposed cost of service by $52,095 for an approved increase to Enterprise IT expense of $7,853,934.

H. Incremental COVID-19 Expenses

1. Introduction

In response to the COVID-19 pandemic, the Department allowed each gas and electric company to record, defer, and track their incremental pandemic-related response costs, subject to a final determination as to their appropriate ratemaking treatment. D.P.U. 20-58-D/D.P.U. 20-91, Interim Order on Ratemaking Proposal and Vote and Order

Opening Investigation at 22-23 (December 31, 2020). Consistent with these rulings, Eversource Energy established affiliate-specific accounting work orders to identify and track incremental non-labor COVID-19 related expenses, such as costs associated with employee protection processes and equipment, facilities cleaning, maintaining the workforce at remote locations, certain telecommunication expenses, and other related costs (Exhs. DPU 3-1; DPU 19-4 & Att.; DPU 56-2).

As of December 31, 2020 (i.e., the end of the test year), NSTAR Electric had incurred total COVID-19-related expenses of $8,848,163, of which $7,907,079 was allocated to distribution operations (Exh. DPU 3-2, Att.). The Company also identified COVID-19-related cost savings of $379,940 that were allocated to distribution operations, producing a net COVID-19-related expense of $7,527,139 (Exhs. DPU 3-2; DPU 56-1).[114] Of the $7,909,079 in distribution-related expenses, the Company identified $4,675,470 as nonrecurring and thus eligible for deferral (Exhs. DPU 3-2; AG 1-34, Att. (h) at 7; AG 1-34, Att. (i) at 5; AG 21-1, Att.). The $7,909,079 in total distribution-related expenses, less $4,675,470 in deferrals, produced a total remaining COVID-19 expense allocated to distribution operations of $3,231,610 (Exhs. DPU 3-2; AG 21-1, Att.; DPU 56-1).

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[114] Cost savings represent expenses that had been avoided as the result of suspended work activities. D.P.U. 20-58-D/D.P.U. 20-91, Interim Order on Ratemaking Proposal and Vote and Order Opening Investigation at 15 (December 31, 2020). The Company's calculations were based on the $7,907,079 total distribution-related expense and did not factor in the $379,940 cost savings (see Exhs. DPU 3-2; DPU 56-1).

NSTAR Electric initially included $3,231,610 in COVID-19-related expenses in its proposed cost of service (Exhs. DPU 56-1; AG 13-2). During the proceeding, the Company revised its estimate of ongoing COVID-19 response costs from $3,231,610 to $988,000, based on a review of its 2022 internal operating budgets (Exh. AG 13-2; RR-DPU-13). These expenses consist of: (1) $362,000 in additional facilities cleaning costs; (2) $75,000 in additional HVAC operation; (3) $380,000 in additional IT costs; and (4) $171,000 in telephone expenses for customer service representatives continuing to work from home (Exhs. DPU 56-2; AG 13-2). The Company states that because its operations have changed as a result of the pandemic experience, these additional expenses will continue to be incurred for the foreseeable future and have thus been incorporated in the Company's cost of service (Exhs. DPU 3-2; ES-REVREQ-2, Sch. 9, at 1 (Rev. 4)). The Company excluded the remaining $2,243,610 from its proposed cost of service (Exh. ES-REVREQ-2, Sch. 9, at 1 (Rev. 4)).

2. Positions of the Parties

a. Attorney General

The Attorney General accepts NSTAR Electric's revised estimate of $988,000 in ongoing incremental COVID-19 responses costs as appropriate (Attorney General Brief at 119, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 31-32; AG-DJE-Surrebuttal-1, at 2). Therefore, the Attorney General accepts the Company's proposed reduction of $2,243,610 to its test year cost of service (Attorney General Brief at 119).

b. Company

NSTAR Electric maintains that it has appropriately identified its recurring COVID-19 response costs (Company Brief at 219, citing Exh. DPU 56-2; RR-DPU-13). The Company also states, as noted by the Attorney General, that it has appropriately eliminated non-recuring COVID-19 response expenses from its proposed cost of service (Company Brief at 219-220, citing Exh. ES-REVREQ-2 (Rev. 2).

3. Analysis and Findings

The Department's long-standing precedent allows only known and measurable changes to test-year expenses to be included in a company's cost of service. D.T.E. 98-51, at 61-62, citing Dedham Water Company, D.P.U. 84-32, at 17 (1984). Further, the Department permits a company to include expenses in its cost of service if a company can demonstrate that the expense is either annually or periodically recurring or, if non-recurring, is extraordinary in nature and amount as to warrant their collection by amortizing them over an appropriate time period. D.P.U. 1270/1414, at 33; see also D.P.U 89-114/90-331/91-80 (Phase One) at 152; Western Massachusetts Electric Company, D.P.U. 88-250, at 65-67 (1989).

The Department has previously recognized that the COVID-19 pandemic has caused not only a public health emergency, but also a significant economic disruption to both customers and jurisdictional gas, electric, and water distribution companies throughout the country. D.P.U. 20-58, Order Opening Inquiry and Establishing Working Group at 2 (May 11, 2020); D.P.U. 20-58-A, Order on Customer Outreach Plan at 5 (June 26, 2020).

While utilities in general faced shifts in demand and usage, increased operational burdens, collections shortfalls, and voluntary and mandatory moratoriums on disconnections, their employees also faced significant disruptions in their day-to-day working conditions. These disruptions necessitated remote work arrangements for those employees whose duties could be performed remotely, including access to IT that an individual employee would not be reasonably expected to personally possess (Exh. DPU 3-2). Because a significant number of employees are considered essential workers who do not have the ability to work remotely, the Company continued to incur facilities cleaning expenses to comply with the cleaning guidelines prescribed by the Center for Disease Control ("CDC") as well as to ensure safe workspaces for its employees (Exh. DPU 3-2). With changes in CDC cleaning protocols and transitions to more of a hybrid work environment in 2021 and thereafter, the Department is satisfied that the test-year expense is not representative of the Company's ongoing COVID-19 response costs that will be incurred in the future. Nonetheless, we recognize that some level of additional COVID-19 response costs will continue to be incurred for an indefinite time.

The Department has examined the Company's calculations and assumptions behind its proposed $988,000 in ongoing COVID-19 response expenses (Exh. DPU 56-2; Tr. 3, at 279-281; RR-DPU-13). The recurring facility cleaning and maintenance costs of $362,000 consists of: (1) $166,000 in increased cleaning of high-traffic areas and touch points identified for each of the Company's Massachusetts facilities; (2) $177,000 in janitorial overtime calculated for each facility; and (3) $19,000 in costs associated with stocking the approximately 150 sanitation stations located at these facilities (Exh. DPU 56-2; Tr. 3,

at 277-278; RR-DPU-13). The recurring electricity costs of $75,000 are associated with additional run times for HVAC equipment based on both CDC and professional engineering guidelines, with a partial offset for lower base electricity costs versus pre-pandemic consumption levels (Exh. DPU 56-2; Tr. 3, at 279-280; RR-DPU-13). The recurring IT costs of $380,000 assume a 25 percent reduction from 2021 expenses as employees transition from remote work to in-office work (Exh. DPU 56-2; Tr. 3, at 280; RR-DPU-13). The recurring customer service costs of $171,000 are based on the Company's allocated share of the $501,120 in increased costs associated with approximately 200 Eversource customer service agent expenses working 20 days a month (Exh. DPU 56-2; Tr. 3, at 279-281; RR-DPU-13). Based on our review, the Department finds that the $988,000 identified by the Company as ongoing COVID-19 response costs is more representative of its ongoing expenses than test-year expense. Aquarion Water Company of Massachusetts, D.P.U. 11-43, at 182-183 (2012); D.P.U. 10-55, at 445. The Department also finds that these costs represent a known and measurable change to test-year cost of service. See D.P.U. 10-55, at 445; D.P.U. 09-30, at 211; D.P.U. 08-35, at 108; Oxford Water Company, D.P.U. 88-171, at 13-14 (1989). Accordingly, the Department allows the $988,000 identified by the Company as ongoing COVID-19 response costs.

I. Employee Retention Credit

1. Introduction

The Coronavirus Aid, Relief, and Economic Security Act of 2020 established an employee retention credit ("ERC") to incentivize companies to retain employees during the

COVID-19 pandemic (RR-AG-2).[115] The ERC operates in the form of a payroll tax credit that is claimed on an employer's quarterly Form 941 tax filings; during 2020, the credit was equal to 50 percent of up to $10,000 in qualified wages paid to an employee (RR-AG-2). While NSTAR Electric had not yet received any of these credits during the test year, the Company booked the expected credits to be received for the years 2020 and 2021 to Account 408, Payroll Taxes (Exh. AG 11-12). The Company estimated that its share of ERCs for 2020 was $1,823,800 (Exh. AG 11-12).

NSTAR Electric considered the ERC credits to be non-recurring because they were not expected to be available in the future, and therefore removed the anticipated ERC credit from its test-year cost of service (Exhs. ES-REVREQ-1, at 58; ES-REVREQ-2, Sch. 9 (Rev. 4); Tr. 1, at 85-86). This adjustment resulted in an increase of $1,823,800 to its test-year cost of service (Exhs. ES-REVREQ-2, Sch. 9 (Rev. 4); ES-RR/CCP/Comp-Rebuttal-1, at 34; AG 21-5).

2. Positions of the Parties

a. Attorney General

The Attorney General contends that the treatment of the ERC in this proceeding should be consistent with the treatment applied in D.P.U. 20-91 (Attorney General Brief at 120; Attorney General Reply Brief at 35). The Attorney General reasons that if the ERC

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115 Section 206 of the Taxpayer Certainty and Disaster Tax Relief Act of 2020, enacted as Division EE of the Consolidated Appropriations Act, 2021, modified the provisions of the ERC and extended its application to July 1, 2021. Pub. L. No. 116-260, 134 Stat. 1182 (December 27, 2020).

was a credit to expense and was non-recurring, then it should be eliminated from the determination of the Company's revenue requirement (Attorney General Brief at 119-120). Further, the Attorney General argues that for consistency, if the Department eliminates the ERC from NSTAR Electric's revenue requirement here, then the ERC must also be eliminated from any level of COVID-19 expense that the Company is ultimately authorized to recover in D.P.U. 20-91 (Attorney General Brief at 120; Attorney General Reply Brief at 35).

b. Company

NSTAR Electric argues that it has appropriately eliminated the effects of the ERC on its cost of service (Company Brief at 220, citing Exhs. AG 11-12; AG 11-22; AG 13-4; AG 21-5; Tr. 1, at 83-86; RR-AG-2; Company Reply Brief at 40-41). According to the Company, because the ERC was not included as an offset in its request to recover incremental COVID-19 costs in D.P.U. 20-91, the ERC must be removed from cost of service to avoid an improper reduction to cost of service (Company Brief at 220, citing RR-AG-2). The Company notes that it will offset any COVID-19 response costs that are ultimately authorized in D.P.U. 20-91 with the ERC (Company Reply Brief at 40-41).

3. Analysis and Findings

The Department typically includes a test year level of expenses in cost of service and will adjust this level only for known and measurable changes. Milford Water Company, D.P.U. 17-107, at 104 (2018), citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.P.U. 07-71, at 120; D.P.U. 87-260, at 75. In this regard, the Department has consistently held that there

are three classes of expenses that are recoverable through base rates: (1) annually recurring expenses; (2) periodically recurring expenses; and (3) nonrecurring extraordinary expenses. D.P.U. 17-107, at 104-105, citing D.P.U. 11-01/D.P.U. 11-02, at 345; D.T.E. 98-51, at 35; D.P.U. 95-118, at 121-122; D.P.U. 1270/1414, at 32-33.

The provisions of the ERC expired, with some limited exceptions not applicable to the Company, during the fourth quarter of 2021.[116] Consequently, the Department finds that the ERC is a nonrecurring credit to payroll taxes, and that its inclusion in the Company's cost of service would produce a distorted level of payroll tax expense. See, e.g., Aquarion Water Company of Massachusetts, D.P.U. 17-90, at 247-248 (2018). Further, we find that the Company has properly calculated the necessary adjustment to its proposed cost of service (Exhs. ES-REVREQ-2, Sch. 8, at 2 (Rev. 4); AG 11-12; AG 11-22; AG 21-5; Tr. 1, at 83-86; RR-AG-2). Therefore, the Department accepts the Company's proposed adjustment, and we remove the ERC from the Company's test-year cost of service. The elimination of this credit produces an increase of $1,823,800 to the Company's test-year cost of service (Exhs. ES-REVREQ-2, Sch. 9 (Rev. 4); ES-RR/CCP/Comp-Rebuttal-1, at 34; AG 21-5).

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116 See Internal Revenue Bulletin: 2021-65, Termination of the Employee Retention Credit Under Section 3134 of the Code in the Fourth Calendar Quarter of 2021 for Certain Employers.

J. Work Asset Management Expenses

1. Introduction

As part of Eversource Energy's technology modernization initiatives, it has embarked on the implementation of a new Work and Asset Management System ("WAM System") across all of its electric transmission and distribution operations, including those of the Company (Exh. ES-ADDITIONS-10, at 1059; Tr. 7, at 766-767). During the test year, NSTAR Electric booked approximately $3,200,000 in expenditures associated with the implementation of the WAM System to Account 921, Office Supplies and Expenses (Exh. DPU 3-14). These expenses represented the cost of employee training intended to familiarize Company personnel with the use of the WAM System (Exh. AG 16-15).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the WAM System training expenses are nonrecurring and should be excluded from the Company's proposed cost of service (Attorney General Brief at 117; Attorney General Reply Brief at 35). In support of her position, the Attorney General contends that once the Company's employees are appropriately trained on the use of the WAM System, these training costs should not be expected to continue (Attorney General Brief at 117). The Attorney General also contends that the Company's Account 921 expenses for 2021 decreased by an amount similar to what would be expected if the WAM System training costs were removed and were consistent with the 2019 expenses when adjusted for inflation and "some level" of continuing costs related to COVID-19

(Attorney General Brief at 117-118, citing Exhs. AG DJE-1, at 6-7; AG 1-2, Att. (6)(e) at 170 (Supp. 1)).

Further, the Attorney General dismisses the Company's claim that it has incurred significant training expenses during the first quarter of 2022 as a non sequitur unsupported by any evidence (Attorney General Brief at 118). She points out that during Department questioning, the Company was unable to confirm whether the increase in expenses booked to Account 921 during the first quarter of 2022 was attributable to training costs (Attorney General Brief at 118, citing Tr. 7, at 764; Attorney General Reply Brief at 35)

Based on the nature of the Company's test-year WAM System training expenses and lack of evidence that the Company's test-year Account 921 expenses are representative of future expenditures, the Attorney General argues that the Company's proposed WAM System training expenses are nonrecurring (Attorney General Brief at 118; Attorney General Brief at 35). Thus, she asserts that the Company's proposed cost of service should be reduced by $2,777,920, which represents the portion of the $3,200,000 in total expenses associated with distribution operations (Attorney General Brief at 119, citing Exh. AG DJE-1, at 7, Sch. 1).[117]

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[117] The Attorney General calculates that, after factoring in working capital, return requirements, and income taxes, her proposed adjustment produces an overall reduction of $3,038,162 to the Company's proposed cost of service (Exh. AG DJE-1, at 7, Sch. 1).

b. Company

NSTAR Electric argues that while the WAM System training costs are not in themselves a recurring expense, the Company continually conducts other trainings across its organization to ensure that employees and contractors are able to perform their duties consistent with Company systems, procedures, and processes (Company Brief at 211, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 32; AG 16-15). For example, the Company maintains that although there are no incurred or forecasted WAM System training expenses for 2022 and 2023, its overall Account 921 expenses during 2021 were $6,939,589, and were $6,471,458 during the first quarter of 2022 (Company Brief at 211, citing Exhs. ES-RR/CPP/Comp-Rebuttal-1, at 32-33; AG 21-4). The Company contends that it will continue to incur training expenses, including training on a range of IT platforms that ESC is developing over the next four years (Company Brief at 211, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 33; Company Reply Brief at 39, citing Exhs. DPU 48-1; ES-ADDITIONS-8A at 2-3). The Company argues that because training costs are recurring, its test-year WAM System training costs provides an appropriate representative expense to be included in the cost of service (Company Brief at 212, citing Exh. ES-RR/CPP/Comp-Rebuttal-1, at 33; Tr. 7, at 766-769).

In the alternative, NSTAR Electric proposes that if the Department determines that its WAM System training costs are not representative, then the expenses should be normalized rather than eliminated in their entirety (Company Reply Brief at 39-40). According to the Company, normalization places a certain degree of risk back on the utility that would be

expected in the course of operations (Company Reply Brief at 40, citing D.P.U. 92-101, at 48-49; D.P.U. 92-78, at 9; D.P.U. 1720, at 89). The Company proposes that if the Department declines to allow the test-year expense in full, a normalization period of four years would be appropriate in view of the relatively short life associated with IT (Company Reply Brief at 39 n.5, citing Bay State Gas Company, D.P.U. 13-75, at 261-263 (2014)).

3. Analysis and Findings

Test-year expenses that recur on an annual basis are eligible for full inclusion in cost of service unless the record supports a finding that the level of the expense in the test year is abnormal. D.P.U. 1270/1414, at 33. The Department's longstanding policy regarding adjustments to O&M expense levels is to set a representative level of expenses that are reasonably expected to recur on a normal annual basis. D.P.U. 1270/1414, at 33.

Account 921 encompasses a wide range of expenditures, representing office supplies and expenses incurred in connection with the general administration of the utility's operations that are assignable to specific administrative or general departments, and not specifically provided for in other accounts. 18 CFR Part 101, Account 921. Examination of the Company's bookings to Account 921 and its related subaccounts for the years 2018 through 2021 indicates that the most significant activity occurs in three subaccounts, with a fourth subaccount acting as a clearing account (Exhs. DPU 3-14; AG 1-2, Att. (6)(e) at 170 (Supp. 1); AG 1-34, Atts. (d) at 25, (e) at 18-19, (f) at 26, (g) at 19, (h) at 27, (i) at 19-20, (k) at 27 (Supp. 1), and (l) at 20 (Supp. 1)). While the Company points to the significant

increase in its Account 921 expenses for the first quarter of 2022, the Company was unable to quantify the reasons for this increase aside from generalized observations about other training programs (Tr. 7, at 765, 768-769). Moreover, the magnitude of the reported increase (i.e., more than doubling test-year expense on an annualized basis) is suggestive of some unusual activity during that period. On this basis, the Department finds that there is insufficient evidence to support consideration of the Company's expense levels for the first quarter of 2022 in assessing the representativeness of its test-year Account 921 expenses.

While the Department acknowledges that utilities engage in employee training on an ongoing basis, the WAM expenses are nonrecurring, and the Company has failed to demonstrate that its test-year Account 921 expenditures are representative of the level of expense that will be incurred in the future. Therefore, the Department finds it appropriate to remove the test-year WAM expenses from the Company's proposed cost of service. D.P.U. 10-55, at 332-333; D.P.U. 08-35, at 120-125.[118] Of the $3,200,000 in test year WAM expenses, the Company allocates 13.19 percent, or $422,080, to its transmission operations (Exhs. AG-DJE-1, at 7, Sch 1; DPU 3-2, Att.). The remaining 86.81 percent, or $2,777,920, represents the portion associated with distribution operations (Exhs. DPU 3-2, Att.; AG-DJE-1, at 7, Sch. 1). Accordingly, the Department reduces the Company's proposed cost of service by $2,777,920.

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[118] NSTAR Electric's alternative proposal to normalize the WAM System training expenses was offered on reply brief. We find the proposal to be untimely, as neither the Department nor the remaining parties had an opportunity to conduct meaningful investigation.

K. Rate Case Expense

1. Introduction

Initially, the Company estimated that it would incur $3,816,170 in rate case expense (Exhs. ES-REVREQ-1, at 100; ES-REVREQ-2, Sch. 19). Based on its final invoices and projected costs to complete the compliance filing, the Company proposes a total rate case expense of $3,108,191 (Exhs. ES-REVREQ-2, Sch. 19 (Rev. 4); DPU 30-8, Att. A (Supp. 3)). NSTAR Electric's proposed rate case expense includes costs related to legal representation, rate case support, and expert consulting services related to the Company's (1) PBR proposal, (2) depreciation study, (3) cost of capital study, and (4) allocated cost of service ("ACOSS") study (Exhs. ES-REVREQ-1, at 94-95, 100; ES-REVREQ-3, WP 19; AG 5-35, Att. A; DPU 30-1).[119]

The Company proposes to normalize the rate case expense over a five-year period based on the statutory requirement (Exhs. ES-REVREQ-1, at 100; ES-REVREQ-2, Sch. 19 (Rev. 4); DPU 30-21). Normalizing the Company's proposed rate case expense of $3,108,191 over five years produces an annual expense of $621,638 (Exh. ES-REVREQ-2, Sch. 19 (Rev. 4)).

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[119] The Company utilized ESC or internal employees as witnesses for certain aspects of the rate case, such as revenue requirement, employee compensation and benefits, and rate design, as well as legal support. The payroll costs for these employees are included in employee compensation and benefits rather than in rate case expense (Exh. DPU 30-11; Tr. 14, at 1507).

2. Positions of the Parties

The Company maintains that it appropriately conducted a competitive solicitation process consistent with the Department's requirements (Company Brief at 198-199). The Company also asserts that it has taken steps to control rate case expense, including selecting outside service providers that provided blended hourly fees, discounts, and not-to-exceed levels (Company Brief at 199, citing Exhs. DPU 30-3; DPU 30-17). In addition, NSTAR Electric maintains that it performs a detailed review of the outside service providers' invoices and resolves any questions or anomalies prior to approving for payment (Company Brief at 199-200, citing Exh. DPU 30-17). No intervenor addressed the Company's rate case expense on brief.

3. Analysis and Findings

a. Introduction

The Department allows recovery for rate case expense based on two important considerations. First, the Department permits recovery of rate case expense that actually has been incurred and, thus, is considered known and measurable. New England Gas Company, D.P.U. 10-114, at 219-220 (2011); D.P.U. 07-71, at 99; D.T.E. 05-27, at 157; D.T.E. 98-51, at 61-62. Second, such expenses must be reasonable, appropriate, and prudently incurred. D.P.U. 10-114, at 220; D.P.U. 09-30, at 226-227; D.P.U. 95-118, at 115-119.

The overall level of rate case expense among utilities has been, and remains, a matter of concern for the Department. D.P.U. 10-114, at 220; D.P.U. 07-71, at 99; D.T.E. 03-40,

at 147; D.T.E. 02-24/25, at 192; D.P.U. 93-60, at 145. Rate case expense, like any other expenditure, is an area in which companies must seek to contain costs. D.P.U. 10-114, at 220; D.P.U. 07-71, at 99; D.T.E. 03-40, at 147-148; D.T.E. 02-24/25, at 192; D.P.U. 96-50 (Phase I) at 79. All companies are on notice that the risk of non-recovery of rate case expenses looms should they fail to sustain their burden to demonstrate cost containment associated with their selection and retention of outside service providers. D.P.U. 10-114, at 220; D.P.U. 09-39, at 289-293; D.P.U. 09-30, at 238-239; D.T.E. 03-40, at 152-154. Further, the Department has found that rate case expenses will not be allowed in cost of service where such expenses are disproportionate to the relief being sought. D.P.U. 10-114, at 220; D.P.U. 10-55, at 323; see also Barnstable Water Company, D.P.U. 93-223-B at 16-17 (1993).

b. Competitive Bidding Process

i. Introduction

The Department has consistently emphasized the importance of competitive bidding for outside services in a petitioner's overall strategy to contain rate case expense. See, e.g., D.P.U. 10-114, at 221; D.P.U. 09-30, at 227; D.T.E. 05-27, at 158-59; D.T.E. 03-40, at 148; D.T.E. 02-24/25, at 192. If a petitioner elects to secure outside services for rate case expense, it must engage in a competitive bidding process for these services. D.P.U. 10-114, at 221; D.P.U. 09-30, at 227; D.P.U. 07-71, at 99-100, 101; D.T.E. 03-40, at 153. In all but the most unusual of circumstances, it is reasonable to expect that a company can comply with a competitive bidding requirement. D.P.U. 10-55,

at 342. The Department fully expects that competitive bidding for outside rate case services, including legal services, will be the norm. D.P.U. 10-55, at 342.

The requirement of having to submit a competitive bid in a structured and organized process serves several important purposes. First, the competitive bidding and qualification process provides an essential, objective benchmark for the reasonableness of the cost of the services sought. D.P.U. 10-114, at 221; D.P.U. 09-30, at 228-229; D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. Second, it keeps even a consultant with a stellar past performance from taking the relationship with a company for granted. D.P.U. 10-114, at 221; D.P.U. 07-71, at 101; D.T.E. 03-40, at 152. Finally, a competitive solicitation process serves as a means of cost containment for a company. D.T.E. 03-40, at 152-153.

The competitive bidding process must be structured and objective and be based on a RFP process that is fair, open, and transparent. D.P.U. 10-114, at 221, 224; D.P.U. 09-30, at 227-228; D.P.U. 07-71, at 99-100; D.T.E. 03-40, at 153. The timing of the RFP process should be appropriate to allow for a suitable field of potential service providers to provide complete bids and provide the company with sufficient time to evaluate the bids. D.P.U. 10-114, at 221; D.P.U. 10-55, at 342-343. Further, the RFP issued to solicit service providers must clearly identify the scope of work to be performed and the criteria for evaluation. D.P.U. 10-114, at 221-222; D.P.U. 10-55, at 343.

The Department does not seek to substitute its judgment for that of a petitioner in determining which service provider may be best suited to serve the petitioner's interests and obtaining competitive bids does not mean that a company must necessarily retain the services

of the lowest bidder regardless of its qualifications. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153. The need to contain rate case expense, however, should be accorded a high priority in the review of bids received for case work. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153. In seeking recovery of rate case expenses, companies must provide an adequate justification and showing, with contemporaneous documentation, that their choice of outside services is both reasonable and cost-effective. D.P.U. 10-114, at 222; D.T.E. 03-40, at 153.

ii. Company's RFP Process

The Company seeks to include expenses associated with the following: (1) PBR proposal; (2) depreciation study; (3) cost of capital study; (4) ACOSS study; (5) legal services; and (6) rate case support (Exhs. ES-REVREQ-1, at 94-95, 100; ES-REVREQ-3, WP 19; DPU 30-1; DPU 30-8, Att. A (Supp. 3); DPU 30-18). NSTAR Electric provided documentation demonstrating that it conducted a competitive bidding process for each of its service providers utilized solely for this base distribution rate proceeding (Exhs. DPU 30-1 & Atts.; DPU 30-7; DPU 30-18; DPU 50-2). The Company also utilized a managed services program vendor who conducted analysis and prepared documentation supporting the filing of exhibits related to capital additions as well as administrative support in submitting filings pursuant to a competitive bidding process that was conducted in 2017 (Exhs. DPU 30-7; DPU 30-18).

Based on our review of the RFPs and responses, we conclude that the Company's choices regarding its consultants, including attorneys, were reasonable and cost effective (Exhs. DPU 30-1, Atts. (h) through (l); DPU 30-2 & Atts.; DPU 30-3 & Att.). We also

find that NSTAR Electric appropriately considered price and non-price factors before selecting the providers that it determined would provide the best combination of price and appropriate quality of service (Exhs. DPU 30-1, Atts. (h) through (l); DPU 30-2 & Atts.; DPU 30-3 & Att.). For each category, the Company appropriately selected a provider that possessed expertise and experience, knowledge of Department ratemaking precedent and practice, familiarity with the Company's operations, and a comprehensive understanding of the tasks for which it was requested to bid (Exhs. DPU 30-1, Atts. (h) through (l); DPU 30-2 & Atts.; DPU 30-3 & Att.). Based on the foregoing, the Department concludes that NSTAR Electric conducted a fair, open, and transparent competitive bidding process for the attorneys and consultants (Exhs. DPU 30-1, Atts. (h) through (l); DPU 30-2 & Atts.; DPU 30-3 & Att.).

c. Various Rate Case Expenses

The Department has directed companies to provide all invoices for outside rate case services that detail the number of hours billed, the billing rate, and the specific nature of the services performed. D.P.U. 10-114, at 235-236; D.T.E. 03-40, at 157; D.T.E. 02-24/25, at 193-194. The Department has reviewed the invoices provided by NSTAR Electric and finds that the invoices are properly itemized (see, e.g., Exhs. DPU 30-8, Atts. B through G; DPU 30-8, Atts. E, F (Supp. 3)). In addition, the Department finds that the total costs associated with each service provider are reasonable, appropriate, and proportionate to the overall scope of work provided and were prudently incurred (see, e.g., Exhs. DPU 30-8, Atts. B through G; DPU 30-8, Atts. E, F (Supp. 3)).

d. Normalization of Rate Case Expense

The proper method to calculate a rate case expense adjustment is to determine the rate case expense, normalize the expense over an appropriate period, and then compare it to the test-year level to determine the adjustment. D.P.U. 10-55, at 338-339; D.T.E. 05-27, at 163; D.T.E. 03-40, at 163; D.T.E. 02-24/25, at 197; D.T.E. 98-51, at 62; D.P.U. 95-40, at 58. The Department's practice is to normalize rate case expense so that a representative annual amount is included in the cost of service. D.P.U. 10-55, at 339; D.T.E. 05-27, at 163; D.T.E. 03-40, at 163; D.T.E. 02-24/25, at 191; D.T.E. 01-56, at 77; D.T.E. 98-51, at 53; D.P.U. 96-50 (Phase I) at 77. Normalization is not intended to ensure dollar-for-dollar recovery of a particular expense; rather, it is intended to include a representative annual level of expense. D.P.U. 10-55, at 339; D.T.E. 05-27, at 163; D.T.E. 03-40, at 163-164; D.T.E. 02-24/25, at 191; D.P.U. 96-50 (Phase I) at 77.

Typically, the Department determines the appropriate period for recovery of rate case expense by taking the average of the intervals between the filing dates of a company's last four base distribution rate cases, including the present case, rounded to the nearest whole number. D.P.U. 10-55, at 339; D.T.E. 05-27, at 163 n.105; D.T.E. 03-40, at 164 n.77; D.T.E. 02-24/25, at 191. If the resulting normalization period is deemed unreasonable or if the company has an inadequate rate case filing history, the Department will determine the appropriate normalization period based on the particular facts of the case. South Egremont Water Company, D.P.U. 86-149, at 2-3 (1986).

NSTAR Electric proposes a five-year rate case expense normalization period based on the period for filing rate cases pursuant to Massachusetts law (Exhs. ES-REVREQ-1, at 101-102; DPU 50-2). The Company also provided a calculation of the average interval between its last four base distribution rate cases, which resulted in an average interval of ten years (Exh. ES-REVREQ-4, Sch. 3).[120] In its calculation, NSTAR Electric did not include any base distribution rate cases involving the former WMECO. Utilizing both NSTAR Electric's and the former WMECo's filings, the average interval between the Company's last four base distribution rate cases is seven years (Exh. ES-REVREQ-4, Sch. 3).[121] As discussed in Section IV.D.5.a above, the Department has approved a PBR plan for the Company that includes a five-year term and stay-out provision. The Department has considered the term of a PBR in establishing an appropriate rate case expense normalization

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120 In addition to the current filing, NSTAR Electric's prior base distribution rate filings were D.P.U. 17-05, Boston Edison Company/Cambridge Electric Light Company/Commonwealth Electric Company/NSTAR Gas Company, D.T.E. 05-85 (2005), and D.P.U. 92-250 (Exh. ES-REVREQ-4, Sch. 3, at 1). Between D.P.U. 22-22 and D.P.U. 17-05, the interval is 4.99 years; between D.P.U. 17-05 and D.T.E. 05-85, the interval is 11.11 years; and between D.T.E. 05-85 and D.P.U. 92-250, the interval is 13.06 years. The sum of these intervals divided by three and rounded to the nearest whole number results in a normalization period of ten years (29.18/3 = 9.73).

121 The former WMECo's prior base distribution rate fillings were D.P.U. 17-05, D.P.U. 10-70, and Western Massachusetts Electric Company, D.T.E. 06-55 (2007). Between D.P.U. 22-22 and D.P.U. 17-05, the interval is 4.99 years; between D.P.U. 17-05 and D.P.U. 10-70, the interval is 6.53 years; and between D.P.U. 10-70 and D.T.E. 06-55, the interval is 3.72 years. The sum of these intervals divided by three and rounded to the nearest whole number results in a normalization period of five years (15.24/3 = 5.08). The average of NSTAR Electric's interval and the former WMECo's interval is 7.41 years (rounded to seven).

period. D.P.U. 17-05, at 281-282; D.P.U. 09-30, at 241; D.P.U. 07-71, at 105; D.T.E. 05-27, at 163-164; D.T.E. 03-40, at 163; D.T.E. 01-56, at 75; D.P.U. 96-50 (Phase I) at 78. The Department has found that the term of a PBR that prevents a company from filing a new base distribution rate case for a predetermined period provides a more representative basis for establishing a rate case expense normalization period. D.P.U. 17-05, at 282; D.P.U. 96-50 (Phase I) at 78. Accordingly, the Department finds that a five-year normalization period is appropriate.

e. Conclusion

The Company proposed and the Department has accepted a final rate case expense of $3,108,191 (Exhs. ES-REVREQ-2, Sch. 19 (Rev. 4); DPU 30-8 (Supp. 3), Att. A). Based on a five-year normalization period, the annual level of rate case expense to be included in the Company's cost of service is $621,638 ($3,108,191 divided by five years). The annual level of rate case expense approved in this proceeding is reflected in Schedule 2 below.

VIII. EXCESS ACCUMULATED DEFERRED INCOME TAXES

A. Introduction

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 ("2017 TCJA") was signed into law.[122] Among other things, the 2017 TCJA reduced the federal corporate income tax rate from 35 percent to 21 percent, effective January 1, 2018. Pub. L. No. 115-97, § 13001. On February 2, 2018, the Department, pursuant to G.L. c. 164, §§ 76,

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[122] Pub. L. No. 115-97, 131 Stat. 2054: An Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018.

93, 94 and G.L. c. 165, §§ 2, 4, opened an investigation into the effect on rates of the decrease in the federal corporate income tax rate on the Department's regulated utilities. Effect of Reduction in Federal Income Tax Rates on Rates Charged by Electric, Gas, and Water Companies, D.P.U. 18-15, Order Opening Investigation (February 2, 2018).[123]

The Department determined, among other things, that for certain regulated utilities, including the Company, the reduction in the federal corporate income tax rate resulted in booked ADIT that was in excess of future liabilities. D.P.U. 18-15, Order Opening Investigation at 4. Thus, as part of the investigation, certain regulated utilities, including the Company, were directed to file a proposal to refund to ratepayers the balance of excess ADIT as of December 31, 2017. D.P.U. 18-15, Order Opening Investigation at 5.

The Department subsequently directed NSTAR Electric to refund excess ADIT to ratepayers through a 2017 Tax Act Credit Factor ("2017 TACF") as a separate reconciling component in the Company's annual rate adjustment/reconciliation filing. D.P.U. 18-15-E at 38-39. The Department determined that the credit factor would remain in effect until the excess ADIT balance is transferred to the new rates that are established in the Company's next base distribution rate proceeding, or unless otherwise directed by the Department. D.P.U. 18-15-E at 39 n.34.

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[123] For a complete background and procedural history, refer to D.P.U. 18-15-A at 1-7.

B. Company Proposal

NSTAR Electric states that its excess ADIT balance as of December 31, 2021, was $428,741,374[124] before tax gross-up and $589,902,826 after tax gross-up (Exhs. ES-REVREQ-2, Sch. 32 (Rev. 4); DPU 51-7). From this amount, the Company deducted a flow-through adjustment of $57,583,262 for items that are primarily depreciation flow-through, and income tax deficiency amounts prior to the 2017 TCJA rate change (Exhs. DPU 18-2; DPU 51-7). Overall, the Company reports a grossed-up net excess ADIT balance of $532,319,565 at year-end 2021 (Exhs. ES-REVREQ-2, Sch. 1, at 4, Sch. 32 (Rev. 4); DPU 51-7).

The Company proposes to continue refunding excess ADIT related to the 2017 TCJA to customers through the 2017 TACF (Exh. ES-REVREQ-1, at 143). As such, the Company does not propose any excess ADIT-related adjustments to the cost of service in this proceeding (Exh. ES-REVREQ-1, at 143). No party addressed the Company's excess ADIT proposal on brief.

C. Analysis and Findings

In D.P.U. 18-15-E, at 39, the Department found that given that NSTAR Electric would refund excess ADIT to ratepayers through its annual rate adjustment/reconciliation filing, the amounts are subject to reconciliation once the final tax liabilities come due. Further, we noted that we fully expected NSTAR Electric to make these determinations as

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124 Of this amount, $47,637,826 was attributable to non-property related excess ADIT, and $381,103,548 was attributable to property-related excess ADIT (Exh. DPU 51-7).

soon as practicable and to implement appropriate adjustments, supported by testimony and exhibits, in future reconciliation filings. In the instant proceeding, the Company has provided total excess ADIT to be refunded to customers as a result of the 2017 TCJA and shown that it tracked the difference between the excess ADIT amortization and the actual refunds through 2017 TACF over time since the D.P.U. 18-15-E decision (Exhs. DPU 18-4, Att.; DPU 32-1 & Att.; DPU 61-14). Further, the Department finds the Company's reported excess ADIT balances to be acceptable (Exh. DPU 51-7).

As noted above, the Department previously directed NSTAR Electric to refund excess ADIT to ratepayers through the 2017 TACF until the Company could transfer the excess ADIT balance to new rates established in the Company's next base rate proceeding, or unless otherwise directed by the Department. D.P.U. 18-15-E, at 39 n.34. In support of its proposal to continue refunding excess ADIT through the 2017 TACF instead of transferring the balance to base distribution rates, the Company points to Budget of the U.S. Government for Fiscal Year 2023, wherein the Administration seeks to raise the federal corporate income tax rate from 21 percent to 28 percent (Exh. DPU 32-3 & Att. at 40, 135). While a change in this tax rate is not certain, if a change does occur the Company would be required to adjust the excess ADIT balance and amortization periods applicable to ensure an accurate refund to customers. We find that it would be administratively efficient for the Company to address future adjustments to the excess ADIT balance and amortization periods through the 2017 TACF. Moreover, the record shows that the balance of unprotected, non-property-related excess ADIT will be fully refunded to customers by the end of the rate

year (Exh. DPU 18-4, Att.; Tr. 1, 140-141). Thus, we find that it would be inappropriate to include the balance in base distribution rates for at least the next five years. Based on these considerations, the Department finds that it is reasonable and appropriate for the Company to retain the 2017 TACF. See D.P.U. 18-150, at 197-198 (allowing National Grid (electric) to retain its tax credit provision due to potential changes Internal Revenue Service normalization requirements).[125] Accordingly, we allow the Company's proposal.

IX. PENSION ADJUSTMENT FACTOR ALLOCATION AND MOTION FOR APPROVAL OF REQUEST FOR ORAL ARGUMENT

A. Introduction

Prior to February 1, 2018, NSTAR Electric recovered a portion of its pension and PBOP expense in its base distribution rates (Exh. ES-REVREQ-7, at 2). See also D.P.U. 17-05, at 323 & n.166; NSTAR Pension, D.T.E. 03-47-C at 7 n.2 (2004).[126] Because a portion of pension and PBOP expense were embedded in base distribution rates, the Company needed to allocate these embedded expenses between its distribution and

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125 If there is a change in the federal corporate income tax rate that necessitates any adjustments to the excess ADIT balance or amortization amounts, the Department may consider opening an investigation to address the change.

126 NSTAR Electric and the former WMECo were separate companies until January 1, 2018, when WMECo was consolidated into NSTAR Electric after approval of the transaction by the Department. D.P.U. 17-05, at 4, 43-44. While a portion of NSTAR Electric's pension and PBOP expenses were recovered through base distribution rates, all of WMECo's qualified pension plan pension and PBOP costs were recovered through its own PAM. D.P.U. 17-05, at 323. In D.P.U. 17-05, the Department approved the transfer of all of NSTAR Electric's qualified pension plan pension and PBOP costs to the pension adjustment factor. D.P.U. 17-05, at 324.

transmission functions. D.T.E. 03-47-B (Phase II) at 10-11. During this time, the Company relied on a transmission allocator in its calculation of its proposed pension adjustment factors ("PAF") that varied from year to year to recognize the actual expense allocated to its transmission function based on FERC's formula rate that uses a labor allocator (Exh. ES-REVREQ-7, at 3-7). In contrast, according to the Company, the Attorney General has advocated the use of a fixed ratio of 3.84 percent using the allocation between its distribution and transmission embedded expenses in base distribution rates based on the ratio originally established for NSTAR Electric in D.T.E. 03-47 (Exh. ES-REVREQ-7, at 3).

Although the allocation issue has been resolved for the Company's post-2018 PAF filings, the allocation issue continues to affect eight PAF filings covering the years 2011 through 2018 that are currently pending before the Department. The outstanding dockets are: NSTAR Electric Company and NSTAR Gas Company, D.P.U. 11-91; NSTAR Electric Company and NSTAR Gas Company, D.P.U. 12-113; NSTAR Electric Company and NSTAR Gas Company, D.P.U. 13-184; NSTAR Electric Company and NSTAR Gas Company, D.P.U. 14-145; NSTAR Electric Company, NSTAR Gas Company, and Western Massachusetts Electric Company, D.P.U. 15-147; NSTAR Electric Company, NSTAR Gas Company, and Western Massachusetts Electric Company, D.P.U. 16-182; NSTAR Electric Company, NSTAR Gas Company, and Western Massachusetts Electric Company, D.P.U. 17-159; and NSTAR Electric Company and NSTAR Gas Company, D.P.U. 18-121.

According to the Company, the Attorney General has challenged the recovery of approximately $26,835,250 in pension costs, including carrying charges, in these dockets

(Exh. ES-REVREQ-7, at 3). The Company notes that the allocation issue has been outstanding for over ten years and maintains that lack of resolution of the issue is creating significant regulatory uncertainty (Exh. ES-REVREQ-7, at 2-3). NSTAR Electric states that the Department's resolution of this impasse is needed in this case before the Company can commit to take on the risk of a ten-year PBR Plan (Exh. ES-REVREQ-7, at 2-3).

On September 2, 2022, the Company filed its initial brief in this proceeding. In its brief, the Company addressed the pension allocation issue and requested oral argument before the full Commission because the Department did not inquire about the issue during the discovery or evidentiary hearing phase of the proceeding (Company Brief at 374-380). No other party briefed this issue. On September 7, 2022, the Company filed a Motion for Approval of Request for Oral Argument on this pension allocation issue ("Motion").[127] On September 23, 2022, the Attorney General filed an Opposition to NSTAR Electric's Motion ("Attorney General Opposition").

B. Positions of the Parties

1. Company

NSTAR Electric contends that the pension allocation issue has been unresolved for over a decade, and that the contested amount currently stands at approximately $26.8 million,

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[127] The Motion is a five-page document without pagination. For purposes of the form of motions and briefs filed with the Department, the Department adopts the requirements for pagination of briefs of the Massachusetts Rules of Appellate Procedure, Rule 20(a)(5) (consecutive page numbering). For purposes of cites to the Motion in this Order, the Department identifies the page where the content appears.

including $8.4 million in carrying costs (Motion at 3; Company Brief at 374-375). The Company asserts that given this magnitude of potential exposure, the Department must resolve the pension allocation issue so that the Company and Attorney General can decide on the appropriate next steps, including seeking judicial review if so determined (Motion at 5; Company Brief at 375-376).[128]

NSTAR Electric defends its use of a variable transmission allocator, arguing that its use was designed to match the annual ratio of transmission and distribution expenses in the PAM with the actual ratio of transmission and distribution expense approved by FERC in setting transmission rates (Company Brief at 375). Further, NSTAR Electric contends that the use of a variable transmission allocator was approved by the Department as part of the Company's compliance filing in D.T.E. 03-47.[129]

The Company also contends that it properly incorporated the allocation of pension/PBOP expense into the PAF formula (Company Brief at 376-379). In addition, the Company maintains that the Attorney General is not seeking to correct a computational error in the PAF formula, but rather seeks to modify the PAF formula itself (Company Brief at 379). According to the Company, the Massachusetts Supreme Judicial Court has repeatedly held that a mechanically applied formula rate is a fixed rate that cannot be

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128 NSTAR Electric contends that if the Department were to decide against the Company on this issue, then it would seek judicial review on the basis of reversible legal error (Company Brief at 375).

129 The Company's brief makes reference to D.T.E. 03-87, which pertains to a double-pole proceeding, and, therefore, appears to be a typographical error.

changed outside of a base distribution rate proceeding, as had been done in D.P.U. 17-05 (Company Brief at 380, citing Attorney General v. Department of Public Utilities, 453 Mass. 191 (2009)).

In support of its Motion, the Company asserts that the complexity of the method to allocate annual pension expense for the PAM necessitates oral argument to ensure that: (1) the issues are fully litigated on the record; (2) all parties have an opportunity to make a complete presentation of their respective positions; and (3) any questions that the Department may have about the parties' positions are thoroughly addressed and examined before a decision is made (Motion at 4). According to the Company, there is no record in this proceeding beyond the initial filing addressing the allocation method for annual pension expense for the PAM between distribution and transmission, the Department did not ask any questions about this issue during the conduct of this proceeding, and the Company has not had the opportunity to fully defend its position given the limited, pointed questions raised by the Attorney General (Motion at 4). Further, NSTAR Electric contends that there are multiple, complex issues of law to address that require counsel to interpret the Company's assertions (Motion at 4). Thus, the Company argues that there is a lack of defined evidence outlining the pension allocation issue on the record, and it is unreasonable and unfair to adjudicate the matter without of allowing oral argument by the parties (Motion at 4).

2. Attorney General

The Attorney General argues that the open PAF dockets are the appropriate forum for the Company to make its arguments (Attorney General Opposition at 3). Further, the

Attorney General contends that the Company has mischaracterized her position as to the pension allocation issue (Attorney General Opposition at 3). According to the Attorney General, in the PAF dockets, she did not advocate for a fixed 3.84-percent allocation factor, but instead argued that the Company erred in its calculation of the PAF and needs to adjust the transmission allocator within the PAF where the pension and PBOP currently in rates enters into the calculation (Attorney General Opposition at 5). The Attorney General contends that her recommendation would only require corrective calculation of the Company's PAF, which can be achieved in the PAF dockets and is not required to be addressed in this instant base distribution rate case (Attorney General Opposition at 4-5).

The Attorney General also argues that the Motion is untimely and unsupported by a showing of good cause to excuse the delay (Attorney General Opposition at 2-3, citing 220 CMR 1.01(4), 1.02(5), 1.11(2)). Further, the Attorney General contends that, if granted, the Motion would result in oral argument being held after the briefing period, thereby denying intervenors an opportunity to appropriately respond to arguments raised at the hearing (Attorney General Opposition at 3). Thus, the Attorney General asserts that the Motion should be denied (Attorney General Opposition at 3).

C. Analysis and Findings

The Department first will address the Motion. The Department's regulations governing requests for oral arguments can be in found in 220 CMR 1.11(2), which provides:

> Oral Argument, When Made. When, in the opinion of the presiding officer, time permits and the nature of the proceedings, the complexity or importance of the [issues] of fact or law involved, and the motion or at the request of a party or staff counsel at or before the close of the taking of testimony, allow

> and fix a time for the presentation of oral argument, imposing such limits of time on the argument as deemed appropriate in the proceeding. Such argument shall be transcribed and bound with the transcript of testimony.

The decision to allow for oral argument is completely within the Department's discretion. Bay State Gas Company, Interlocutory Order on Appeal of Hearing Officer Ruling on Intervention, D.P.U. 16-12, at 8 n.6 (March 8, 2016); The Berkshire Gas Company, D.P.U. 15-178, Interlocutory Order on Appeal of Hearing Officer Ruling on Intervention and Motion for Clarification at 8 n.6 (February 17, 2016); The Berkshire Gas Company, D.P.U. 15-48, Interlocutory Order on Motion to Stay and Appeals of Hearing Officer Ruling on Intervention at 15 n.6 (June 19, 2015); NSTAR Electric Company, D.P.U. 12-19, at 10 n.10 (2012); D.P.U. 11-43, at 6, 9. Further, the Department finds no statutory right to oral argument before an administrative agency.[130]

As an initial matter, the Motion was filed approximately six weeks after the close of hearings, and the Company provides no reason for this inordinate delay. As such, we find the Motion is untimely. Nevertheless, even if the Motion was made within the time prescribed by 220 CMR 1.11(2), the Department finds that the Company did not demonstrate that oral argument is warranted in this proceeding. NSTAR Electric's prefiled initial testimony, supporting appendix, initial brief, and Motion provided ample background

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130 The Massachusetts Administrative Procedures Act, G.L. c. 30A, contains no such right. Further, the Department does not find that due process interests require oral argument. See, e.g., Federal Communications Commission v WJR, The Goodwill Station, Inc., 337 U.S. 265, 275 (1949) (due process law as guaranteed by the Fifth Amendment does not require federal administrative agencies to accord oral argument).

information and Company commentary on the pension allocation issue (Exhs. ES-REVREQ-1, at 209-210; ES-REVREQ-7; Company Brief at 374-380; Motion at 2-5). Further, the remaining parties had the opportunity to issue discovery, conduct cross-examination of witnesses, file comments, and respond to the Motion to address the pension allocation issue. Oral argument was not necessary to flesh out the issues. Based on these considerations, the Motion is denied.

Notwithstanding our findings above, the Department will address the issue of NSTAR Electric's pension allocation in the pending PAF dockets. Three cases, D.P.U. 11-91, D.P.U. 12-113, and D.P.U. 13-184, have been fully briefed by both the Company and the Attorney General. The Attorney General has submitted prefiled testimony in D.P.U. 14-145, D.P.U. 15-147, D.P.U. 16-182, D.P.U. 17-159, and D.P.U. 18-121. Given the procedural posture of the Company's PAF proceedings, including the evidentiary record developed to date, the Department finds that it is more appropriate and efficient to continue to adjudicate the pension allocation issue in those open dockets.[131] Accordingly, the Department declines to examine NSTAR Electric's pre-2018 pension allocations in this Order.

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[131] Given the nature of the unresolved issue and in the exercise of its discretion, the Department will consider whether oral argument in any of these open dockets is necessary.

X. STORM COST RECOVERY MECHANISM

A. Introduction

The parameters of NSTAR Electric's current storm cost recovery mechanism ("storm fund") were approved in the Company's last base distribution rate proceeding, D.P.U. 17-05. In particular, the Department: (1) established that a storm-fund-eligible event must meet a $1.2 million incremental O&M cost threshold; (2) set the annual storm fund contribution collected through base distribution rates at $10 million; (3) approved an annual O&M expense associated with storm events of $3.6 million; (4) approved a symmetrical cap of $30 million on the storm fund balance; (5) approved the accrual of carrying charges at the prime rate for storm-fund-eligible events, with recovery to begin at the time that the costs are incurred; and (6) allowed the Company to seek cost recovery through the exogenous cost provision of the PBR mechanism (pending a prudence review) provided that the combination of any single storm in excess of $30 million and balance of the storm fund exceeds $75 million. D.P.U. 17-05, at 547-559. The Department also established reporting requirements to allow for expedited and efficient review of the Company's storm-cost filings and for an evaluation of the prudency of storm-related costs. D.P.U. 17-05, at 562.

B. Company Proposals

1. Storm Fund Modifications

The Company proposes to continue its storm fund mechanism with four modifications. First, the Company proposes to increase the storm-fund-eligible event threshold to $1.3 million in incremental O&M costs (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1,

at 162). NSTAR Electric states that its proposal is based on increasing the current threshold of $1.2 million by the cumulative inflation change of the GDP-PI, as reported by the U.S. Bureau of Economic Analysis, from 2016 through 2020 (Exhs. ES-REVREQ-1, at 163; DPU 4-7. Att.).

Second, the Company proposes to increase the annual storm fund contribution collected through base distribution rates to $31 million (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 181; ES-REVREQ-2, Sch. 22 (Rev. 4)). According to the Company, its current annual storm fund allowance of $10 million is insufficient, given the large disparity between the annual average of incremental O&M costs related to storm-fund-eligible events experienced during the last several years and the amount currently amortized through base distribution rates (Exh. ES-REVREQ-1, at 163). The Company states that its proposal is based on the average monthly storm costs of approximately $2.6 million incurred between February 1, 2018 (the date that rates established in D.P.U. 17-05 were implemented) through the end of the test year, multiplied by twelve months (Exhs. ES-REVREQ-1, at 181; ES-REVREQ-2, Sch. 22 (Rev. 4)).

Third, NSTAR Electric proposes to increase the annual O&M expense associated with storm events to $7.8 million (Exh. ES-REVREQ-1, at 164-164). The Company bases this proposal on the average number of storm-fund-eligible events from 2017 through 2020, which were six events on average, multiplied by the proposed storm-fund-eligible event threshold of $1.3 million (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 164-165; AG 12-6).

Fourth, NSTAR Electric proposes that, for each storm-fund-eligible event subsequent to the seventh event in a calendar year, the Company is permitted to recover the storm-fund-eligible event threshold of $1.3 million through the storm fund (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 165-166, 169-170; DPU 34-1). Conversely, if there are less than five storm-fund-eligible events in a calendar year, customers would receive a $1.3 million credit for the number of events less than five that did not occur (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 169-170; DPU 34-1).

2. Other Proposals

In addition to the proposed modifications to the storm fund, the Company sets forth three additional proposals. First, the Company proposes to recover the current storm-fund-eligible event threshold of $1.2 million for six storm-fund-eligible events that occurred in 2020 and seven storm-fund-eligible events that occurred in 2021, for a total of $15.6 million in costs (Exh. ES-REVREQ-1, at 173; Company Reply Brief at 49).

Second, NSTAR Electric proposes to maintain its current storm cost adjustment recovery factor ("SCRAF") and to recover, beginning on January 1, 2023, and subject to a future prudence review and reconciliation, a portion of the Company's outstanding storm fund deficiency of approximately $106 million over a five-year period for an annual amortization amount of $21.2 million (Exhs. ES-REVREQ-1, at 178-180; DPU 4-8, Att. (b)).[132]

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[132] Currently, the Company recovers an annual amortization amount of $28 million through the SCRAF for costs associated with storm-fund-eligible events that occurred prior to February 1, 2018 (Exh. ES-REVREQ-1, at 178). On December 31, 2022,

Third, the Company proposes to recover through the SCRAF beginning on January 1, 2024, subject to future prudence review and reconciliation, $196.2 million in costs associated with two exogenous storm events – Tropical Storm Henri and the October 2021 Nor'easter (Exhs. ES-REVREQ-1, at 179-180; ES-REVREQ-4, Sch. 11(d); DPU 4-8, Att. (c); DPU 4-13).[133] The Company proposes to recover the costs for these two storm events over a five-year period for annual amortization amount of $39.2 million (Exhs. DPU 4-8, Att. (c), at 1; DPU 4-13; DPU 4-14 & Att.).

C. Positions of the Parties

1. Attorney General

The Attorney General argues that NSTAR Electric's storm cost recovery proposals improperly attempt to insulate the Company from all storm-related financial risk (Attorney General Brief at 133, citing D.P.U. 15-155, at 83; D.P.U. 09-39). In particular, the Attorney General recommends that the Department reject four of the Company's proposals.

First, the Attorney General argues that Company's proposal to increase the annual storm fund contribution collected through base distribution rates to $31 million represents a significant shift of financial risk to ratepayers (Attorney General Brief at 138). Moreover, the Attorney General contends that the Company's request is unnecessary because it can

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the amortization period associated with these storms expires (Exh. ES-REVREQ-1, at 178).

133 The Company notes that the amortization of the exogenous cost currently collected through the SCRAF expires on December 31, 2023 (Exhs. ES-REVREQ-1, at 179; DPU 4-13, at 1).

recover additional storm costs through the existing SCRAF, which the Company proposes to extend in the instant proceeding (Attorney General Brief at 138, citing Exh. ES-REVREQ-1, at 181).

Second, the Attorney General argues that NSTAR Electric's proposal to recover the storm-fund-eligible event threshold of $1.3 million for each storm after the seventh storm also seeks to eliminate the Company's storm-related financial risk (Attorney General Brief at 137, citing D.P.U. 15-155, at 78). In this regard, the Attorney General contends that NSTAR Electric already is insulated from the cost-risk of storms due the large number of storm cost recovery mechanisms approved for the Company in recent years (Attorney General Brief at 138, citing D.P.U. 17-05, at 547-548, 550, 553-555, 559, 561, 562, NSTAR Electric Company, D.P.U. 21-133; D.P.U. 21-75/D.P.U. 21-76; NSTAR Electric Company, D.P.U. 20-29). Moreover, the Attorney General asserts that NSTAR Electric earns an ROE that, in part, is intended to compensate the Company for such risks (Attorney General Brief at 138). Finally, the Attorney General asserts that maintaining a fixed number of storm-fund-eligible event threshold amounts in base distribution rates is a fair and reasonable way to balance financial risk between the Company and its ratepayers (Attorney General Brief at 137).

Third, the Attorney General argues that NSTAR Electric's request to recover the storm-fund-eligible event threshold amounts for the six storm events in 2020[134] should be

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[134] The Attorney General does not address the Company's request to recover the storm-fund-eligible event threshold amounts attributable to seven storms in 2021.

rejected because it contravenes the Department's Order in D.P.U. 17-05, it would retroactively alter the entire regulatory treatment of storm costs and storm fund cost eligibility, and it would improperly rebalance the risk for storm recovery in the Company's favor (Attorney General Brief at 135-136, citing D.P.U. 17-05, at 548-549; Attorney General Reply Brief at 41-43). Further, the Attorney General contends that if NSTAR Electric's proposal is allowed, it would triple the recovery currently allowed in base distribution rates and would represent one-and-a-half times the amount the Company proposes to include in base distribution rates going-forward (Attorney General Reply Brief at 41). In addition, the Attorney General asserts that approving this proposal would allow the Company to consistently recover storm-related costs when such costs exceed the representative amount set in base distribution rates, with no corresponding path for ratepayers to benefit in the years when costs are less than those in base distribution rates (Attorney General Reply Brief at 43).

Finally, the Attorney General argues that the Department should reject the Company's proposal to recover costs associated with Tropical Storm Henri and the October 2021 Nor'easter (Attorney General Brief at 139). The Attorney General asserts that this proposal should be rejected because the Company has not yet provided supporting documentation or costs for Department review (Attorney General Brief at 139).

2. Company

The Company contends that storms are more common due to changes in weather patterns and climate change and are more costly due to expectations (customer and political) that compel more rapid restorations (Company Brief at 312). According to the Company,

these circumstances are beyond its control and are creating an unpreventable increase in the cost of storm response (Company Brief at 312). As such, the Company requests that the Department consider the proposed modifications to the storm fund structure (Company Brief at 312-318). Further, the Company asserts that its proposal to maintain the SCRAF is in the best interest of ratepayers as it serves to minimize carrying charges that ultimately will be recovered for the storm fund qualifying events which, in turn, mitigate bill impacts and maintain stabilized rates (Company Brief at 320-323). The Company's responses to the four arguments raised by Attorney General are discussed below.

First, the Company argues that its proposal to increase the annual storm fund contribution collected through base distribution rates to $31 million does not represent a significant shift of risk to ratepayers (Company Brief at 331). Rather, the Company contends that its proposal meets the Department's objective of maintaining a sufficient reserve in the storm fund for the benefit of both the Company and its customers (Company Brief at 331). The Company further asserts that to maintain a balance between storm cost recovery and rate stability, the annual storm fund contribution collected through base distribution rates is designed to recover qualifying storm costs while eliminating rate changes (Company Brief at 331, citing Exhs. ES-STORMS-Rebuttal-1, at 22; AG 12-7).

Second, the Company argues that its proposal to recover the storm-fund-eligible event threshold of $1.3 million for each storm after the seventh storm should be approved, as it is a reasonable and an appropriate means of balancing risk and cost-sharing between the Company and its customers (Company Brief at 317-318, 330, citing Exhs. ES-STORMS-Rebuttal-1,

at 14-15; DPU 20-3). The Company contends that this proposal recognizes the inevitable year-to-year variability of storm-fund-eligible events, as well as the fact that larger-scale events may occur that can exceed any number of storms that the Department would find appropriate for setting the threshold (Company Brief at 317-318). Further, the Company asserts that the proposal is symmetrical, so that if there is a deviation resulting in a lower number of storms in a year, customers would be credited with the storm-fund-eligible event threshold (Company Brief at 318). Nevertheless, the Company claims that, while fewer than six storm-fund-eligible events could occur in any given year, it is more likely that the number of storm events in any year will exceed six (Company Brief at 329).[135]

Third, NSTAR Electric argues that the Department specifically permitted the Company to propose an appropriate level of recovery associated with the storm-fund-eligible event threshold amounts for the six storm events in 2020 (Company Brief at 325-326, citing D.P.U. 21-75/D.P.U. 21-76, at 28). Further, the Company contends that allowing recovery through base distribution rates of the storm-fund-eligible thresholds for three storm events, as approved in D.P.U. 17-05, is an ineffective means of determining a representative number of storm-fund-eligible storms due to the increasing frequency and intensity of storms (Company Brief at 326-327, citing D.P.U. 17-05, at 546; D.P.U. 21-75/D.P.U. 21-76, at 22; Company Reply Brief at 48). According to the Company, the actual number of storm-fund eligible

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135 The Company notes that since 2020, the number of qualifying storm fund events has exceeded the number of storm-fund-eligible event thresholds included in base distribution rates as the representative number of such storms (Company Brief at 329, citing Exhs. ES-STORMS-Rebuttal-1, at 8; DPU 20-3).

storm occurrences in a given year exceeds the number of storms the Department has historically allowed in base distribution rates (Company Reply Brief at 47). Thus, the Company asserts that there is no imbalance in allowing the recovery of storm-fund-eligible event thresholds over the representative number of storms established in D.P.U. 17-05 (Company Brief at 328). Based on these considerations, the Company seeks recovery of the storm-fund-eligible event threshold amounts for six storm events in 2020, and for seven additional storm events in 2021 (Company Brief at 327-328; Company Reply Brief at 48). The Company argues that disallowing these costs without a finding that the costs were unreasonably incurred is not an appropriate outcome (Company Reply Brief at 47).

Finally, NSTAR Electric disagrees with the Attorney General's recommendation to deny the Company's proposal to recover costs associated with Tropical Storm Henri and the October 2021 Nor'easter (Company Brief at 332, citing Attorney General Brief at 139). The Company argues that it is important to begin cost recovery of these storm events on January 1, 2024, in order to strike an appropriate balance between cost recovery and rate stability (Company Brief at 332, citing Exh. DPU 4-14). In this regard, the Company contends that a delay in recovery of these costs would create significant fluctuations in customer rates as well as significant carrying charges (Company Brief at 332, citing Exhs. DPU 4-14; AG 20-3). For these reasons, the Company asserts that the Department should approve cost recovery commencing January 1, 2024, associated with Tropical Storm Henri and the October 2021 Nor'easter (Company Brief at 332).

D. Analysis and Findings

1. Introduction

The Department's primary objective for allowing a storm fund is to levelize the recovery of storm restoration costs of major storms on ratepayers. D.P.U. 17-05, at 545; D.P.U. 15-155, at 73; Fitchburg Gas and Electric Light Company, D.P.U. 13-90, at 13 (2014), citing D.P.U. 10-70, at 201-202; D.P.U. 09-39, at 206. The Department has recognized that the use of storm funds may shift the burden of cost recovery disproportionately to ratepayers without providing commensurate benefits. D.P.U. 17-05, at 545; D.P.U. 15-155, at 73; D.P.U. 13-90, at 13. As such, the Department has put all EDCs on notice that if they seek continuation of a storm fund in their next base distribution rate case, they must demonstrate why the continuation of a storm fund is in the best interest of ratepayers. D.P.U. 17-05, at 545; D.P.U. 15-155, at 73-74; D.P.U. 13-90, at 14-15.

2. Continuation of the Storm Fund

The Department has devoted significant time and resources to the improvement of each electric utility's storm response. As a result, storm response requirements are now more formalized, more comprehensive, and more rigorous. See, e.g., G.L. c. 164, § 1J; 220 CMR 19.03 (setting forth standards for the acceptable performance for emergency preparation and restoration services for electric and gas companies); Investigation by Department of Public Utilities into Responses to Tropical Storm Irene and October 2011 Snowstorm, D.P.U. 11-85-B/11-119-B at 141 (2012) (imposing penalties for company's failure to timely respond to emergency wires-down calls and communicate effectively with

municipal officials and customers); D.P.U. 11-119-C at 71-72 (imposing penalties for company's failure to restore service to its customers in a safe and reasonably prompt manner). To meet these requirements, EDCs are expected to properly prepare for and implement storm response measures that restore power safely and expeditiously. These obligations require the Company to devote substantial resources to achieving the desired results. Further, as the Company's recent history indicates, the frequency and severity of major storms has increased (see, e.g., Exhs. ES-REVREQ-1, at 159; ES-REVREQ-2, Sch. 22, at 2 (Rev. 4); ES-REVREQ-4, Sch. 11 & Atts.; DPU 4-8, Atts. (b), (c), (d); DPU 20-3, Att.; AG 11-29, Att.; AG 8-80, Att.). Not surprisingly, the costs of responding to these events have increased as well (see, e.g., Exhs. ES-REVREQ-4, Sch. 11 & Atts.; DPU 4-8, Atts. (b), (c), (d); DPU 20-3, Att.; AG 8-80, Att.).

We acknowledge that NSTAR Electric's current storm fund mechanism has not provided the desired balance between cost recovery and rate stability. Specifically, the overall number of NSTAR Electric's major storm events in the past several years have contributed to a large storm fund deficit that expanded even further due to the accumulation of a significant amount in carrying charges.[136] The severity and frequency of these storms could not have been anticipated when NSTAR Electric's storm fund mechanism was developed, or when it was most recently refined in D.P.U. 17-05. As a result, without a storm fund mechanism, it is unlikely that NSTAR Electric could have absorbed the large

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136 As previously noted, the Company estimates its current storm fund deficit at $106 million (Exh. DPU 4-8, Att. (b)).

accumulation of storms costs over the past several years without filing a base distribution rate case, or even multiple rate cases, which could have resulted in an increase in rates for distribution service other than storm fund costs. Moreover, coupled with the five-year stay-out provision associated with the Department-approved PBR mechanism in the instant proceeding (see Section IV.D.5.a above), a storm fund remains an important cost recovery mechanism.[137]

Therefore, we find that, if properly structured, allowing NSTAR Electric to continue to operate a storm fund can provide for adequate recovery of storm costs in a manner that is designed to create rate stability. On that basis, we conclude that the storm fund shall continue, but with several modifications, as discussed below.

3. Storm Fund Modifications

a. Storm-Fund-Eligible Event Threshold

The Company proposes to increase the storm-fund-eligible event threshold to $1.3 million in incremental O&M costs (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162). NSTAR Electric states that its proposal is based on increasing the current threshold of $1.2 million by the cumulative inflation change of the GDP-PI, as reported by the U.S. Bureau of Economic Analysis, from 2016 through 2020 (Exhs. ES-REVREQ-1, at 163; DPU 4-7, Att.).

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137 The Department notes that the PBR mechanism does not apply to the storm-fund-eligible events or thresholds.

The Department has reviewed the Company's storm-fund-eligible event threshold calculation and finds it to be reasonable and consistent with Department precedent. D.P.U. 17-05, at 548-549; D.P.U. 18-150, at 416; D.P.U. 15-155, at 76-77. Further, we find that this increased threshold strikes an appropriate balance between providing NSTAR Electric with necessary access to the storm fund to recover costs associated with major storms and ensuring that the routine storms are not contributing to a storm fund deficit balance. Accordingly, we approve a storm-fund-eligible event threshold of $1.3 million per storm event.

b. Annual Storm Fund Contribution Collected Through Base Distribution Rates

The Company proposes to increase the annual storm fund contribution collected through base distribution rates to $31 million (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 181; ES-REVREQ-2, Sch. 22 (Rev. 4)). A storm fund is intended to provide a level of rate stability for customers, but only if it actually allows for recovery of storm costs over time without requiring a change to customer rates. D.P.U. 17-05, at 551; D.P.U. 15-155, at 78. As evidenced by the increased frequency and magnitude of storm fund eligible storms since 2017, and the projected storm deficit balance of $106 million if the current storm fund contribution and number and magnitude of storms remained the same, the current annual storm fund contribution of $10 million has proven to be insufficient to maintain rate stability (Exhs. ES-REVREQ-1, at 159, 179-181; ES-REVREQ-2, Sch. 22, at 2 (Rev. 4); ES-REVREQ-4, Sch. 11 & Atts.; DPU 4-8, Atts. (b), (c), (d); DPU 20-3, Att.; AG 11-29, Att.; AG 8-80, Att.). Thus, we conclude that an increase in the base distribution rate

contribution to the storm fund is warranted. D.P.U. 18-150, at 423; D.P.U. 17-05, at 551; D.P.U. 15-155, at 178; Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 13-85, at 101, 106 (2016); Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 13-59 (2013).

Here, the Department seeks to set a new annual storm fund contribution amount in base distribution rates that will allow the Company to recover storm costs over time without generating a surplus or deficit balance in the storm fund that exceeds the symmetrical cap.[138] We recognize the uncertainty in achieving this result given the unpredictable nature of weather in general, and storm-fund qualifying events in particular. Further, we acknowledge that, while major historical storm events provide some perspective regarding the frequency, severity, and cost of major storms, such information is by no means sufficiently predictive with any degree of certainty to definitively plan for future storm events. Notwithstanding these considerations, however, NSTAR Electric's storm fund history is instructive in the context of developing new and updating existing elements of the storm fund.

The Department has reviewed the record supporting the proposed annual storm fund contribution by NSTAR Electric (see, e.g., Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 163-164, 181; ES-REVREQ-2, Sch. 22 (Rev. 4); ES-STORMS-Rebuttal-1, at 16-24; DPU 4-8, at 3). In its review, the Department considered the number of storms that have

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138 In D.P.U. 17-05, the Company proposed, and the Department allowed, a symmetrical cap of $30 million on the storm fund's balance to trigger either a customer refund for an over-recovery balance that exceeds the cap, or a customer charge for an under-recovery balance that exceeds the cap. D.P.U. 17-05, at 532-533, 554-555.

occurred between the Company's last rate case and the end of the test year; the incremental cost of these storms; the number of storms with incremental O&M costs that were so extraordinarily high that they should be deemed statistical outliers; and the number of storms that would not have been eligible for storm fund recovery had the $1.3 million storm-fund-eligible event been in effect (Exhs. ES-REVREQ-4, Sch. 11 & Atts.; DPU 4-8, Atts. (b), (c), (d); DPU 20-3, Att.; AG 11-29, Att.; AG 8-80, Att.). Additionally, we reviewed the calculation applied by the Company as the basis to establish its proposed $31 million annual storm fund contribution amount and find that it is consistent with the Department precedent (Exhs. ES-REVREQ-1, at 181; ES-REVREQ-2, Sch. 22 (Rev. 4)). D.P.U. 17-05, at 531, 553.

We are not persuaded by the Attorney General's argument that the Company's proposal represents a significant shift of risk to ratepayers. We find that the proposal sufficiently reflects the Company's storm fund history and as noted above, is consistent with Department precedent. Further, we conclude that increasing the annual storm fund contribution is a reasonable and appropriate approach to provide sufficient funds to levelize the rate impact for major storms that are eligible for cost recovery through the storm fund and decrease the likelihood that the storm fund will attain a large deficiency balance. Thus, contrary to the Attorney General's contention, we find that increasing the annual storm fund contribution is necessary to maintain rate stability over the long term. Accordingly, we approve the Company's proposal to increase the annual storm fund contribution collected through base distribution rates to $31 million.

c. Annual O&M Expense for Storm Events

NSTAR Electric proposes to increase the annual O&M expense associated with storm events to $7.8 million (Exh. ES-REVREQ-1, at 164-164). The Company bases this proposal on the average number of storm-fund-eligible events from 2017 through 2020, which were six events on average, multiplied by the proposed storm-fund-eligible event threshold of $1.3 million (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 164-165; AG 12-6).

As the frequency and magnitude of storm events has varied significantly year-to-year, the Department recognizes that the test-year level of O&M costs in base distribution rates is not necessarily representative of the Company's future costs. D.P.U. 17-05, at 550. Therefore, consistent with Department precedent, we find it necessary to normalize the level of base distribution rate recovery to derive a more representative threshold amount for O&M expenses associated with storm events. D.P.U. 18-150, at 418-419; D.P.U. 17-05, at 550; D.P.U. 15-155, at 80-81. The Department finds that the Company's proposed annual O&M expense of $7.8 million in base distribution rates, based upon recovery for six storm-fund-eligible events per year and applying the approved $1.3 million storm-fund-eligible event threshold, is reasonable and consistent with Department precedent. D.P.U. 18-150, at 418-419; D.P.U. 17-05, at 550; D.P.U. 15-155, at 80-81. Accordingly, we approve the Company's proposal.

d. Recovery of Storm-Fund-Eligible Event Threshold After the Seventh Storm Event

NSTAR Electric proposes that, for each storm-fund-eligible event subsequent to the seventh storm event in a calendar year, the Company is permitted to recover the

storm-fund-eligible event threshold of $1.3 million through the storm fund (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 165-166, 169-170; DPU 34-1). Conversely, if there are less than five storm-fund-eligible events in a calendar year, customers would receive a $1.3 million credit for the number of events less than five that did not occur (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 169-170; DPU 34-1).

The Department recognizes that the frequency of storm-fund-eligible storms is inherently variable year-to-year and as a result cost recovery may not align with the amounts collected through base distribution rates for a set number of storms. Nonetheless, based on the record evidence, the Department is persuaded that it is more likely than not that the number of storm-fund-eligible storms will increase in future years due to weather patterns and meteorological characteristics associated with climate change (Exhs. ES-STORMS-REBUTTAL-1, at 8; DPU 4-1). See also Inflation Reduction Act of 2022, P.L. 117-169, § 50153 (appropriating funds to address the effects of changes in weather due to climate change on the reliability and resiliency of the electric grid). Therefore, the Department agrees with the Company and finds it reasonable to establish a measure of relief in years when the number of storm-fund-eligible events significantly exceed the representative number in base distribution rates. See D.P.U. 21-75/D.P.U. 21-76, at 22. The Department, however, finds that the Company's proposal to allow it to recover storm-fund-eligible event thresholds for six events in base rates and any event after the seventh event does not appropriately balance the financial risk between the Company and ratepayers. More than one storm event above average does not constitute a significant

variation from the average number of annual storms. Based on consideration of the frequency of storms, the Department finds that three storm events after above the average number of storm events is a significant variation in the reasonably anticipated number of storms. Therefore, the Company may recover storm-fund-eligible event thresholds of $1.3 million through the storm fund for each storm-fund-eligible event subsequent to the eighth storm event in a calendar year.

The Company's proposal also seeks to provide relief to ratepayers if there are fewer than five storm-fund-eligible events in a year (Exhs. ES-CAH/DPH-1, at 98; ES-REVREQ-1, at 162, 169-170; DPU 34-1). In conjunction with the above modifications, the Department finds that the Company's proposal appropriately balances the financial risk between NSTAR Electric and ratepayers. Thus, we approve this aspect of the proposal.

Based on the above considerations and findings, we approve the Company's proposal, as modified herein.

4. Other Proposals

a. Recovery of Storm-Fund-Eligible Event Thresholds for 2020 and 2021 Storms

The Company proposes to recover through the storm fund the current storm-fund-eligible threshold of $1.2 million for six storm-fund-eligible events that occurred in 2020 and seven storm-fund-eligible events that occurred in 2021, for a total of $15.6 million in costs (Exh. ES-REVREQ-1, at 173; Company Brief at 328; Company Reply

Brief at 49).[139] As noted, the Commonwealth is experiencing weather patterns and meteorological characteristics associated with climate change. See also D.P.U. 21-75/D.P.U. 21-76, at 27. When the Department established the annual O&M expense in base distribution rates in 2017, we did not anticipate that number of storm events would vary significantly from the representative amount. D.P.U. 21-75/D.P.U. 21-76, at 22. The Attorney General argues that allowance would retroactively alter the entire regulatory treatment of storm costs and storm fund cost eligibility (Attorney General Brief at 135-136). We disagree. The costs that the Company proposes to collect do not retroactively change rates provided for prior service. D.P.U. 10-70, at 216. Instead, the increased costs are due to changes in weather patterns and increased storm activity since the Company's last base distribution rate case (Exhs. ES-STORMS-REBUTTAL-1, at 8; DPU 4-1). Based on the changes that have occurred since 2017, we find it appropriate to allow the Company to recover the threshold amounts for storm-fund-eligible events that significantly exceeded the representative level in 2020 and 2021. The Department, however, finds that a deviation greater than one storm is not a significant deviation from the representative level of storms contemplated in D.P.U. 17-05. Consistent with our above

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139 In D.P.U. 21-75/D.P.U. 21-76, at 28, the Department allowed NSTAR Electric to apply deferred accounting treatment to the excess calendar year 2020 storm-fund-eligible event threshold amounts (i.e., the threshold amounts that exceed those already recovered in base rates less one) until the Company's next base rate proceeding. There was no specific deferral of the storm-fund-eligible event thresholds for the seven storm events that occurred in 2021, which the Company seeks to include in this proposal.

findings, the Department finds that a deviation of three or more storms above the representative level constitutes a significant variation that was not anticipated in the approval of the storm fund mechanism. Accordingly, the Company may recover the current storm-fund-eligible threshold of $1.2 million for five storm-fund-eligible events that occurred in 2020 and six storm-fund-eligible events that occurred in 2021, for a total of $13.2 million in costs.

b. Maintaining the Current SCRAF

NSTAR Electric proposes to maintain its current SCRAF for effect on January 1, 2023, subject to a future prudence review and reconciliation of the storm costs, to recover a portion of the Company's outstanding storm fund deficiency of approximately $106 million over a five-year period for an annual amortization amount of $21.2 million (Exhs. ES-REVREQ-1, at 178-180; DPU 4-8, Att. (b)).[140] Currently, the Company recovers an annual amortization amount of $28 million through the SCRAF for costs associated with storm-fund-eligible events that occurred prior to February 1, 2018 (Exh. ES-REVREQ-1, at 178). On December 31, 2022, the amortization period associated with these storms expires (Exhs. ES-REVREQ-1, at 178; DPU 4-14). The Company anticipates additional storm activity to occur in 2022 that would further increase the storm fund deficit

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140 In its review of NSTAR Electric's 2020 SCRAF filing, the Department determined that it would review the appropriate method for cost recovery of the storm fund deficiency balance in the instant base distribution rate case. D.P.U. 20-29, Interlocutory Order on Motion for Adoption of Storm Cost Review Schedule at 9-10 (December 21, 2021).

(Exh. ES-REVREQ-1, at 179). If the Company were to reflect the current storm fund deficit amortized over five years in rates effective January 1, 2023, it estimates relatively small bill impacts (0.1 percent decrease for EMA customers and 0.6 percent increase for WMA customers) (Exh. ES-REVREQ-1, at 179). We find the Company's proposal is a reasonable and appropriate way of recovering the outstanding storm fund deficiency, subject to required prudence reviews and reconciliation, while maintaining rate stability and mitigating carrying charges. Accordingly, we allow this proposal.

c. Recovery of Storm Costs for Tropical Storm Henri and the October 2021 Nor'easter

The Company proposes to recover through the SCRAF beginning on January 1, 2024, subject to future prudence review and reconciliation, $196.2 million in exogenous costs associated with Tropical Storm Henri and the October 2021 Nor'easter (Exhs. ES-REVREQ-1, at 179-180; ES-REVREQ-4, Sch. 11(d); DPU 4-8, Att. (c); DPU 4-13). The Company proposes to recover the costs for these two storm events over a five-year period for annual amortization amount of $39.2 million (Exhs. DPU 4-8, Att. (c), at 1; DPU 4-13; DPU 4-14 & Att.). The amortization of the exogenous costs currently collected through the SCRAF expires on December 31, 2023 (Exhs. ES-REVREQ-1, at 179; DPU 4-13, at 1).

We recognize the Attorney General's concern that the Company has not yet provided supporting documentation for Department review (Attorney General Brief at 139). Nonetheless, the Department has previously allowed a company to begin recovering storm-related costs before the company has submitted finalized invoices, subject to

investigation and reconciliation. See, e.g., D.P.U. 18-101, at 23-24 (allowing NSTAR Electric to begin recovery of three exogenous storms in advance of finalized costs); D.P.U. 13-59, at 1-2, 14 (allowing National Grid to replenish its storm fund subject to prudence review and reconciliation of costs associated with 14 storms); D.P.U. 09-39, at 210-212 (allowing National Grid to begin recovering 2008 winter storm costs subject to investigation and reconciliation).

We find that it is reasonable and appropriate to allow NSTAR Electric to begin cost recovery of these storm events through the SCRAF beginning on January 1, 2024, as it strikes an appropriate balance between cost recovery and rate stability. Allowing the proposal will avoid significant fluctuations in customer rates and mitigate carrying charges to customers (Exh. DPU 4-13). If the Department finds any of the costs associated with these two storm events to be imprudent, the Company must return the costs to customers with interest at the prime rate calculated from the time the costs were incurred. Thus, customers will not be harmed by the commencing of cost recovery for these two storm events beginning on January 1, 2024. Accordingly, we allow this proposal, subject to the findings herein.

d. Other Storm Fund Components

The Company does not propose any changes to the storm fund cap, carrying charges related to storm-fund-eligible and exogenous storm events, or reporting on storm events. The Department finds that these components of the storm fund shall continue consistent with the directives set forth in D.P.U. 17-05 and any subsequent Department decisions.

E. Conclusion

Based on the above findings, the Department directs NSTAR Electric to implement its storm fund with the modifications set forth herein. The modified storm fund shall apply to any storm-fund-eligible events that occur on or after January 1, 2023. The Company's outstanding storm fund balance shall be recovered consistent with the findings above. The recovery of storm-related costs for Tropical Storm Henri and the October 2021 Nor'easter will commence on January 1, 2024, as described above.

Further, the Company may recover $13.2 million through the storm fund effective January 1, 2023, which represents the current storm-fund-eligible event threshold of $1.2 million for five storm-fund-eligible events that occurred in 2020 and six storm-fund-eligible events that occurred in 2021, as discussed above. Finally, as part of its compliance filing in this proceeding, the Company shall file a revised storm cost recovery adjustment tariff consistent with the storm-related directives set forth above.

XI. VEGETATION MANAGEMENT PROGRAM

A. Introduction

The Company's current Vegetation Management Program consists of two components, the Base Vegetation Management Program ("Base VM Program") and the Resiliency Tree Work Program ("RTW Program").[141] As outlined below, the Company has proposed several

[141] For a complete background on the Company's Vegetation Management Program see D.P.U. 17-05, at 563-591; D.P.U. 11-85-B/11-119-B; and D.T.E. 06-55.

changes to these two components and also has proposed a municipality specific hazard tree removal pilot program.

B. Base Vegetation Management Program

1. Introduction

NSTAR Electric's Base VM Program involves the management of trees along distribution lines and at substation facilities to provide a safe work environment for line workers, to allow visual and physical access to the Company's electric facilities, to prevent damage to electric equipment, and to improve reliability, shorten restoration times, and improve customer satisfaction (Exh. ES-WAV-2, at 2). The Company's service area includes two distinct geographic areas, i.e., EMA and WMA, that differ to a certain extent due to varying weather patterns, landscapes, and tree species (Exh. ES-WAV-1, at 6-7). As such, the Company does not perform the same type of work in the two geographic areas (Exh. ES-WAV-1, at 6-7).

2. Company Proposal

The Company's current Base VM Program includes an established trim cycle to ensure that all circuits, regardless of performance, are trimmed at least once every four to five years, subject to circuit-specific considerations (Exhs. ES-WAV-1, at 3; DPU 39-10, at 4). Due to the differences in the two geographic areas, the Company proposes to eliminate the requirement for a blanket four- to five-year trim cycle and, instead, prioritize circuits based on performance and reliability (Exhs. ES-WAV-1, at 14-15; DPU 39-10, at 4-6). The Company notes that information systems have evolved, and it is now able to

utilize a database of tree-related outages and analysis of SAIDI/SAIFI to prioritize vegetation management resources to be used for at-risk circuits (Exh. ES-WAV-1, at 15-18).[142] NSTAR Electric also proposes to conduct pre-trim mobile visual inspections on every transmission and distribution line at least every four years to ensure that no areas of the distribution system are left unattended and, should it encounter vegetation issues, the Company would address them immediately after inspection (Exh. ES-WAV-1, at 15-16, 19). Under the Company's proposal, all circuits would be trimmed at least every eight years, regardless of inspection or reliability data (Exhs. ES-WAV-1, at 16; DPU 39-10).

The Company proposes to recover $20,007,619 through base distribution rates (Exhs. ES-REVREQ-1, at 104; ES-REVREQ-2, Sch. 21; AG 10-23). The Company based this amount on its test-year Base VM Program expenses (Exhs. ES-REVREQ-1, at 104; ES-REVREQ-2, Sch. 21; AG 10-23).

3. Positions of the Parties

The Company contends that its proposed modification will assist the Company in addressing increasing frequency of weather events caused by climate change by enhancing reliability on the system based on frequency of impact, severity, and customers served (Company Brief at 334-335). The Company asserts that not all distribution lines and circuits are created equal, as each serve different purposes and encounter unique reliability and

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142 The Company uses a Power BI database to track outages on its system, to isolate and identify specific outage information as it relates to tree impacts on a circuit, and to track the number of customers impacted (Exh. ES-WAV-1, at 16; Tr. 6, at 586-589).

vulnerability issues based on the number of customers and areas served as well as the rate and severity of weather events (Company Brief at 339, citing Exhs. ES-WAV-1, at 15; ES-WAV-Rebuttal-1, at 4-6). NSTAR Electric contends that the proposed reliability-based circuit prioritization would be based on data that was not previously available, as the Company's information systems have evolved so that data as it relates to tree impacts, the number of customers impacted, and specific areas of circuits down to the street, pole, and device location are now tracked and recorded (Company Brief at 339-340, citing Exhs. ES-WAV-1, at 18; ES-WAV-Rebuttal-1, at 5-6; DPU 39-10).

In addition, the Company asserts that due to varying vegetation, some circuits in its service area have existing clearances that do not require trimming every four years, while other circuits have clearances that would benefit from more frequent trimming (Company Brief at 342, citing Exh. DPU 28-6). NSTAR Electric maintains that allowing it to trim some circuits more than once in the four-year cycle and delay other circuits until trimming is necessary, although no trim cycle would exceed eight years, would improve reliability on the system and allocate resources to ensure efficiency and cost containment (Company Brief at 342, citing Exhs. ES-WAV-1, at 5; DPU 39-10). No intervenor addressed the Company's Base VM Program proposals on brief.

4. Analysis and Findings

The Company proposes to utilize a reliability-based analysis to prioritize the circuit trim schedule but to have flexibility to do some circuits more than once in the four- to five-year trim cycle and to schedule some circuits for trim after five years, but no later than

eight years (Exh. DPU 39-10, at 5). Based on the record evidence, the Department determines that using a reliability-based analysis will benefit ratepayers by improving the reliability and resiliency of the Company's distribution system (Exhs. ES-WAV-1, at 15, 17; DPU 28-6; DPU 28-9; AG 10-19, at 1-2). We recognize that technology has evolved and that the Company is now better positioned to use different data to prioritize vegetation management resources (Exhs. ES-WAV-1, at 18; ES-WAV-Rebuttal-1, at 5-6; DPU 39-10). Further, the Company has demonstrated that trees and vegetation are the leading cause of customer outages (Exhs. ES-WAV-1, at 6-7, 14, 34; ES-WAV-Rebuttal, at 22). Thus, the Company's proposed modification to focus on reliability-based prioritization inspections is likely to put NSTAR Electric in a better position to meet the Department's SQ guidelines. Revised Service Quality Guidelines, D.P.U. 12-120-D, at 7-8 (2015).

Nonetheless, the Department finds that deferring trimming for eight years may not further the objectives required for a vegetation management program. Specifically, companies are required to meet circuit performance reliability requirements that become more stringent over time. D.P.U. 12-120-D at 7-9. While the Department recognizes that some flexibility in trimming is needed, we find it appropriate to require that any trimming be deferred for no more than five years.[143]

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[143] As discussed in Section IV.D.5.a above, the Department has approved a PBR plan for NSTAR Electric with a five-year term, with the potential to continue the term for another five years. At the time of its next base distribution rate case filing, or request to continue the PBR term, the Company shall submit to the Department an updated reliability-based analysis, which shall include outage impacts of the tree trimming,

Finally, it is a well-established Department precedent that base distribution rate filings are based on an historic test year, adjusted for known and measurable changes. D.P.U. 10-70, at 232, 254-255; Eastern Edison Company, D.P.U. 1580, at 13-17, 19 (1984); Massachusetts Electric Company, D.P.U. 136, at 3-5 (1980). Here, the Company's test-year expenditure was $20,007,619 (Exhs. ES-REVREQ-2, Sch. 21, at 2; AG 10-23). Based on the record evidence, we find that the test-year expenditure is representative of the Company's spending for its Base VM Program vegetation management (Exhs. ES-REVREQ-1, at 104; ES-REVREQ-2, Sch. 21; AG 10-23). Therefore, we allow the inclusion of $20,007,619 in base distribution rates.

C. Resiliency Tree Work Program

1. Introduction

The Company's RTW Program was established as a six-year pilot program, from January 1, 2017 through December 31, 2022. D.P.U. 17-05, at 580-581.[144] The RTW Program costs are recovered on an annual basis through a reconciling mechanism, i.e., the RTW factor.[145] D.P.U. 17-05, at 583-584. The Company proposes to continue operation of the RTW Program but modify cost recovery (Exh. ES-WAV-1, at 37). Specifically, NSTAR

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visual comparisons of areas trimmed frequently and less frequently to demonstrate the accuracy of the analysis, and data-based improvements to the program.

144 For additional background on the RTW Program, refer to D.P.U. 17-05, at 563-584.

145 Pursuant to the RTW Program tariff, the Company submits an RTW factor filing annually on September 15th for rates effective January 1st (Exhs. ES-WAV-1, at 23; ES-WAV-3, at 18; ES-RDC-6, Sch. 2, at 338, 342).

Electric proposes to collect RTW Program costs from January 1, 2017 to December 31, 2022, through the RTW factor (Exh. ES-WAV-1, at 37).[146] For work performed after January 1, 2023, the Company proposes to transfer a representative level of costs into base distribution rates (Exh. ES-WAV-1, at 32, 37). Specifically, the Company's proposes to include $23.2 million in base distribution rates, which is comprised of: (1) $3.2 million for mid-cycle trimming; (2) $5.0 million for maintenance enhanced tree trimming and RTW trimming; and (3) $15.0 million for tree removals (Exhs. ES-WAV-1, at 34-35; ES-WAV-3, at 16).[147]

2. RTW Program Overview

The Company's RTW Program consists of three main components. First, the RTW Program trimming specification is applied to circuits that are considered at risk for reliability and is different from both the scheduled maintenance trim specification and the maintenance

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146 The RTW Program costs for 2017 through 2021 are under investigation in separate dockets. NSTAR Electric Company, D.P.U. 21-108; NSTAR Electric Company, D.P.U. 20-97; NSTAR Electric Company, D.P.U. 19-114; NSTAR Electric Company, D.P.U. 18-102. The Company proposed that the Department review such costs and issue final approval of the costs in this proceeding (Exh. ES-WAV-1, at 37-38). The Department has already determined that it would not adjudicate the RTW Program costs for 2017 through 2021 in this proceeding, and we need not revisit that decision. D.P.U. 22-22, Interlocutory Order on Scope of Proceeding at 10 (March 9, 2022) ("Scoping Order"). On September 23, 2022, the Company filed its annual RTW factor for 2022. NSTAR Electric Company, D.P.U. 22-123. Therefore, 2022 RTW Program costs were not discussed on brief or in the Scoping Order.

147 To facilitate the Department's review in the Company's next base distribution rate case, NSTAR Electric proposes to continue tracking the RTW Program activities and costs separately from the Base VM Program (Exh. ES-WAV-1, at 35-36).

enhanced tree trimming specification (Exhs. ES-WAV-1, at 23; ES-WAV-3, at 13). The Company's experience is that the majority of tree-related outages occur from limbs and trees that are located beyond the maintained Base VM Program trim zone (Exh. ES-WAV-1, at 23). The RTW Program trimming specification expands the Base VM Program trim zone on the backbones of critical circuits to 15 feet to the side of the circuit and 25 feet above the circuit (Exhs. ES-WAV-1, at 23; ES-WAV-3, at 13; DPU 39-10). The Company states that this enhanced trim zone helps to make circuits more resilient to tree-caused outages (Exhs. ES-WAV-1, at 23; ES-WAV-3, at 13).

Second, the RTW Program is intended to complement the Company's Base VM Program's existing tree removal activities by expanding the identification and removal of hazard and at-risk trees beyond each circuit's backbone to include laterals serving 100 or more customers as well as off-road rights-of-way located on private property (Exhs. ES-WAV-3, at 14; ES-WAV-1, at 24; DPU 39-10). This expansion of tree removal is intended to support a reduction in the number of customers impacted by fallen trees (Exh. ES-WAV-1, at 24).

Third, mid-cycle trimming[148] is an element in the Company's strategy to address emerging poor-performing circuits (Exhs. ES-WAV-1, at 24; DPU 39-10). The Company

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148 As outlined in Section XI.B.2 above, the Company currently follows an established trim cycle to ensure that all circuits are trimmed at least once every four to five years (Exh. ES-WAV-1, at 3). Mid-cycle (or off-cycle) trimming is trimming that occurs earlier than the established trim cycle and is taken on a proactive basis to address poor-performing circuits and other anomalies (Exh. ES-WAV-1, at 3).

stated that mid-cycle trimming provides the flexibility to address immediate issues on circuits that are not scheduled for trimming under the Base VM Program (Exh. DPU 39-10). The Company states that mid-cycle trimming is also consistent with the Department's reliability directive to trim all circuits at least once every five years (Exhs. ES-WAV-1, at 24; ES-WAV-3, at 14, citing D.P.U. 11-85-B/11-119-B at 135).

3. Positions of the Parties

a. Attorney General

The Attorney General asserts that the Department should reject the Company's request to continue the RTW Program (Attorney General Brief at 141). The Attorney General maintains that the RTW Program was not approved to extend beyond six years (Attorney General Brief at 139). Moreover, the Attorney General asserts that the RTW Program, which has been in effect for five of the six planned years, should have already accomplished most of its intended goals to improve reliability and expand the clearance specifications for circuits classified as at risk (Attorney General Brief at 140, citing NSTAR Electric Company, D.P.U. 21-108, Exh. ES-WAV/RWF-1, at 12).

In addition, the Attorney General asserts that felled trees removed through the RTW Program will not re-emerge as vegetation management issues (Attorney General Brief at 10). Further, the Attorney General maintains that while vegetation will continue to grow, it should be manageable through the Company's Base VM Program on an approved trim cycle (Attorney General Brief at 140). In addition, the Attorney General contends that continuation of the RTW Program creates redundancy of vegetation services (Attorney General Brief

at 140-141). Specifically, the Attorney General asserts that an augmented vegetation management plan, such as the RTW Program, targets the Company's entire distribution system resulting in multiple crews targeting the same circuits (albeit with different trim specifications) and yielding operational redundancies and unwarranted vegetation management costs (Attorney General Brief at 140-141).

Finally, the Attorney General recommends that the Department reject the Company's proposal to transfer $23.2 million of RTW Program costs to base distribution rates (Attorney General Brief at 141, citing Exh. ES-WAV-1, at 3, 34-35). The Attorney General notes that the Department approved the recovery of RTW Program costs for 2017 through 2021 subject to further investigation and reconciliation, and that such further investigation has not yet concluded (Attorney General Brief at 141-142, citing D.P.U. 21-108, at 4; NSTAR Electric Company, D.P.U. 20-97, at 4; NSTAR Electric Company, D.P.U. 19-114, at 4; NSTAR Electric Company, D.P.U. 18-102, at 4).

b. Company

The Company asserts that the costs and benefits of its RTW Program are well-established and that it has become an integral part of the Company's overall Vegetation Management Program (Company Brief at 356). The Company highlights four key areas of system improvement arising from the RTW Program, based on a comparison of a three-year average baseline to data from the six-month period from January 2021 to June 2021 (Company Brief at 353-355). The Company asserts that the first area of improvement is customers affected by tree-related outages (Company Brief at 354). Specifically, NSTAR

Electric maintains that the total number of customers affected by tree-related outages declined by 28 percent (Company Brief at 353-354, citing Exh. ES-WAV-1, at 30). Similarly, the Company contends that RTW Program circuits had a 54-percent reduction in tree-related outages as compared to a 17-percent reduction for the non-RTW Program circuits (Company Brief at 354, citing Exh. ES-WAV-1, at 30).

NSTAR Electric contends that the second area of improvement is contributions to SAIDI by tree-related outages (Company Brief at 354). Specifically, the Company asserts that SAIDI tree-related outages on RTW Program circuits decreased by 65 percent as compared to a 32-percent decrease in SAIDI tree-related outages on non-RTW Program circuits (Company Brief at 354, citing Exh. ES-WAV-1, at 30).

The Company claims that the third area of improvement is contributions to SAIFI by tree-related outages (Company Brief at 354). NSTAR Electric asserts that SAIFI associated with tree-related outages on RTW Program circuits decreased 56 percent as compared to an 18-percent reduction in SAIFI tree-related outages on non-RTW Program circuits (Company Brief at 354, citing Exh. ES-WAV-1, at 30-31).

The Company contends that the fourth improvement is a reduction in the number of outages on RTW Program circuits as compared to non-RTW Program circuits (Company Brief at 354). The Company maintains that the RTW Program circuits experience a 40-percent reduction, while the non-RTW Program circuits experienced a nine-percent increase (Company Brief at 354-355, citing Exh. ES-WAV-1, at 31). NSTAR Electric asserts that, based on these results, the RTW Program provides numerous benefits to its

overall distribution system by minimizing tree-related outages and improving the customer experience (Company Brief at 355).

In addition, the Company asserts that the RTW Program has yielded benefits of noticeably fewer customer interruptions, a more stable resource of crew availability, and assurance that NSTAR Electric's ongoing grid modernization efforts are not hampered by hazard trees (Company Brief at 355-356, citing Exh. ES-WAV-1, at 31-32). The Company also argues that there is a critical need to continue the RTW Program due to the increasing frequency and severity of weather-related events in NSTAR Electric's service territory (Company Brief at 356). Further, the Company maintains that while trees felled through the RTW Program may not re-emerge as vegetation management issues in the immediate future, other hazard and risk trees will appear, e.g., due to drought, insect infestation, tree species (Company Brief at 363-364).

Further, the Company maintains that contrary to the Attorney General's assertion, the RTW Program is not redundant to the Base VM Program and the reliability benefits may not continue in the absence of the RTW Program (Company Brief at 361, 364, citing Exhs. ES-WAV-1, at 23-24; ES-WAV-Rebuttal-1, at 14-18; DPU 39-10). The Company highlights the circuit trimming specifications and notes that they are distinct from those in the Base VM Program in terms of required clearance (Company Brief at 364, citing Exhs. ES-WAV-1, at 23-24; ES-Rebuttal-1, at 17; DPU 39-10; DPU 66-4).

With respect to its proposal to transfer the RTW Program costs to base distribution rates, the Company asserts that the costs of the RTW Program are stable and therefore

representative of future costs (Company Brief at 358, citing Exhs. ES-WAV-1, at 32; DPU 39-10). The Company maintains that it was authorized to recover $23.2 million annual incremental RTW Program O&M expenses and that it has utilized this amount to accomplish the goals of the RTW Program (Company Brief at 358, citing Exhs. ES-WAV-3; DPU 39-10). In addition, the Company maintains that continuing recovery of the RTW Program costs through the annual reconciling mechanism adds an administrative burden to Company personnel as employees assigned to work on the RTW Program are also required to conduct that program's administrative review (Company Brief at 366, citing Exhs. ES-WAV-1, at 32-33; ES-WAV-Rebuttal-1, at 18; AG 10-21).

4. Analysis and Findings

a. Continuation of RTW Program

The Department has recognized the significant financial burden that ratepayers have borne due to high storm restoration costs. The Department has further recognized that a company's poor pre-storm preparation may have adverse effects on that company's ratepayers. D.P.U. 13-90, at 19; D.P.U. 11-01/D.P.U. 11-02, at 70-71; D.P.U. 09-39, at 210-211. Thus, the Department views storm resiliency programs, such as the RTW Program, as a potentially worthwhile step towards strengthening a utility's distribution system and mitigating a portion of the physical damage and financial impacts of future storm events, and thereby benefitting ratepayers. D.P.U. 13-90, at 19. It is for these reasons that the Department allowed the RTW Program on a pilot basis. D.P.U. 17-05, at 580-581.

The Department concludes that the Company has demonstrated that the RTW Program, in conjunction with the Base VM Program, has been beneficial to further reducing storm-related outages through resiliency tree work outside of the Base VM Program trim zone (Exhs. ES-WAV-1, at 30-31; DPU 39-10). Further, there are differences between the Base VM Program and the RTW Program that highlight the uniqueness of each program (Exhs. ES-WAV-1, at 23-24; ES-WAV-Rebuttal-1, at 14). For example, the specific trim zones differ for the Base VM program and the RTW Program (Exh. ES-WAV-1, at 23-24). Further, the RTW Program offers elements of tree work not considered standard practice under the Base VM Program (e.g., enhanced mid-cycle trimming, expanded hazard and risk-tree identification and removal) (Exh. ES-WAV-1, at 24).

In addition, while trees removed through the RTW Program may not reemerge as vegetation management issues in the immediate future, it is apparent that other trees will experience damaging conditions necessitating their removal through the RTW Program (Exh. ES-WAV-Rebuttal-1, at 14-15). In this regard, there are typically multiple hazard tree profile lists for different circuits, which are prioritized by circuit reliability, general condition of the hazard trees, availability of equipment needed depending on the type and size of the tree, and cost implications (Exhs. ES-WAV-1, at 24-25; ES-WAV-Rebuttal-1, at 12). Therefore, we find that continuation of the RTW Program is appropriate to achieve increased reliability (Exhs. ES-WAV-Rebuttal-1, at 14-16; DPU 66-18). For these reasons, the Department allows the RTW Program to continue through the PBR term.

b. RTW Program Cost Recovery

The Company proposes to collect $23.2 million annually through base rates for RTW Program expenses (Exhs. REV-REQ-1, at 104; ES-REVREQ-2, Sch. 21, at 2; ES-WAV-3, at 16). The investigation of the RTW Program costs for 2017 through 2021 is ongoing in separate dockets. D.P.U. 21-108; D.P.U. 20-97; D.P.U. 19-114; D.P.U. 18-102. Thus, the RTW Program costs are neither known nor measurable. Therefore, the Company is unable to establish an appropriate level of costs to include in base distribution rates. We also note that there has been some volatility in the costs, with costs in only calendar year 2021 exceeding the proposed $23.2 million (Exh. AG 10-22).[149]

Based on these factors, the Department disallows the Company's request to move the RTW Program costs into base distribution rates. Instead, any costs incurred for the RTW Program from January 1, 2023, will continue to be collected through the RTW factor. The Company is directed to continue submitting annual filings demonstrating its RTW Program costs.[150] Therefore, the Department will remove $23.2 million from the Company's proposed cost of service (Exh. ES-REVREQ-2, Sch. 21, at 2 (Rev. 4); Department

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149 The Company reports incurring the following annual RTW Program costs: $2,875,000 in 2017, $20,629,368 in 2018, $19,296,574 in 2019, $21,249,610 in 2020, and $23,404,894 in 2021 (Exh. AG 10-22).

150 Pursuant to the RTW Program tariff, the Company submits an RTW factor filing annually on September 15th for rates effective January 1st (Exhs. ES-WAV-1, at 23; ES-WAV-3, at 18; ES-RDC-6, Sch. 2, at 338, 342). The RTW Program tariff will remain in effect, and the Company is directed to continue submitting its annual RTW factor filings pursuant to this schedule.

Schedules 2, 9 below). The Company shall file a revised RTW Program tariff consistent with these findings.

c. Future Filing Requirements

The Department has directed NSTAR Electric to track and maintain necessary information related to its RTW Program, including, but not limited to, costs, benefits, and contribution to reliability improvements (Exh. ES-RDC-6, Sch. 2, at 342). D.P.U. 17-05 at 581-582. Given that the Department is allowing the RTW Program to continue, we find it appropriate to require certain documentation to be submitted in the Company's annual filings. Specifically, the Company's annual filings shall include information about circuits and circuit segments (i.e., circuit identifier, circuit type, circuit voltage, three-phase miles, two-phase miles, single-phase miles, total circuit miles, municipality name(s)), program work and activity by circuit and circuit segments[151] and cost information (i.e., tree removal costs, trimming costs, other costs if applicable, tree contractors, trimming contractors, contractors for other work performed).

Further, all invoices submitted by the Company shall provide detailed work descriptions and locations and should be clearly attributable to the RTW Program, i.e., differentiated from work done pursuant to the Base VM Program. In addition, the

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151 For tree work, the Company should provide whether a profile was conducted, the primary reason(s) for initiating work, work performed, trees removed, tree contractor, tree removal cost, and cost per tree removal. For trimming work, the Company should provide circuit miles planned for trimming, primary reason for initiating work, work performed, actual circuit miles trimmed, percent of planned work complete, total pruning cost, and cost per mile for trimming.

Company's annual filing shall include separate spreadsheets detailing: (1) future year planned work by circuit, including circuit priority; (2) a report on revisions of the previously planned work for the current year, i.e., reprioritization based on circuit and SQ data; (3) data on circuit improvements (customers affected, outage events, improved restoration times, etc.) as a three-year average, current year, and variance; (4) service-quality data information by system and circuit as a three-year average, current year, and variance; and (5) worst-performing three-phase circuits (i.e., bottom 25 percent of circuits, including circuit average interruption duration index ("CKAIDI"), circuit average interruption frequency index ("CKAIFI"), and circuit interruption, reported as a three-year average, current year, and variance).

D. Municipal Hazard Tree Removal Pilot Program

1. Introduction

The Company proposes a new pilot program, the municipal hazard tree removal pilot program, to begin January 2023 (Exhs. ES-WAV-1, at 4, 20; ES-RDC-6, Sch. 1, at 527; DPU 28-19). NSTAR Electric states that the current process to remove hazard trees near the distribution system takes significant time because the Company is required to obtain the requisite municipal permissions, which is a costly process when done on a state-wide basis (Exhs. ES-WAV-1, at 20; DPU 28-10). For its proposed pilot program, the Company states it would partner with municipalities to conduct surveys, identify multiple hazard tree removals, develop municipality-specific removal plans, and expedite the commissioning and approval process on a much larger scale (Exhs. ES-WAV-1, at 20-21; DPU 39-10, at 6).

The Company states its arborists would work directly with municipal tree wardens to identify hazard trees and jointly finalize a removal list (Exh. DPU 57-12).

The Company proposes to rank municipalities based on: (1) those municipalities that are willing to work with the Company to achieve more removals; and (2) those municipalities having a SAIDI/SAIFI reliability measure that is one of the 40 worst in Massachusetts (Exhs. DPU 28-10; DPU 57-12, Att.). The Company would then submit the municipal plans to the Department with cost-benefit analyses for informational purposes so that the Department is aware of the municipalities involved (Exh. ES-WAV-1, at 21).

The Company estimates an annual total cost of $1 million for the proposed pilot program (Exhs. ES-WAV-1, at 21; AG 10-17). The Company estimates an average tree removal cost of $1,000, and states that the $1 million budget would allow it to remove 50 hazard trees in 20 municipalities each year, at a cost of $50,000 per municipality (Exhs. ES-WAV-1, at 21; AG 10-17). The Company proposes to recover the costs of the proposed pilot program through the RTW factor rather than base distribution rates because the costs will be variable and unpredictable until the program matures (Exhs. ES-WAV-1, at 4, 22; ES-RDC-6, Sch. 2, at 341). The Company proposes to provide actual costs with supporting invoices for recovery through the RTW factor (Exhs. ES-WAV-1, at 22; DPU 28-20 & Att. at 3; AG 10-17).

2. Positions of the Parties

a. Attorney General

The Attorney General asserts that the Company failed to provide sufficient details regarding the proposed municipal hazard tree removal pilot program (Attorney General Brief at 142-143). In particular, the Attorney General maintains that the Company failed to provide annual pilot program costs (Attorney General Brief at 143). The Attorney General also argues that the removal of hazardous trees is already part of the RTW Program and that the Company failed to explain why this pilot program is not redundant (Attorney General Brief at 142-143). In addition, the Attorney General questions why a partnership with municipal tree wardens and municipal officials has not already been forged through the Company's Vegetation Management Program (Attorney General Brief at 143). Finally, the Attorney General contends that the Company has claimed that the pilot would reduce the amount of money needed for removal of certain hazard and risk trees, but that NSTAR Electric has not reflected such a reduction in its request to move RTW Program costs into base distribution rates (Attorney General Brief at 143, citing Exh. AG 10-16, at 1; Tr. 6, at 549).

b. Company

The Company asserts that it is requesting $1 million for this pilot program because that proposed annual budget would allow it to work with up to 20 individual municipalities annually to develop a town-specific plan to remove up to 50 hazard trees (as opposed to up to three trees over 20 years) (Company Brief at 368, citing Exhs. ES-WAV-1, at 21-22;

ES-WAV-Rebuttal-1, at 22; AG 10-17). The Company maintains that it cannot provide a more precise estimate of the costs because municipality participation is out of the Company's control, and for that reason, it proposes to report to the Department more precise costs and estimates with a cost-benefit analysis once the municipal hazard tree removal pilot program is underway (Company Brief at 368, citing Exhs. ES-WAV-1, at 21; DPU 28-8; DPU 39-10; DPU 39-14; AG 10-16).

In addition, the Company contends that the proposed pilot program is not redundant with its Base VM Program or the RTW Program because under those programs, the Company does not have the budget to accommodate broad municipal-specific plans and only removes one or two trees at a time in any given municipality, over many years (Company Brief at 369, citing Exhs. ES-WAV-1, at 20; ES-WAV-Rebuttal-1, at 22; DPU 28-8). Further, the Company argues that the proposed pilot program will result in hazard tree removals that are in addition to the trees that will be removed under the existing RTW Program (Company Brief at 369, citing Exhs. ES-WAV-Rebuttal-1, at 22; DPU 28-10).

Finally, the Company asserts it has established relationships with municipal tree wardens and municipal officials and that these relationships are stable and constantly developing (Company Brief at 369-370, citing Exhs. ES-WAV-1, at 20; ES-WAV-Rebuttal-1, at 22; DPU 28-8). The Company argues that the issue is not the relationship, but rather that the Company does not have the resources to assign crews to specific municipalities to focus on hazard tree removal (Company Brief at 370, citing Exhs. ES-WAV-1, at 20; ES-WAV-Rebuttal-1, at 22; DPU 28-8). The Company asserts that a larger-scale municipal

hazard tree removal program would have a significant impact on reliability and resiliency and reduce storm damage and costs (Company Brief at 370, citing Exhs. ES-WAV-Rebuttal-1, at 23; DPU 28-8).

3. Analysis and Findings

While we acknowledge the importance of NSTAR Electric's goal of reliability and resiliency for its customers, we have several concerns with the pilot program as proposed. For example, the Company is already obligated to work with municipal officials and municipal tree wardens to remove hazard trees on public property. G.L. c. 87, § 14; D.P.U. 11-85-B/11-119-B at 122, 134; Investigation of Emergency Plans for Hurricane Bob, D.P.U. 91-228, at 12 (1992). General Laws c. 87, § 14, outlines requirements and timeframes for companies' coordination with municipal officials and municipal tree wardens. The Department has also directed companies to conduct annual meetings with local tree wardens in each municipality within their service areas. D.P.U. 11-85-B/11-119-B at 122, 134; D.P.U. 91-228, at 12.

In addition, the Department has approved continuation of the RTW Program (see Section XI.C.4.a above). The RTW Program and the Base VM Program both encompass resiliency tree removal activity, which uses the same criteria as the proposed municipal hazard tree pilot program (Exhs. ES-WAV-3, at 12; AG 10-16). Specifically, all three programs identify hazard trees to be removed by focusing on trees causing a pattern of interruptions (Exhs. ES-WAV-1, at 20-21, 25-26, 28; ES-WAV-3, at 12, 14; DPU 39-10, at 6; AG 10-16, at 1). The Company distinguishes the proposed pilot program from the

RTW Program by noting that the RTW Program is typically used to remove a single tree in a municipality (Exh. DPU 28-10). While the Company states it lacks the resources to accommodate municipal-specific plans, there is nothing in the RTW Program that prevents NSTAR Electric from focusing on specific municipalities where there are demonstrated reliability issues to harden the distribution system (Exh. ES-WAV-3, at 13-15). Further, an objective of the RTW Program is to conduct tree trimming and remove hazardous or at-risk trees, so working with municipalities focused in specific geographical areas with reliability issues in parallel with the standard Base VM Program could achieve the objects of the programs and minimize costs (Exh. ES-WAV-3, at 14, 16).

Further, NSTAR Electric acknowledged that it was unable to provide a concrete cost estimate and that it has not yet developed a budget (Exhs. ES-WAV-1, at 22; DPU 28-19). While the Company anticipates that the pilot program "should" improve the performance of circuits, it was also unable to provide an estimate of any such improvement (Exh. DPU 28-9). Given the speculative nature of the costs and any improvements, it would be premature to allow recovery of any costs related to a municipal hazard tree pilot program at this time.

In addition, the Department has granted a five-year PBR (see Section IV.D.5.a above), and, as such, the Company should have the incentive to continue to improve its RTW Program, including designing better methods to manage municipal tree removals more efficiently. Moreover, the Department notes that approval of the municipal hazard tree

removal pilot program would also create an administrative burden on the Department, the Attorney General, and other intervenors.

Based on these factors, the Department finds that the recovery of costs related to the proposed municipal hazard tree removal pilot program is not in the interest of the ratepayers. Therefore, the Department disallows any cost recovery related to the proposed municipal hazard tree removal pilot program. The Company shall file a revised RTW Program tariff consistent with these findings.

XII. EXOGENOUS COST PROPERTY TAX PROPOSALS

A. Introduction

NSTAR Electric seeks to recover incremental property tax expenses resulting from cities and towns in the Company's service area adopting a hybrid "reproduction cost new less depreciation" ("RCNLD") and net book value ("NBV") method[152] of assessing the value of personal property. The Company requests recovery through two separate exogenous cost provisions. First, the Company seeks to recover $8,314,371 in total property taxes assessed by Springfield for fiscal years 2012 through 2015 under the exogenous cost provision of a settlement reached in docket NSTAR/Northeast Utilities Merger, D.P.U. 10-170-B (2012) (Exhs. ES-REVREQ-1, at 182, 184-185, 190-191; ES-REVREQ-6(a), Sch. 1). Second, the

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152 The hybrid RCNLD/NBV method is based on 50 percent of RCNLD valuations and 50 percent of NBV valuations (Exh. ES-REVREQ-1, at 135). The hybrid RCNLD/NBV method uses the property tax expense as reported on the town's most recent property tax bills, adjusted to recognize any changes in personal property valuations (Exh. ES-REVREQ-1, at 135).

Company seeks to recover $30,006,340 in property taxes attributable to fiscal years 2021 and 2022 and half of fiscal year 2023, through the exogenous cost provision of the Company's current PBR mechanism (Exhs. ES-REVREQ-1, at 182, 191-199; ES-REVREQ-6(a), Sch. 2 (Supp.); DPU 16-1 (Rev.)). The Department will address each of these requests separately below.

B. Merger Settlement

1. Introduction

In D.P.U. 10-170-B at 2, 107, the Department approved a proposed settlement ("Merger Settlement") to merge NSTAR Electric and NSTAR Gas, along with their parent holding company NSTAR, and the former WMECo, along with its parent holding company Northeast Utilities.[153] As part of its decision, the Department approved a rate freeze applicable to the base distribution rates of NSTAR Electric, NSTAR Gas, and WMECo, so that base distribution rates in effect on January 1, 2012, remained in place until January 1, 2016. D.P.U. 10-170-B at 18-19, 107.

Pursuant to Article II (5) of the Merger Settlement, NSTAR Electric may seek exogenous cost recovery of incremental property taxes incurred during the rate freeze (i.e., January 1, 2012 through December 31, 2015) associated with the adoption by municipalities of the hybrid RCNLD/NBV method of assessing the value of personal property, provided that the incremental expense meets the minimum annual threshold for

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[153] Pursuant to 220 CMR 1.10(3), the Department incorporates by reference the Merger Settlement filed and approved in D.P.U. 10-170-B.

exogenous costs. The Merger Settlement provides that the dollar threshold for qualification as an exogenous factor in any calendar year covered by the Merger Settlement shall be determined by multiplying the total distribution revenues of that year by a factor of 0.003212 (Merger Settlement, Art. II (5)). The Merger Settlement is silent with respect to the method to be used to recover exogenous costs.

In D.P.U. 17-05, the former WMECo first sought to recover the aforementioned incremental property taxes assessed by Springfield as an exogenous cost pursuant to the Merger Settlement. D.P.U. 17-05, at 521-522.[154] At the time, WMECo had filed appeals of the Springfield tax assessments to the Appellate Tax Board, which still were pending. D.P.U. 17-05, at 523-524. As such, the Department denied WMECo's request to recover incremental property taxes pursuant to the Merger Settlement. The Department determined that because WMECo still was engaged in the appeals process after the denials of its tax abatement requests, we were unable to assess whether at the end of the appeals process there would be any incremental taxes and, if so, whether the amounts would be above the annual threshold subject to recovery from ratepayers as exogenous costs. D.P.U. 17-05, at 524. Thus, the Department decided not to consider WMECo's request for recovery of incremental property taxes as an exogenous cost at that time, and instead determined that, once all

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154 Springfield had transitioned to the hybrid RCNLD/NBV well before March 26, 2019, the date that the Department of Revenue issued a Local Finance Opinion detailing a change in guidance from the Bureau of Local Assessment on the appropriate method of valuation for purposes of local property tax assessment (Exhs. ES-REVREQ-1, at 184; DPU 54-5, at 1). The Local Finance Opinion is discussed further in Section XII.C.3 below.

appeals were exhausted, WMECo should file a separate petition seeking exogenous cost recovery of any incremental property tax assessed using the hybrid RCNLD/NBV method from 2012 through 2015. D.P.U. 17-05, at 524.

2. Company Proposal

In the instant case, NSTAR Electric renews the former WMECo's previous request to recover $8,314,371 in incremental property taxes from 2012 through 2015 pursuant to the Merger Settlement (Exhs. ES-REVREQ-1, at 184-185; ES-REVREQ-6(a), Sch. 1). The Company proposes to amortize the property tax recovery over a five-year period at an annual amount of $1,662,874 (Exhs. ES-REVREQ-1, at 190; ES-REVREQ-2, Sch. 26 (Rev. 4)). NSTAR Electric argues that the annual amount of incremental property taxes meets the exogenous cost recovery standard under the Merger Settlement and that all of the Company's appeals have been exhausted (Company Brief at 301-302). No intervenor specifically addressed the Company's proposal on brief.

3. Analysis and Findings

Since the Department's decision in D.P.U. 17-05, the Company's challenges to the Springfield incremental tax assessments have been unsuccessful. In particular, in May 2020, the Appellate Tax Board rejected WMECo's appeals of the 2012 and 2013 assessments. Western Massachusetts Electric Company v. Board of Assessors of the City of Springfield, Appellate Tax Board, Docket Nos. F315550, F319349 (May 20, 2020). That decision subsequently was upheld by the Massachusetts Appeals Court in a Rule 23.0 Memorandum and Order issued in April 2022. Western Massachusetts Electric Company v. Board of

Assessors of Springfield, 100 Mass. App. Ct. 1131 (Mass. App. Ct. 2022). In June of this year, the Supreme Judicial Court denied further appellate review of the matter. Western Massachusetts Electric Company v. Board of Assessors of Springfield, FAR-28794, 2021-P-0596 (June 2, 2022). Following the Appeals Court decision, the Company paid the outstanding tax liability to Springfield, including interest (Exhs. DPU 54-8, at 2 & Att.; AG 12-18).[155]

Further, since the decision in D.P.U. 17-05, the Department has had another opportunity to evaluate a request for exogenous cost recovery pursuant to the Merger Settlement. In D.P.U. 19-120, at 326-328, NSTAR Gas requested recovery pursuant to the Merger Settlement of incremental property tax expenses assessed by the City of Worcester and Town of Westborough from 2012 through 2015. In that Order, the Department determined that that NSTAR Gas did not need to exhaust all of its appeals before seeking exogenous cost recovery of incremental property taxes pursuant to the Merger Settlement and could begin to recover incremental property taxes associated with Worcester and Westborough for 2012 through 2015. D.P.U. 19-120, at 334-335.

The Department has given careful consideration to NSTAR Electric's request in the instant case. The Merger Settlement expressly allows the Company to seek recovery of the incremental tax amounts associated with the change in property valuation for fiscal years

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155 The Company's instant request to recover $8,314,371 in incremental property taxes assessed by Springfield for fiscal years 2012 through 2015 does not include an interest component (Exhs. DPU 54-1, Att.; DPU 54-8, at 2).

2012 through 2015, provided that the incremental expense satisfies the Department's exogenous cost standard in D.P.U. 96-50 (Phase I) and meets the minimum annual threshold for exogenous costs set forth in the Merger Settlement (Merger Settlement, Art. II (5)). We find that the incremental tax amounts satisfy the Department's exogenous cost standard and that the Company has demonstrated that for each fiscal year from 2012 through 2015, the amount of incremental property tax exceeded the Merger Settlement threshold (Exhs. ES-REVREQ-6(a), Sch. 1; DPU 54-1, Att.). D.P.U. 96-50 (Phase I), at 292. Further, in light of the treatment of the hybrid RCNLD/NBV method by the Massachusetts appellate courts, and consistent with our decision with respect to NSTAR Gas in D.P.U. 19-120, we find that the Company no longer needs to pursue additional appeals before seeking exogenous cost recovery of incremental property taxes pursuant to the Merger Settlement.[156] Rather, we conclude that it is reasonable and appropriate for the Company to begin to recover the incremental property taxes associated with Springfield for fiscal years 2012 through 2015.

The Merger Settlement does not describe the manner in which these costs shall be recovered (see Merger Settlement, Art. II (5)). As noted above, NSTAR Electric proposes to amortize the recovery of $8,314,371 in incremental property taxes over five years at an

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156 While the Company refers to its appeals as "exhausted," we note that the recent decision of the Massachusetts Appeals Court appears confined to the Springfield incremental tax assessments for fiscal years 2012 and 2013 (Exh. DPU 54-7, Att. (a) at 2). Nonetheless, based on the considerations above, the Company may begin to recover the entire amount attributable to fiscal years 2012 through 2015.

annual amount of $1,662,874 (Exhs. ES-REVREQ-1, at 184-185, 190; ES-REVREQ-6(a), Sch. 1; ES-REVREQ-2, Sch. 26 (Rev. 4)). In Section IV.D.5.a above, the Department approved a PBR plan for NSTAR Electric with a five-year term. As such, the Department finds that it is reasonable and appropriate to amortize the recovery of the incremental property taxes over the same term as the PBR plan. D.P.U. 19-120, at 337. To the extent the Company recovers any or all of the incremental property taxes relative to fiscal years 2012 through 2015 as a result of an abatement/appeals process, it shall refund customers the incremental property tax amounts through the exogenous cost provision of its PBR plan (Exhs. ES-REVREQ-1, at 190-191; DPU 54-2). D.P.U. 19-120, at 337.

Based on the above considerations, the Department approves the Company's exogenous cost property tax proposal relative to the Merger Settlement. The Company shall amortize the recovery of $8,314,371 in incremental property taxes over five years at an annual amount of $1,662,874.

C. D.P.U. 17-05 PBR Mechanism

1. Introduction

In D.P.U. 17-05, at 370-414, the Department approved a PBR mechanism with a five-year term, which allows NSTAR Electric to adjust its distribution rates annually through the application of a revenue-cap formula that accounts for, among other factors, inflation and exogenous events, either positive or negative. D.P.U. 17-05, at 381-399. Since the decision in D.P.U. 17-05, the Department has approved four annual PBR adjustments for the Company. NSTAR Electric Company, D.P.U. 21-106 (2021); NSTAR Electric Company,

D.P.U. 20-96 (2020); NSTAR Electric Company, D.P.U. 19-115 (2019); D.P.U. 18-101. In NSTAR Electric's most recent annual PBR adjustment filing, D.P.U. 21-106, the Company included, for the first time, a request to recover $11.8 million in additional property taxes incurred in fiscal year 2021 (i.e., July 2020 through June 2021) through the end of calendar year 2021 and associated with what the Company maintained was an exogenous event resulting from a change in the valuation method used by certain municipalities to assess utility property. D.P.U. 21-106, at 3, citing Exhs. ES-RWF/ANB at 15-22; ES-RWF-ANB-1, at 1-2; ES-RDC-1, Sch. 2; see also D.P.U. 21-106, Exhs. ES-RWF/ANB-3, at 1; DPU 2-1. Subsequently, the Company proposed to remove these costs from the PBR adjustment and, instead, file a future request for exogenous cost recovery in a separate proceeding. D.P.U. 21-106, at 11, citing NSTAR Electric Filing Letter at 1-2; Exhs. ES-RWF/ANB-1 (Mitigated); DPU 2-2, Att. (a)). The Department approved NSTAR Electric's proposal, and we noted that we would review any request for exogenous cost recovery in a separate proceeding to be filed by the Company. D.P.U. 21-106, at 11.

In the instant proceeding, NSTAR Electric's initial filing included a request to recover $30,006,340 in total additional property taxes though the exogenous cost provision of the Company's current PBR mechanism, comprised of the incremental property taxes that initially were presented in D.P.U. 21-106 and subsequently withdrawn, plus incremental property taxes attributable to fiscal year 2022 and half of fiscal year 2023 (Exhs. ES-REVREQ-1, at 182, 191-199; ES-REVREQ-6(a), Sch. 2, at 1 (Supp.); DPU 16-1,

Att. at 1 (Rev.)). The Company proposed to begin recovering approximately $8 million attributable to fiscal year 2021 property taxes through the PBR adjustment factor for effect on January 1, 2023 (Exh. ES-REVREQ-1, at 197). The Company stated that any over/under recovery of the prior-period expenses would be reconciled in the next PBR adjustment filing on September 15, 2023, with carrying charges calculated at the prime rate (Exh. ES-REVREQ-1, at 197).

On September 23, 2022, the Company submitted its revised fifth annual PBR filing pursuant to the PBR plan approved in D.P.U. 17-05. The Department docketed the matter as D.P.U. 22-120. In that filing, the Company does not propose a PBR adjustment to base distribution revenues. NSTAR Electric Company, D.P.U. 22-120, Exhs. ES-RDC, at 3; ES-ANB-1, at 1. Rather, NSTAR Electric proposes to recover through base distribution rates, the incremental property taxes incurred in fiscal year 2021, 2022, and the first half of 2023, which the Company states amounts to $30,187,653. D.P.U. 22-120, Exhs. ES-ANB at 7-8, 21-30 (Rev.); DPU 4-3, Att. The Company makes essentially the same statements in that filing to support its requested recovery as in the instant case. D.P.U. 22-120, Exh. ES-ANB at 15, 21-30 (Rev.).[157] The Company also requests that the Department make

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[157] The Company attributes the higher amount requested for recovery in D.P.U. 22-120 to final property tax information from two municipalities that was not available at the time that exhibits were prepared in the instant case, and to a recalculation of totals to conform to the Department's recent decision in Eversource Gas Company of Massachusetts, D.P.U. 22-122 (October 31, 2022) and NSTAR Gas Company, D.P.U. 22-121 (October 31, 2022). D.P.U. 22-120, Exhs. DPU 1-1, at 4; DPU 4-3 & Att.

a finding in the instant case that an exogenous event has occurred pursuant to the PBR plan approved in D.P.U. 17-05, and then to allow the actual implementation of the cost recovery in D.P.U. 22-120. D.P.U. 22-120, Exhs. ES-ANB at 7-8 (Rev.); DPU 1-1, at 1-2.

2. Positions of the Parties

a. Attorney General

The Attorney General argues that the Department should deny the Company's proposal to treat increased property valuations as exogenous costs under the Company's current PBR plan (Attorney General Brief at 180; Attorney General Reply Brief at 31). The Attorney General contends that none of the incremental costs associated with various municipalities using a hybrid RCNLD/NBV method meet the exogenous cost threshold set forth in the Company's PBR mechanism (Attorney General Brief at 180-181, citing Exh. ES-REVREQ-6(b), Sch. 4.). Further, the Attorney General submits that each municipality's adoption of an alternative to the NBV property tax assessment method should be considered a separate exogenous event, particularly since various municipalities adopted an alternative method at different times (Attorney General Reply Brief at 31-32). In this regard, the Attorney General argues that the Department of Revenue ("DOR") has provided guidance to municipalities on adopting an alternative to the NBV tax assessment method but does not require cities and towns to use the alternative method (Attorney General Reply Brief at 32-33, citing Exh. ES-REVREQ-6(a), Sch. 4, at 3; Sch. 5, at 7). Finally, the Attorney General asserts that the Department previously rejected the notion that incremental property tax amounts across multiple municipalities should be combined and totaled for purposes of

meeting the exogenous cost threshold in the PBR mechanism (Attorney General Brief at 180-181, citing Eversource Gas Company of Massachusetts, D.P.U. 21-112-A at 8-11 (June 3, 2022); D.P.U. 20-120, at 349-350; D.P.U. 19-120, at 332-338; D.P.U. 18-150, at 421-422; D.P.U. 17-05, at 558-559; Attorney General Reply Brief at 31-34).

b. TEC and PowerOptions

TEC and PowerOptions argue that the Department should continue to evaluate exogenous cost recovery of incremental property taxes on a non-cumulative, individual municipality basis and not combine totals from various municipalities for purposes of meeting the exogenous cost threshold (TEC/PowerOptions Brief at 13, citing D.P.U. 20-120, at 349-350). Further, TEC and PowerOptions assert that only NSTAR Electric can protect its ratepayers from "overly aggressive" property tax valuations, and it is imperative that the Company continue to vigorously contest unreasonably high assessments (TEC/PowerOptions Brief at 13).

c. Company

The Company argues that when costs are interrelated and caused by a single exogenous event, the costs should be calculated in the aggregate (Company Brief at 304-305, citing D.P.U. 18-101, at 20-21; Boston Gas Company, D.T.E. 05-66, at 11-13 (2005); Colonial Gas Company, D.T.E. 00-73, at 19-22 (2001)). In this regard, NSTAR Electric contends that the incremental property taxes at issue arise from DOR's decision to "formally transition" from the traditional NBV method of utility property valuation to the hybrid RCNLD/NBV approach, and that DOR's directives constituted a single exogenous event

because it caused large numbers of municipalities (specifically, 187 of 194 municipalities) to change their tax valuation method and increase the Company's property taxes (Company Brief at 301-306).

According to the Company, to focus on each individual municipality's tax assessment as a separate and distinct exogenous event is legally flawed, as the exogenous event is not the municipality's decision to change the property tax valuation, but rather the municipalities need to comply with DOR's directive (Company Brief at 306-307; Company Reply Brief at 34-35). In this regard, the Company contends that legal "causation principles" point to DOR's purported directives as being the direct or proximate cause of 187 municipalities changing their valuation method and increasing property taxes beginning in fiscal years 2021 and 2022 (Company Brief at 306, citing Lynn Gas & Electric Company v. Meriden Fire Insurance Company, 158 Mass. 570, 575 (1893); Jussim v. Massachusetts Bay Insurance Company, 415 Mass. 24, 27 (1993); Company Reply Brief at 35-36).

Moreover, the Company argues that the Department has allowed exogenous cost recovery based on aggregate costs. For example, NSTAR Electric contends that the Department determined that the March 2018 Nor'Easter storm event, during which the Company was in a continuous state of storm preparation and restoration, should be treated as single major storm event for exogenous cost recovery (Company Reply Brief at 37-38, citing D.P.U. 18-101, at 11-12, 20-21). Thus, the Company claims that the Department should treat as a single exogenous event, the increase in incremental property taxes among various municipalities since the issuance of DOR's directives in 2019 (Company Brief at 307;

Company Reply Brief at 38). Based on the above considerations, the Company asserts that the Department should allow NSTAR Electric to recover $30,006,340 in incremental property taxes pursuant to the exogenous cost provision in the Company's current PBR mechanism (Company Brief at 307).

3. Analysis and Findings

In D.P.U. 17-05, at 395-398, the Department approved an exogenous cost factor as a component of the Company's PBR plan. Pursuant to NSTAR Electric's current PBR tariff, the Company must provide supporting documentation and rationale demonstrating that the proposed exogenous cost meets the following criteria: (1) the cost change must be beyond the Company's control; (2) the cost change arises from a change in accounting requirements or regulatory, judicial, or legislative directives or enactments; (3) the cost change is unique to the electric distribution industry as opposed to the general economy; and (4) the cost change meets a threshold of significance for qualification. M.D.P.U. No. 59(E) at § 1.08.[158] The significance threshold for exogenous costs was set at $5 million for each individual event in

[158] The Department has defined exogenous costs as positive or negative cost changes actually beyond a company's control and not reflected in the GDP-PI. D.P.U. 94-50, at 172-173. These include, but are not limited to, incremental costs resulting from: (1) changes in tax laws that uniquely affect the relevant industry; (2) accounting changes unique to the relevant industry; and (3) regulatory, judicial, or legislative changes uniquely affecting the industry. D.P.U. 96-50 (Phase I) at 291; D.P.U. 94-50, at 173. In D.P.U. 17-05, at 396, we determined that NSTAR Electric's definition of exogenous costs in its proposed PBR tariff was consistent with the definition adopted by the Department in D.P.U. 94-50.

calendar year 2018, and thereafter was to be adjusted annually based on changes in GDP-PI. D.P.U. 17-05, at 397-398; M.D.P.U. No. 59(E) at § 1.08.

In D.P.U. 21-107-A at 18-19, the Department determined that a Local Finance Opinion issued by DOR in March 2019 (see n.154 above) constituted a regulatory policy change that lowered the burden of using a method other than NBV and induced a significant number of municipalities in NSTAR Gas' service area to change their valuation method. Further, we determined that DOR's regulatory policy change on NBV, while not mandating a specific valuation method, has driven widespread adoption by municipalities of an alternative property valuation method resulting in an incremental change in property tax expense in excess of NSTAR Gas' significance threshold. D.P.U. 21-107-A at 19. In addition, we found that the cost increases satisfy the criteria for an exogenous event because NSTAR Gas had incurred a cost change that: (1) arose from DOR's 2019 state-wide regulatory directive that it would no longer treat NBV as the default method for valuation of utility property taxes or give presumptive validity to valuations based on NBV; (2) was beyond NSTAR Gas' control; (3) was unique to the utility industry as opposed to the general economy; and (4) met NSTAR Gas's significance threshold. D.P.U. 21-107-A at 19. The Department distinguished our prior determinations that examined the significance of property tax expense changes driven by municipalities' independent decisions to change their method of property valuation and not driven by DOR's change in regulatory policy governing the utility industry. D.P.U. 21-107-A at 19-20.

We find that the same standard applied in D.P.U. 21-107-A to NSTAR Gas should apply to NSTAR Electric's proposal in the instant case. The record in the instant proceeding shows that at the time of NSTAR Electric's last base distribution rate case, D.P.U. 17-05, only six municipalities in the Company's service area had transitioned from NBV to the hybrid RCNLD/NBV method of assessing property taxes (Exh. DPU 16-1, Att. at 9-11 (Rev.)). The Company has demonstrated that 187 municipalities now have transitioned from NBV to the hybrid RCNLD/NBV method since the Department's Order in D.P.U. 17-05 (Exhs. ES-REVREQ-6(a), Sch. 2, at 9-11 (Supp.); DPU 16-1, at 2 & Att. at 9-11 (Rev.)). As such, we find that the Local Finance Opinion issued by DOR in March 2019 constituted a regulatory policy change that led a significant number of municipalities within NSTAR Electric's service area to change their valuation method. Further, we conclude that DOR's action was beyond NSTAR Electric's control and was unique to the utility industry as opposed to the general economy. In addition, NSTAR Electric's supporting documentation appears to show that the cost change resulting from DOR's actions meets the Company's significance threshold (Exhs. ES-REVREQ-6(a), Sch. 2, at 8 (Supp.); DPU 16-1, Att. at 8 (Rev.)).

The final determination of the amount of incremental property taxes eligible for recovery will be made in docket D.P.U. 22-120. Consistent with the findings in D.P.U. 21-107-A at 20, NSTAR Electric will need to demonstrate that its proposed exogenous cost adjustments include only the incremental property tax expense that arises from the exogenous event. Further, the Company must isolate the impact of municipalities'

adoption of the hybrid RCNLD/NBV method following DOR's issuance of the Local Finance Opinion and follow the terms of the PBR tariff to implement the exogenous cost change. D.P.U. 21-107-A at 20. Once approved by the Department, the amount of the cost change shall be amortized over two years and recovered through a separate factor. We find this method of recovery is reasonable and appropriate given that the permanent increase in property tax expense due to the hybrid RCNLD/NBV method will be reflected in base distribution rates as a result of our Order today (see Exh. ES-REVREQ-27, Sch. 27 (Rev. 4); Department Schedule 7 below).

XIII. SERVICE QUALITY PERFORMANCE EXEMPTION

A. Introduction

The Department approved the current SQ Guidelines applicable to EDCs and local gas distribution companies in D.P.U. 12-120-D. The SQ Guidelines establish performance metrics and benchmarks against which the EDCs and local gas distribution companies must measure their performance annually. D.P.U. 12-120-D. The SQ Guidelines established the following metrics with an associated penalty for EDCs: SAIDI;[159] SAIFI;[160] CKAIDI;

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159 SAIDI means the total duration of customer interruptions in minutes divided by the total number of customers served by the EDC, expressed in minutes per year. SAIDI characterizes the average length of time that customers are without electric service during the reporting period. D.P.U. 12-120-D, Att. A at 6.

160 SAIFI means the total number of customer interruptions divided by the total number of customers served by the EDC, expressed in number of interruptions per customer per year. SAIFI characterizes the average number of sustained electric service interruptions for each customer during the reporting period. D.P.U. 12-120-D, Att. A at 6.

CKAIFI; Service Appointments Kept As Scheduled; Customer Complaints; and Customer Credit Cases. D.P.U. 12-120-D, Att. A. The SQ Guidelines require EDCs to annually report their performance for each of these metrics and pay monetary penalties if their performance does meet the applicable benchmarks. D.P.U. 12-120-D at 7-16. The EDCs must include all relevant data when calculating their annual performance for each metric, unless some data has been excluded either because it meets the definition of an "Excludable Major Event" or a company requested, and the Department approved, a limited exemption. D.P.U. 12-120-D, Att. A at 4, 25. The SQ Guidelines define the term Excludable Major Event as follows:

> "Excludable Major Event" means a major Interruption event that meets one of the three following criteria: (1) the event is caused by earthquake, fire or storm of sufficient intensity to give rise to a state of emergency proclaimed by the Governor (as provided under the Massachusetts Civil Defense Act); (2) any other event that causes an unplanned Interruption of service to fifteen percent or more of the Electric Company's total customers in the Electric Company's entire service territory; or (3) the event was a result of the failure of another Company's transmission or power supply system. Excludable Major Events apply to all SQ reliability metrics. Notwithstanding the foregoing criteria, an Interruption event caused by extreme temperature condition is not an Excludable Major Event.

D.P.U. 12-120-D, Att. A at 4. Excludable Major Events are the only events automatically excluded from the calculation of all SQ metrics. D.P.U. 12-120-D, Att. A at 12. The SQ Guidelines, however, allow EDCs to request a limited exemption from a particular portion of the SQ Guidelines, including circumstances where an event does not meet the definition of Excludable Major Event. D.P.U. 12-120-D, Att. A, at 25. For example, the Department may grant an exemption from a particular metric or metrics if extraordinary circumstances arise during an outage event that render prompt service restoration beyond an EDC's

reasonable control. D.P.U. 12-120-D, Att. A at 25; 2020 Electric Service Quality Reports, D.P.U. 21-SQ-10 through 21-SQ-13, at 6 (February 4, 2022), citing Petition by Local Gas Distribution Companies for Limited Waiver of Service Quality Guidelines, D.P.U. 15-56, at 5 (2016).

B. Company Proposal

NSTAR Electric requests that, for SQ reporting purposes, the Department allow storms with SAIDI values more than four standard deviations from the Company's mean to be excluded from the computation of SAIDI/SAIFI performance for that year (Exh. ES-CAH/DPH-1, at 106-107). The Company's proposal would not change the current definition of Excludable Major Event, but instead would create a second circumstance under which single days automatically would be excluded from metric calculations (Exh. NG 1-1). Thus, under the Company's proposal, events with customer outages exceeding the 15-percent threshold still would be excluded from SAIDI/SAIFI reporting pursuant to the Excludable Major Event definition, and events with less than 15 percent customer outages, but with a SAIDI value more than four standard deviations from the mean, also would be excluded automatically (Exh. NG 1-1).

C. Positions of the Parties

1. National Grid (electric)

National Grid (electric) supports NSTAR Electric's proposal and argues that the Department's exclusion criteria should be refined to recognize that EDCs have made substantial investments in their systems over the past 20 years, yet significant storms continue

to occur that, because of the investments, do not trigger the Excludable Major Event threshold (National Grid (electric) Brief at 6-10, citing Exhs. ES-CAH/DPH-1, at 102-104; ES-CAH/DPH-2; NG-1, at 9-10; NG 1-1). According to National Grid (electric), the current three-year rolling average option to mitigate or eliminate penalties neither rectifies the influence of weather conditions beyond the control of the companies nor accounts for the effect of system improvements and an increasing customer base (National Grid (electric) Brief at 4-5, citing Exh. NG-1, at 7-9). National Grid (electric) asserts that NSTAR Electric's proposal more appropriately recognizes the impact of system improvements and an increased customer base over the past 20 years (National Grid (electric) Brief at 5-6, citing Exh. ES-CAH/DPH-1, at 101).

Further, National Grid (electric) contends that the Company's proposal is not a request for the Department to replace the existing definition of Excludable Major Event, but rather to add a second-tier test that "would work in conjunction with the existing definition of Excludable Major Event" (National Grid (electric) Brief at 7-8, citing Exh. NG 1-1). National Grid (electric) asserts that NSTAR Electric's proposed automatic exclusion would provide a bridge until a future generic proceeding, wherein the Department can reevaluate the current 15-percent exclusion threshold as part of a broader inquiry into updating the SQ Guidelines (National Grid (electric) Brief at 8, 15, citing Exhs. ES-CAH/DPH-1, at 103-105; NG-1, at 14-16; NG 1-1).[161]

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[161] National Grid (electric) argues that in future generic SQ proceedings, the Department should reduce the 15-percent threshold criteria because only extraordinarily large weather impacts are excluded from the day-to-day computation of "reliability," which

2. Company

NSTAR Electric argues that the definition of an Excludable Major Event has remained unchanged for 20 years, despite the technological and operational improvement to the Company's system over that same time period (Company Brief at 93, citing Exh. ES-CAH/DPH-1, at 101). In this regard, the Company contends that it has improved the reliability of its distribution system such that the number of customers interrupted per storm has decreased by 30 percent over the past ten years (Company Brief at 92, citing Exh. ES-CAH/DPH-1, at 99-100). NSTAR Electric asserts, however, that because of the decrease in customer interruptions, fewer storms meet the 15-percent threshold for an Excludable Major Event, yet still cause significant damage and, therefore, are included in the annual SAIDI and SAIFI calculations (Company Brief at 92, citing Exh. ES-CAH-DPH-1, at 100). According to NSTAR Electric, including such data in the SAIDI and SAIFI calculations gives the false impression that reliability is worsening and the Company's SAIDI and SAIFI performance is declining (Company Brief at 92-93, citing Exh. ES-CAH/DPH 1, at 99-100). NSTAR Electric asserts that its proposal accounts for the Company's reliability improvements and increased customer counts (Company Brief at 93-94, citing Exh. ES-CAH/DPH-1, at 101).

National Grid (electric) claims is not a valid methodological approach for SAIDI/SAIFI computations (National Grid (electric) Brief at 8, citing Exh. NG 1-1 n.5).

NSTAR Electric argues that its proposal is supported by a comprehensive analysis of the SAIDI and SAIFI performance measures, which demonstrate that severe weather events have not been properly excluded from the computation of SAIDI and SAIFI for measuring day-to-day reliability (Company Brief at 94, citing Exhs. ES-CAH/DPH-1, at 103-104; ES-CAH/DPH-2). In particular, the Company asserts that its analysis shows that there are weather events that are causing days with SAIDI performance that are four standard deviations from the average daily performance but are not reaching the 15-percent threshold of customers experiencing a service interruption (Company Brief at 93-94, citing Exhs. ES-CAH/DPH-1, at 103-104; ES-CAH/DPH-2). Finally, the Company contends that its proposal to exclude days with a SAIDI value exceeding four standard deviations from the mean is intended to provide a bridge until the Department opens a future generic proceeding to address the SQ Guidelines (Company Brief at 94, citing Exhs. NG 1-1; NG 1-4).

D. Analysis and Findings

NSTAR Electric proposes to exclude data from event days that may indicate severe distribution system damage, yet do not meet the current definition of an Excludable Major Event (Exhs. ES-CAH/DPH-1, at 106-107; NG 1-1). NSTAR Electric argues that, unlike the current definition of Excludable Major Event, the Company's proposal accounts for reliability improvements and increased customer counts on the distribution system (Company Brief at 93-94, citing Exh. ES-CAH/DPH-1, at 101).

The Department recognizes that the definition of Excludable Major Events has remained unchanged for over 20 years and may no longer accurately account for emergency

events resulting in severe damage, or for the changes to distribution systems and increased customer counts. Service Quality Guidelines for Electric Distribution Companies and Local Gas Distribution Companies, D.T.E. 99-84, Att. at 2 (2001). The Department intends to open a proceeding within the next year to evaluate the current SQ Guidelines, at which time the EDCs and relevant stakeholders will have an opportunity to comment on proposed refinements to the Guidelines. In the interim, however, we find that it is reasonable and appropriate to approve the Company's proposal. The Company's proposal and attendant analysis demonstrates that events with SAIDI values greater than four standard deviations from the mean tend to cause significant damage, despite not reaching the current customer outage criteria for an Excludable Major Event (Exhs. ES-CAH/DPH-1, at 103-106; ES-CAH/DPH-2). As such, including these event days in the SAIDI/SAIFI calculations may skew NSTAR Electric's overall performance results and may not accurately reflect the Company's efforts to improve reliability of the distribution system. While we recognize that under the current SQ Guidelines NSTAR Electric may seek specific exemptions for severe weather events that do not meet the definition of an Excludable Major Event but nonetheless have a severe impact on a utility's distribution system, we find that the Company's proposal presents a straightforward, verifiable, and efficient alternative to such an exemption (Exhs. ES-CAH/DPH-1, at 104-107; ES-CAH-DPH-2). In this regard, we do not consider the Company's proposal as a permanent change to the definition of what constitutes an Excludable Major Event under the current SQ Guidelines. Rather, the proposal is an interim measure that will be reevaluated over time until the Department updates the SQ Guidelines.

Based on these considerations, the Department approves the Company's proposal to exclude from the annual SAIDI and SAIFI metric calculations, event days where the SAIDI values exceed the mean plus four standard deviations. As the SQ Guidelines apply to each EDC, so too will this event day exemption, effective immediately. More specifically, the EDCs may begin applying this exemption in their 2022 annual SQ report filings, for the full 2022 calendar year of data. The EDCs shall follow the method for calculating the event day exemption as presented by the Company in Exhibit ES-CAH/DPH-2. Consistent with the SQ Guidelines as they relate to Excludable Major Events, the EDCs shall demonstrate in their annual SQ report filings why any data excluded pursuant to this event day exemption qualifies for exclusion and calculate annual SAIDI and SAIFI performance both with and without the excluded data. The Department will evaluate each EDC's annual SAIDI and SAIFI performance using the values with the relevant event day exemptions, provided the companies file all appropriate calculations, assumptions, and data in their respective annual SQ report filings.

As noted above, the Department plans to revisit the SQ Guidelines in the next year, at which point we will further evaluate the event day exemption and its effectiveness at providing a more accurate impression of reliability improvements and increased customer counts on the EDCs' distribution systems. The Department may modify or eliminate the event day exemption based on that evaluation, or during our review of the annual SQ reports should circumstances warrant.

XIV. SMART PROGRAM AND SOLAR EXPANSION PROGRAM INVESTMENTS

A. SMART Program Investments

1. Introduction

On September 12, 2017, pursuant to G.L. c. 164, § 94, Fitchburg Gas and Electric Light Company d/b/a Unitil ("Unitil"), National Grid (electric), and NSTAR Electric and the former WMECo (collectively "Distribution Companies") filed with the Department a joint petition for approval of a model Solar Massachusetts Renewable Target ("SMART") Provision tariff ("SMART Provision") to implement An Act Relative to Solar Energy and DOER regulations ("SMART Program"). St. 2016, c. 75, § 11(b); G.L. c. 25A, § 6; 225 CMR 20.00. The Department docketed the petition as D.P.U. 17-140.[162]

On September 26, 2018, the Department issued a final Order approving the SMART Provision. Joint Petition for Approval of Model Solar Massachusetts Renewable Target Tariff, D.P.U. 17-140-A, Order Approving Model SMART Provision (September 26, 2018) ("SMART Order"). In the SMART Order, the Department determined that the Distribution Companies may recover the following: (1) the incremental O&M and capital costs necessary to meet the SMART Program's objectives; (2) an estimate of the net cost of the incentive

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[162] The Attorney General, DOER, Acadia Center, BCC Solar Advantage, Inc., Genbright, LLC, and Solar Energy Industries Association were granted intervenor status. Joint Petition for Approval of Model Solar Massachusetts Renewable Target Tariff, D.P.U. 17-140-A, Order Approving Model SMART Provision at 2-3 (September 26, 2018). Associated Industries of Massachusetts was granted limited participant status. D.P.U. 17-140-A, Order Approving Model SMART Provision at 3 (September 26, 2018).

payments, alternative on-bill credits ("AOBCs"), and revenues generated from the SMART Program; and (3) a reconciliation adjustment with applied interest. SMART Order at 143-160. These costs are to be recovered through a SMART factor consistent with certain directives and the formula established in each Distribution Company's respective tariff. SMART Order at 181-190. The Distribution Companies are required to make an annual cost recovery and reconciliation filing for the SMART factor on or before November 1st of each year, for effect January 1st of the next year. SMART Order at 197. NSTAR Electric's current SMART tariff is M.D.P.U. No. 74D.

In accordance with the directives in the SMART Order, the Company filed annual SMART factor filings in dockets D.P.U. 18-132, D.P.U. 19-125, D.P.U. 20-131, and D.P.U. 21-134. The Department issued Phase I Orders in each docket and approved the Company's proposed SMART factors, subject to further investigation. NSTAR Electric Company, D.P.U. 21-134, at 4-5 (2021); NSTAR Electric Company, D.P.U. 20-131, at 5-6 (2020); NSTAR Electric Company, D.P.U. 19-125, at 5-6 (2019); NSTAR Electric Company, D.P.U. 18-132, at 4-5 (2018). On May 21, 2020, the Department issued a final Order approving the 2019 SMART Program costs, subject to certain directives. D.P.U. 18-132-A at 3 8. At the time of the initial filing in the instant proceeding, the Department had not issued final Orders in D.P.U. 19-125, D.P.U. 20-131, and D.P.U. 21-134. The Department subsequently issued a final Order in D.P.U. 21-134. D.P.U. 21-134-A (November 29, 2022).

2. Company Proposal

The Company proposes to transfer the recovery of expenses for ESC net plant balances associated with $11.4 million in SMART Program capital additions, placed in service through December 31, 2021, to base distribution rates (Exhs. ES-REVREQ-1, at 41-42; ES-ADDITIONS-1, at 51; ES-ADDITIONS-7, Att. (a) (Supp).; DPU 14-2; DPU 39-20, at 1-2; DPU 39-21). The Company proposes to include the revenue requirement associated with those investments charged to the Company as Enterprise IT O&M expense, or $1,908,643, in the computation of the revenue requirement underlying base rates that become effective January 1, 2023 (Exhs. ES-REVREQ-1, at 22, 41-42; ES-REVREQ-4, Sch. 9 (Rev. 1)).[163] Thus, beginning January 1, 2023, the Company would recover the costs associated with the remaining un-depreciated SMART investments through distribution rates (Exh. DPU 39-20, at 2). The Company states that these costs represent IT system enhancements, including data interfaces and billing system modifications used to support an additional line item for the SMART factor on customer bills (Exhs. ES-ADDITIONS-1,

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163 The Company included corresponding revenues of $1,893,718 associated with SMART Program expenses for purposes of reflecting the appropriate revenue deficiency (Exhs. ES-REVREQ-1, at 25; ES-REVREQ-2, Sch. 1, at 9; Sch. 6 (Rev. 4)). SMART Program revenues associated with the sale of product revenues (i.e., revenues from the sale of energy, forward capacity market, and sale of solar renewable energy credits) will continue to be included in the SMART mechanism, as well as, the: (1) incentive payments for RPS Class I renewable generation attributes and/or environmental attributes produced by a solar tariff generation unit; (2) AOBCs for energy generated by an AOBC generation unit; (3) the basis upon which incentive payments and AOBCs are determined; and (4) the recovery of any such incentive payments, AOBCs, and certain incremental administrative costs associated with the implementation and operation of the SMART Program (Exh. ES-REVREQ-1, at 25).

at 51; DPU 14-1). According to the Company, it has produced in the instant proceeding all of the documentation necessary for the Department to conduct a prudency review of these costs (Exhs. ES-ADDITIONS-1, at 51; ES-REVREQ-1, at 44; ES-ADDITIONS-7 & Supp.).

The Company notes, however, that it will not recover the revenue requirement earned under its SMART tariff prior to new base distribution rates taking effect due to the timing of the SMART filings, which go into effect on January 1st of each year and include a twelve-month lag between when investments are placed in service to when recovery begins (Exh. ES-REVREQ-1, at 42). Thus, the Company proposes for the earned revenue requirement to be recovered through the SMART tariff and after the effective date of new base distribution rates set in this proceeding (Exh. ES-REVREQ-1, at 42). Specifically, NSTAR Electric proposes that, by November 1, 2022, it will file its annual SMART Program filing for actual investments placed in service on or before August 30, 2022, and that the associated SMART factor will be effective January 1, 2023 through December 31, 2023 to allow for the recovery of the 2022 revenue requirement on the SMART Program costs (Exh. ES-REVREQ-1, at 42-43). Then, by November 1, 2023, the Company will file its annual SMART Program filing for actual investments placed in service on or before August 30, 2023, and the associated SMART factor will be effective January 1, 2024 through December 31, 2024, to allow for the recovery of the 2023 revenue requirement on the SMART Program costs (Exh. ES-REVREQ-1, at 43). At this point, the SMART factors no longer will recover investments that have been reflected in base rates as of January 1, 2023 (Exh. ES-REVREQ-1, at 43).

3. Positions of the Parties

The Attorney General argues that the Department should deny the Company's request to transfer to base distribution rates the costs associated with the SMART Program, as these costs already are recovered in reconciling mechanisms (Attorney General Brief at 113-116). Further, the Attorney General argues that the Department need not transfer costs into base distribution rates at this time because of the open SMART dockets (Attorney General Brief at 116). Rather, the Attorney General asserts that the Department should continue to adjudicate the SMART Program costs in the open SMART Program dockets (Attorney General Brief at 116).

The Company restates its SMART Program proposals on brief (Company Brief at 128, 135-136, 141, 389, 391). The Company, on brief, addresses the proposed roll-in of capital additions, but does not specifically address the Attorney General's arguments about the SMART Program investments (Company Brief at 52-53).

4. Analysis and Findings

In the SMART Order, the Department determined the categories of recoverable costs associated with the SMART Program, and the process by which the Company could recover such costs, after they have been reviewed and approved by the Department. SMART Order at 143-160, 181-190, 197. In particular, we determined that it was reasonable to allow recovery through the SMART factor of costs to upgrade IT and billing systems that are specifically related to SMART Program implementation. SMART Order at 150. Since that Order, the Company has recovered SMART-related costs through its SMART factor, subject

to further investigation by the Department. D.P.U. 21-134, at 4-5; D.P.U. 20-131, at 5-6; D.P.U. 19-125, at 5-6; D.P.U. 18-132, at 4-5. As noted above, final Orders have issued in dockets D.P.U. 18-132 and D.P.U. 21-134.

In the instant proceeding, the Company requests that the Department conduct a prudency review of several years of SMART-related IT system enhancement capital additions and then transfer the unrecovered balance of these investments to base rates (Exhs. ES-ADDITIONS-1, at 51; ES-REVREQ-1, at 22, 41-42; DPU 39-20, at 1-2; DPU 39-21).[164] We decline to do so. First, we find that it is more appropriate and efficient to review all of the costs subject to recovery in the individual outstanding SMART Program dockets, rather than to undertake a piecemeal review of the IT-related capital costs. Next, as noted above, the Department already determined that recovery of certain IT-related costs, such as those proposed by the Company, should be recovered through the SMART factor. SMART Order at 150. We see no compelling reason to allow an alternative cost recovery method at this time. As the Company can recover the final allowable costs associated with the IT system enhancements through the SMART factor, denying the proposal in this case does not result in cost disallowance. Finally, in the SMART Order we directed the Company to designate the SMART factor as a separate line item for the purposes of bill clarity and bill transparency. SMART Order at 195. We find that continuing to allow recovery through the

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164 The Department recognizes and appreciates the Company's resource intensive efforts in providing supporting documentation associated with its SMART Program capital additions (Exhs. ES-ADDITIONS-7 & Supp.; DPU 14-5 (Supp.)).

SMART factor, as opposed to recovering some costs through base distribution rates, maintains the important considerations of bill clarity and transparency.

Based on the above considerations, the Department rejects the Company's proposal to transfer the unrecovered balance of SMART-related IT investments in base distribution rates. As noted above, the Company sought to include $1,908,643 in SMART Program costs in base rates effective January 1, 2023 (Exhs. ES-REVREQ-1, at 22, 41-42; ES-REVREQ-4, Sch. 9 (Rev. 1)). The Company also included in the proposed revenue requirement SMART Program revenues in the amount of $1,893,718 (Exhs. ES-REVREQ-1, at 25; ES-REVREQ-2, Sch. 1, at 9; Sch. 6 (Rev. 4)). The Department removes the SMART Program costs and revenues from the proposed cost of service. The effect of our decision is shown on Schedules 2 and 9 below.

B. Solar Expansion Program Investments

1. Introduction

On June 30, 2016, NSTAR Electric and WMECo filed with the Department a proposal to construct, own, and operate up to 62 MW of solar generation facilities ("Solar Expansion Program") pursuant to G.L. c. 164, § 1A(f). NSTAR Electric Company and Western Massachusetts Electric Company, D.P.U. 16-105 (2016).[165] The Department

[165] In its initial filing, the Company proposed to move into base distribution rates costs related to its Solar Program approved in D.P.U. 09-05 and Western Massachusetts Electric Company, D.P.U. 13-50 (2013). During the proceeding, the Company acknowledged that it had not conferred with the Attorney General as outlined in D.P.U. 09-05 (Exh. DPU 37-3). As such, the Company withdrew its proposal and made certain adjustments to its proposed cost of service to reflect the removal of these

approved the proposal, which included pre-approval of capital installation and replacement costs, annual operating expenses, and annual lease and property tax expenses. D.P.U. 16-105, at 35-36. In particular, the Department approved a spending cap of $205.7 million on capital installation and replacement costs. D.P.U. 16-105, at 30, 33, 36.

Pursuant to the Company's solar expansion cost recovery mechanism ("SECRM") tariff, as Solar Expansion Program generation facilities are constructed and placed into service, the Company files every six months for adjustments to its solar expansion cost recovery factors ("SECRFs"), beginning on January 1st of each calendar year. The SECRM recovers the investment and ongoing maintenance costs of the solar generation projects, offset by any credits for the sale of energy; either the sales of renewable energy credits ("RECs") into the ISO-NE market or the market value of RECs used to comply with the Renewable Portfolio Standard ("RPS"); and capacity sales, if any (Exh. ES-REVREQ-1, at 34). The SECRFs are reconciled on an annual basis.

2. Company Proposal

The Company reports that it has successfully commissioned the full approved scope of 62 MW approved by the Department in D.P.U. 16-105 (Exh. ES-ADDITIONS-1, at 48). Further, NSTAR Electric states that the Department, through several Solar Expansion Program compliance filings, has reviewed and analyzed the Company's Solar Expansion Program investments and found the costs to be prudent and the facilities used and useful in

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investments from the revenue requirement (Exhs. ES-REVREQ-2, Sch. 1, at 9; Schs. 6, 27, 29-32 (Rev. 4); ES-REVREQ-3, WP 27, at 3 (Rev. 4); DPU 37-3).

providing service to customers (Exh. ES-ADDITIONS-1, at 48, citing NSTAR Electric Company, D.P.U. 19-127-A (2021); NSTAR Electric Company, D.P.U. 19-59-A (2020); NSTAR Electric Company, D.P.U. 18-124-A (2020)). The Company proposes to transfer the Solar Expansion Program capital investments through 2021, totaling $161,594,319, into rate base in this proceeding (Exhs. ES-ADDITIONS-1, at 48; ES-ADDITIONS-12, Att. (b); DPU 37-2).

3. Positions of the Parties

The Attorney General argues that the Department should deny the Company's request to transfer to base distribution rates the costs associated with the Solar Expansion Program, as the costs already are recovered through a reconciling mechanism (Attorney General Brief at 113). We address this argument below. The Attorney General makes several additional arguments, in the context of the proposed PBR plan and annual PBR adjustment, regarding the transfer of the Solar Expansion Program investments to base distribution rates (Attorney General Brief at 113-117, citing Exh. AG-TN-1, at 4-10). The Company raises counter arguments on brief (Company Brief at 52-53). We address these issues in Section IV.D.5.j above.

4. Analysis and Findings

The Department previously determined that the Company acted prudently in undertaking the construction of the Solar Expansion Program facilities and that the facilities were used and useful in providing service to customers prior to the end of the test year.

See D.P.U. 19-127-A at 3, 8; D.P.U. 19-59-A at 4, 12; D.P.U. 18-124-A at 2, 10. Accordingly, we need not review the investments for a prudency or in-service determination.

As noted above, the Company proposes to transfer the Solar Expansion Program capital investments through 2021, totaling $161,594,319, into base distribution rates in this proceeding (Exhs. ES-ADDITIONS-1, at 48; ES-ADDITIONS-12, Att. (b); DPU 37-2). The 2021 capital expenditures were necessary to complete the final close-out activities of the solar facilities that were initiated under the Solar Expansion Program (Exhs. ES-ADDITIONS-1, at 48; ES-ADDITIONS-12, Att. (b); DPU 37-2). These costs include contractor and engineering services, licensing and permitting fees, and other outside services (Exhs. ES-ADDITIONS-12, Att. (b); DPU 37-2). The total 2021 costs also include a refund from National Grid for interconnection costs at one of the solar facilities (Exh. DPU 37-2). As a result, the overall 2021 costs reduce the Company's test-year net plant in service by $793,724 (Exh. DPU 37-2). The Department has reviewed the 2021 costs and supporting documentation, and we find the costs to be reasonable and represent a known and measurable change to the test-year amount. Further, we note that the Company's total capital investment for the Solar Expansion Program is below the spending cap of $205.7 million on capital installation and replacement costs set in D.P.U. 16-105, at 30, 33, 36.

Given that the Solar Expansion Program costs were prudently incurred, the facilities are used and useful in providing service to customers, and the total investment is below the authorized spending cap, we find it reasonable, appropriate, and consistent with precedent to transfer the investments to NSTAR Electric's rate base and allow the Company to recover the

unrecovered balance through base distribution rates. See, e.g., D.P.U. 18-150, at 203. Thus, we are not persuaded by the Attorney General's argument to the contrary. Accordingly, the Department allows the Company to transfer the Solar Expansion Program capital investments through 2021, totaling $161,594,319, into base distribution rates in this proceeding.

XV. ADVANCED METERING INFRASTRUCTURE PROPOSALS

A. Introduction

In NSTAR Electric Company, D.P.U. 21-80, NSTAR Electric requested Department approval of its AMI Implementation Plan and submitted for review a model tariff to establish an annual reconciling mechanism to recover costs associated with its plan (Exhs. ES-REVREQ-1, at 200; ES-CAH/DPH-1, at 14, 109-110; ES-AMI-1, at 8, 16-19; DPU 7-1). In the instant proceeding, NSTAR Electric submitted a company-specific rate tariff, proposed M.D.P.U. No. 80, for approval based on the model tariff presented in D.P.U. 21-80 (Exhs. ES-CAH/DPH-1, at 30; ES-AMI-1, at 11, 17; ES-AMI-2; ES-RDC-6, Sch. 1, at 556-561; DPU 7-1). The Company requests that the Department adopt the model tariff for company-specific application and authorize recovery of AMI investment costs after January 1, 2023 (Exh. ES-AMI-1, at 16-17).

As proposed, the company-specific tariff establishes an annual reconciling mechanism and factor allowing NSTAR Electric to recover an annual AMI revenue requirement associated with the Company's AMI-related plant in service for each AMI investment year prior to the recovery year, as well as recoverable O&M expense (Exhs. ES-AMI-1, at 19;

ES-AMI-2; ES-RDC-6, Sch. 1, at 556-561). Specifically, the AMI revenue requirement would be calculated to recover: (1) the monthly revenue requirement for eligible AMI investments recorded as in service in the AMI investment year immediately prior to the recovery year; (2) the average annual revenue requirement for the calendar year ending December 31 of the AMI investment year two years prior to the recovery year, for cumulative eligible investments placed into service in the AMI investment years two years prior to the recovery year; (3) the annual revenue requirement for the recovery year on eligible investments recorded as in service in the AMI investment year immediately prior to the recovery year; and (4) actual monthly AMI-related O&M expenses incurred in the AMI investment year prior to the recovery year (Exhs. ES-REVREQ-1, at 200-201; ES-AMI-1, at 19-20; ES-AMI-2, at 1-5; ES-RDC-6, Sch. 1, at 556-560). The proposed AMIF would apply to all retail delivery service kWh, pursuant to annual Department prudency reviews and approval (Exhs. ES-AMI-1, at 16; ES-AMI-2, at 1, 5-6; ES-RDC-6, Sch. 1, at 560-561). As contemplated in the proposed tariff, NSTAR Electric would submit to the Department an annual AMI cost recovery filing by May 15 that would include the following: (1) project documentation of all eligible AMI investment recorded as in service by the Company during the prior AMI investment year; (2) documentation supporting non-recurring O&M expense as part of recoverable O&M expense; (3) the AMI reconciliation calculation; and (4) bill impacts (Exhs. ES-REVREQ-1, at 201; ES-AMI-1, at 20; ES-AMI-2, at 5-6; ES-RDC-6, Sch. 1, at 560-561). Pursuant to Department review and approval, the AMIF would be in

effect from July 1 to June 30 of each year (Exhs. ES-AMI-2, at 1, 4-5; ES-RDC-6, Sch. 1, at 559-560).

As part of the Company's AMI Implementation Plan, NSTAR Electric has proposed an increase in the depreciation accrual rate for Account 370.10 (Meters – AMR). As discussed in more detail in Section VII.B.1 above, the Company's proposed depreciation rate of 8.62 percent is intended to align with the planned deployment of AMI and retirement of AMR meters by 2028 (Exhs. ES-REVREQ-1, at 202-203; ES-AMI-1, at 21). Because AMR meters will continue to be purchased and installed prior to AMI implementation, NSTAR Electric proposes to treat any remaining undepreciated plant associated with AMR meters at the time of full AMI implementation as a regulatory asset (Exhs. ES-REVREQ-1, at 203-204; ES-AMI-1, at 21-22). Under the Company's proposal, the amortization for the regulatory asset would be based on the period of recovery of investment through depreciation of AMR meters approved in the instant proceeding (Exhs. ES-REVREQ-1, at 204; ES-AMI-1, at 22). NSTAR Electric proposed that after the regulatory asset is fully amortized, the Company would apply the amount of depreciation in base distribution rates against the recovery of the AMI cost recovery mechanism (Exhs. ES-REVREQ-1, at 204; ES-AMI-1, at 22).

NSTAR Electric also proposed to establish a cost-of-service benchmark for metering infrastructure to determine incremental O&M expense related to AMI (Exh. REVREQ-1, at 202-203, 205-209). In particular, the Company proposed to measure incremental costs based on the test-year level of costs for meter expenses, maintenance of meters, meter reading expenses, and miscellaneous customer accounts expenses as measured by the FERC

Account (Exh. ES-REVREQ-1, at 205-206). Using FERC Accounts 586, 597, 902, and 905, the Company calculated $9.7 million in test-year metering costs (Exhs. ES-REVREQ-1, at 206; ES-AMI-1, at 24; ES-AMI-3, at 1). This amount represents the baseline amount the Company proposed to compare against to determine incremental cost recovery for AMI meter-related O&M (Exhs. ES-REVREQ-1, at 206; ES-AMI-1, at 24). NSTAR Electric proposed to track and provide documentation for the O&M costs incurred related to AMI implementation, and to recover as incremental costs the lesser of these costs or the net change to FERC Accounts 586, 597, 902, and 905 from the test-year amount of $9.7 million, adjusted each year for the annual change in GDP-PI (Exhs. ES-REVREQ-1, at 206-207; ES-AMI-1, at 24-25).

B. Positions of the Parties

1. Attorney General

The Attorney General argues that the Department should deny any new capital tracker cost recovery mechanism proposed by NSTAR Electric (Attorney General Brief at 39, 55).[166] The Attorney General contends that the annual rate increases contemplated by the proposed PBR plan will provide recovery for all costs of providing electric distribution service, and that the recovery mechanisms will overcompensate the Company for costs related to AMI and customer information systems ("CIS") investments (Attorney General Brief at 39). As an

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166 TEC and PowerOptions also argue the Department should decline to adopt new capital trackers, including one for AMI costs, beyond the scope of the grid modernization proceedings (TEC/PowerOptions Brief at 14).

alternative, and as discussed in further detail in Section IV.C.1 above, the Attorney General recommends establishing an all-in capital tracker in lieu of a PBR plan, and she argues it would obviate the need for the Company's AMI cost recovery proposals here and in D.P.U. 21-80 (Attorney General Brief at 43). Under this scenario, the Attorney General indicates that the all-in capital tracker would allow for recovery of all NSTAR-specific investments (Attorney General Brief at 43).

The Attorney General maintains that if the Department rejects the proposed all-in tracker recommendation, it should still reject or modify the Company's AMI-related proposal (Attorney General Brief at 44). On brief, the Attorney General reiterates the arguments she presented in D.P.U. 21-80 (Attorney General Brief at 44-51). First, the Attorney General contends that AMI capability is not a special investment that requires exceptional recovery outside of base distribution rates, but instead should be treated as business as usual and accounted for in the proposed PBR plan and rate formula increases to base distribution rates (Attorney General Brief at 44-49, citing Exhs. AG-TN-1, at 12-13; AG-TN-2, at 2-14).

Additionally, the Attorney General claims that the proposed company-specific AMI tariff has the same issues she identified in the model AMI tariff submitted in D.P.U. 21-80 (Attorney General Brief at 49). Specifically, the Attorney General contends the proposed tariff has the following flaws: (1) the AMI revenue requirement in Section 2.7 does not recognize, nor does it "net out" recovery of the meter system cost recovery that already exists in base distribution rates; (2) the AMI revenue requirement in Section 2.7, parts (1) and (3) provide double recovery of the costs of plant placed in service during the investment

year; (3) the eligible investment in Section 2.10 should recognize and adjust for the meter investment, whether "in service" or in the warehouse inventory, of newer AMR or bridge meters than can be repurposed for those customers who opt-out of AMI; (4) the tariff makes no provision for the reduction in O&M expense related to embedded meter investment or otherwise that any new capital investment creates; (5) the recoverable O&M expense charged from the service company in Section 2.16 should reflect only the appropriate and reasonable allocated share of any such service company costs, and not any amount that is "charged;" (6) the property tax rate definition in Section 2.14 should reflect the total utility property tax paid for the year as a percentage of the total utility property valuation for that same tax year and not the net plant; (7) there is no indication that the tariffed charge provides for a fully reconciling charge; (8) there is no definition of the term "incremental" that is it is used in Sections 1.0 and 2.16; (9) there is no provision for reconciliation or incorporation of the costs recovered through the charge with those recovered through base distribution rates; and (10) there is no provision for termination of the tariff (Attorney General Brief at 49-50, citing Exhs. ES-AMI-2; AG-TN-2, at 14-16). To the extent that the Department approves the Company's proposed tariff, the Attorney General argues that the necessary changes should be made to correct these flaws (Attorney General Brief at 50). Consistent with the recommendations made in D.P.U. 21-80, the Attorney General also requests the AMI cost recovery tariff be amended such that NSTAR Electric can only earn a return on its grid modernization investments after it shows that it has actually achieved and delivered to

ratepayers the benefits the Company projected in its benefit cost analysis (Attorney General Brief at 50-51).

Regarding the Company's proposal to track and document incremental O&M costs and savings, the Attorney General argues it is inadequate for two reasons: (1) the use of actual savings does not hold the Company accountable for delivering benefits of the same magnitude and within the timeframes that its business case projects; and (2) the proposal leaves other rate-case-dependent benefits quantified in the AMI business case, including reductions in bad-debt expense and truck rolls from "no trouble found" incidents unaccounted for (Attorney General Brief at 53-54). As she recommends in D.P.U. 21-80, the Attorney General requests that the Department reduce the Company's AMI cost recovery revenue requirement by the amount of O&M savings and revenue assurance benefits projected in the benefit cost analysis until the actual cost reductions are fully captured and reflected in a subsequent base distribution rate case (Attorney General Brief at 54).

Finally, the Attorney General argues that the proposed company-specific tariff should be amended to reflect net cost reductions back to ratepayers if the Company receives government funding (Attorney General Brief at 54). Because the Company asks for timely approval of its AMI plan and cost recovery proposal to increase its likelihood of obtaining Infrastructure Investment and Jobs Act ("2021 IIJA")[167] funding, the Attorney General claims that there should be a mechanism to flow back to ratepayers any 2021 IIJA funding, or any

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[167] Infrastructure Investment and Jobs Act of 2021, Pub. L. 117-58.

other federal or state funding, for the Company's AMI system investments (Attorney General Brief at 54-55). Therefore, she argues the proposed tariff must include a provision to ensure ratepayers realize the benefits of government funding immediately (Attorney General Brief at 55).

2. Company

NSTAR Electric asserts its narrow proposal in the instant proceeding is to obtain Department approval of the company-specific AMI tariff, which follows from the model AMI tariff submitted in D.P.U. 21-80 (Company Brief at 371, citing Exh. DPU 7-1). The Company maintains that approval of the proposed tariff is the next step in establishing the platform to support the Company's AMI Implementation Plan (Company Brief at 371-372, citing Exhs. ES-AMI-1, at 8; DPU 7-1). NSTAR Electric asserts that under the proposal all AMI capital additions will be subject to a prudence review as the costs are proposed for recovery through the reconciling mechanism (Company Brief at 372, citing Exh. ES-AMI-1, at 16). The Company contends that it has proposed an end-of-life meter replacement plan that is consistent with the directives in Modernization of the Electric Grid – Phase II, D.P.U. 20-69-A (2021), including its proposal to treat any remaining book value associated with AMR at the time of full AMI implementation as a regulatory asset (Company Brief at 372, citing Exh. ES-REVREQ-1, at 204).

In response to the Attorney General, the Company argues that she simply restates her recommendations from D.P.U. 21-80, and that all the claims, arguments, and

recommendations there were thoroughly rebutted (Company Brief at 372).[168] In particular, NSTAR Electric maintains that the Attorney General's arguments are based on flawed concepts and mischaracterizations of the Company's AMI Implementation Plan and proposed cost recovery mechanism (Company Brief at 374).

C. Analysis and Findings

1. Introduction

NSTAR Electric requested approval of its AMI Implementation Plan and model AMI tariff in D.P.U. 21-80 (Exhs. ES-REVREQ-1, at 200; ES-CAH/DPH-1, at 14, 109-110; ES-AMI-1, at 8, 16-19; DPU 7-1). In the instant proceeding, the Company seeks approval of the company-specific tariff that follows from, and is identical to, the model AMI tariff, but has been identified as company-specific (Exhs. ES-CAH/DPH-1, at 30; ES-AMI-1, at 11, 17; ES-AMI-2; ES-RDC-6, Sch. 1, at 556-561; DPU 7-1). Additionally, the Company proposes to recover any remaining book value of AMR meter costs at the time of AMI implementation through the establishment of a regulatory asset, and to establish a cost-of-service baseline for incremental O&M expense associated with AMI implementation (Exhs. ES-REVREQ-1, at 202-209; ES-AMI-1, at 20-22; ES-AMI-3). Concurrent with the instant Order, the Department approves NSTAR Electric's AMI Implementation Plan and a

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168 NSTAR Electric does not reiterate all of its positions in its brief, but notes that the Company's response to the Attorney General's contentions and recommendations can be found in pages 61 through 111 of the Company's initial brief filed on June 1, 2022, in D.P.U. 21-80, and pages three through 23 of the Company's reply brief filed on June 28, 2022, in the same docket (Company Brief at 374).

new AMIF reconciling mechanism, as well as directs modifications to the proposed model AMI tariff. D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B at 234, 238-239, 285-306. Because the only update to the model AMI tariff in the instant proceeding is the identification as company-specific, the Department adopts the findings from D.P.U. 21-80-B/D.P.U. 21-81-B/ D.P.U. 21-82-B and will not re-examine the arguments addressed therein.

2. AMR and Legacy Assets

As part of the Company's proposal, NSTAR Electric seeks approval to treat any remaining book value of AMR meter costs at the time of AMI implementation as a regulatory asset (Exhs. ES-REVREQ-1, at 204; ES-AMI-1, at 22; DPU 7-1; DPU 16-8; DPU 33-3, at 3; DPU 42-12). While the amount of remaining AMR meter costs at the time of AMI implementation is uncertain, the Company estimates a potential unrecovered AMR meter balance of approximately $21 million to $23 million at the end of 2028 (Exhs. DPU 9-1, at 2 & Att. (b); DPU 33-3, at 2 & Att. (b)).[169]

A regulatory asset is an incurred cost for which a regulatory agency such as the Department allows a regulated company to record a deferral to be considered for recovery in the future. Massachusetts Electric Company and Nantucket Electric Company, D.P.U. 10-54, at 318 n.235 (2010). See Bay State Gas Company, D.P.U. 15-50, at 6 n.10 (2015). A regulatory asset is created when regulators provide reasonable assurance of the

[169] The Company also suggested in testimony an unrecovered AMR balance upwards of $40 million at the end of AMI deployment (Exh. ES-AMI-1, at 22).

creation of an asset, i.e., when a company capitalizes all or part of an incurred cost that would otherwise be expensed and the regulators allow recovery of revenue at least equal to that cost. Western Massachusetts Electric Company, D.P.U. 94-8-CC (Phase I) at 12 n.13 (1994). NSTAR Electric does not seek to defer an incurred cost to be considered for future recovery, but instead essentially seeks approval to create and recover a potential regulatory asset with an amortization period determined by the amount of depreciation expense associated with AMR meters set in this proceeding (Exhs. ES-REVREQ-1, at 204; ES-AMI-1, at 22; DPU 9-1, Att. (b); DPU 16-8; DPU 42-11). Under the Company's proposal, once the regulatory asset is fully amortized, the amortization amount, equal to depreciation expense associated with AMR meters in base distribution rates, would be applied against the recovery of AMI costs in the recovery mechanism (Exhs. ES-REVREQ-1, at 204; ES-AMI-1, at 22; DPU 42-11). The Company's proposal therefore is for current approval for recovery of an unknown amount and amortization period.

While not included in NSTAR Electric's initial proposal, the Company suggests that to the extent that any similarly unrecovered costs related to legacy CIS and meter data management systems ("MDMS") remain, these costs would be treated as a regulatory asset in the same manner (Exh. DPU 46-3). The Company's CIS associated with WMA and EMA service areas were launched in 2008 and 1990, respectively, and have both been fully depreciated (Exh. DPU 9-2).[170] The Company notes, however, that it has made periodic

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[170] While the Company could not identify the original book value of the CIS launched in 1990, software is typically depreciated over a period of three to ten years, and therefore all software installed by NSTAR Electric and ESC prior to 2010 has been

additional capital investments over time after the initial installations to address business needs and regulatory requirements and may need to make additional investments between today and the time AMI systems are fully installed (Exh. DPU 9-2). As such, any unrecovered costs or necessary retirements would be treated similarly to how the Company proposes to treat unrecovered AMI costs (Exhs. DPU 9-2; DPU 46-3). With respect to the Company's MDMS, NSTAR Electric anticipates the costs will be fully recovered in 2023 and 2027, but to the extent unrecovered costs remain they would be dealt with similarly (Exh. DPU 46-3).

The Department permits companies to establish regulatory assets in limited circumstances. D.P.U. 10-55, at 311. In this instance the Company's proposal is inconsistent with Department precedent because it seeks approval of cost recovery for potential, currently unknown, costs and a yet to be determined amortization schedule. Moreover, the Department has concerns regarding the potential for double recovery and overcollection of costs associated with the transition from AMR to AMI (Exh. DPU 9-1). During the proceeding, the Department explored the potential for under- or over-recovery of costs related to AMR and AMI implementation, as well as the Company's willingness to recover all AMR, AMI, CIS, and MDMS costs, i.e., meter-related capital, through the AMIF beginning on January 1, 2023 (Exhs. DPU 9-1; DPU 33-3; DPU 42-8; DPU 43-1; DPU 46-3; Tr. 7, at 713-718; RR-DPU-29). In evidentiary hearings as well as in response to discovery, the Company confirmed that it would not object to recovering all meter-related

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fully depreciated; the original book value of the 2008 CIS was $9,612,342 and has been fully depreciated (Exhs. DPU 9-2; DPU 46-7).

capital through the AMIF, and that such treatment would eliminate the potential for over-recovery of costs, the need to establish any regulatory assets, and the need to recognize any offsets in the reconciling mechanism to coordinate between amounts still being recovered in base distribution rates (Exhs. DPU 43-1; DPU 46-3; Tr. 7, at 714-717; RR-DPU-29; RR-DPU-33). Based on these benefits, as well as the administrative efficiency of reviewing and recovering related costs through a single mechanism, the Department directs the Company to remove from base distribution rates all meter-related capital, and to instead recover them through the proposed reconciling mechanism. Accordingly, the Department directs the Company to reduce plant in service associated with Account 370 in the amount of $328,863,241, as well as the associated accumulated depreciation of $120,017,193 and ADIT in the amount of $50,123,051 (Exh. ES-REVREQ-3, WPs 25, 31 (Rev. 4); RR-DPU-29, Att. (e) at 1). An additional reduction is also required to O&M expense in the amount of $1,696,500[171] associated with the Company's legacy CIS and MDMS, and a reduction of $5,919,880 in property taxes (RR-DPU-29, Att. (a); RR-DPU-33).

3. Incremental O&M Baseline

NSTAR Electric calculates a test-year cost for metering and miscellaneous customer account expenses of $9.7 million, based on costs from FERC Accounts 586, 597, 902, and 905 (Exhs. ES-REVREQ-1, at 206; ES-AMI-1, at 24; ES-AMI-3, at 1; DPU 45-1). This

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171 The Company identified $1,712,485 as the annual recovery amount based on its proposed ROE (RR-DPU-29, Atts. (c) & (d)). This amount has been revised using the ROE approved by the Department in this Order and in accordance with the calculations applied to Enterprise IT expenses, discussed in Section VII.G.4 above.

amount represents the baseline amount of meter-related expenses NSTAR Electric will compare against in order to determine incremental cost recovery for AMI-meter related O&M as a component of the Company's reconciling mechanism (Exhs. ES-REVREQ-1, at 206; ES-AMI-1, at 24; ES-AMI-3, at 1). The Company proposes to track and document O&M costs required for AMI implementation and to recover as incremental costs the lesser of these costs or the net change to FERC Accounts 586, 597, 902, and 905 from the test amount of $9.7 million, adjusted each year for the annual change in GDP-PI (Exhs. ES-REVREQ-1, at 207; ES-AMI-1, at 24-25; DPU 45-2). NSTAR Electric acknowledges that there will be incremental O&M savings as well as costs and proposes to offset its requested incremental cost recovery by any AMI-related costs savings realized in the deployment of AMI (Exhs. ES-REVREQ-1, at 206-209; ES-AMI-1, at 25-26; ES-AMI-3, at 2). The Department has reviewed the identified categories and estimates of potential incremental costs and savings and finds that they are based on reasonable assumptions (Exhs. ES-REVREQ-1, at 207-209; ES-AMI-1, at 25-26; ES-AMI-3, at 2; DPU 45-1). Further, the Department finds that the Company's proposal for tracking incremental costs and savings ensures it will not double recover AMI related costs while appropriately accounting for inflation and potential savings (Exhs. ES-REVREQ-1, at 205-209; ES-AMI-1, at 25-26; ES-AMI-3, at 2; DPU 45-1; DPU 45-2). Therefore, the Department approves the Company's proposal for an incremental O&M expense baseline of $9.7 million, adjusted each year only for the annual change in GDP-PI, and directs NSTAR Electric to also account for actual AMI-related O&M savings as part of its reconciling mechanism filing.

4. Conclusion

Consistent with the Department's approval of NSTAR Electric's AMI Implementation Plan and AMI reconciling mechanism in D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B, the Department approves the proposed company-specific AMI tariff, subject to the findings and modifications above and in D.P.U. 21-80-B/D.P.U. 21-81-B/ D.P.U. 21-82-B. Moving meter-related capital from base distribution rates to the Company's reconciling mechanism approved in D.P.U. 21-80-B/D.P.U. 21-81-B/ D.P.U. 21-82-B results in approximately $48.9 million being recovered through the AMIF effective January 1, 2023.[172] As designed, the AMIF will normally go into effect annually on July 1, and is intended to be in effect for a 12-month period through June 30 of the following year, but because the Department directs the Company to move all meter-related capital to the reconciling mechanism, the initial rate will go into effect January 1, 2023, to coincide with the establishment of new base distribution rates (RR-DPU-29). On May 15, 2024, the Company will file its annual AMIF to reconcile the revenue requirement associated with meters and existing CIS and MDMS systems for investment through December 31, 2023, including eligible AMI investments potentially incurred in 2022 (RR-DPU-29). D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B at 238 & n.95. As part of NSTAR Electric's compliance filing in the instant proceeding, the Department directs the Company to file an updated AMI tariff that is

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172 The Company identified $50,153,098 as the annual recovery amount based on its proposed ROE (RR-DPU-29, at 2 n.1). This amount has been revised using the ROE approved by the Department in this Order.

consistent with the Department's findings both herein and in D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B.

XVI. CAPITAL STRUCTURE AND COST OF CAPITAL

A. Introduction

NSTAR Electric proposes a 7.43-percent WACC representing the rate of return to be applied on rate base to determine the Company's total return on its investment (Exh. ES-REVREQ-2, Sch. 1, at 5, Sch. 33, at 1 (Rev. 4)). The Company's WACC comprises the following elements: (1) a capital structure consisting of 46.34 percent long-term debt, 0.45 percent preferred stock, and 53.21 percent common equity; (2) a long-term debt cost rate of 3.93 percent; (3) a preferred stock cost of 4.56 percent; and (4) an ROE of 10.50 percent (Exh. ES-REVREQ-2, Sch. 1, at 5 (Rev. 4)). The Attorney General proposes a 6.28-percent WACC based on the following components: (1) a capital structure consisting of 49.47 percent long-term debt, 0.53 percent preferred stock and 50.00 percent common equity; (2) a long-term debt cost rate of 3.60 percent; (3) a preferred stock cost of 4.56 percent; and (3) an ROE of 8.95 percent (Exhs. AG-JRW-1, at 5; AG-JRW-Surrebuttal-1, at 8).

B. Capital Structure

1. Introduction

At the end of the test year, NSTAR Electric reported a $3,670,000,000 long-term debt balance, a $43,000,000 preferred stock balance, and a $4,521,109,220 in common equity balance (Exh. ES-REVREQ-2, Sch. 33, at 1 (Rev. 4)). The Company proposes:

(1) an increase of $800,000,000 to its long-term debt balance to reflect $1,450,000,000 in long-term debt issuances in 2021 and 2022[173] less the redemption of $650,000,000 in long-term debt issuances that reached maturity in 2021 and 2022; and (2) an increase of $612,000,000 to its common equity balance to reflect post test-year equity contributions from its parent company (Exh. ES-REVREQ-2, Sch. 33 (Rev. 4)). NSTAR Electric's adjustments result in a capitalization ratio of 46.34 long-term debt, 0.45 percent preferred stock, and 53.21 percent common equity (Exh. ES-REVREQ-2, Sch. 33, at 1 (Rev. 4)).

The Attorney General proposes an imputed capital structure of 49.47 precent long-term debt, 0.53 percent preferred stock, and 50.00 percent common equity (Exhs. AG-JRW-1, at 31; JRW-4). The Attorney General states that an imputed capital structure aligns the Company with the capital structures of its parent company and the companies in the proxy groups (Exhs. AG-JRW-1, at 30-31; AG-JRW-Surrebuttal-1, at 7).

2. Positions of the Parties

a. Attorney General

The Attorney General contends that NSTAR Electric's common equity ratio is higher than the average common equity ratios of the proxy groups of electric companies compiled by the Company and the Attorney General (see Sections XVI.D.1.a and Section XVI.D.1.b below) and higher than Eversource Energy's common equity ratio (Attorney General Brief

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173 On March 31, 2021, the Department authorized the Company to issue long-term debt securities in an amount not to exceed $1,600,000,000. NSTAR Electric Company, D.P.U. 20-146, at 27 (2021).

at 81, 84). The Attorney General claims that the Company is benefiting from "double leverage" because the parent company has a higher debt ratio than NSTAR Electric (Attorney General Reply Brief at 15). She argues that the solution to double leverage is to impute a more reasonable capital structure for the revenue requirement calculation or to recognize the downward impact that an unusually high equity ratio will have on the financial risk of a utility (Attorney General Reply Brief at 16-17).

b. Company

The Company argues that its proposed common equity ratio is similar to common equity ratios recently approved by the Department (Company Brief at 252-253, citing, e.g., Exh. ES-VVR-Rebuttal-1, at 103-104; D.P.U. 17-05, at 623 (53.54 percent common equity)). Moreover, NSTAR Electric maintains that the Company's proposed common equity ratio is comparable to that of the average common equity ratio of the Company's proposed proxy group of electric companies, which was 54.80 percent (Company Brief at 253, citing Exh. ES-VVR-Rebuttal-1, at 101-102).

3. Analysis and Findings

A company's capital structure typically consists of long-term debt, preferred stock, and common equity. D.P.U. 07-71, at 122; D.T.E. 03-40, at 319; D.T.E. 01-56, at 97; Pinehills Water Company, D.T.E. 01-42, at 17-18 (2001). The ratio of each capital structure component to the total capital structure is used to weight the cost (or return) of each capital structure component to derive a WACC. D.P.U. 07-71, at 122; D.T.E. 03-40, at 319; D.T.E. 01-42, at 18; D.P.U. 86-149, at 5. The WACC is used to calculate the rate of

return, which is applied to a company's rate base as part of the revenue requirement established by the Department, and it is made up of three components: (1) the cost of a company's long-term debt; (2) the cost of a company's preferred stock; and (3) the ROE set by the Department. D.P.U. 07-71, at 122; D.T.E. 03-40, at 319; D.T.E. 01-42, at 18; D.P.U. 86-149, at 5.

The Department typically will accept a company's test-year-end capital structure, allowing for known and measurable changes. D.T.E. 03-40, at 323-324; Boston Gas Company, D.P.U. 88-67 (Phase I) at 74 (1988); D.P.U. 84-94, at 50. Within a broad range, the Department will defer to the management of a utility in decisions regarding the appropriate capital structure, unless the capital structure deviates substantially from sound utility practice. Mystic Valley Gas Company v. Department of Public Utilities, 359 Mass. 420, 428-429 (1971); High Wood Water Company, D.P.U. 1360, at 26-27 (1983); Blackstone Gas Company, D.P.U. 1135, at 4 (1982) (a company's capital structure that is composed entirely of common equity with no long-term debt varies substantially from usual utility practice); see also Cambridge Electric Light Company, D.P.U. 20104, at 42 (1979).

As noted above, NSTAR Electric proposes to increase its test-year balance of long-term debt by $800,000,000 (Exhs. ES-REVREQ-1, at 144; ES-REVREQ-2, Sch. 33, at 1 (Rev. 4); DPU 10-1; Tr. 7, at 730-734). D.P.U. 20-146, Compliance Filing, Att. D (June 1, 2021); D.P.U. 20-146, Compliance Filing, Att. D (August 25, 2021); D.P.U. 20-146, Compliance Filing, Att. D (May 23, 2022); D.P.U. 20-146, Compliance

Filing, Att. D (September 16, 2022)). The Department finds that the Company's $800,000,000 long-term debt adjustment is a known and measurable change and accepts the Company's pro forma long-term debt balance of $4,470,000,000 (Exh. ES-REVREQ-2, Sch. 33 (Rev. 4)).

Turning to the Company's pro forma common equity balance, the Company proposes an increase of $612,000,000 to its test-year-end balance of common equity to reflect post-test-year capital contributions from Eversource Energy (Exhs. ES-REVREQ-2, Sch. 33, at 1 (Rev. 4); DPU 10-2; Tr. 7, at 744). While the Department accepts known and measurable changes to test-year-end capitalization, we examine parent holding company capital contributions for potential adverse rate effects because capital contributions are not subject to regulatory review under G.L. c. 164, § 14. D.P.U. 15-80/D.P.U. 15-81, at 252-253; D.P.U. 14-150, at 317 n.197; D.P.U. 10-70, at 241-242. NSTAR Electric has demonstrated that the post-test-year capital contributions from Eversource Energy are known and measurable and that the capital contributions were necessary for the Company to maintain its financial metrics and credit rating (Exh. AG 1-11, Att. (d) at 7 (Supp.); Tr. 7, at 742-744). Therefore, the Department accepts the Company's pro form common equity balance of $5,133,109,220 (Exh. ES-REVREQ-2, Sch. 33, at 1 (Rev. 4)).

In support of her contention that the Company's proposed common equity ratio should be rejected, the Attorney General has neither argued nor presented evidence demonstrating that the Company's common equity ratio of 53.21 percent deviates substantially from sound utility practice. Rather, the Attorney General bases her position solely on her consultant's

testimony that the Department must recognize that the Company's higher equity ratio reduces its financial risk by calculating its cost of capital using an imputed capital structure or authorizing a lower ROE (Attorney General at 84, citing Exh. AG-JRW-1, at 25-30). The consultant's contention alone does not meet the Department's standard to impute a capital structure. The Company's common equity ratio is consistent with those approved by the Department in recent years, and we do not conclude that such a ratio is so weighted towards equity as to deviate substantially from sound utility practice or impose an unfair burden on consumers. D.P.U. 20-120, at 382 (approving a 53.44-percent common equity ratio and rejecting the Attorney General's imputed capital structure); D.P.U. 19-120, at 344-346 (approving a 54.77-percent common equity ratio and rejecting the Attorney General's imputed capital structure); D.P.U. 18-150, at 450 & n.231 (approving a 53.49-percent common equity ratio and rejecting the Attorney General's imputed capital structure); D.P.U. 17-05, at 623 (approving 53.91-percent and 54.51-percent common equity ratios and rejecting the Attorney General's imputed capital structures). Therefore, the Department will use a long-term debt balance of $4,470,000,000, a preferred stock balance of $43,000,000, and a common equity balance of $5,133,109,220 to determine NSTAR Electric's capital structure and cost of capital. The Department addresses the Company's financial risk compared to the proxy companies in Section XVI.D.3.g below.

C. Cost of Debt

1. Introduction

In its initial filing, the Company calculated a cost of debt of 3.60 percent (Exh. ES-REVREQ-2, Sch. 33, at 2). Based on the updates to its long-term debt balance discussed above, the Company proposes a long-term debt cost of 3.93 percent, which is calculated by dividing the annual interest payments by the principal amount of the issuances outstanding (Exh. ES-REVREQ-2, Schedule 33, at 2 (Rev. 4)). The Attorney General did not address the Company's updated cost of debt on brief.

2. Analysis and Findings

The Department has reviewed the Company's calculation of its proposed 3.93-percent cost of debt and determines that the cost of debt was properly calculated (Exh. ES-REVREQ-2, Sch. 33, at 2 (Rev. 4)). Therefore, the Department accepts the use of a 3.93-percent cost of debt for the purpose of determining the Company's WACC.

D. Return on Equity

1. Introduction

a. Company's Proposal

The Company's proposes a 10.50-percent ROE based on an analysis that considered the results of the constant growth discounted cash flow model ("DCF") and two risk premium models: (1) the capital asset pricing model ("CAPM"); and (2) the bond yield plus risk premium model ("RPM") (Exh. ES-VVR-1, at 5-6). These models are applied to the market data and financial information of two proxy groups of publicly-held companies

(Exh. ES-VVR-1, at 30-34).[174] The first proxy group comprises 15 publicly traded utility companies engaged in the business of electric distribution service ("Electric Proxy Group"),[175] and the second proxy group comprises twelve publicly-traded domestic companies with investment risk profiles that the Company represents are equivalent or lower than the Electric Proxy Group ("Non-Regulated Proxy Group") (Exh. ES-VVR-1, at 30-34).[176] In addition, NSTAR Electric's ROE analysis also considers the following factors to propose an ROE within the range of analytical results: (1) current and projected capital market conditions; (2) qualitative factors; and (3) the Company's proposed PBR plan (Exhs. ES-VVR-1, at 22, 37, 40; ES-CAH/DPH-1, at 110-117).

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174 It is necessary to establish a group of publicly traded companies to serve as a proxy to estimate a market-based ROE because the Company is a wholly owned subsidiary of Eversource Energy and is not publicly traded (Exh. ES-VVR-1, at 21).

175 The following were NSTAR Electric's selection criteria for the Electric Proxy Group: (1) an electric utility; (2) a safety rank of one, two, or three; (3) a corporate credit rating of at least BBB- or Baa3; (4) currently paying dividends without having discontinued or reduced dividends over the previous five years (2016-2020); (5) does not own nuclear power generation facilities; and (6) is not and has not recently been an acquisition target (Exh. ES-VVR-1, at 31).

176 The following were NSTAR Electric's selection criteria for the Non-Regulated Proxy Group: (1) a conservative stock classification, meaning a safety rank no lower than one (2) a beta between 0.75 and 0.95; (3) a financial strength rating of A+ or higher; (4) a corporate credit rating of at least BBB- or Baa3; (5) not in the following businesses: gas and/or electric distribution, investment and financial services, pharmaceutical, life sciences, medical technology, hardware/software, or defense contracting; (6) currently paying dividends without having discontinued or reduced dividends over the previous five years (2016-2020); and (7) having at least one consensus earnings estimate published by an information service (Exh. ES-VVR-1, at 35).

In NSTAR Electric's DCF analyses, the required ROE equals the sum of the expected dividend yield and the expected long-term growth rate (Exh. ES-VVR-1, App. A). For the expected dividend yield, the Company uses the proxy companies' current annualized dividend and 30-day, 60-day, and 90-day average closing stock prices (Exhs. ES-VVR-1, App. A at 1; ES-VVR-3, at 3; ES-VVR-4, at 3). For the expected long-term growth rate, the Company uses projected earnings per share ("EPS") growth rates of the proxy companies provided by Thomson First Call (provided by Yahoo! Finance), Zacks Investment Research, and Value Line Investment Survey ("Value Line"), along with historical EPS growth rates provided by Value Line (Exhs. ES-VVR-1, at 48; ES-VVR-1, App. A at 5; ES-VVR-3, at 2; ES-VVR-4). The Company states that it excludes low-end and high-end outliers from its calculation of the mean DCF results to remove low cost of equity estimates that investors would not reasonably accept over corporate debt securities and high cost of equity estimates that reflect earnings growth that are not likely sustainable for regulated utility companies (Exhs. ES-VVR-1, at 7 & App. B, at 5; ES-VVR-3). In addition, the Company adjusts the model results to account for flotation costs[177] and includes a financial risk adjustment based on the difference between the market value and book value of the companies ("leverage adjustment") (Exhs. ES-VVR-1, at 48; ES-VVR-1, App. C; ES-VVR-1 App. D). After these adjustments,

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[177] Flotation costs are the costs incurred in issuing securities, also referred to as issuance costs. D.P.U. 85-266-A/85-271-A at 169; D.P.U. 19-120, at 354 n.172.

the Company's updated, mean DCF results are 9.68 percent for the Electric Proxy Group and 11.85 percent for the Non-Regulated Proxy Group (Exh. ES-VVR-Rebuttal-2, at 1, 2).[178]

The Company's CAPM includes three components to calculate the cost of equity: (1) a risk-free rate of return; (2) the proxy companies' beta coefficients, which are measures of systemic risk;[179] and (3) a market risk premium, which is the difference between market return estimates and the risk-free rate of return (Exh. ES-VVR-1, at 51). For the risk-free rate of return, NSTAR Electric uses average projected 30-year U.S. Treasury Bond yields from Blue Chip Financial Forecasts (Exhs. ES-VVR-1, at 55; ES-VVR-5, at 1; ES-VVR-Rebuttal-5, at 1).

The Company uses beta coefficients for the proxy companies published by Value Line with a leverage adjustment, which the Company states is necessary to reflect the difference between the companies' book value capital structure and market value capital structure (Exh. ES-VVR-1, at 60-61). NSTAR Electric's estimated market-return comprises a one-quarter weighting of a DCF analysis on the Standard and Poor's ("S&P") 500 Index, a one-quarter weighting of a DCF analysis on the Value Line 1,700 Stock Universe, and a one-half weighting of the historical Ibbotson Stocks, Bonds, Bills, and Inflation Yearbook annual total returns from 1926 to 2020 (Exhs. VVR-5, at 1-2; ES-VVR-Rebuttal-5, at 1-2).

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178 In the Company's initial filing, the adjusted, mean DCF results were 9.78 percent and 11.70 percent, respectively (Exh. ES-VVR-1, at 78).

179 A stock's beta measures the co-variability between the price movements of an individual stock and the price movements of the total market portfolio (Exh. ES-VVR-1, at 52).

In addition to the traditional CAPM results, the Company considers the CAPM results with a size adjustment published by Duff & Phelps and the results of the empirical CAPM, which applies a 75-percent weighting to the product of the beta coefficient and the market risk premium and a 25-percent weighting to the market risk premium alone (Exh. ES-VVR-1, at 63-66). For the Electric Proxy Group, after applying an adjustment for flotation costs, the Company's updated traditional, size adjusted, and empirical CAPM results range from 11.39 percent to 11.88 percent (Exh. ES-VVR-Rebuttal-2, at 3).[180] For the Non-Regulated Proxy Group, after applying an adjustment for flotation costs, the Company's traditional, size adjusted, and empirical CAPM results range from 10.95 percent to 11.25 percent (Exh. ES-VVR-Rebuttal-2, at 3).[181]

In NSTAR Electric's RPM, the cost of equity equals the sum of the Company's prospective cost of debt and expected equity risk premium (Exh. ES-VVR-1, at 67-68). For the Electric Proxy Group, the Company uses an average of equity risk premiums, including: (1) historic returns for the S&P 500 Composite Index less historic long-term corporate bonds; (2) the prospective equity risk premium used in the CAPM described above; (3) historic returns for the S&P Utilities Index less historic utility bond yields; and (4) a DCF analysis of the S&P 500 Utilities Index less the three-month average of Moody's Investors Service Inc.'s

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180 In NSTAR Electric's initial filing, the Electric Proxy Group CAPM results ranged from 10.77 percent to 11.26 percent (Exh. ES-VVR-1, at 78).

181 In the Company's initial filing, the Non-Regulated Proxy Group CAPM results ranged from 10.34 percent to 10.64 percent (Exh. ES-VVR-1, at 78).

"(Moody's") A-rated public utility bond yields (Exh. ES-VVR-6, at 1-5). For the Non-Regulated Proxy Group, the Company uses an average of equity risk premiums, including historic returns for the S&P 500 Index less historic long-term corporate bonds and the prospective equity risk premium used in the CAPM described above (Exh. ES-VVR-6, at 7-8). After applying an adjustment for flotation costs, the updated RPM calculations produce ROE estimates of 10.84 percent for the Electric Proxy Group and 11.37 percent for the Non-Regulated Group (Exh. ES-VVR-Rebuttal-2, at 4).[182]

b. Attorney General's Proposal

To develop her rate of return recommendation, the Attorney General considers the results of a constant growth DCF analysis and a CAPM applied to a proxy group of 24 publicly held electric utility companies ("Attorney General Proxy Group") (Exhs. AG-JRW-1, at 22-23; JRW-3).[183] In addition, the Attorney General considers capital market conditions and the trend in authorized ROEs (Exh. AG-JRW-1, at 9-22). The Attorney General's DCF results are 8.80 percent for the Attorney General Proxy Group and

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182 In the Company's initial filing, the RPM calculations produced ROE estimates of 10.66 percent for the Electric Proxy Group and 10.75 percent for the Non-Regulated Proxy Group (Exh. ES-VVR-1, at 78).

183 The following were the Attorney General's selection criteria for her proxy group: (1) has at least 50 percent of revenues from regulated electric operations as reported in its Form 10-K filed with the U.S. Securities Exchange Commission; (2) is listed as a U.S.-based electric utility; (3) has an investment grade issuer credit rating by Moody's and S&P; (4) has paid a cash dividend in the past six months with no reductions or omissions; (5) has not been involved in an acquisition of another utility, nor has been the target of an acquisition in the past six months; and (6) has analysts' long-term EPS growth rate forecasts available (Exh. AG-JRW-1, at 22-23).

8.95 percent for the Electric Proxy Group (Exh. AG-JRW-1, at 56). For the CAPM, the Attorney General uses a market risk premium based on a review of studies and surveys, which produces an ROE estimate of 7.70 percent (Exh. AG-JRW-1, at 64-68). The Attorney General concludes that 7.70 percent to 8.95 percent represents a reasonable range of ROEs for NSTAR Electric and recommends an 8.95-percent ROE at the top of the range, giving primary weight to the DCF results and accounting for the recent rise in interest rates (Exh. AG-JRW-1, at 4, 71).

c. UMass Proposal

UMass recommends a 9.25-percent ROE based on an analysis of authorized returns for New England investor-owned utilities (Exh. UMASS-EP/RS-1, at 53-58). UMass states that an ROE of 9.25 percent would not threaten NSTAR Electric's financial integrity and ability to raise capital on reasonable terms (Exh. UMASS-EP/RS-1, at 58).

2. Positions of the Parties

a. Attorney General

i. Proxy Groups

The Attorney General asserts that the Attorney General Proxy Group and Electric Proxy Group are similar in risk based on six measures, including credit ratings, beta, financial strength, safety, earnings predictability, and stock price stability (Attorney General Brief at 87, citing Exh. AG-JRW-1, at 23). The Attorney General contends that the Department generally rejects the results of non-regulated proxy groups (Attorney General Brief at 86, citing D.T.E. 01-56, at 116; D.P.U. 96-50 (Phase I), at 132; D.P.U. 92-250,

at 160-161; D.P.U. 905, at 48-49). The Attorney General claims that the companies in the Non-Regulated Proxy Group are very different from the electric distribution business and none of them operate under a regulatory construct like the electric distribution business (Attorney General Brief at 87). The Attorney General argues that the Department should not consider the Non-Regulated Proxy Group in its determination of the Company allowed ROE[184] (Attorney General Brief at 88).

ii. ROE Estimation Models

(A) DCF

The Attorney General contends that the Department should reject the Company's DCF analysis as it contains several substantive flaws that overstate the estimated cost of equity (Attorney General Brief at 81). First, she argues that the Company's outlier test eliminates low-end outliers while not affecting high-end outliers in the Electric Proxy Group (Attorney General Brief at 90). She claims that the asymmetric elimination of low-end outliers creates an upwardly biased estimate (Attorney General Brief at 90; Attorney General Reply Brief at 20). In addition, the Attorney General asserts that the Company relies solely on overly optimistic and upwardly biased EPS growth rates of Wall Street analysts and Value Line (Attorney General Brief at 90-92; Attorney General Reply Brief at 20).

The Attorney General also maintains that the Company's leverage adjustment is unwarranted (Attorney General Brief at 92-93). She claims that the market value of a firm's

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184 Throughout this Order, the Department uses the terms authorized and allowed interchangeably.

equity is greater than the book value due to the firm's earning a return that is more than its equity costs (Attorney General Brief at 93). The Attorney General avers that the adjustment is unnecessary as there is no change in the Company's leverage, and its financial statements and fixed financial obligations remain the same (Attorney General Brief at 93). She contends that financial publications and investment firms report capitalizations on a book value basis, not on a market value basis (Attorney General Brief at 93). Further, Attorney General argues that regulatory commissions have rejected leverage adjustments because they increase ROEs for utilities that have high returns on common equity and decrease ROEs for utilities that have low returns on common equity (Attorney General Brief at 93).

Finally, the Attorney General contests the Company's flotation cost adjustment to its DCF results (Attorney General Brief at 93). She maintains that the Company has not provided evidence that flotation costs have been paid (Attorney General Brief at 92). In addition, she asserts that the Department has previously rejected the inclusion of issuance costs in the determination of ROE (Attorney General Brief at 92, citing D.P.U. 17-05, at 705-706; D.P.U. 90-121, at 180; D.P.U. 88-67 (Phase I) at 193; D.P.U. 86-280-A at 112; D.P.U. 85-137, at 100). The Attorney General argues that the Company has not provided sufficient evidence to change Department precedent (Attorney General Brief at 94).

(B) CAPM and RPM

The Attorney General contends that the major issue with the CAPM is the measurement and magnitude of the market premium (Attorney General Brief at 96). The Attorney General asserts that the Department should use a market risk premium no higher

than 5.50 percent in any CAPM analysis used to determine NSTAR Electric's cost of equity (Attorney General Brief at 96). Further, she argues that there are five primary errors with the Company's CAPM: (1) the market risk premium of 7.50 percent; (2) the use of the empirical CAPM; (3) the size adjustment; (4) the use of leverage-adjusted betas; and (5) the flotation adjustment (Attorney General Brief at 96-105).

The Attorney General contends that the most significant error in the Company's CAPM is the market risk premium (Attorney General at 99). She avers that the Company's approach in computing its historical market risk premium suffers from several flaws, including stock market survivorship bias, the use of the arithmetic mean of stock price returns, an inappropriate time horizon, a failure to recognize changes in risk and return over time, a downward bias in historical bond returns, and unattainable return bias (Attorney General Brief at 99-100, citing Exh. AG-JRW-1, at 85-89). The Attorney General also claims that the Company's prospective market risk premium relies on the same biased EPS growth rates used in the Company's DCF analyses that are inconsistent with both historic and projected economic and earnings growth as reflected in projections of gross domestic product ("GDP") growth (Attorney General Brief at 100-102, citing Exh. AG-JRW-1, at 89-95; Attorney General Reply Brief at 21-23). Further, the Attorney General asserts that the Company's market risk premium component of the RPM contains the same flaws and should also be rejected (Attorney General Brief at 106).

The Attorney General also objects to the use of the empirical CAPM to estimate the Company's required ROE (Attorney General Brief at 98). She asserts that: (1) the empirical

CAPM has not been theoretically or empirically validated in refereed journals; and (2) the adjusted betas from Value Line already address the purported empirical issues with the CAPM (Attorney General Brief at 98, citing Exh. AG-JRW-1, at 83-84).

Additionally, the Attorney General argues that the size premium adjustment made by the Company is inappropriate and should be rejected (Attorney General Brief at 103-105). She notes that the size premiums are poor measures for size adjustments as they fail to account for survivorship and unattainable return biases (Attorney General Brief at 103-104). According to the Attorney General because public utilities are closely regulated, must gain approval for financial transactions, have standardized accounting and reporting requirements, and have earnings that are, to an extent, predetermined by the ratemaking process, their stocks do not exhibit a significant size premium (Attorney General Brief at 104). The Attorney General further argues that the Company's upward adjustments of betas to compensate for the difference between book value and market value capitalization suffers from the same flaw as the adjustment it made in its DCF analysis (Attorney General Brief at 98, citing Exh. AG-JRW-1, at 83-84).

iii. Required ROE

The Attorney General also argues that her 7.70-percent to 8.95-percent range of reasonable ROEs and 8.95 percent ROE recommendation are supported by current capital market conditions and a trend of declining authorized ROEs for other electric distribution companies (Attorney General Brief at 79-80, 95, 111-112; Attorney General Reply Brief at 13-14, 25-27). Specifically, she maintains that despite short-term expectations of higher

inflation, the long-term inflation rate is still 2.50 percent (Attorney General Brief at 108). Further, the Attorney General avers that: (1) authorized ROEs for distribution companies nationally have trended downward since 2012, coinciding with decreasing interest rates; (2) Massachusetts ROEs have trended upward while the national averages have moved downward; and (3) the differences between Massachusetts and national average ROEs have become larger in recent years (Attorney General Brief at 110-111, citing Exh. AG-JRW-1, at 18-21; Attorney General Reply Brief at 26).

In addition, the Attorney General asserts that the investment risk of the Company is below the investment risk of the Electric Proxy Group because the Company has a higher credit rating and higher equity ratio (Attorney General Brief at 81, 84-85). She claims that the Company overestimates its required ROE by assuming NSTAR Electric is riskier than the Electric Proxy Group (Attorney General Brief at 80-83, 112; Attorney General Reply Brief at 18). The Attorney General avers that the electric distribution industry overall is among the lowest risk industries in the nation as measured by beta and, therefore, the industry's risk has declined (Attorney General Brief at 80, citing Exh. JRW-6).

Moreover, the Attorney General argues that NSTAR Electric's proposed PBR plan decreases the Company's financial risk relative to the proxy companies due to the exogenous cost factor and the rate adjustments (Attorney General Brief at 83, citing Exh. AG-JRW-1, at 8-9). Further, she contends that the stay-out provision of the PBR plan does not increase the Company's risk because the Company can break the stay-out provision (Attorney General Brief at 83 n.82, citing Exh. AG-JRW-1, at 8; D.P.U. 17-05, at 403-404 (2017)).

Finally, the Attorney General argues that the Department should reject the Company's request for an allowed ROE at the higher end of the reasonable range because of NSTAR Electric's quality of service (Attorney General Reply Brief at 29-30). The Attorney General asserts that the Company disingenuously claims that its PBR plan benefitted customers because, according to the Attorney General, the Company merely shifted costs from O&M by adjusting the capitalization rate (Attorney General Brief at 21-22; Attorney General Reply Brief at 30).

b. Acadia Center

Acadia Center agrees with UMass's recommendation of a 9.25-percent ROE (Acadia Center Brief at 9). Acadia Center argues that the allowed ROE should be significantly lower than the 10.5 percent proposed by the Company (Acadia Center Brief at 8). Acadia Center argues that comparable New England distribution companies can attract capital at lower rates without experiencing financial distress (Acadia Center Brief at 9).

c. Conservation Law Foundation

CLF argues that the Company's proposed ROE is unreasonably high and results in rates that are not just and reasonable (CLF Brief at 8). Further, CLF contends that the Company has failed to adequately explain why an increase in an already high ROE is warranted (CLF Brief at 8). CLF asserts that it is unreasonable for NSTAR Electric ratepayers to pay more than their neighbors for the same type of electric service and investments, subject to the same capital markets (CLF Brief at 8).

d. UMass

UMass argues that NSTAR Electric's proposed ROE is not commensurate with the return authorized for other New England EDCs or the national averages for electric rate cases in 2021 and the first quarter of 2022 (UMass Brief at 3, 35; UMass Reply Brief at 9-11). UMass contends that a 9.25-percent ROE reflects a level of return that the Company's peers have demonstrated to be sufficient to successfully provide similar services, maintain financial integrity, and attract capital (UMass Brief at 36; UMass Reply Brief at 9-11). UMass avers that experience in the region clearly demonstrates that an allowed ROE of 9.25 percent is sufficient to maintain financial integrity and to allow the firm to attract capital on reasonable terms (UMass Brief at 40, citing Exh. UMASS-EP/RS-1, at 57-58; Tr. 10, at 1150-1152).

e. Company

i. Proxy Groups

NSTAR Electric argues that, in determining its ROE, it has used appropriate proxy groups that include companies that: (1) are based on valid selection criteria; and (2) have sufficient financial and operating data to discern the investment risk of NSTAR Electric versus the comparison groups (Company Brief at 258, citing D.P.U. 20-120, at 413). The Company maintains that the objective in developing a proxy group is to develop a group of companies that are fundamentally similar with respect to operating, financial, and business risks of the utility seeking rate relief (Company Brief at 258-259, citing D.P.U. 08-35, at 176). NSTAR Electric claims that the companies in the Non-Regulated Proxy Group are

comparable because they are lower risk consumer staple, food and beverage, chemicals processing, and transportation companies, which, like utilities, are less susceptible to changes in the business cycle (Company Brief at 259-260, 272, citing Exhs. ES-VVR-1, at 35; VVR-Rebuttal-1, at 91; Company Reply Brief at 28). Further, NSTAR Electric asserts that the Department has accepted the use of a non-regulated proxy group in setting the ROE (Company Brief at 260, 273, citing D.P.U. 13-75, at 302, 328; D.P.U. 12-25, at 416-17, 441). Finally, the Company maintains that the Attorney General's Proxy Group is too limited because it does not include comparable non-regulated companies (Company Brief at 272).

ii. ROE Estimation Models

(A) DCF

NSTAR Electric argues that the DCF analysis underestimates the Company's cost of equity because of the impact of recent long-term interest rates on the dividend yield (Company Brief at 262, citing Exh. ES-VVR-1, at 15-17, 48-49; Company Reply Brief at 27-28). The Company claims that investors view utility stocks as substitutions for fixed-income securities and that the recent downward pressure on long-term interest rates resulted in increased demand for utility stocks, raising utility stock prices and suppressing dividend yields (Company Brief at 262, citing Exh. ES-VVR-1, at 15-17, 48-49; Company Reply Brief at 27-28).

With respect to expected growth rates, the Company asserts that it correctly relies on EPS growth rates because a substantial amount of academic research has demonstrated that

equity analyst forecasts have a significant influence on the growth expectations of investors (Company Brief at 260, citing Exh. ES-VVR-1, App. A at 2-3). The Company further argues that the Department should reject the Attorney General's claim that EPS growth rates are overly optimistic and upwardly biased consistent with the Department's prior findings on this issue (Company Brief at 275, citing Exh. ES-VVR-Rebuttal-1, at 35-37; D.P.U. 20-120, at 420; D.P.U. 19-120, at 374; Company Reply Brief at 27).

In addition, NSTAR Electric contends that it eliminated low-end and high-end outliers from the mean DCF results considered in the proposed ROE because those results did not pass fundamental tests of economic logic (Company Brief at 260-261, citing Exh. ES-VVR-1, App. B at 1-2). The Company reasons that rational investors will not invest in common stocks if the expected return is lower than or marginally higher than yields available on corporate debt securities (Company Brief at 260-261, citing Exh. ES-VVR-1, App. B at 2)

Finally, the Company argues that the Department should adopt the Company's adjustments to the DCF results to reflect the difference between market value and book value and to account for flotation costs (Company Brief at 261). The Company maintains that a leverage adjustment is necessary when the average market value equity capitalization of the proxy group companies is materially higher than the corresponding book value equity capitalizations (Company Brief at 261, citing Exh. ES-VVR-1, at App. C at 1-4). NSTAR Electric contends that the flotation adjustment accounts for the various costs incurred in the issuance of new equity stock (Company Brief at 261, citing Exh. ES-VVR-1, App. D at 1).

(B) CAPM and RPM

NSTAR Electric maintains that it ensured a balanced approach to estimate a market risk premium for the CAPM by using historical and prospective data and that the prospective market risk premium was calculated consistent with the Department's directives in D.P.U. 20-120, at 429-430 (Company Brief at 262-263). The Company argues that its market risk premium is reasonable and that the Attorney General's objections to the Company's calculation of the market risk premium are without merit (Company Brief at 280). Specifically, the Company maintains that the forecasted EPS growth rate for the S&P 500 is a reasonable market-based estimate that has been accepted by other utility commissions and is consistent with historical returns (Company Brief at 281).

The Company also asserts that it considers a size-adjusted CAPM based on academic studies that have shown small capitalization stocks have historically earned returns that are materially higher than returns predicted by the traditional CAPM (Company Brief at 264). In addition, the Company contends that it considers the empirical variant of the CAPM because extensive empirical evidence has shown that the risk-return relationship between beta and stock returns is flatter than what is predicted by the traditional CAPM (Company Brief at 264, citing Exh. ES-VVR-1, at 65). Further, the Company argues that it applies leverage and flotation adjustments to the CAPM results for the same reasons that those adjustments were applied to the DCF results (Company Brief at 263, citing Exhs. ES-VVR-1, at 60-66; ES-VVR-Rebuttal-1, at 5).

With respect to the RPM, NSTAR Electric argues that the Department relies on the RPM as a supplemental approach in determining the level of ROE (Company Brief at 282, citing D.P.U. 07-71, at 137). For the same reasons discussed above in relation to the market risk premium used in the CAPM, the Company claims that the Attorney General's objections to the market risk premium used in the RPM have no merit (Company Brief at 282). The Company avers, therefore, that the Department should at least supplement its calculation of the Company's ROE with the risk premium approach (Company Brief at 282).

iii. Required ROE

The Company maintains that its proposed ROE reflects capital market conditions and is the result of applying widely accepted common equity cost models (Company Brief at 292). NSTAR Electric argues that it is critical for the Department to recognize that the allowed ROE must position the Company to attract capital on a going-forward basis because it will not be able to maintain safe and reliable service without a fair return (Company Brief at 255). NSTAR Electric asserts that based on the legal standard for authorizing an ROE and the evidence in this proceeding, the Department should adopt the Company's recommended ROE of 10.50 percent (Company Brief at 255-256, 292).

In support of its requested ROE, NSTAR Electric also contends that the Department's decision must account for the recent increases in interest rates and inflation (Company Reply Brief at 25). The Company asserts that as interest rates have increased, and continue to increase, the cost of equity also increases (Company Reply Brief at 26, citing Tr. 14, at 1433, 1436-1439, 1441-1443; RR-DPU-40, Att. at 1; RR-ES-1).

Further, the Company claims that the intervenors' recommended ROEs based on national and regional authorized ROEs have no merit (Company Brief at 284-285, 288-291; Company Reply Brief at 22, 30, 32-34). NSTAR Electric argues that the Department should not rely on the 2021 and 2022 national averages for allowed ROEs or current authorized ROEs in New England because the sample sizes of these decisions are too small to be reliable, the national averages are skewed by jurisdictions that use formulaic approaches to determine an allowed ROE, and setting an allowed ROE based on averages from prior years would ignore the recent dramatic increase in interest rates and inflation (Company Brief at 284-285, 289-291, citing Tr. 9, at 1004-1006; Company Reply Brief at 22, 33, citing Exh. ES-VVR-Rebutal-1, at 18; Tr. 14, at 1437-1443; RR-DPU-40, Att. at 1; RR-ES-1, Att.).

With respect to credit rating, the Company maintains that the Department should reject the Attorney General's proposal to lower the Company's ROE based on a comparison to the proxy companies' credit ratings (Company Reply Brief at 24). NSTAR Electric asserts that there is no evidence showing a nexus between credit ratings and the specific, authorized cost of equity set for utilities and that the Department has rejected adjustments based on credit rating in the past (Company Reply Brief at 24, citing D.P.U. 20-120, at 430; D.P.U. 09-30, at 363, 365).

Turning to the proposed PBR plan, the Company argues that the proposed ten-year stay-out provision increases the Company's risk and, therefore, the Department should establish an ROE at the higher end of the reasonable range (Company Brief at 267, 283-284).

In particular, NSTAR Electric asserts that a "stay-out provision as part of a PBR plan may increase a company's risks in meeting its financial requirements" (Company Brief at 265, 284, citing D.P.U. 20-120, at 431-432; Company Reply Brief at 25). The Company further claims that the Department has found that a ten-year stay-out provision as part of a company's PBR mechanism increases the risks in meeting its financial requirements (Company Brief at 265, 284, citing D.P.U. 19-120, at 405).

Moreover, the Company avers that the electric utility industry is facing regulatory uncertainty associated with changes necessary to help achieve reductions in GHG emissions (Company Brief at 266, citing Exh. ES-CAH/DPH/ANB-1, at 116; Company Reply Brief at 25). NSTAR Electric contends that the changes will require significant increases in capital expenditures and will create regulatory uncertainty (Company Brief at 266; Company Reply Brief at 25).

Finally, NSTAR Electric argues that its ROE should be set at the higher end of the reasonable range based on qualitative factors (Company Brief at 267; Company Reply Brief at 31). The Company asserts that it has excellent service quality and exceeded its benchmarks during its current PBR plan (Company Brief at 267, citing Exh. ES-CAH-DPH-1, at 111). The Company also claims that it is a top performer in the industry with respect to reliability and customer service (Company Brief at 267-268, citing Exh. ES-CAH-DPH-1, at 112; Company Reply Brief at 31). Further, the Company maintains that during its current PBR plan the Company contained O&M costs to the direct

benefit of customers and excelled at storm restoration (Company Brief at 267-268, citing Exh. ES-CAH-DPH-1, at 112-114; Company Reply Brief at 31-32).

3. Analysis and Findings

a. Proxy Groups

The use of a proxy group of companies is standard practice in setting an ROE that is comparable to returns on investments of similar risk. D.P.U. 08-35, at 176-177; D.T.E. 99-118, at 80-82; D.P.U. 92-78, at 109-110; Western Massachusetts Electric Company, D.P.U. 1300, at 97 (1983). The use of a proxy group is especially relevant for evaluation of a cost of equity analysis when a distribution company does not have common stock that is publicly traded, as is the case with NSTAR Electric (Exh. ES-VVR-1, at 32). D.P.U. 08-35, at 176-177; D.T.E. 99-118, at 80-82; D.P.U. 92-78, at 109-110. The Department has stated that companies in the proxy group must have common stock that is publicly traded[185] and must be generally comparable in investment risk. D.P.U. 1300, at 97.

In our evaluation of the proxy groups used by the Company and the Attorney General, we recognize that it is neither necessary nor possible to find a group in which the companies match NSTAR Electric in every detail. D.T.E. 99-118, at 80; D.P.U. 87-59, at 68; Boston Gas Company, D.P.U. 1100, at 135-136 (1982). Rather, we may rely on an analysis that employs valid criteria to determine which companies will be in the proxy group and that provides sufficient financial and operating data to discern the investment risk of NSTAR

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185 An important aspect of the criteria for a proxy group is that financial information is readily available for publicly traded companies.

Electric relative to the proxy group. D.T.E. 99-118, at 80; D.P.U. 87-59, at 68; D.P.U. 1100, at 135-136.

The Department expects diligence by parties in assembling proxy groups that will produce statistically reliable analyses required to determine a fair rate of return for the company. D.P.U. 10-55, at 480-482. The Department has previously found that overly exclusive selection criteria may affect the statistical reliability of a proxy group, especially if such screening criteria result in a limited number of companies in the proxy group. D.P.U. 10-55, at 480-482.[186] The Department has directed parties to limit criteria to the extent necessary to develop a broader as opposed to a narrower proxy group. D.P.U. 10-114, at 299; D.P.U. 10-55, at 481-482. To the extent that a particular company's characteristics differ from those of the others in a proxy group, those differences should be identified in sufficient detail to enable a reviewer to discern any effects on investment risk. D.P.U. 10-114, at 299; D.P.U. 10-55, at 480-482. Additionally, the Department places less reliance on a proxy group if the member companies are substantially different from the company in the case. D.P.U. 90-121, at 166.

After review, the Department finds that NSTAR Electric and the Attorney General each employed a set of valid criteria to select the Electric Proxy Group and Attorney General

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186 The challenge when selecting a proxy group is to narrow it sufficiently to reflect the risks faced by the company in question and, at the same time, find a large enough proxy group to bring confidence to the ultimate result by mitigating any distortion introduced by possible measurement error or vagaries in an individual company's market data. In Re Public Service Company of New Hampshire, 90 NH PUC 230, 247 (2005).

Proxy Group, and the Department finds that both parties provided sufficient information to draw conclusions about the relative risk characteristics of the Company versus the members of the proxy groups (Exhs. ES-VVR-1, at 30-31; AG-JRW-1, at 22-23; AG-JRW-3). D.P.U. 12-25, at 402; D.P.U. 09-30, at 307. Therefore, the Department will accept the Company's Electric Proxy Group and the Attorney General Proxy Group to determine NSTAR Electric's allowed ROE.

Periodically, companies have proffered a comparable earnings approach to estimate ROE as a supplement to DCF and risk premium analyses. D.T.E. 01-56, at 113-116. The comparable earnings approach uses both historical returns and forecasted returns for a group of non-utility companies, which proponents of this approach have selected based on financial risk criteria from resources such as Value Line, Moody's, and S&P. D.P.U. 13-75, at 320; D.P.U. 12-25, at 433-436; D.P.U. 08-35, at 208-211; D.T.E. 01-56, at 113-116. Therefore, the comparable earnings approach is similar to NSTAR Electric's proposal to estimate its ROE based on DCF and risk premium analyses using historical and forecasted data of the Non-Regulated Proxy Group, which was selected based on similar financial risk criteria (Exhs. ES-VVR-1, at 32-37; ES-VVR-4; ES-VVR-5; ES-VVR-6). The Department has generally rejected the results of the comparable earnings analysis on the basis that the financial risk criteria provided by the proponents, including beta, financial strength, price stability, and credit rating, were not sufficient to establish the comparability of the non-price-regulated firms with the distribution company being considered. D.P.U. 13-75, at 321-322; D.P.U. 12-25, at 435-436; D.P.U. 08-35, at 210; D.T.E. 01-56, at 113-116.

After review, we find that NSTAR Electric's proposal to rely on a Non-Regulated Proxy Group suffers from similar limitations to those identified with respect to the comparable earnings approach. The Department has repeatedly found that the use of beta as a criterion in selecting a comparable group of companies is not a reliable investment risk indicator given its statistical measurement limitations. D.P.U. 13-75, at 321-322; D.P.U. 12-25, at 435; D.P.U. 08-35, at 210; D.T.E. 01-56, at 113-116. The Department also has found that the financial risk criteria employed by NSTAR Electric do not fully capture the value of operating a regulated monopoly in a revenue decoupled market. D.P.U. 13-75, at 321-322; D.P.U. 12-25, at 435. Moreover, while NSTAR Electric correctly states that we must ensure a proxy group of companies is fundamentally similar with respect to the operating, financial, and business risks of the utility, the Company provided little evidence concerning how the operating and business risks of the Non-Regulated Proxy Group are similar to an electric distribution company, other than opinion testimony, which contrasts with the Attorney General's opinion testimony (Exhs. ES-VVR-1, at 35; ES-VVR-Rebuttal-1, at 91; AG JRW-1, at 74; Tr. 9, at 1047).[187] D.P.U. 08-35, at 176.

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[187] Further, in the Company's testimony it stated that the Non-Regulated Proxy Group behaved similarly to utility companies in the business life cycle, but during evidentiary hearings the Company represented that the business life cycle did not apply to utilities at all, which creates further uncertainty that the Non-Regulated Proxy Group is comparable to NSTAR Electric (Exh. ES-VVR-Rebuttal-1, at 91; Tr. 9, at 1047).

NSTAR Electric correctly identifies two instances in which the Department has considered ROE estimates based on non-regulated companies in our determination of a utility's allowed ROE. D.P.U. 13-75, at 286-287; D.P.U. 12-25, at 402. The Company, however, does not present a complete picture of the Department's analysis in those cases. NSTAR Electric fails to acknowledge that, in both proceedings, the Department stated that the non-regulated businesses were potentially riskier and, all else equal, potentially more profitable than the petitioning utility company, and the Department considered that disparity in risk in determining the appropriate ROE. D.P.U. 13-75, at 286-287; D.P.U. 12-25, at 402.[188] Ultimately, the Department authorized ROEs in those Orders that were, respectively, 303 basis points and 251 basis points lower than the DCF model results for the non-regulated business, which indicates that the Department placed limited weight on the ROE estimates based on the proxy group of non-regulated companies. D.P.U. 13-75, at 293, 329; D.P.U. 12-25, at 407, 444.

Based on the findings above, while there is some evidence that the Non-Regulated Proxy Group has similar financial risk to NSTAR Electric, the Company has provided limited evidence demonstrating that the consumer staple, food and beverage, chemicals processing, and transportation companies have comparable operations and business risk to an electric distribution company (Exhs. ES-VVR-1, at 35; VVR-Rebuttal-1, at 91). Therefore,

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188 The Department has repeatedly found that the presence of unregulated operations in a proxy group would tend to produce model results that overstate a utility's cost of equity. D.P.U. 17-170, at 307; D.P.U. 15-80/D.P.U. 15-81, at 291-292; D.P.U. 10-114, at 335.

the Department will place limited weight on the ROE estimates based on the Non-Regulated Proxy Group in our determination of the allowed ROE.

b. ROE Estimation Models

i. DCF Model

The DCF is a commonly used valuation model based on the fundamental premise that investors value financial assets on the basis of expected future cash flows, discounted by an appropriate risk-adjusted rate of return (Exhs. ES-VVR-1, at 42; AG-JRW-1, at 39). As discussed above, both the Company and the Attorney General rely on DCF analyses to recommend an allowed ROE (Exhs. ES-VVR-1, at 5; AG-JRW-1, at 6). The parties disagree on three key issues regarding their respective DCF analyses: (1) the impact of current market conditions on the DCF results; (2) the appropriate estimated growth rate; and (3) the Company's adjustments to the DCF analysis for flotation costs, the leverage adjustment, and outliers.

The Department recently considered the relationship between low interest rates and utility stock prices over the last several years and whether a projected increase in long-term interest rates caused the DCF analysis to understate the cost of equity. D.P.U. 20-120, at 416-419. The Department found that, although utility stocks had increased above historic levels in conjunction with low interest rates, the evidence in that proceeding that long-term interest rates would change was speculative. D.P.U. 20-120, at 417-419. In this proceeding, the record is clear that long-term interest rates have increased compared to the period of time from which the parties derived the dividend yields used in the DCF analyses

(Exh. ES-VVR-Rebutal-1, at 23-26; Tr. 14, at 1463). We also have considered the Attorney General's evidence of investors forecasting that utility stocks will retain their high valuations in the near term (Tr. 14, at 1449-1452; RR-DPU-48). Based on the foregoing evidence, the Department finds that there is greater certainty that the DCF results understate the Company's cost of equity. The Department takes these findings into consideration in the determination of the reasonable range below.

Determining the appropriate long-term growth expectations of investors in a DCF analysis is often difficult and controversial. D.P.U. 15-155, at 365. As discussed above, the Company and Attorney General use different growth rates in their respective DCF analyses, and each party objects to the other's choice of growth rates. Regarding EPS growth rates, the Department has previously found that federal regulators have mitigated the systemic bias in overly optimistic stock recommendations, and the Department has accepted DCF results that rely on EPS growth rates. D.P.U. 20-120, at 419-420; D.P.U. 19-120, at 374. We reaffirm those findings.

The Company uses EPS growth rates between 5.20 percent and 5.60 percent for the Electric Proxy Group (Exhs. ES-VVR-3, at 1, 2; ES-VVR-Rebuttal-3, at 1, 2). The Attorney General uses a growth rate of 5.50 percent for the Attorney General Proxy Group and a growth rate of 5.75 percent for the Electric Proxy Group (Exh. AG-JRW-1, at 54-55). Based on our precedent and the supporting evidence provided by the parties, the Department finds that both the Company's and the Attorney General's approaches to the expected growth rates are reasonable (Exhs. ES-VVR-1, App. A at 3-10; AG-JRW-1, at 45-55).

Turning to the Company's proposed adjustments for flotation costs, the Department has consistently rejected issuance cost adjustments for purposes of determining an allowed ROE. D.P.U. 10-70, at 259; D.P.U. 90-121, at 180 ("[t]he use of a flotation cost adjustment to the cost of equity is not acceptable"). The Department has found in several Orders that investors already take into account issuance costs in their decision to purchase a stock at a given price. D.P.U. 90-121, at 180, citing D.P.U. 88-67 (Phase I) at 193; D.P.U. 87-260, at 105-106; D.P.U. 86-280-A at. 112; D.P.U. 85-137, at 100. The Department finds that NSTAR Electric has failed to present any evidence or argument to justify a departure from long-standing precedent (Exh. DPU 10-16). Accordingly, the Department will not rely on the Company's DCF results without adjustment for flotation costs in the determination of the reasonable range.

The Department has also consistently rejected leverage adjustments (Exhs. ES-VVR-1, at 48; ES-VVR-1, App. C). D.P.U. 10-55, at 513; D.P.U. 09-39, at 387; D.T.E. 05-27, at 298; D.T.E. 03-40, at 357-359; D.T.E. 01-56, at 105-106; D.P.U. 906, at 100-101; Eastern Edison Company, D.P.U. 837/968, at 49 (1982). The Company's proposed leverage adjustment relies on a comparison between book and market capitalization and, therefore, has similar elements to the price-book ratio method of determining a utility's cost of equity. D.T.E. 01-56, at 105. The Department has frequently rejected the price-book analysis because it fails to recognize variables such as a company's geographic location, load factors, and customer make-up, which can affect price-book ratios. D.T.E. 01-56, at 105, citing D.P.U. 906, at 100-101. Additionally, the price-book analysis has been found to rely

excessively on investor perceptions of the relationship between market and book prices in their investment decisions. D.T.E. 01-56, at 105, citing D.P.U. 837/968, at 49.

These weaknesses of the price-book ratio analysis are also present in NSTAR Electric's leverage adjustment. The Company asserts that investors require a higher return because the book value of their investment is exceeded by its market value (Exh. ES-VVR-1, App. C, at 1). Considering the multiplicity of factors that affect investor decisions on the valuation of a utility's common stock, the Department considers the Company's market/book analysis as an implicit attempt to automatically ensure a market-to-book ratio of one-to-one. This automatic assurance would serve to remove an inherent aspect of utility management, that is, to "bear the brunt of inefficient decisions and reap the rewards of efficiency." D.T.E. 01-56, at 106, citing D.P.U. 906, at 100. The Department is not obligated to ensure that market-to-book ratios remain on a one-to-one basis. The Department finds that NSTAR Electric has failed to present any evidence or argument to justify a departure from long-standing precedent (Exh. DPU 10-15). Therefore, the Department places no weight on the Company's proposed leverage adjustment.

Finally, the Company applied low-end and high-end outlier thresholds to the DCF results (Exhs. ES-VVR-3, at 1, 2; ES-VVR-Rebuttal-3, at 1, 2). While the Department has concerns that the design of NSTAR Electric's outlier test could lead to asymmetrical results that skew the cost of equity estimate, in this particular case, the Company's DCF results screened for outliers are comparable to the Attorney General's DCF results without a screen

for outliers (Exhs. ES-VVR-3, at 1, 2; ES-VVR-Rebuttal-3, at 1, 2; AG-JRW-1, at 55; Tr. 14, at 1474).

The Company's updated mean DCF results for the Electric Proxy Group, without the adjustments for flotation costs or the leverage adjustment, range from 8.50 percent to 9.20 percent, and the Attorney General's DCF results for the Attorney General Proxy Group and Electric Proxy Group are 8.80 percent and 8.95 percent (Exhs. ES-VVR-Rebuttal-3, at 1, 2; AG-JRW-1, at 55). Based on the findings above, the Department will consider these DCF results in our determination of the reasonable range below. In addition, without the adjustment for flotation costs and the leverage adjustment, the Company's updated mean DCF results for the Non-Regulated Proxy Group range from 10.30 percent to 11.70 percent (Exhs. ES-VVR-4, at 1-2; ES-VVR-Rebuttal-4, at 1, 2). Consistent with our findings on the Non-Regulated Proxy Group above, the Department will accord limited weight to the Non-Regulated Proxy Group DCF results in our determination of the reasonable range below.

ii. CAPM

The Department has previously found, and the Company has acknowledged, that the traditional CAPM analysis as a basis for determining a utility's cost of equity has limited value because of several limitations, including some questionable assumptions that underlie the model (Exh. ES-VVR-1, at 52). D.P.U. 20-120, at 423; D.P.U. 19-120, at 383; D.P.U. 17-170, at 298; D.P.U. 10-55, at 514; D.P.U. 08-35, at 207; Commonwealth

Electric Company, D.P.U. 956, at 54 (1982).[189] As a result, it has been the Department's long-standing practice to accord the results of the CAPM limited weight. See, e.g., D.P.U. 17-05-H at 9 & n.9; D.P.U. 20-120, at 423-425; D.P.U. 19-120, at 383-385.

Recently, in an effort to consider a broader range of CAPM analyses in future base distribution rate proceedings, the Department directed all electric and gas companies to submit a CAPM analysis that estimates the market return based on the Value Line 1,700 Stock Universe using Value Line's median of estimated dividend yields and estimated price appreciation potential in addition to the other ROE estimation models that, in the judgment of the party, provide a reliable estimate of the cost of equity. D.P.U. 20-120, at 429-430. As discussed above, NSTAR Electric estimated a market-return based on a one-quarter weighting of a DCF analysis on the S&P 500 Index, a one-quarter weighting of a DCF analysis on the Value Line 1,700 Stock Universe, and a one-half weighting of the historical returns (Exhs. VVR-5, at 1-2; ES-VVR-Rebuttal-5, at 1-2). After review, the Department finds that the Company's proposal complies with the Department's directive and, in this proceeding, incorporating the expected growth based on Value Line's data ensured a more conservative

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189 In D.P.U. 08-35, at 207 n.131, the Department noted the following assumptions of the CAPM: (1) capital markets are perfect with no transaction costs, taxes, or impediments to trading, all assets are perfectly marketable, and no one trader is significant enough to influence price; (2) there are no restrictions to short-selling securities; (3) investors can lend or borrow funds at the risk-free rate; (4) investors have homogeneous expectations (i.e., investors possess similar beliefs on the expected returns and risks of securities); (5) investors construct portfolios on the basis of the expected return and variance of return only, implying that security returns are normally distributed; and (6) investors maximize the expected utility of the terminal value of their investment at the end of one period.

approach in developing the market return and the Company's weighting of the Value Line, S&P 500 Index, and historical data produced a balanced analytical approach to the CAPM (Exhs. ES-VVR-1, at 6; ES-VVR-Rebuttal-1, at 76; ES-VVR-5; ES-VVR-Rebuttal-5).[190] The Department will take these findings into consideration in our determination of the reasonable range below.

The Department previously has rejected attempts to adjust CAPM-derived ROE calculations for company size. D.P.U. 10-70, at 270-271; D.P.U. 08-35. In this proceeding, both the Attorney General and the Company produce several academic studies that support opposite conclusions on whether a size adjustment is warranted (Exhs. ES-VVR-1, at 63; ES-VVR-Rebuttal-1, at 86-88; AG-JRW-1, at 95-98). Further, the Company was unable to indicate whether investors consider the size-adjusted CAPM more reliable than the traditional CAPM, and the size-adjusted CAPM has not been adopted by a significant number of regulatory authorities for purposes of determining an allowed ROE (Exhs. ES-VVR-Rebuttal-1, at 88; DPU 64-2). Overall, the Department finds that the record evidence pertaining to the propriety of a size-adjustment is inconclusive. Therefore, the

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190 The Department notes that there are multiple accepted approaches employed by analysts to estimate the market return, and the Department's findings should not be construed as a determination that the Department will only accept NSTAR Electric's approach in future cases. D.P.U. 20-120, at 424 & n.211 ("Accepted approaches to estimating the market return include using realized market returns during a historical time period; applying the DCF model to a representative market index, such as the S&P 500; and surveying academic and investment professionals."). The Department will continue to evaluate the probative value of parties' CAPM analyses, variations thereof, and other ROE estimation models on a case-by-case basis.

Department will accord the Company's size-adjusted CAPM results limited weight in the determination of the reasonable range below.

The Department previously has rejected the empirical variation of the CAPM, as well. D.P.U. 10-70, at 271. We are not persuaded to deviate from our prior treatment of the empirical CAPM results because NSTAR Electric and the Attorney General provide contradictory expert testimony on the validity of the empirical CAPM, the Company was unable to indicate whether investors consider the empirical CAPM more reliable than the traditional CAPM, and only a small number of regulatory jurisdictions have relied on the empirical CAPM for rate setting purposes (Exhs. ES-VVR-1, at 63-66; ES-VVR-Rebuttal-1, at 79-85; AG-JRW-1, at 83-84; DPU 64-2). Therefore, the Department finds that it is appropriate to give limited weight to the Company's empirical CAPM results in our determination of the reasonable range below.

NSTAR Electric's CAPM results include flotation cost adjustments and leverage adjustments. For the same reasons discussed in Section XVI.D.3.b.i above, the Department rejects the Company's flotation cost adjustments and leverage adjustments. To remove the leverage adjustment, the Department applies a beta of 0.89 for the Electric Proxy Group and a beta of 0.86 for the Non-Regulated Proxy Group to the Company's updated CAPM schedules, which do not include the flotation cost adjustments (Exh. ES-VVR-Rebuttal-5).[191] The traditional CAPM results without flotation costs or leverage adjustments are

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[191] The Company applies the flotation cost adjustments in its testimony (Exh. ES-VVR-1, at 66).

10.50 percent for the Electric Proxy Group and 10.26 percent for the Non-Regulated Proxy Group (Exh. ES-VVR-Rebutal-5, at 1-4). The size-adjusted CAPM results without flotation costs or leverage adjustments are 10.99 percent for the Electric Proxy Group and 10.04 percent for the Non-Regulated Proxy Group (Exhs. ES-VVR-5, at 1-4; ES-VVR-Rebutal-5, at 1-4). The empirical CAPM results without flotation costs or leverage adjustments are 10.71 percent for the Electric Proxy Group and 10.53 percent for the Non-Regulated Proxy Group (Exhs. ES-VVR-5, at 1-4; ES-VVR-Rebutal-5, at 1-4).

The Attorney General presents a considerably different CAPM result of 7.70 percent (Exh. AG-JRW-1, at 70). The Attorney General places little weight on her CAPM results in her recommended ROE of 8.95 percent, which is 125 basis points higher than her CAPM results and equal to her highest DCF result (Exh. AG-JRW-1, at 33, 95). The Attorney General adopts the position that the results of the CAPM are less reliable because of the difficulty in determining a market risk premium (Exh. AG-JRW-1, at 3; Tr. 14, at 1467). Moreover, the Attorney General has given little to no weight to her CAPM results for many years (Tr. 14, at 1470). Considering the Attorney General's position that her CAPM result is unreliable, the Department places no weight on the results of the Attorney General's CAPM estimate in determining the appropriate ROE.

iii. RPM

The Department has repeatedly found that an equity risk premium analysis can overstate the amount of company-specific risk and, therefore, the cost of equity. D.P.U. 17-05-H at 11-12; D.P.U. 17-05, at 701-702; D.P.U. 10-114, at 322; D.P.U. 88-67

(Phase I) at 182-184. More specifically, the Department has long criticized the use of long-term corporate or public utility bonds yields because these instruments may have risks that could be diversified with the addition of common stock in investors' portfolios and, therefore, the RMP overstates the risk accounted for in the resulting cost of equity. D.P.U. 10-114, at 322; D.P.U. 90-121, at 171; D.P.U. 88-67 (Phase I) at 182-183. The Department has found that because the RPM is not a forward-looking approach, and is, instead, based on current market conditions, current U.S. Treasury bond yields are the appropriate measure of the risk-free rate in the RPM. D.P.U. 17-05-H at 12, citing D.P.U. 17-05, at 702-703; D.P.U. 13-75, at 319; D.P.U. 12-25, at 433.

Despite the Department's long-standing precedent, and the Company's acknowledgement that "U.S. Treasury securities remain the closest thing to a risk-free asset," the Company relies on projected corporate and public utility bond yields in its RPM (Exhs. ES-VVR-1, at 55, 69-70; ES-VVR-6; ES-VVR-Rebuttal-6). For these reasons, the Department finds that NSTAR Electric's RPM results of 10.66 percent and 11.37 percent are inconsistent with Department precedent and overstate the Company's required ROE (Exhs. ES-VVR-1, at 77; ES-VVR-Rebuttal-1, at 5). Therefore, the Department will not rely on the results of the Company's RPM in our determination of the reasonable range.

c. Authorized ROEs

The Attorney General, Acadia Center, and UMass all argue that the Department should determine NSTAR Electric's ROE based on national and regional allowed ROEs. As an initial matter, the Department reaffirms its finding that the purported upward trend in

ROEs granted in Massachusetts since 2012 is skewed by decisions at the start of that period that set the authorized ROE for those companies at the low-end of the reasonable range to account for deficient management practices (Exh. AG-JRW-1, at 20). D.P.U. 20-120, at 435-436. Moreover, while ROEs granted in other jurisdictions may be indicative of general overall trends, without knowing what quantitative and qualitative factors were considered in these other regulatory agencies, the Department is unable to conclude that these ROEs are appropriate for NSTAR Electric. D.P.U. 19-120, at 363; D.P.U. 17-170, at 282.

In addition, the record demonstrates that the national and regional authorized ROEs relied on by the intervenors come from a small sample of utility companies, and setting an allowed ROE based on averages from prior years would ignore the more recent change in market conditions (Exh. ES-VVR-Rebutal-1, at 18; Tr. 9, at 1004-1006; Tr. 14, at 1437-1443; RR-DPU-40, Att. at 1; RR-ES-1, Att.). Therefore, the Department places no weight on the ROE trends cited by the Attorney General and no weight on the ROEs proposed by Acadia Center and UMass.

d. Reasonable Range

When setting the range of reasonableness and then determining the allowed ROE, the Department is guided by the standard set forth in Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944) ("Hope") and Bluefield Waterworks and Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923) ("Bluefield"). The allowed ROE should preserve a company's financial integrity, allow it to attract capital on reasonable terms, and be comparable to returns on investments of

similar risk. Hope at 603; Bluefield at 692-693. The allowed ROE should be determined "having regard to all relevant facts." Bluefield at 692. Both quantitative and qualitative factors must be considered in determining an allowed ROE. D.P.U. 11-01/D.P.U. 11-02, at 424; D.P.U. 08-27, at 134-138; D.T.E. 02-24/25, at 229-231; D.P.U. 92-78, at 115; D.P.U. 89-114/90-331/91-80 (Phase I) at 224-225.

The use of empirical analyses in this context is not an exact science. D.P.U. 17-170, at 305; D.P.U. 15-155, at 377; see also Southern Bell Telephone and Telegraph Company v. Louisiana Public Utility Commission, 239 La. 175, 225 (1960) (ascertainment of a fair return in a given case is a matter incapable of exact mathematical demonstration); United Railways & Electric Company of Baltimore v. West, 280 U.S. 234, 250 (1930) (what will constitute a fair return is not capable of exact mathematical demonstration). Conducting a model-based ROE analysis requires the analyst to make a number of subjective judgments. Even in studies that purport to be mathematically sound and highly objective, crucial subjective judgments are made along the way and necessarily influence the end result. Western Massachusetts Electric Company, D.P.U. 18731, at 59 (1977). Each level of judgment to be made in these models contains the possibility of inherent bias and other limitations. D.T.E. 01-56, at 117; D.P.U. 18731, at 59.

While the results of analytical models are useful, the Department must ultimately use our own judgment of the evidence to determine an appropriate ROE. We must apply to the record evidence and argument with the considerable judgment and agency expertise necessary to determine the appropriate use of the empirical results. Our task is not a mechanical or

model driven exercise. D.P.U. 08-35, at 219-220; D.P.U. 07-71, at 139; D.T.E. 01-56, at 118; D.P.U. 18731, at 59; see also Boston Edison, 375 Mass. 1, 15 ("experience has shown that, in making a determination as elusive as estimating the cost of equity capital, 'mathematical formulas and rules of thumb are obsolete'" citing A.J.G. Priest, Principles of Public Utility Regulation 196 (1969)).[192]

The Department typically accords the most weight to the results of the DCF analysis in determining the reasonable range. D.P.U. 20-120, at 396; D.P.U. 17-05-H at 13. Based on our precedent and findings above, the Department finds that it is appropriate in this case to give the most weight to the mean DCF results for the Electric Proxy Group and the Attorney General Proxy Group, with a range of results from 8.50 percent to 9.20 percent (Exhs. ES-VVR-3, at 1, 2; ES-VVR-Rebuttal-3, at 1, 2; AG-JRW-1, at 55). Additionally, the Department finds that it is appropriate in this case to give more than limited weight to the Company's traditional CAPM results for the Electric Proxy Group of 10.50 percent because of the impact of changing interest rates on the DCF analysis, but not as much weight as the DCF because of the questionable assumptions underlying the CAPM. Further, based on the

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[192] As the Department stated in New England Telephone and Telegraph Company, D.P.U. 17441, at 9 (1973):

> Advances in data gathering and statistical theory have yet to achieve precise prediction of future events or elimination of the bias of the witnesses in their selection of data. Thus, there is no irrefutable testimony, no witness who has not made significant subjective judgments along the way to his conclusion, and no number that emerges from the welter of evidence as an indisputable "cost" of equity.

findings above with respect to the Non-Regulated Proxy Group and the CAPM variants, the Department finds it appropriate to give limited weight to the DCF results of the Non-Regulated Proxy Group, the size-adjusted CAPM and empirical CAPM results of the Electric Proxy Group, and the CAPM results of the Non-Regulated Group. Finally, because the Company's RPM results overstate the cost of equity and the Attorney General does not find her CAPM result to be reliable, the Department does not rely on those model results to determine the reasonable range. In our judgment, based on a review of the evidence presented in this case, the arguments of the parties, and the considerations set forth above, the Department finds that 9.40 percent to 10.00 percent, with a midpoint of 9.70 percent, is a reasonable range of ROEs for NSTAR Electric in this proceeding.

e. Market Conditions

In determining an allowed ROE within the reasonable range, the Department has previously considered evidence of the impact that changing market conditions will have on the quantitative ROE estimates. D.P.U. 17-05-H, at 15-16; D.P.U. 20-120, at 434-435; D.P.U. 19-120, at 357-362; D.P.U. 17-170, at 280-281. Projecting future market trends, whether interest rates, dividends and earnings growth, or GDP growth is difficult through surveys and modeling alike, and the Department will reject proposals to adjust cost of equity estimates without compelling evidence. D.P.U. 20-120, at 434-435; D.P.U. 17-170, at 280.

During this proceeding, the Federal Reserve Board indicated that it would shift to a more aggressive monetary policy to address the highest inflation rate seen in the past 40 years (Exh. ES-VRR-Rebuttal-1, at 21). In May 2022, the Federal Reserve Board raised

the Federal Funds target rate, indicated that it would institute further rate increases at subsequent meetings through the year, and stated that it would begin to reduce the size of its securities portfolio (Exh. ES-VRR-Rebuttal-1, at 29). From the end of 2021 to June 2022, the 30-year U.S. Treasury bond yield increased over 100 basis points, A-rated long-term utility bond yields increased by 150 basis points, and economists expect longer-term interest rates will continue to trend higher while the Company's rates are in effect (Exh. VVR-Rebuttal-1, at 23, 27-28; RR-DPU-40; RR-ES-1).

Based on the evidence, NSTAR Electric contends that the Department's decision must account for the recent increases in interest rates and inflation because as interest rates increase the cost of equity also increases (Company Reply Brief at 26, citing Tr. 14, at 1433, 1436-1439, 1441-1443; RR-DPU-40, Att. at 1; RR-ES-1). After review, the Department concludes that, although there is not a one-to-one correlation between an increase in long-term debt interest rates and the cost of equity, NSTAR Electric's argument that current market conditions will increase the cost of equity while the Company's rates are in effect is more persuasive than the Attorney General's argument that an adjustment is not warranted. Therefore, the Department will set the Company's allowed ROE in the upper half of the reasonable range to account for market conditions.

f. Qualitative Factors

The Department has found that both quantitative and qualitative factors must be taken into account in determining an allowed ROE. D.P.U. 11-01/D.P.U. 11-02, at 424; D.P.U. 08-27, at 134-138; D.T.E. 02-24/25, at 229-231; D.P.U. 92-78, at 115;

D.P.U. 89-114/90-331/91-80 (Phase I) at 224-225; see also Boston Edison, 375 Mass. 1, 11 ("The rate of return is not an immutable number, but rather one chosen from a range of reasonable rates and determined by the Department to be appropriate under the circumstances"); Boston Gas Company v. Department of Public Utilities, 359 Mass. 292, 305 (1971) (holding that the Department was not required to rely on any particular group of comparative figures to estimate ROE, as "[s]uch comparisons usually can be no more than general guides to be appraised by the [Department] in considering the fairness of rates . . . ."). It is both the Department's long-standing precedent and accepted regulatory practice[193] to consider qualitative factors such as management performance and customer service in setting a fair and reasonable ROE. See, e.g., D.P.U. 09-39, at 399-400 (considered company's assistance to municipal and public safety officials to restore power to the customers of another company following a severe ice storm in setting allowed ROE); D.P.U. 12-86, at 257-258 (deficiencies regarding affiliate transactions and selection of rate

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[193] See, e.g., In re Citizens Utilities Company, 171 Vt. 447, 453 (2000) (general principle that rates may be adjusted depending on the adequacy of the utility's service and the efficiency of its management); Gulf Power Company v. Wilson, 597 So.2d 270, 273 (1992) (regulator was authorized to adjust rate of return within reasonable range to adjust for mismanagement); Wisconsin Public Service Corp. v. Citizens' Utilities Board, Inc., 156 Wis.2d 611, 616 (1990) (prudence is a factor regulator considers in setting utility rates and can affect the allowed ROE); US West Communications, Inc. v. Washington Utilities & Transportation Commission, 134 Wash.2d 74, 121 (1998) (a utility commission may consider the quality of service and the inefficiency of management in setting a fair and reasonable rate of return); North Carolina ex rel. Utilities Commission v. General Telephone Company of the Southeast, 285 N.C. 671, 681 (1974) (the quality of the service rendered is, necessarily, a factor to be considered in fixing the just and reasonable rate therefore).

case consultants warranted ROE at lower end of reasonable range). With respect to a company's performance, the Department has determined that where a company's actions have had the potential to affect ratepayers or have actually done so, the Department may take such actions into consideration in setting the ROE. D.P.U. 11-01/D.P.U. 11-02, at 424; D.T.E. 02-24/25, at 231; D.P.U. 85-266-A/271-A at 6-14. Thus, the Department may set ROEs that are at the higher end or lower end of the reasonable range based on above-average or subpar management performance and customer service.

The Department has reviewed the record evidence and finds that the Company has met or exceeded its service quality standards and benchmarks (Exh. ES-CAH-DPH-1, at 111). The Company has also demonstrated strong performance with respect to reliability and storm restoration (Exh. ES-CAH-DPH-1, at 112-114). The Department, however, also notes that the Company scaled back its manhole inspections in recent years and has experienced an uptick in manhole disturbance events since its last rate case, particularly in 2018, 2019, and 2022 (Tr. 12, at 1303; RR-DPU-45). In response to these events, the Company has undertaken steps to address manhole disturbances, including expanding its replacement of manhole covers with energy release cover (Tr. 12, at 1303-1309; RR-DPU-46). The Department finds, while NSTAR Electric should continue to take proactive steps to maintain an adequate level of manhole safety inspections and continue to install new monitoring and safety technologies, the Company's handling of manhole safety does not constitute a systemic service quality shortcoming. The Department also notes the absence of any evidence of systemic service quality shortcomings that warrant a downward

adjustment to NSTAR Electric's allowed ROE. Based on the record and balancing the Company's service quality record, the Department concludes that NSTAR Electric's qualitative factors justify an allowed ROE above the midpoint of the reasonable range.

g. Investment Risk

The Attorney General states, and the Department has held, that credit ratings provide investors with relevant information with respect to a company's risk level (Exh. AG-JRW-1, at 6, 24). D.P.U. 20-120, at 396. Nonetheless, debt and equity securities are exposed to different risks and, therefore, require different returns. D.P.U. 20-120, at 396. Therefore, while credit ratings alone do not reflect the full range of risk borne by equity investors, it would be reasonable for investors to consider a company's credit rating in the assessment of investment risk. D.P.U. 20-120, at 396. NSTAR Electric has not provided any persuasive evidence that investors would not rely on credit ratings in the assessment of investment risk, and we reaffirm our previous findings.

The Attorney General also contends that NSTAR Electric has lower investment risk because the Company's equity ratio is higher than the average equity ratios of the proxy groups (Exh. AG-JRW-1, at 30). Credit rating agencies take a company's capital structure into account in their ratings (see e.g., Exh. AG-1-11, Att. (a) at 18, Att. (d) at 7 (Supp.) (liquidity analysis includes company's management of its capital structure)). Therefore, the Department concludes that separate adjustments to the allowed ROE for NSTAR Electric's credit rating and NSTAR Electric's capital structure would overstate the impact of the Company's capital structure on its investment risk.

The Department has found that a PBR plan's more timely and flexible cost recovery serves to reduce a company's risks while a stay-out provision as part of a PBR plan may increase a company's risks in meeting its financial requirements. D.P.U. 20-120, at 431-432; D.P.U. 19-120, at 405-405; D.P.U. 18-150, at 494-495; D.P.U. 17-05, at 710-711. The Department has established in this Order a PBR plan specific to the Company. As described Section IV.D.5 above, the PBR plan allows NSTAR Electric to implement annual rate adjustments to provide revenue support for post-test-year expense increases and capital investments and includes an exogenous cost provision. The Department, however, also has approved a five-year stay-out provision (see Section IV.D.5.a. above).

Above, the Department found that NSTAR Electric's ROE should be in the upper half of the reasonable range because of extraordinary market conditions and the Company's qualitative factors. Based on a balancing of the provisions of the PBR plan approved in this Order and NSTAR Electric's credit rating relative to the proxy groups, the Department finds that NSTAR Electric's allowed ROE should be at the lower-end of the upper half of the reasonable range.

4. Conclusion

Based on a review of the evidence presented in this case, the arguments of the parties, and the considerations set forth above, the Department finds that an authorized ROE of 9.80 percent is within a reasonable range of rates that will preserve NSTAR Electric's financial integrity, will allow it to attract capital on reasonable terms and for the proper

discharge of its public duties, will be comparable to earnings of companies of similar risk and, therefore, is appropriate in this case.[194] In making this finding, the Department has exercised its expertise and informed judgment and has considered both qualitative and quantitative aspects of the parties' various methods for determining the Company's ROE, as well as the arguments of and evidence presented by the parties in this proceeding.

XVII. RATE STRUCTURE

A. Rate Structure Goals

Rate structure defines the level and pattern of prices charged to each customer class for its use of utility service. The rate structure for each rate class is a function of the cost of serving that rate class and how rates are designed to recover the cost to serve that rate class. The Department has determined that the goals of designing utility rate structure are to achieve efficiency and simplicity as well as to ensure continuity of rates, equity and fairness between rate classes, and corporate earnings stability. D.P.U. 19-120, at 409; D.P.U. 17-170, at 313; G.L. c. 25, § 1A.

Efficiency means that the rate structure should allow a company to recover the cost of providing the service and provide an accurate basis for consumers' decisions about how to best fulfill their needs. The lowest-cost method of fulfilling consumers' needs should also be the lowest-cost means for society as a whole. Thus, efficiency

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194 In setting this ROE, the Department has taken into consideration the amount of the storm fund assessment paid by the Company pursuant to G.L. c. 25, § 18. See Fitchburg Gas and Electric Light Company et al. v. Department of Public Utilities, 467 Mass. 768 (2014).

in rate structure means it is cost based and recovers the cost to society of the consumption of resources to produce the utility service. D.P.U. 19-120, at 409; D.P.U. 17-170, at 313-314.

The Department has determined that a rate structure achieves the goal of simplicity if it is easily understood by consumers. Rate continuity means that changes to rate structure should be gradual to allow consumers time to adjust their consumption patterns in response to a change in rate structure. In setting rates, the Department balances fairness and equity. Fairness means that each customer class should pay more than the costs of serving that class. Equity, in rate structure, means that the Department considers affordability among customers in establishing rate classes and when establishing discount rates for low-income customers.[195] Earnings stability means that the amount a company earns from its rates should not vary significantly over a period of one or two years. D.P.U. 19-120, at 409-410; D.P.U. 17-170, at 314; G.L. c. 25, § 1A.

There are two parts to determining rate structure: cost allocation and rate design. The cost allocation step assigns a portion of a company's total costs to each rate class through an embedded ACOSS. The allocated cost of service represents the cost of serving each rate class at equalized rates of return ("EROR") given the company's level of total costs. D.P.U. 19-120, at 410; D.P.U. 17-170, at 314.

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[195] The Department addresses the low-income discount rate and compliance with G.L. c. 164, § 141 in Section XVII.C.3 below.

There are four steps to develop an ACOSS. The first step is to functionalize costs. In this step, costs are associated with the production, transmission, or distribution function of providing service. The second step is to classify expenses in each functional category according to the factors underlying their causation. Thus, the expenses are classified as demand-, energy-, or customer-related. The third step is to identify an allocator that is most appropriate for costs in each classification within each function. The fourth step is to allocate all of a company's costs to each rate class based upon the cost groupings and allocators chosen and then to sum for each rate class the costs allocated in order to determine the total costs of serving each rate class at EROR. D.P.U. 19-120, at 410; D.P.U. 17-170, at 315.

The results of the ACOSS are compared to normalized revenues billed to each rate class in the test year. If these amounts are reasonably comparable, then the revenue increase or decrease may be allocated among the rate classes to equalize the rates of return and ensure that each rate class pays the cost of serving it. If, however, the differences between the allocated costs and the test-year revenues are significant, then, for reasons of continuity, the revenue increase or decrease may be allocated so as to reduce the difference in rates of return, but not to equalize the rates of return in a single step. D.P.U. 19-120, at 411; D.P.U. 17-170, at 315.

As the previous discussion indicates, the Department does not determine rates based solely on the results of an ACOSS, but also explicitly considers the effect of its rate structure decisions on the amount that customers are billed. For instance, the

pace at which fully cost-based rates are implemented depends, in part, on the effect of the changes on customers. In addition, considering the goal of equity, the Department also has ordered the establishment of special rate classes for certain low-income customers and has considered the effect of such rates and rate changes on low-income customers.[196] D.P.U. 19-120, at 411; D.P.U. 17-170, at 316; G.L. c. 25, § 1A. To reach fair decisions that encourage efficient utility and consumer actions, the Department's rate structure goals must balance the often-divergent interests of various customer classes and prevent any class from subsidizing another class unless a clear record exists to support such subsidies – or unless such subsidies are required by statute, e.g., G.L. c. 164, § 1F(4)(i) (discounted low-income rates). In addition, G.L. c. 164, § 94I ("Section 94I") requires the Department, in each base distribution rate proceeding, to design rates based on EROR by customer class as long as the resulting impact for any one customer class is not more than ten percent.[197] The

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[196] By enacting G.L. c. 164, § 1F(4)(i), the Legislature substantially adopted the Department's structure, eligibility requirements, and rules governing discounted rates for low-income customers of electric and gas companies.

[197] Section 94I provides:

> In each base distribution rate proceeding conducted by the [D]epartment under Section 94, the [D]epartment shall design base distribution rates using a cost-allocation method that is based on equalized rates of return for each customer class; provided, however, that if the resulting impact of employing this cost-allocation method for any [one] customer class would be more than [ten] percent, the [D]epartment shall phase in the elimination of any cross subsidies between rate classes on a revenue neutral basis phased in over a reasonable period as determined by the [D]epartment.

Department reaffirms its rate structure goals that are designed to result in rates that are fair, equitable, and cost-based and enable customers to adjust to changes. D.P.U. 19-120, at 412; D.P.U. 17-170, at 316-317.

The second part of determining the rate structure is rate design. The level of the revenues generated by a given rate structure is governed by the cost allocated to each rate class in the cost allocation process. The pattern of prices in the rate structure, which produces the given level of revenues, is a function of the rate design. The overarching requirement for rate design is that a given rate class should produce sufficient revenues to cover the cost of serving the given rate class and, to the extent possible, meet the Department's rate structure goals discussed above. D.P.U. 19-120, at 412; D.P.U. 17-170, at 317.

B. Allocated Cost of Service Study and Rate Design

1. Introduction

NSTAR Electric currently consists of four legacy operating companies. They are Boston Edison Company ("Boston Edison"), Cambridge Electric Light Company ("Cambridge Electric Light"), Commonwealth Electric Company ("Commonwealth Electric") and WMECo (Exh. ES-RDC-1, at 2). In its previous base distribution rate case filing, D.P.U. 17-05, the Company filed a proposal to consolidate and align the rates and rate classes associated with its Boston Edison, Cambridge Electric Light, Commonwealth Electric, and WMECo operating companies into two sets of rates; Boston Edison, Cambridge Electric Light, and Commonwealth Electric rates comprised the EMA rate classes, and the WMECo

rates comprised the WMA rate classes (Exh. ES-RDC-1, at 2-3). The proposal envisioned the consolidation of existing customers under a single set of tariffs for EMA and WMA territories, with separate distribution pricing for customers in EMA and in WMA, but consolidated transmission rates and certain reconciling rates (Exh. ES-RDC-1, at 3). The Department allowed certain components of NSTAR Electric's previous rate consolidation and alignment plan, but we did not accept the Company's entire plan and directed the Company to undertake a gradual implementation of a consolidated and aligned rate design for general service customers to ameliorate large bill impacts without a multi-year subsidy plan, to improve unclear tariffs, and to comply with Section 94I (Exh. ES-RDC-1, at 4). D.P.U. 17-05, at 96. Moreover, the Department encouraged the Company to provide for a more gradual plan for consolidation and alignment either through its next general rate filing or through a revenue neutral rate design filing(s) (Exh. ES-RDC-1, at 4). D.P.U. 17-05-B at 96.

In the current filing, the Company proposes to streamline and align its rate offerings for possible future consolidation or simplification (Exh. ES-RDC-1, at 5). The Company's proposal addresses the ACOSS, rate consolidation, distribution rate design, transmission rate allocation and design, reconciliation rate allocation factors, and revised LED streetlight pricing. Each of these areas is addressed below.

2. ACOSS

a. Company Proposal and Updates

NSTAR Electric performed an ACOSS that assigns or apportions, based on

cost-causation principles, the Company's total cost of service to each rate class (Exh. ES-ACOS-1, at 5). NSTAR Electric developed its ACOSS using five main steps (Exh. ES-ACOS-1, at 6-7). First, the Company functionalized its rate base and costs into the main functions required to provide electricity to customers (Exh. ES-ACOS-1, at 7). NSTAR Electric followed the functional categories contained in the FERC Uniform System of Accounts ("USOA-FERC"),[198] which are production, transmission, distribution, customer services, and administrative and general (Exh. ES-ACOS-1, at 7).

Second, the Company performed a levelization of costs, which involves the disaggregation of costs by customers' voltage service levels, or voltage "splits" (Exh. ES-ACOS-1, at 7). The service level designations are a means of identifying and associating investment and expenses with customers and their loads at established points of service (Exh. ES-ACOS-1, at 7). The levelization is performed because typically, the lower the voltage level of service required by the customer, the greater the cost to provide service (Exh. ES-ACOS-1, at 7). The Company applied voltage splits using an analysis developed for the marginal cost study submitted in the Company's last base distribution rate case, D.P.U. 17-05 (Tr. 8, at 789). The marginal cost study was prepared in 2015 and encompassed year-by-year plant additions by FERC account for the 30-year period of 1986 through 2015 (Exh. CLC-ES 3-6, Att. (h) (Supp. 2)).

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198 18 CFR Part 1.

Third, the Company classified the functionalized and levelized costs into three primary "cost-causative" characteristics of investment and expenses (Exh. ES-ACOS-1, at 8). Each type of cost varies in response to changes in one or more of three categories: energy consumed (kWh), peak demand (kilowatt ("kW")), and number of customers (Exh. ES-ACOS-1, at 8).

Next, once the costs are classified, they were assigned to the group or groups of customers responsible for those costs (Exh. ES-ACOS-1, at 8). Finally, in the fifth step, the Company developed allocators to allocate common costs (costs that cannot be assigned to specific customers) among the rate groups (Exh. ES-ACOS-1, at 8).

The Company used 24 rate classes in the ACOSS study (Exh. ES-ACOS-1, at 8). The rate classes were mostly denominated as Residential and General Service, with differentiation of the former group by whether the customer has electric space heating, and of the latter group by legacy service area and by size, as defined by billing demand (Exh. ES-ACOS-1, at 8). Additional rate classes included two sets of streetlight customers, differentiated by equipment ownership (i.e., Company or customer) (Exh. ES-ACOS-1, at 8).

As discussed in further detail below, the Company proposed to consolidate some rate classes within its legacy service areas and to create improved alignment of rate class definitions across the service areas (Exh. ES-ACOS-1, at 9). The Company states that in implementing the consolidation and alignment, the ACOSS faced the challenge that the rate classes defined for the study are prospective, using rate class definitions submitted for approval in this filing (Exh. ES-ACOS-1, at 9). Several of the definitions differ from their

predecessors, so the Company estimated customer numbers, peak demand, and energy consumption for the newly defined classes based upon numbers for the current classes (Exh. ES-ACOS-1, at 9).

On May 13, 2022, the Company filed its first revised ACOSS and rate design exhibits (Exhs. ES-ACOS-2 through ES-ACOS-5 (Rev. 1); ES-RDC-2 through ES-RDC-5 (Rev. 1); ES-RDC-7 (Rev. 1)). In these revised exhibits, the Company: (1) updated test-year billing determinants from 2020 to 2021 quantities; (2) updated the test-year revenue requirement to reflect the Company's revisions in its April 22, 2022 filing; (3) restricted revenue allocations to residential customers per the Department's directive in D.P.U. 20-120, at 485, and as discussed in the Company's prefiled testimony; and (4) revised the low-income discount from 36 percent to 42 percent (Exhs. ES-RDC-1, at 36-39; ES-ACOS-2 through ES-ACOS-5 (Rev. 1); ES-RDC-2 through ES-RDC-5 (Rev. 1); ES-RDC-7 (Rev. 1); LI-ES 1-4; LI-ES 1-5).

On July 1, 2022, the Company filed a second revised ACOSS and rate design exhibits to reflect another revenue requirement update filed earlier on June 24, 2022 (Exhs. ES-ACOS-2 through ES-ACOS-5 (Rev. 2); ES-RDC-2 through ES-RDC-5 (Rev. 2); ES-RDC-7 (Rev. 2)). In these revised exhibits, the Company: (1) corrected customer counts related to the existing WMA Rate T-4, and proposed WMA Rates G-1 and T-4; (2) updated primary and secondary voltage splits; and (3) updated the weighting favors for customer assistance and sales (Exhs. ES-ACOS-2 through ES-ACOS-5 (Rev. 2); ES-RDC-2 through ES-RDC-5 (Rev. 2); ES-RDC-7 (Rev. 2); CLC-ES 3-6 Att. (h) (Supp. 3)). Regarding the

voltage splits, the Company applied a new method to determine voltage level line items based on more recently calculated 2020 values and provided an explanation of how the primary voltage level line items were determined (Exh. CLC-ES 3-6, Att. (h) (Supp. 3); Tr. 8, at 788-792). As noted above, in its initial ACOSS, the Company applied values used in its previous rate filing, D.P.U. 17-05 (Exh. CLC-ES 3-6, Att. (h) (Supp. 2); Tr. 8, at 789).

On July 22, 2022, in response to a record request issued at the evidentiary hearings by Cape Light Compact, the Company updated its second revised ACOSS (RR-CLC-3). In this response, the Company provided (i) an explanation and supporting documentation for the classification criteria used in the engineering assessment to classify retirement units for each plant account listed in Exhibit CLC-ES-3-6 Att. (h) (Supp. 3), which had been filed on July 12, 2022, and (ii) an update to voltage split information used in second revised ACOSS filed on July 1, 2022. As part of its response to Record Request CLC-3, the Company updated its second revised ACOSS, reflecting values from Exhibit CLC-ES-3-6 Att. (h) (Supp. 3), and inclusive of corrections to errors identified while responding to Record Request CLC-4 through Record Request CLC-6 (RR-CLC-3, Att. (d)).

On September 27, 2022, the Company filed a third revised ACOSS and rate design exhibits to reflect another revenue requirement update, which was filed on the same day (Exhs. ES-ACOS-2 through ES-ACOS-5 (Rev. 3); ES-RDC-2 through ES-RDC-5

(Rev. 3)).[199] Additionally, in this version of the ACOSS, the Company incorporated all of the changes it identified in responding to Record Request CLC-3 as discussed above (i.e., provided documentation and explanation for the classification criteria used in the engineering assessment to classify retirement units for each plant account, further updated voltage splits as provided in its second revised ACOSS filed on July 1, 2022, and corrected errors identified while responding to other record requests) (RR-CLC-3, Att. (d); RR-CLC-4; RR-CLC-5; RR-CLC-6; see Exh. CLC-ES 3-6, Att. (h) (Supp. 3)).

b. Positions of the Parties

i. Attorney General

The Attorney General challenges certain methods employed by the Company regarding cost allocation. Specifically, the Attorney General argues that the change of allocations between the first revised and second revised ACOSSs and between the second revised ACOSS and the Company's response to Record Request CLC-3, are significant and provided limited opportunity for Department and intervenor review (Attorney General Brief at 157-158). The Attorney General also asserts that NSTAR Electric's data is deficient, and that the Company does not have a complete understanding of the basis for the updated voltage allocations being applied in the most recent versions of the ACOSS (Attorney General Brief at 155, 158).

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199 The final revenue requirement shown in Exhibit ES-REVREQ-2 is slightly lower than the revenue requirement used to develop the rate design exhibits due to the timing of the debt issuance reflected in the cost of service.

The Attorney General asserts that the Department should require NSTAR Electric to use the original filed voltage splits reflective of the values used in its last base distribution rate case (Attorney General Brief at 158). The Attorney General also asserts that the Department should require that the Company include a comprehensive and thorough distribution plant voltage analysis as part of its initial filing in its next base distribution rate case (Attorney General Brief at 158-159).

ii. Cape Light Compact

Cape Light Compact supports the Company's corrections in its second revised ACOSS filing as well as the ACOSS filed as the Company's response to Record Request CLC-3, Att. (d) (CLC Brief at 18). Cape Light Compact also agrees with the updates made to reflect corrected primary and secondary share assignments as well as the change in method used by the Company to classify primary and secondary voltage splits using 2020 data (CLC Brief at 19, 21; CLC Reply Brief at 5). In addition, Cape Light Compact agrees with the changes to weighting factors updated for customer assistance and sales in the Company's second revised ACOSS (CLC Brief at 22).

Cape Light Compact, however, disagrees with the Company's use of amalgamation of primary shares for accounts 364 and 365, and for accounts 366 and 367 (CLC Brief at 23; CLC Reply Brief at 9-10). Cape Light Compact argues that the Company's use of amalgamation to assign weights to primary and secondary customers for these accounts should be rejected because it results in arbitrary cost allocation and unjustified cost shifts among rate classes (CLC Brief at 23; CLC Reply Brief at 9-10). Cape Light Compact also

contends that amalgamated shares do not result in accurate cost allocation, are entirely unnecessary to avoid volatility between rate cases, and result in unjustified cost shifts between rate classes (CLC Brief at 23, 26-27). Cape Light Compact asserts that the Department should reject the Company's amalgamated shares for accounts 364 and 365, and for accounts 366 and 367, and recommends that the Department direct the Company to produce an updated ACOSS model to reflect this change (CLC Brief at 27-28).

iii. Company

NSTAR Electric rejects the notion that the data used to develop the voltage splits is deficient, and the Company contends that the categorization of its assets begins with the WAM System where individual work orders are created (Company Brief at 423). NSTAR Electric asserts that completed work orders that have met all work-management requirements are then classified based on a combination of guidance from the Company's Capital vs. Expense Policy ("APS#8"), the USOA-FERC, and the Company's retirement unit manual (Company Brief at 423, citing RR-CLC-3, Atts. (a) & (b); RR-CLC-4, Att. 4(c)). NSTAR Electric also claims that APS#8 lays out guidelines as to when assets may be capitalized, and the USOA-FERC and Company's retirement unit manual illustrate the types of assets that are capitalized in each plant account (Company Brief at 423, citing RR-CLC-3). According to NSTAR Electric, however, voltage information is not available in these plant records so Company engineers must use their knowledge and expertise to review the listed retirement units in each account in assessing their application for primary versus secondary service (Company Brief at 423, citing RR-CLC-3). Finally, the Company asserts that in its review

of assets in accounts 365-368 it found erroneous assignments, and that it corrected these errors in the ACOSS model filed in response to Record Request CLC-3 (Company Brief at 424, citing RR-CLC-3 through RR-CLC-6).

NSTAR Electric also affirms its decision to use updated voltage allocations of distribution plan assets booked to FERC Accounts 366 and 367 in its second and third revised ACOSS (Company Brief at 422-423). The Company argues that its late-stage voltage split allocation update was appropriate, as it was first filed in response to a record request issued by Cape Light Compact and was based on the test year rather than extending the time series analysis or continuing using the historical method to allocate voltage splits as approved in D.P.U. 17-05 (Company Brief at 423, citing RR-CLC-2; RR-CLC-3).

Further, NSTAR Electric argues that its use of amalgamation of primary shares is consistent with Department precedent, in particular the Company's previous ACOSS approved in D.P.U. 17-05 (Company Brief at 418, 422; Company Reply Brief at 56-57). The Company also contends that using amalgamated shares is supported by the National Association of Regulatory Utility Commissioners ("NARUC") Cost of Service manual, particularly for Accounts 366 and 367 (Company Brief at 418, 422, citing NARUC manual at 91). Further, the Company asserts that Account 365 represents overhead conductors and devices that must be attached to the poles and towers recorded in Account 364, and therefore the primary voltage shares for those two accounts are set equal (Company Brief at 422, citing D.P.U. 17-05). In addition, the Company argues that it would be inappropriate to classify all poles as primary because poles that carry both primary and secondary lines are often

classified as primary, while poles that carry secondary lines are classified as secondary (Company Brief at 422, citing D.P.U. 17-05). Therefore, NSTAR Electric concludes that changing the Company's accounting and separating the calculations for Accounts 364 and 365 would be inconsistent with Department precedent (Company Brief at 422, citing D.P.U. 17-05).

c. Analysis and Findings

First, the Department addresses the Company's updated ACOSS filings. The Company explained during evidentiary hearings the significance of accurately classifying assets to the correct account and between primary service and secondary service customers:

> The primary and secondary splits occur for the distribution asset accounts, or rate-base accounts, typically 364 to 368 under the FERC accounting system. And the purpose of the splits is to ensure that costs are allocated to customer groups that actually make use of the assets. So, one would want a primary-level customer not to be responsible for secondary-level costs. So, for each of these main distribution accounts, 364 to 368, the effort is made in typical rate cases and in this one to determine the share of assets that serves primary only and the share of assets that serves secondary or primary and secondary.
> (Tr. 8, at 783).

The Company, therefore, acknowledges that it is charged with tracking costs to each distinct account, and accurately splitting the shares of those costs between primary service and secondary service customers.

For concerns related to continuity and fairness, the Company should have a clear process by which it assigns and allocates costs across accounts and customers. The Department and intervenors need the opportunity in a base distribution rate case to examine the procedures and data behind the calculations. In the instant case, however, the Company,

without explanation or support, filed, concurrent with its submission, new allocations and voltage splits in its second ACOSS, response to Record Request CLC-3, and third revised ACOSS, after the discovery period for this case closed. While the Company states that the values used in its revised ACOSSs are based on data that was not previously available (Tr. 8, at 790), the Department cannot find that such data has been adequately reviewed for consistency and accuracy. Absent clear, replicable processes or procedures documented to explain how the Company approaches the assignment and allocation of costs to primary service and secondary service customers for these accounts, the Department directs the Company to utilize the costs and voltage splits used in its initial filing (i.e., the data used in D.P.U. 17-05) in its current cost allocation process. In addition, the Department directs NSTAR Electric to undertake a review of the processes used to assign costs to individual accounts and primary service and secondary service customers and to report on the results of the review in the Company's initial filing in its next base distribution rate case.

Cape Light Compact expresses concerns with the Company's use of amalgamation for Accounts 364 and 365, as well as for Accounts 366 and 367, when assigning the revenue requirement associated with those accounts to primary service and secondary service customer rate classes (CLC Brief at 23; CLC Reply Brief at 9-10). Cape Light Compact argues that the Company's use of amalgamation to assign weights to primary and secondary customers for these accounts should be rejected because it results in arbitrary cost allocation and unjustified cost shifts among rate classes (CLC Brief at 23; CLC Reply Brief at 9-10). The Company does not claim that it is incapable of producing costs by account, or incapable

of properly assigning them by voltage split; it simply contends that such practice was used in the prior rate filing, D.P.U. 17-05, and that share combinations are supported by the NARUC Cost of Service manual (Company Brief at 418, 422). Absent a lack of data, information, or other rationale pertaining to the actual data available, the Department is not persuaded that the continued amalgamation of Accounts 364 and 365, as well as Accounts 366 and 367, is necessary. The Company has distinct cost data for these accounts, which, by definition, will lead to more accurate cost allocation as it will accurately apply the principle of cost causation (Tr. 8, at 793). Further, we find that the Company has not provided analysis or sufficient information to convince us that amalgamation of voltage splits is necessary to avoid rate volatility (Exh. CLC-ES 3-6, Att. (h) (Supp. 2)). Additionally, our prior approval of amalgamating certain costs does not preclude us from reaching a different finding here, particularly where amalgamation was not raised as a contested issue in D.P.U. 17-05 and, as we do here, we explain the reason for our decision. United Automobile Workers v. National Labor Relations Board, 802 F.2d 969, 974 (1986); D.P.U. 20-120, at 325 n.158. Therefore, the Department directs the Company not to use amalgamation of accounts for which distinct detail exists and to file a revised ACOSS in compliance with this directive.

3. Rate Consolidation and Revenue Allocation

a. Introduction

The Company proposes to eliminate obsolete rate offerings, partially consolidate and align tariffs, and simplify existing rate designs (Exh. ES-RDC-1, at 5). In addition, the

Company proposes to refine certain tariff definitions, introduce a non-demand small C&I offering within Rate G-1, and eliminate or alter seasonal and time-of-use ("TOU") rates (Exh. ES-RDC-1, at 5).

The current rate groupings for C&I customers, which are born from legacy classifications, are classified differently, and assigned significantly different rate designs, which the Company states makes it difficult to consolidate rate classes without triggering unacceptable bill impacts (Exh. ES-RDC-1, at 17). For example, Cambridge Electric Light Rate G-2 includes customers with monthly demands greater than 100 kW, and these customers are categorized as medium/large general service customers; however, in WMA, customers with monthly demands up to 349 kW are categorized as small general service customers (Exh. ES-RDC-1, at 17). As the Company pursues consolidation among its legacy rate classes, the categorization of various classes is significant to ensure that customers are treated equitably across the Company's entire operating territory (Exh. ES-RDC-1, at 17).

NSTAR Electric states that it is not proposing entirely new rate classes, rather it is proposing new names and alternative definitions for some rate classes (Exh. ES-RDC-1, at 21). To establish consistency and simplicity, the Company proposes to establish: (1) Rate G-1 as its rate class for customers with demand annually equal to or less than 100 kW; (2) Rate G-2 for customers with demand annually greater than 100 kW; (3) Rate G-3 for customers with large loads who frequently receive service at the primary voltage level; and (4) WMA Rate T-5, which is unique to WMA and which serves a small number of customers (Exh. ES-RDC-1, at 21).

For small C&I customers, the Company proposes to introduce a common threshold throughout its service territory (Exh. ES-RDC-1, at 19). Currently, the demand threshold for Boston Edison Rate G-1 is 10 kW, Cambridge Electric Light Rate G-1 and Commonwealth Electric Rate G-1 is 100 kW, and WMA Rate G-0 is 349 kW (Exh. ES-RDC-1, at 19). The Company states that the most efficient and least disruptive way to establish consistency among customers is to adopt one of the existing demand thresholds (Exh. ES-RDC-1, at 19). Therefore, the Company chose a 100-kW demand threshold for small C&I customers (Exh. ES-RDC-1, at 19).[200]

The Company also proposes to introduce a new non-demand offering for small C&I customers under the proposed G-1 rate class (Exh. ES-RDC-1, at 5, 41). NSTAR Electric states that the non-demand offering and the Company's general attention toward energy-only rates for small C&I customers are in response to the evolving nature of rate design considering public policy, technology, and ever-shifting customer uses, such as electric vehicle charging (Exh. ES-RDC-1, at 42).

Further, the Company proposes to eliminate seasonal pricing in the Boston Edison service area, except for customers taking service under Rate T-1, because such pricing potentially results in higher bills in the summer through a combination of higher rates and

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200 The Company also proposes to allow customers to take service on Rate G-2 if their average monthly demand over 12 consecutive months – rather than their monthly demand – exceeds 100 kW (RR-TEC-1).

usage (Exh. ES-RDC-1, at 41-42). The Company states that elimination of the summer price differential will provide some rate relief to customers (Exh. ES-RDC-1, at 41-42).

The Company also proposes that rate classes and customers falling into the medium general service category that build on the definitions established for small general service rate classes and the existing definitions for large general service rate classes (Exh. ES-RDC-1, at 19-20). As such, customers using more than 100 kW annually that are not otherwise assigned to a large general service rate class are considered medium general service customers (Exh. ES-RDC-1, at 20). The Company states that it is not proposing revisions to rate class definitions in the large general service category at this time, as the legacy class differences are not as significant as those seen in the small general service group (Exh. ES-RDC-1, at 20).

More specifically, the Company proposes: (1) expanding the Boston Edison Rate G-1 offering from 10 kW to 100 kW; (2) moving the current Boston Edison Rate G-2 customers to either the expanded Boston Edison Rate G-1or Boston Edison Rate T-2; (3) renaming the Boston Edison Rate T-2 as Boston Edison Rate G-2 and changing the availability from greater than ten kW to greater than 100 kW; (4) combining Cambridge Electric Light Rates G-0, G-1, and G-4 into Cambridge Electric Light Rate G-1 that encompasses customers with monthly demand up to 100 kW, and cancel Cambridge Electric Light Rates G-0 and G-4; (5) consolidating Commonwealth Electric Rate G-5 customers into new Commonwealth Electric Rate G-1; (6) closing Commonwealth Electric Rate G-7; (7) consolidating WMA Rate G-0, WMA Rate T-0, WMA Rate G-2, and WMA Rate T-4 with monthly demand up to 100 kW

into a new WMA Rate G-1; (8) moving the remaining WMA Rate G-0, WMA Rate T-0, and WMA Rate G-2 customers with demand greater than 100 kW to revised WMA Rate G-2 with monthly demand greater than 100 kW and up to 349 kW, thereby eliminating WMA Rate T-0; (9) limiting WMA Rate T-4 to monthly demand greater than 100 kW and up to 349 kW; and (10) renaming WMA Rate T-2 as WMA Rate G-3 (Exh. ES-RDC-1, at 20, 71-72).

The Company also proposes to eliminate use of the declining block rate/demand charge design and, where appropriate, that the rate design would be replaced by a simple customer charge/energy charge design with no demand charge or demand ratchets (Exh. ES-RDC-1, at 8-9). The Company states that elimination of the current energy block design will improve the price signal to ratepayers of the cost of energy at the margin (Exh. ES-RDC-1, at 42). In addition, the Company proposes to maintain block demand charges, or demand ratchets only on those rates where there are continuity concerns (Exh. ES-RDC-1, at 10-11).

The Company states that currently effective optional TOU rate offerings have been closed for new customer enrollment, with the exception for Cambridge Electric Light Rate G-4, Commonwealth Electric Rate G-7, WMA Rate T-0, and WMA Rate T-4 (Exh. ES-RDC-1, at 11). The Company proposes to transfer Cambridge Electric Light Rate G-4 customers to the proposed Cambridge Electric Light Rate G-1, close Commonwealth Electric Rate G-7, and consolidate WMA Rate T-0 customers into proposed

WMA Rate G-1 (Exh. ES-RDC-1, at 11). In addition, the Company proposes to redefine WMA Rate T-4 (Exh. ES-RDC-1, at 11).

Finally, the Company states that it is not introducing new TOU energy rates at this time, as it asserts that volumetric TOU rates are not appropriate as distribution system costs are primary demand related (Exh. ES-RDC-1, at 11). The Company notes that the current optional TOU rate offerings are vestiges of electric deregulation and that that new TOU rate design would be addressed following the deployment of AMI (Exh. ES-RDC-1, at 11-12, citing Investigation into Time Varying Rates, D.P.U. 14-04-C at 2 (2014); Rulemaking Pursuant to Executive Order 562 to Reduce Unnecessary Regulatory Burden, D.P.U. 15-183 (2016); D.P.U. 1720.

The table below summarizes the Company's current and proposed rate classes and categories:

Rate Group	**Rate Class – current**	**Rate Class - proposed**
Residential (no changes)	Rates R-1, R-2, R-3, and R-4	Rates R-1, R-2, R-3, and R-4
Small General Service	Boston Edison: Rate G-1 (<=10 kW) Rate T-1 (<=10 kW TOU) Rate G-2 (> 10 kW) Cambridge Electric Light: Rate G-0 (<=10 kW) Rate G-6 (<=10 kW TOU) Rate G-1 (10< kW<=100) Rate G-4 (10< kW<=100 TOU) Rate G-5 (Comm. Space Heat) Commonwealth Electric: Rate G-1 (<=100 kW) Rate G-7 (<=100 kW TOU)	Boston Edison: Rate G-1 (<=100 kW) Rate T-1 (<=10 kW TOU) Cambridge Electric Light: Rate G-1 (<=100 kW) Rate G-6 (<=10 kW TOU) Rate G-5 (Comm. Space Heat) Commonwealth Electric: Rate G-1 (<=100 kW) Rate G-7 (<=100 kW TOU) Rate G-4 (General Power)

	Rate G-4 (General Power) Rate G-5 (Comm. Space Heat) Rate G-6 (All-Electric School) WMA: Rate 23 (Water Heating) Rate 24 (Church) Rate G-0 (<= 349 kW) Rate T-0 (<= 349 kW TOU)	Rate G-6 (All-Electric School) WMA: Rate 23 (Water Heating) Rate 24 (Church) Rate G-1 (<= 100 kW)
Medium General Service	Boston Edison: Rate T-2 (> 10 kW) Cambridge Electric Light: Rate G-2 (> 100 kW) Commonwealth Electric: Rate G-2 (100< kW <=500) WMA: Rate G-2 (<=349 kW; Primary) Rate T-4 (<=349 kW; Primary TOU)	Boston Edison: Rate G-2 (>100 kW) Cambridge Electric Light: Rate G-2 (> 100 kW) Commonwealth Electric: Rate G-2 (100< kW <=500) WMA: Rate G-2 (<=349 kW; Primary) Rate T-4 (<=349 kW; Primary TOU)
Large General Service (no changes)	Boston Edison: Rate G-3 (14 kV) Rate WR (MWRA) Cambridge Electric Light: Rate G-3 (>100 kW; 13.8 kV) Rate SB1/MS1/SS1 (MIT Standby) Commonwealth Electric: Rate G-3 (>500 kW) WMA: Rate T-2 (349< kW <= 2500) Rate T-5 (> 2500 kW)	Boston Edison: Rate G-3 (14 kV) Rate WR (MWRA) Cambridge Electric Light: Rate G-3 (>100 kW; 13.8 kV) Rate SB1/MS1/SS1 (MIT Standby) Commonwealth Electric: Rate G-3 (>500 kW) WMA: Rate G-3 (349< kW <= 2500) Rate T-5 (> 2500 kW)
Streetlights (no changes)	Rates S-1, S-2	Rates S-1, S-2

Exh. ES-RDC-1, at 18-19.

a. Positions of the Parties

i. Attorney General

The Attorney General argues that the Department should reject the Company's proposed elimination of seasonal and TOU rates and establish more efficient TOU windows

without delay (Attorney General Brief at 171-173). The Attorney General asserts that the Company has not presented a viable reason to eliminate or reduce the availability of seasonal or TOU rates, and she contends that the implementation of new TOU rates could take several years to complete (Attorney General Brief at 173). In addition, the Attorney General claims that the Company's proposal to eliminate seasonal and TOU rates is inconsistent with Department policies favoring peak-demand reduction and optimizing benefits associated with alternative rates such as TOU rates (Attorney General Brief at 173, citing D.P.U. 14-04-C at 3). The Attorney General asserts that to maximize benefits associated with existing TOU rates, the Department should establish a more limited on-peak window and pricing ratios (Attorney General Brief at 175, citing Exh. AG-DED-Surrebuttal-1, at 12-17).

ii. DOER

DOES argues that the Company's peak periods for commercial TOU rates send the wrong incentives to commercial customers, conflict with the structure of the "Clean Peak" program and may result in increased curtailments of renewable generation (DOER Reply Brief at 7-8). Further, DOER contends that, while a future proceeding to establish AMI-supported time-varying rates is necessary and will produce new rates, future process is not a reason to avoid modifications to improve existing TOU rates in the current proceeding (DOER Reply Brief at 8).

iii. Acadia Center

Acadia Center argues that the Department should reject the Company's proposed elimination of seasonal and TOU rates and establish more efficient TOU windows, such as

revising on-peak hours to include the hours between 3:00 p.m. and 7:00 p.m. on weekdays (Acadia Center Reply Brief at 2-3). Acadia Center also recommends that the Department consider establishing more efficient TOU windows (Acadia Center Reply Brief at 2-3). Finally, Acadia Center asserts that NSTAR Electric's timeline for its proposal to tie revising TOU rates to AMI deployment is "too slow" (Acadia Center Reply Brief at 2-3).

iv. TEC and PowerOptions

TEC and PowerOptions assert that the Company's peak periods for commercial TOU rates must be adjusted to reflect when peak loads occur, which TEC and PowerOptions claim tend to occur over a smaller number of hours than currently reflected in rates (TEC/PowerOptions Brief at 3). TEC and PowerOptions also express concern that customers with interval meters should be able to maintain such meters despite rate consolidation (TEC/PowerOptions Brief at 11). In this regard, TEC and PowerOptions contend that customers with interval meters are able to purchase retail energy based on their actual hourly consumption, and that many such customers have entered into retail energy supply contracts where pricing is based on the availability of interval data (TEC/PowerOptions Brief at 11). As such, TEC and PowerOptions contend that the Department should ensure that customers do not lose the ability to maintain interval meters with the proposed consolidation and streamlined definitions of rates (TEC/PowerOptions Brief at 11). Finally, TEC and PowerOptions assert that the Department should not wait until years after the full deployment of AMI to revise the Company's TOU periods (TEC/PowerOptions Brief at 3; TEC/PowerOptions Reply Brief at 6).

v. UMass

UMass argues that the current definition of on-peak periods used in the Company's distribution rates and tariffs are out of date, they do not accurately reflect when peak conditions occur on the system and, as a result, they send inefficient price signals that discourage efficient use of the grid and they frustrate the Commonwealth's clean energy and climate policies, particularly around investment in and operation of DG (UMass Brief at 30; UMass Reply Brief at 7). UMass asserts that the Department should require that NSTAR Electric revise its on-peak hours for all TOU customers to include the hours between 3:00 p.m. and 7:00 p.m. on weekdays, with all other hours considered off-peak (UMass Brief at 30). UMass also argues that the Company should not wait until deployment of AMI meters to make the recommended change to TOU rates (UMass Brief at 35; UMass Reply Brief at 7).

Further, UMass argues that the Department should direct NSTAR Electric to eliminate demand ratchets in all of its rate designs (UMass Brief at 40). UMass asserts that demand ratchets are misaligned with Department goals and Massachusetts climate policy, are inefficient, and are unfair and complex (UMass Brief at 40-42). UMass contends that demand ratchets place a floor on customers' demand charges, even if those customers draw no power from the grid across all on-peak hours, resulting in inaccurate price signals that do not elicit efficient behavior (UMass Brief at 41-42).

Finally, UMass argues that the Department should not approve the elimination of seasonally differentiated rates (UMass Brief at 45). UMass argues that discontinuing

seasonally differentiated rates would be a "step in the wrong direction" with respect to recent legislation (UMass Reply Brief at 8).

vi. Company

The Company argues that its proposals regarding seasonal rates and TOU rates are reasonable and establish consistency (Company Brief at 429; Company Reply Brief at 58). Regarding seasonal rates, NSTAR Electric argues that it is attempting to establish some consistency in its rate design and that the legacy Boston Edison service area is the only area in Massachusetts with seasonal rates (Company Brief at 429, citing Exh. ES-RDC-Rebuttal-1, at 19; Company Reply Brief at 60). Further, the Company asserts that movement away from seasonally differentiated rates is consistent with electrification efforts (Company Brief at 429, citing Exh. ES-RDC-Rebuttal-1, at 19).

With respect to TOU rates, the Company clarifies that it is not seeking to eliminate all TOU rates in this proceeding (Company Brief at 430; Company Reply Brief at 58). Rather, the Company asserts that it is proposing only to end certain optional TOU rates with limited enrollment (Company Brief at 430; Company Reply Brief at 58). Regarding peak period definitions, the Company argues that this proceeding is not the appropriate time to propose changes, and that large bill impacts could result from such a change (Company Brief at 430). The Company contends that any change in TOU definitions will require a change in the pricing and the ratio of peak to off peak pricing (Company Brief at 430, citing Exh. ES-RDC-Rebuttal-1, at 11; Company Reply Brief at 59). According to the Company, a shorter peak window could narrow the revenue collection during peak hours, which would

necessitate higher off-peak pricing over a longer window or much higher pricing during the peak hour (Company Brief at 430, citing Exh. ES RDC-Rebuttal-1, at 11; Company Reply Brief at 59). Further, the Company asserts that it will have more information to review alternative rate structures when AMI is fully developed (Company Brief at 430-431; Company Reply Brief at 60).

b. Analysis and Findings

In D.P.U. 17-05-B, at 96, the Department ordered the Company to provide for a more gradual plan for consolidation and alignment in its next general rate filing. The Department supports the eventual goal of consolidation of the Company's rates across its service territory and finds the Company's proposals related to rate class alignment to be a positive step toward achieving one set of rates for the Company. Rate class alignment also allows for greater flexibility to address current and future policy goals and customer needs.

When consolidating rates, the Department has noted that a proposal must consider our rate structure goals of simplicity, efficiency, continuity, equity, fairness, and earnings stability. D.P.U. 17-05-B at 86; D.P.U. 10-55, at 556; G.L. c. 25, § 1A. The proposals related to alignment in the current case speak directly to the rate structure goals of simplicity, efficiency, equity, and fairness, as customers across the Company's service territory will have more consistent rate definitions and offerings.

The Company has proposed to align general service offering demand thresholds (Exh. ES-RDC-1, at 19-20). Customers with average demand below 100 kW annually will generally be served on Rate G-1 (Exh. ES-RDC-1, at 19). Medium C&I customers will

primarily be served under Rate G-2 and will be those with demand between 100 kW and 349 kW annually (Exh. ES-RDC-1, at 19). Large C&I customers will primarily be served under Rate G-3 and will be those with demand between 349 kW and 2,500 kW annually. The Large C&I customers are also frequently serviced at the primary voltage level. (Exh. ES-RDC-1, at 21). The Department finds these proposed rate class definitions to be appropriate and, therefore, they are approved.

NSTAR Electric also proposes a new offering within the G-1 rate class; a non-demand-based rate class (Exh. ES-RDC-1, at 5, 41). Such a rate class can provide appropriate price signals to assist new and advancing customer needs, such as electric vehicle charging (Exh. ES-RDC-1, at 42). Therefore, the Department approves the Company's proposed non-demand-based Rate G-1.

The Company also proposes to eliminate the seasonal rate offerings under Commonwealth Electric Rate G-1, and Commonwealth Electric Rate G-7, but maintain the closed seasonal Boston Edison Rate T-1 (Exh. ES-RDC-1, at 41). The Department finds that in order to align with the rest of NSTAR Electric's service territories, the Company's proposal to eliminate the seasonal offerings under Commonwealth Electric Rate G-1 and Commonwealth Electric Rate G-7 is appropriate at this time (Exh. ES-RDC-1, at 41). Therefore, the Department approves the Company's elimination of the seasonal rate offerings under Commonwealth Electric Rate G-1, and Commonwealth Electric Rate G-7. Additionally, the Department accepts the Company's maintaining the closed seasonal Boston Edison Rate T-1.

The Department also finds that the Company's following proposals meet the Department goal of simplicity, further assist in the alignment and consolidation process, and, therefore, are approved: (1) expanding the Boston Edison G-1 rate offering from 10 kW to 100 kW; (2) moving the current Boston Edison G-2 customers to either the expanded Boston Edison Rate G-1 or Boston Edison Rate T-2; (3) renaming the Boston Edison Rate T-2 as Boston Edison Rate G-2 and changing the availability from greater than ten kW to greater than 100 kW; (4) combining Cambridge Electric Light Rates G-0, G-1, and G-4 into Cambridge Electric Light Rate G-1 that encompasses customers with monthly demand up to 100 kW, and cancel Cambridge Electric Light Rates G-0 and G-4; (5) consolidating Commonwealth Electric Rate G-5 customers into new Commonwealth Electric Rate G-1; (6) closing Commonwealth Electric Rate G-7; (7) consolidating WMA Rate G-0, WMA Rate T-0, WMA Rate G-2, and WMA Rate T-4 with monthly demand up to 100 kW into a new WMA Rate G-1; (8) moving the remaining WMA Rate G-0, WMA Rate T-0, and WMA Rate G-2 customers with demand greater than 100 kW to revised WMA Rate G-2 with monthly demand greater than 100 kW and up to 349 kW, thereby eliminating WMA Rate T-0; (9) limiting WMA Rate T-4 to monthly demand greater than 100 kW and up to 349 kW; and (10) renaming WMA Rate T-2 as WMA Rate G-3 (Exh. ES-RDC-1, at 20, 71-72).

Next, the Department finds it reasonable and appropriate to approve the Company's proposal to eliminate the use of block energy rates (Exh. ES-RDC-1, at 8-9). The

Department finds that the Company's proposal to replace the block energy rates with a simple customer charge and energy charge design is consistent with the goal of simplicity.

The Company has reduced, but still maintains, some demand ratchets (Exh. ES-RDC-1, at 45). The Department recognizes that, in some instances, demand ratchets may be misaligned with the goals to establish efficient, fair, and simple rate structures. Further, demand ratchets may conflict with Massachusetts' climate policy and the Department's statutory mandates to prioritize reducing GHG emissions and increasing energy efficiency. Nonetheless, based on continuity concerns, we find it inappropriate to eliminate all demand ratchets in the instant proceeding. Thus, the Company shall retain a demand ratchet for existing customers currently taking service under proposed Boston Edison demand Rate G-1, in which customers with usage greater than 10 kW pay a demand charge but those customers with usage at or under 10 kW do not (Exhs. ES-RDC-1, at 45; ES-RDC-2, Sch. 1, at 1 (Rev. 3)). Similarly, the Company shall retain a demand ratchet for customers taking service under WMA Rate 24, and Commonwealth Electric proposed Rate G-1 demand, in which a demand ratchet is used for existing customers with demand meters and usage above 2 kW (Exhs. ES-RDC-1, at 45; ES-RDC-2, at 1 (Rev. 3)). Further, the Department directs the Company and all EDCs to address the merits of demand ratcheted rates in their next base distribution rate filings, and, if warranted, to include a proposal or plan to eliminate the use of ratcheted rates.

The Company states that all currently effective, optional TOU rates have been closed except for Cambridge Electric Light Rate G-4, Commonwealth Electric Rate G-7,

WMA Rate T-0, and WMA Rate T-4 (Exh. ES-RDC-1, at 11). The Company proposes to transfer Cambridge Electric Light Rate G-4 customers to the non-demand, proposed Cambridge Electric Light Rate G-1; close Commonwealth Electric Rate G-7; and consolidate WMA Rate T-0 into the non-demand, proposed WMA Rate G-1 (Exh. ES-RDC-1, at 11). Several intervenors argue that the peak periods should be adjusted, and that the Department need not wait until AMI deployment to do so (Attorney General Brief at 171-173; DOER Reply Brief at 8; Acadia Center Reply Brief at 2-3; TEC/PowerOptions Brief at 3; TEC/PowerOptions Reply Brief at 6; UMass Brief at 35; UMass Reply Brief at 7).

The Department finds that the Company's peak and off-peak hours should be refined, and, for TOU rates, should better reflect actual distribution system demand costs. The current TOU time periods available to the Company's customers are very broad and pre-date electric industry restructuring. The TOU offerings proposed to be eliminated have limited enrollment as well. Nonetheless, we share the Company's concern that adjusting the peak period at this time may be disruptive to ratepayers (Exhs. ES-RDC-Rebuttal-1, at 11; AG 40-4). As such, we find that it is more appropriate to address revised peak periods once the Company has moved forward on AMI implementation and we have more information to review alternative rate structures that will benefit customers and achieve public policy objectives. See, e.g., G.L. c. 164, § 92B (electric sector modernization plans); D.P.U. 21-80-B/D.P.U. 21-81-B/D.P.U. 21-82-B at 201, 327 & n.136. Based on these considerations, we approve the Company's proposal to transfer existing TOU customers to different rate classes, as identified above.

Finally, the Department finds that it is reasonable and appropriate for customers impacted by rate alignment efforts to continue to use interval meters to utilize the competitive retail electricity market. In particular, we recognize that many of these customers have entered into multi-year competitive electricity supply contracts that are predicated upon a load shape informed by interval metering data, and that a switch from interval meter data to a profiled load during a rate consolidation has the potential to disrupt pre-existing electricity supply contractual arrangements (Exh. SUR-TEC/PO-JDB-1, at 12).

4. Distribution Rate Design

a. Introduction

NSTAR Electric proposes to collect $1,261,038,188 in base distribution revenues (Exh. ES-REVREQ-2, Sch. 1 (Rev. 4)). In allocating revenues to rate groups, the Company departed from traditional revenue allocation in that it proposes to first develop target revenues by rate group, and then by rate classes within each group (Exh. ES-RDC-1, at 27-28, 30). The Company states that this variation of the traditional target class revenue allocation first to rate groupings, and then to rate classes, was utilized in an effort to align rate classes within each group and create a path to equalization of rates (Exh. ES-RDC-1, at 30). The Company developed rate groups by aggregating the revenue requirement for similar rate classes as follows: residential customers, small C&I customers, medium C&I customers, large C&I customers, Company-owned streetlights, and customer-owned streetlights (Exh. ES-RDC-1, at 30).

The Company performed four steps to construct the base distribution revenue requirement for each rate group (Exh. ES-RDC-1, at 27). First, the Company simulated current test-year revenues using rates in effect on January 1, 2022, and test-year billing quantities (Exhs. ES-RDC-1, at 27; ES-RDC-2 (Rev. 3)).[201] Second, the Company performed an ACOSS to determine the revenue requirement by rate class at EROR, as discussed in Section XVII.B.2 (Exhs. ES-RDC-1, at 27, 31; ES-ACOS-2 through ES-ACOS-5 (Rev. 3); ES-RDC-2 through ES-RDC-5 (Rev. 3)). Third, the Company summed the individual class revenue requirements at EROR for each of the proposed residential, small general service, medium general service, large general service, Company-owned streetlights, and customer-owned streetlights groups (Exh. ES-RDC-1, at 31). As part of the third step, the Company also included the proposed transfer of $46,794,254 associated with the SECRF, the RTW factor, and the SMART factor into current base distribution rates[202] for the purpose of applying the 200-percent base distribution rate cap (Exhs. ES-RDC-1, at 24-25; ES-RDC-2, Sch. 4-9 (Rev. 3); ES-REVREQ-2, Sch. 1, at 9 (Rev. 4)). The Company made an offsetting adjustment to reconciling revenues to reflect the change in the reconciling revenues to the total increase in rates when applying the ten-percent total revenue cap (Exhs. ES-RDC-2, Sch. 4-9 (Rev. 3); ES-REVREQ-2, Sch. 1,

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201 Beginning with its May 13, 2022, updated ACOSS, the Company provided its rate design using 2021 billing determinants to derive its allocated costs.

202 The Company proposed to transfer $21,700,536 for the SECRF, $23,200,000 for the RTW factor, and $1,893,718 for the SMART factor.

at 9). The adjustment also reflected the increase in basic service charges resulting from the alignment of some customer classes among the small and medium C&I rate groupings (Exh. ES-RDC-1, at 25-26). Further, the Company increased the Residential Assistance Adjustment factor ("RAAF") revenues resulting from the proposed increase in the low-income discount rate (Exhs. ES-RDC-1, at 27; ES-RDC-2, Sch. 4-10 (Rev. 3)).

Fourth, the Company applied rate group impact constraints of a ten-percent cap on the increase to total revenues, net of proposed reconciling mechanism revenue changes, from the change in base distribution revenues, followed by a 200-percent cap on base distribution revenues from the average increase to base distribution revenues, and then a zero-percent rate increase floor to derive target revenues by rate group (Exhs. ES-RDC-1, at 28, 30-34; ES-RDC-2, Sch. 5 (Rev. 3)).

Next, the Company calculated the rate class revenue targets using the following steps. First, the Company calculated an average distribution unit cost for each rate group by dividing its target revenue derived in the previous step by the amount of its test year kWh sales for the residential, small general service, and street lighting groups and by its test year billing demand for the medium general service and the large general service groups (Exhs. ES-RDC-1, at 31-34; ES-RDC-2, Sch. 5-9 (Rev. 3)). Second, for each rate class the applicable group average distribution unit cost was multiplied by the applicable test year billing determinants for that rate class to determine a total distribution revenue target prior to applying the rate class impact constraints (Exhs. ES-RDC-1, at 31-34; ES-RDC-2, Sch. 5-9 (Rev. 3)). Third, the Company applied a ten-percent cap on the increase to total revenues,

net of proposed reconciling mechanism revenue changes, from the change in base distribution revenues and allocated any rate class revenue that exceeded the cap to rate classes within the rate group that did not exceed the cap. Similarly, the Company applied a 200 percent cap on base distribution revenues from the average increase to base distribution revenues and allocated any rate class revenue within the rate group that exceeded the cap to rate classes within the rate group that did not exceed the cap. Finally, the Company applied a zero-percent floor in distribution revenue decreases and allocated any excess distribution revenue to rate classes within the rate group that did not reach the floor (Exhs. ES-RDC-1, at 27, 30-31; ES-RDC-2, Sch. 6-9 (Rev. 3)).

With respect to rate class impact constraints and the rate class revenue allocation process, the Company states that in D.P.U. 13-90, the Department elaborated that to conform to Section 94I, the following steps should be taken: (1) calculate total revenues for each rate class using the most recently effective rates; (2) calculate the revenue cap for each rate class at ten percent of the total revenues for each rate class; (3) determine if any rate class will receive a base rate increase greater than this revenue cap when designing rates at EROR; and (4) for those rate classes that have a base distribution rate increase that exceeds the cap, allocate the total amount over the cap to the rate classes that are under the cap based on their current base rate revenue levels (Exh. ES-RDC-1, at 29). The Company also notes that in D.P.U. 15-155 and D.P.U. 15-80/15-81, the Department directed both companies to allocate the revenue requirement that exceeds the ten-percent cap to those rate classes that did not exceed the cap based on their distribution revenue requirements at EROR (Exh. ES-RDC-1,

at 29). The Company states that it applied the aforementioned constraints to limit rate group and rate class revenue increases to ten percent of total revenue and 200 percent of the average distribution revenue increase (Exh. ES-RDC-1, at 28).

In D.P.U. 20-120, at 485, the Department directed all distribution companies to include a proposal in future base distribution rate cases to eliminate cross subsidies over time if the increase to any one rate class based on EROR exceeds ten percent (Exh. ES-RDC-1, at 36-37). In its initial filing, the Company proposed that an initial attempt to eliminate class cross-subsidies should be made by restricting allocations of revenues exceeding the ten-percent cap between residential and general service (including streetlights) customer groups (Exh. ES-RDC-1, at 36-37). The Company proposed that any revenue exceeding the ten-percent cap from a residential rate class would not be allocated to any general service rate class and no revenue exceeding the ten-percent cap from a general service rate class would be allocated to a residential rate class (Exh. ES-RDC-1, at 36-37). The Company also proposed that if this restriction could not be met (i.e., all rate classes in either the general service or residential group exceed the ten-percent cap), then the allocation of revenue across residential and general service groups would be allowed (Exh. ES-RDC-1, at 37). While the Company's streetlighting rate group exceeded the ten-percent cap when the ACOSS was initially filed, the Company did not implement the aforementioned reallocation in its initial filing, because the Department's Order in D.P.U. 20-120 was issued on September 30, 2021, and the Company's target revenue allocation process was at a late stage (Exh. ES-RDC-1 at 37). However, the Company took the opportunity to implement the reallocation when it

filed its first revised ACOSS on May 13, 2022 (Exh. RDC-2, Sch. 5 (Rev. 1). The Company reallocated the excess revenues to other general service rate groups, but not to the residential rate group (Exh. ES-RDC-2, Sch. 5 (Rev. 3)).

After applying the ten-percent total revenue cap, the Company applied the 200-percent base distribution revenue cap, which was exceeded by Rate S-2, customer-owned streetlights, in the amount of $80,430 (Exh. ES-RDC-2, Sch. 5 (Rev. 3)). After allocating the excess revenues to the remaining non-residential rate groups, the Company implemented a revenue floor for base distribution revenue increases of zero dollars, though no rate group triggered this rate floor and, as such, no reallocation was necessary (Exh. ES-RDC-2, Sch. 5 (Rev. 3)). As explained above, the Company used the final revenue allocations by rate group to determine the target revenue allocation to individual rate classes (Exh. ES-RDC-1, at 31). In applying the rate class impact constraints to rate classes, numerous classes also experienced revenue increases in excess of the ten- and 200-percent caps (Exhs. ES-RDC-5; ES-RDC-2, Schs. 6 through 9 (Rev. 3)).

b. Positions of the Parties

i. Attorney General

The Attorney General argues that the Company, without justification or evidentiary support, applied the revenue allocation constraints in contravention of Department precedent established in D.P.U. 19-120 and that this error impacted the final revenue requirement (Attorney General Brief at 160, citing Exhs. AG-DED-Surrebuttal-1, at 9-10; CLC-JDW-1, at 6; Attorney General Reply Brief at 45-46). In particular, the Attorney General contends

that NSTAR Electric's proposed revenue allocation process suffers from two significant errors: (1) the Company applied the Department's constraints (i.e., overall statutory ten-percent total revenue cap, rate increase floor, and relative distribution percent rate increase) in the wrong order; and (2) the Company's proposed allocation results in rate class revenue re-allocations being confined within each proposed rate group (Attorney General Brief at 160-162, citing Exhs. AG-DED-Surrebuttal-1, at 10-11; CLC-JDW-1, at 21).

The Attorney General recommends that the Department require the Company to implement its revenue allocation process consistent with the Department's Order in D.P.U. 19-120 (Attorney General Brief at 161, citing Exh. AG-DED-Surrebuttal-1, at 11). Specifically, the Attorney General argues that the Company should implement its approved revenue allocation with three constraints in the following order: (1) cap the overall total rate increases of no greater than ten percent; (2) apply a rate increase floor of zero percent ensuring that no rate class received a rate decrease in the context of an overall rate increase; and (3) cap the allowed base distribution rate increases equal to a percent multiple of the system average increase (Attorney General Brief at 161, citing D.P.U. 19-120, at 487 (Department Schedule 10); Tr. 8, at 859-862). According to the Attorney General, NSTAR Gas also implemented this order in its final revenue allocation compliance filing approved by the Department (Attorney General Brief at 160-161, citing Tr. 8, at 862).

The Attorney General also disagrees with the Company's proposal to restrict the reallocation of revenues that exceed a constraint to only other rate classes that were part of the same rate group (Attorney General Brief at 160). The Attorney General argues that

because the Company performed its class cost of service study on a rate class basis, this restriction is unnecessary and counter-productive to an overall approach of bringing individual rate classes towards their full cost of service and reducing cross-subsidizes (Attorney General Brief at 162, citing Exh. AG-DED-Surrebuttal-1, at 10-11).

Further, the Attorney General argues that the Company's proposed class rate increases are excessive and inconsistent with rate continuity principles (Attorney General Brief at 162). The Attorney General contends that, to provide greater rate continuity, the Department should limit the base distribution rate increase to any single customer class by 1.25 times the overall system average increase, after the application of the statutory ten-percent cap in total overall rates (Attorney General Brief at 163, 165, citing Exh. AG-DED-1, at 11). According to the Attorney General, this limit would reduce the maximum revenue increase in base distribution rates to any single customer class to 15.88 percent, as opposed to the Company's proposed 25.4-percent maximum increase (Attorney General Brief at 163, 165, citing Exhs. AD-DED-1, at 12; AG-DED-3, Schs. 1, 2). Finally, the Attorney General recommends that rate increases that exceed the statutory ten-percent cap in total rates be phased in over the course of the Company's proposed multi-year rate plan (Attorney General Brief at 163-164, 165, citing Exh. AG-DED-1, at 12).

ii. Cape Light Compact

Cape Light Compact asserts that NSTAR Electric made two significant errors in following Department precedent in its revenue allocation (CLC Brief at 9). Specifically, Cape Light Compact argues that the Company performed the revenue increase constraints in

the incorrect order and incorrectly applied the revenue floor to base distribution revenues rather than to total revenues (CLC Brief at 9-12, 17-18; CLC Reply Brief at 4). Cape Light Compact further contends that NSTAR Electric's proposed target revenue allocation process results in unjust and unreasonable rate decreases to four general service rate classes (CLC Brief a 14-16).[203] Cape Light Compact asserts that these four rate class decreases create an unfair class subsidy in favor of small and medium general legacy Boston Edison customers over small and medium general customers in other parts of the Company's service area (CLC Brief at 16).

Cape Light Compact argues that NSTAR Electric's proposed target revenue allocation should be rejected, and that the Company should be required to revise its revenue allocation consistent with Department precedent in D.P.U. 19-120 (i.e., proper ordering of the caps and floors and application of the floor based on total revenues) (CLC Brief at 16-18). According to Cape Light Compact, following the method established in D.P.U. 19-120 will result in small rate classes receiving a disproportionate credit or significant violations of the floor in subsequent application of the 200-percent cap because it is applied after the floor (CLC Brief at 16, citing Exh. CLC-JDW-1 at 10-11). Cape Light Compact asserts that this issue can be resolved with two modifications – (1) if more than one iteration of the floor is necessary, the credit from reapplying the floor in subsequent iterations could be allocated to rate classes that

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203 The four rate classes are: Rate G-1/T-1 (Boston Edison); Rate G-5 (Commonwealth Electric); Rate G-2 (Boston Edison); and Rate WR (Boston Edison) (CLC Brief at 16).

already benefitted from the ten-percent cap, and (2) where the total revenue increase is very nearly zero, rather than applying the floor, each rate in the affected class could receive the same increase in the revenue requirement (CLC Brief at 16, citing Exh. CLC-JDW-Surrebuttal-1 at 13; CLC Reply Brief at 2-3).

iii. TEC and PowerOptions

TEC and PowerOptions argue that the Section 94I cap allocation process serves the dual purpose of limiting rate shock while moving closer to cost-based rates over time (TEC/PowerOptions Reply Brief at 10). Further, they contend that the dual purpose of the ten-percent and 200-percent caps, in that order, was important to ensure that rates are ultimately cost based and provide continuity in the form of measured increases for rates that are not delivering their costs of service at EROR (TEC/PowerOptions Reply Brief at 10). In addition, TEC and PowerOptions claim that the order in which the constraints are applied is important because a rate that is adjusted in excess of its cost of service should not be required to bear additional cross subsidies beyond the addition of revenue required for the revenue floor adjustment (TEC/PowerOptions Reply Brief at 11). TEC and PowerOptions, however, disagree with Cape Light Compact's recommendation to apply a total revenues floor (TEC/PowerOptions Reply Brief at 11).

According to TEC and PowerOptions, the Department should order that the sequence of operations proceed as follows: (1) apply the ten-percent cap; (2) apply base distribution revenue floor to ensure that no rate class experiences a rate decrease; (3) apply the revenue addition from the base distribution revenue floor as a credit to excess revenues allocated as

part of the ten-percent cap; and (4) apply the 200-percent cap excluding rate classes subject to a revenue floor adjustment from bearing additional allocation of revenue from other classes in excess of the 200-percent cap (TEC/PowerOptions Reply Brief at 12).

iv. Company

The Company summarizes its distribution rate allocation process (Company Brief at 392-399). In response to the intervenor positions, NSTAR Electric asserts that, overall, the Company's process in developing its proposed rate design and subsequent revenue allocation through analyzing and applying the Department's long-standing rate design goals is consistent with Department precedent, despite not implementing the same process applied in D.P.U. 19-120 (Company Brief at 420-421, citing Exhs. ES-RDC-1, at 6; ES-RDC-Rebuttal-1, at 7-8). According to the Company, there is no Department requirement regarding the proposed sequencing of the overall statutory ten-percent cap, rate increase floor, or relative distribution-percent rate increase (Company Brief at 421). Rather, the Company contends that the Department is not precluded from considering appropriate alternative allocation methods than the method used D.P.U. 19-120 (Company Brief at 421, citing D.P.U. 19-120, at 421). The Company asserts that its revenue allocation process, although not consistent with D.P.U. 19-120, nevertheless is consistent with the Department's rate design objectives and balances various ratemaking objectives, such as efficiency and rate stability (Company Brief at 421, citing Exhs. ES-RDC-1, at 40; ES-RDC-Rebuttal-1, at 5, 7-8).

Further, NSTAR Electric argues that Cape Light Compact's recommendation to apply a total revenues floor is also inappropriate, as it would leave the Company with no control over the level of distribution pricing because the final distribution rates become a by-product of the total revenue floor (Company Brief at 421, citing Exh. ES-RDC-Rebuttal-1, at 7). The Company maintains that a floor on total revenue forces further reallocation of distribution revenue targets and prevents rates from ever reflecting the cost of service (Company Brief at 421, citing Exhs. ES-RDC-Rebuttal-1, at 7; DPU 36-6).

NSTAR Electric also rejects the Attorney General's argument that the Company's proposed allocation process results in rate class revenue reallocations being confined within each proposed rate group (Company Brief at 421). In addition, the Company disputes Cape Light Compact's assertion that the allocation process results in unjust and unreasonable rate decreases for four general service rate classes (Company Brief at 421). The Company argues that its proposed rate class groupings were established based on continuity and simplicity and are necessary to make progress in aligning the pricing among legacy rate classes (Company Brief at 421, citing Exhs. ES-RDC-1, at 21; DPU 11-6).

c. Analysis and Findings

As a first step in its revenue allocation process the Company appropriately began its allocation with revenues at EROR per the ACOSS (Exh. ES-RDC-1, at 28). The Company then grouped customer classes into six groups based on the proposed characteristics for each class and group: residential rate classes, small C&I rate classes, medium C&I rate classes, large C&I rate classes, Company-owned streetlights, and customer-owned streetlights

(Exh. ES-RDC-1, at 16). The Company grouped its rate classes in an effort to align the availably characteristics of similar rate classes, as a step toward rate consolidation in the future (Exh. ES-RDC-1, at 22). After determining the appropriate target revenue, by applying the rate constraints to the revenue requirement at EROR for each rate group, the Company applied the resulting target revenues' unit costs to each rate class within each group, and then within each rate group applied again the rate class revenue constraints to derive each rate class's final base distribution revenue requirement (Exh. ES-RDC-1, at 30-31). The Department finds that the foregoing steps reflect reasonable efforts to align the availability characteristics of similar rate classes.

In applying its group and rate class revenue constraints, the Company took into consideration its proposed transfer to base distribution rates of revenues currently recovered through the SECRF, SMART factor, and the RTW factor, along with the change to the RAAF associated with increasing the low-income discount rate (Exhs. ES-RDC-1, at 24-25, 27; ES-RDC-2, Sch. 4-10 (Rev. 3); ES-REVREQ-2, Sch. 1, at 9 (Rev. 4)). In Section XIV.A.4 above, the Department disallowed the transfer of SMART Program investments to base distribution rates, and in Section XI.C.4.b above, the Department disallowed the transfer of the RTW Program costs to base distribution rates. Moreover, in Section XVII.C.3 below, the Department approved an increase to the low-income discount from 36 percent to 42 percent. Also, in Section XV.C.2 above, the Department directed the Company to remove meter-related capital from base distribution rates and, instead, recover these costs through the AMI reconciling factor. Accordingly, in its compliance filing, the

Company shall adjust the base distribution revenues to comply with these directives, for the purpose of applying the 200-percent base distribution rate cap (Exhs. ES-RDC-2, Sch. 4-9 (Rev. 3); ES-REVREQ-2, Sch. 1, at 9 (Rev. 4)). In addition, to comply with these directives, the Company shall make offsetting adjustments to reconciling rate revenues for the purpose of applying the ten-percent total revenue cap.

Next, the Company applied a series of revenue constraints. The Company proposes a distribution rate allocation process that does not follow the order set forth in D.P.U. 19-120, at 487 (see Exhs. ES-RDC-1, at 28, 30-34; ES-RDC-2, Sch. 5 (Rev. 3)). In D.P.U. 19-120, the Department applied revenue constraints in the following order: ten-percent cap on the total revenue increase, followed by the zero percent floor on distribution revenue, followed by a 200 percent cap on overall distribution revenue increase. D.P.U. 19-120, at 487. However, we note that in D.P.U. 20-120, the Department applied revenue constraints in the following order: ten-percent cap on the total revenue increase, followed by a 200-percent cap on overall distribution revenues, and no revenue floor. D.P.U. 20-120, at 538-540. In the instant case, NSTAR Electric applied the ten-percent cap on total revenue increase, followed by a 200-percent cap on the overall distribution revenue increase, followed by the zero-percent floor on distribution revenue to ensure that a rate class does not receive a distribution rate decrease (Exhs. ES-RDC-1, at 28, 30-34; ES-RDC-2, Sch. 5 (Rev. 3)).

To reach fair decisions that encourage efficient utility and consumer actions, the Department's rate structure goals must balance the often-divergent interests of various customer classes and must prevent any class from subsidizing another class unless a clear

record exists to support such subsidies, or unless such subsidies are required by statute. D.P.U. 19-120, at 431. To achieve such balance, flexibility in the revenue allocation method may be warranted, so long as the results do not violate our rate structure goals or result in unjust or unreasonable rates. Without such flexibility, the Department cannot develop rates that adequately allow for the consideration of efficiency, simplicity, continuity, fairness, and stability. As such, we decline to adopt the intervenors' recommendations to strictly follow the revenue constraints set forth in D.P.U. 19-120. In addition, we find that implementing a floor on distribution revenue increases at zero percent mitigates intervenor concerns regarding the subsidization of legacy Boston Edison small and medium general service customers by small and medium general service customers in other legacy service areas.

As noted, the Company began its allocation process by applying the ten-percent total revenue cap as mandated by Section 94I first to each customer rate group[204] to determine the unit cost and later to each proposed rate class within each customer rate group (Exh. RDC-2, at Sch. 5 (Rev. 3)). In D.P.U. 20-120, at 485, the Department directed all gas and electric companies to include a proposal in their future base distribution rate cases to eliminate cross subsidies over time if the increase to any one rate class based on EROR exceeds ten percent. The Company suggested that one option would be to restrict revenues that exceeded the ten-percent cap between residential and general service customer groups, inclusive of streetlights (Exh. ES-RDC-1, at 36-37). Beginning with its first revised ACOSS and

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[204] Residential, small C&I, medium C&I, large C&I, customer-owned streetlights, and Company-owned streetlights.

continuing through later iterations, the Company implemented this proposal to reallocate the overage from its streetlighting rate group; the overage was assigned to other general service rate groups, but not to the residential rate group (Exh. ES-RDC-2, Sch. 5 (Rev. 3)). Notwithstanding our decision below, to address our goals of continuity and fairness and to maintain the flexibility required to properly balance our rate structure goals, no rate group should be exempt from being allocated any revenues in excess of the ten-percent cap. The Department is not convinced that restricting revenues that exceed the ten-percent cap between residential and general service customer groups will assist in eliminating cross subsidies over time. Moreover, the Company did not submit a specific proposal regarding the D.P.U. 20-120 directive when applying the ten-percent cap to each rate class within each group. Nevertheless, in this instance, we accept the Company's implementation of the Section 94I ten-percent cap at the rate class level within each group because it will help with the future alignment of the Company's C&I rate classes. Therefore, in its compliance filing, the Company shall include all rate groups in the reallocation of revenues in excess of the rate group revenue constraint caps, and we accept the Company's application of the ten-percent cap to individual rate classes within each rate group. We reiterate that all gas and electric companies shall include a proposal in their future base distribution rate cases to eliminate cross subsidies over time if the increase to any one rate class based on EROR exceeds ten percent. D.P.U. 20-120, at 485.

The Company next proposes for each rate class a distribution revenue increase cap of 200 percent (or a multiplier of 2.0) of the system overall increase (Exh. ES-RDC-1, at 28).

The Attorney General argues that a multiplier of 1.25 is more appropriate (Attorney General Brief at 163, 165, citing Exh. AG-DED-1, at 11). As noted above, the Department balances numerous principles when determining the appropriate multiplier to apply to the average increase in base distribution rates. The Department finds that use of a 2.00 multiplier adequately balances the principle of fairness with resulting customer bill impacts. D.P.U. 18-150, at 583; D.P.U. 17-05-B at 325.

Next, the Company applied a zero-percent revenue floor to its proposed base distribution rates after applying the ten-percent and 200-percent rate caps (Exh. ES-RDC-2, Sch. 5 through Sch. 9 (Rev. 3)). Cape Light Compact argues that the floor should be applied to total revenues, not just base distribution revenues (CLC Brief at 17-18; CLC Reply Brief at 4-5). The Department finds it reasonable to accept the Company's zero-percent distribution revenue floor, as it will limit the increases to other rate classes and will meet the Department's goal of fairness (Exh. DPU 36-6). Further, we find that setting the revenue floor using base distribution revenues provides a more equitable result, as reconciling revenues, which vary from year to year, are excluded. Further, using base distribution revenues avoids further reallocation of distribution revenue targets and ensures that the revenue floor more accurately reflects the cost of service (Exh. ES-RDC-Rebuttal-1, at 7). For these reasons, the Department directs the Company in its compliance filing to apply a zero-percent floor on base distribution revenues as the last revenue constraint in its allocation process.

Based on our findings above, we conclude that the Company's revenue allocation process is reasonable and appropriate and will result in just and reasonable rates. Accordingly, we approve this aspect of the Company's rate design.

5. Transmission Rate Allocation and Design

a. Introduction

The Company states that transmission rates are currently allocated to rate classes based on the twelve-month coincident peak ("12 CP") method, meaning that the Company's total retail transmission revenue requirement is allocated to rate classes based on each class's contribution to the annual coincident peak experienced on the transmission system for a particular year (Exh. ES-RDC-1, at 22). The allocated revenue requirement is then translated into a rate using the approved rate design for the class (Exh. ES-RDC-1, at 22). As such, each rate class has its own unique transmission rate (Exh. ES-RDC-1, at 22). Individualized rates and unique rate designs present a challenge to any effort to consolidate rates, but the Company proposes to alter the transmission allocation method as part of its overall rate alignment efforts (Exh. ES-RDC-1, at 22-23).

As with distribution rates, the Company proposes to categorize rate classes into the five distinct rate groups discussed above, with the customer-owned streetlighting and the Company-owned streetlighting combined into one rate group and to allocate the transmission revenue requirement to each of the rate groups using the 12 CP method (Exh. ES-RDC-1, at 23). However, because the difference between an individualized rate class allocation and the applicable rate group allocation is too large for certain classes, the Company does not

propose a single allocation by rate group to apply to all rate classes within a group (Exh. ES-RDC-1, at 23). With respect to WMA Rate T-5, the 12 CP method is applied to individual customer billing for transmission rates (Exh. ES-RDC-6, Sch. 2, at 188). In this method of billing, customers are first charged based on monthly non-coincident peak demand but are subsequently rebilled based on their coincident-peak demand (Exh. UMass 1-7; Tr. 8, at 827). For other large general service rate classes, the Company bills customers on their monthly non-peak demand (Exh. UMass 1-7).

The following table includes an illustrative depiction of the Company's proposed transmission revenue allocation:

Rate Group	**Proposed Rate Class**	**Allocation of Transmission Revenue Requirement**
Residential	R-1/R-2, R-3/R-4	44.14%
Small General Service	G-1 (ALL), T-1 (Boston Edison), G-5 (Cambridge Electric Light), G-6 (Commonwealth Electric), 24 (WMA) G-7 (Commonwealth Electric) 23 (WMA)	19.30% 0.22% 0.0002%
Medium General Service	G-2 (ALL), T-4 (WMA)	19.22%
Large General Service	G-3 (ALL), T-5 (WMA) WR (Boston Edison)	16.59% 0.26%
Streetlights	S-1/S-2	0.28%

Exh. ES-RDC-2, Sch. 3, at 3 (Rev. 3).

NSTAR Electric also proposes a change in transmission rate design for certain rate classes in the small general service group to better align with the proposed distribution rate

designs and the Company's movement toward more energy-focused rate design for this group of customers (Exh. ES-RDC-1, at 23). The Company states that, while transmission rate design changes are only proposed for the small general service group, all rate classes will experience rate changes because the proposed allocation is revenue neutral in total (Exh. ES-RDC-1, at 24). The Company provides the following table to summarize the proposed transmission rate design changes:

Legacy Rate Class	**Proposed Transmission Rate Design Change**
G 1NDMD (Boston Edison), T-1 (Boston Edison), G-0 (Cambridge Electric Light), G-6 (Cambridge Electric Light), G-1 (Commonwealth Electric), G-5 (Commonwealth Electric), G-6 (Commonwealth Electric), 23 (WMA), 24 (WMA)	None
G-1DMD (Boston Edison)	Convert from two-part demand/energy rate to energy only rate
G-2 (Boston Edison) (<=100 kW customers only), T-2 (Boston Edison) (<=100 kW customers only), G-1 (Cambridge Electric Light), G-4 (Cambridge Electric Light), G-7 (Commonwealth Electric) G-0 (WMA) (<=100 kW customers only), T-0 (WMA) (<=100 kW customers only), G-2 (WMA) (<=100 kW customers only), T-4 (WMA) (<=100 kW customers only)	Convert from demand-only rate to energy-only rate
G-5 (Cambridge Electric Light)	Convert from inclining block energy rate to flat energy-only rate
G-4 (Commonwealth Electric)	Convert from two-part demand/energy rate to energy-only rate

Exh. ES-RDC-1, at 24.

b. Positions of the Parties

i. TEC and PowerOptions

TEC and PowerOptions request two revisions to the Company's transmission rate design and offerings (TEC/PowerOptions Brief at 5-10). First, TEC and PowerOptions request that the Company expand coincident peak transmission billing from customers taking service under WMA Rate T-5 to all large customers in the Company's EMA service territory (TEC/PowerOptions Brief at 5). TEC and PowerOptions argue that the Department should expand the availability of coincident peak transmission billing on an opt-in basis to large customers who have flexible loads and/or DG that can reduce demands during transmission system peak hours (TEC/PowerOptions Brief at 8).

TEC and PowerOptions assert that the Department has previously found that coincident peak billing for transmission eliminates inequities by charging customers based on their individual consumption at the time of system peak (TEC/PowerOptions Brief at 5, citing D.P.U. 10-70-B at 5). Further, TEC and PowerOptions contend that the Department has previously found that coincident peak billing is consistent with cost causation principles and can produce benefits by reducing congestion during system peak hours, leading to flatter load profiles and system utilization and reducing long-term transmission costs (TEC/PowerOptions Brief at 5, citing D.P.U. 10-70-B at 5; Western Massachusetts Electric Company, D.P.U. 12-97, at 13-14 (2013)). Furthermore, TEC and PowerOptions argue that customers taking service under Rate T-5 in the WMA service area have had coincident peak transmission billing for approximately eight years and appear to be responding to price

signals and reducing load during monthly peak hours (TEC/PowerOptions Brief at 5, citing Exh. TEC/PO-JDB-1; Tr. 8, at 928).

TEC and PowerOptions assert that should the Department agree with expanding 12 CP billing to more large customers, that customers wishing to opt in to such a billing option should be required to post deposits and pay for incremental administrative costs associated with bill generation (TEC/PowerOptions Brief at 8, citing RR-DPU-35). TEC and PowerOptions also recommend that expansion of coincident peak billing in the Company's EMA service area should be limited to an initial pilot of approximately 35 customers in the G-3 customer group, with a waiting list if necessary (TEC/PowerOptions Brief at 8, citing RR-DPU-36). To address automating the Company's systems to accommodate 12 CP transmission billing in the future, TEC and PowerOptions assert that the Department should ensure that AMI and CIS systems have the ability to automate such billing structures to reduce the administrative effort associated with implementing this rate design at this time (TEC/PowerOptions Brief at 8-9).

Additionally, TEC and PowerOptions recommend changes to the Company's proposed consolidated Rate G-1, which has both non-demand and demand-based rate options (TEC/PowerOptions Brief at 9). TEC and PowerOptions argue that the Company's proposed G-1 demand customers' transmission rate is a volumetric charge, which would result in an inequity to high load factor customers with their paying much more for transmission service than they would under a demand charge (TEC/PowerOptions Brief at 9; TEC/PowerOptions Reply Brief at 3). Thus, TEC and PowerOptions assert that the Department should direct the

Company to implement a demand-based transmission rate for Rate G-1 demand customers (TEC/PowerOptions Brief at 9).

ii. UMass

UMass asserts that new laws require the Department to prioritize GHG emission reductions and to consider the impacts of rate design decisions on the deployment of DER that support the Commonwealth's climate and clean energy policies (UMass Brief at 20-21, citing 2022 Clean Energy Act, §§ 56 & 57; 2021 Climate Act, § 15; G.L. c.164, §§ 141, 142; UMass Reply Brief at 3-5). Thus, UMass argues that it is critical for the Department to prioritize efficient rate structures that support the Commonwealth's clean energy and climate policies (UMass Brief at 20-25). In this regard, UMass contends that the time is right to expand access to the T-5 rate structure (UMass Brief at 20; UMass Reply Brief at 5-6).

UMass asserts that transmission charges are particularly amenable to efficient rate design because they are assigned to the Company based on a known tariff formula (UMass Brief at 12). Further, UMass contends that the T-5 rate has been in effect for years in the WMA service area and has proven that it affects customers' decision-making on grid usage and that provides significant customer benefits (UMass Brief at 12-13). In addition, UMass argues that the T-5 rate should send efficient price signals that encourage customer action, such as deploying energy storage and on-site generation, which would support Massachusetts energy and climate policies (UMass Brief at 13-15). UMass also claims that a T-5 rate structure for transmission charges is superior to the other structures proposed by the Company vis-à-vis the Department's rate structure goals of simplicity, continuity, fairness,

and earnings stability (UMass Brief at 13, 25-27). In particular, UMass asserts that amending transmission rates for large general service customers will affect only the Company's largest customers, who are well equipped to respond to the resulting price signals and capable of doing so (UMass Brief at 13).

UMass asserts that the Department should require that NSTAR Electric expand its T-5 rate design to all large general service customers in the EMA and WMA service areas starting in January 2024 (UMass Brief at 13, 27-29). Further, UMass asserts that the Department should require NSTAR Electric to assess monthly transmission charges to all its large general service customers based on their average 60-minute grid demand during the hour in which the Company's applicable Regional Network Service load peaks for that month, as the Company currently does for T-5 customers (UMass Brief at 13, citing Exh. UMASS-EP/RS-1, at 28).

iii. Company

The Company argues that 12 CP transmission billing should not be expanded to all large general service customers. First, the Company contends that it needs to collect the costs associated with the system that has been constructed to serve large general service customers, and if these large general service customers reduce demand during the system peak for the month, transmission costs for that month will be reduced only to the extent that such activity was not forecasted by the Company (Company Brief at 431-432, citing Exh. ES-RDC-Rebuttal-1, at 10).

Second, the Company claims that 12 CP transmission billing is inefficient in that it produces a price signal that cannot be acted upon since the coincident peak is not known until the billing month has concluded (Company Brief at 432, citing Exhs. ES-RDC-Rebuttal-1, at 11; DPU 58-4; UMASS-ES 1-7). The Company asserts that some customers with DG may be able to reduce load around a board time space to cover the anticipated coincident peak, but less sophisticated customers and those without DG may not be able to pinpoint accurately the moment at which they should curtail use in order to lower their overall cost (Company Brief at 432). Thus, the Company argues that 12 CP transmission billing provides an accurate basis for consumer decisions (Company Brief at 433-434).

c. Analysis and Findings

The Department has previously stated that pricing transmission service based on a customer's use at the time of system peak rather than based on the customer's peak, which may not coincide with the system peak, provides a more equitable assignment of cost responsibility. D.P.U. 17-05-B at 212; D.P.U. 10-70-B at 6. The 12 CP billing for Rate T-5 is one method of efficiently assigning accurate costs to those customers who utilize the transmission system during peak periods. While customer behavior benefits from 12 CP may not result in lower system costs immediately, lower system peak usage will eventually be reflected in transmission system peak forecasts, lowering costs for all customers.

In the Company's last base distribution rate case, the Department directed the Company to evaluate the further expansion of coincident peak transmission billing to NSTAR Electric customers; however, the Company did not undertake any such evaluation that could

assist the Department in weighing the merits of the proposed use of 12 CP transmission billing for all large customers (Tr. 8, at 922-924). D.P.U. 17-05-B at 213. As the Company has made and continues to make efforts toward rate alignment, and as 12 CP billing supports numerous rate-making goals such as simplicity and efficiency, the Department finds that it is reasonable and appropriate for the Company to expand optional 12 CP transmission billing to all large general service customers.

The Department recognizes that, in the immediate future, there may be administrative challenges associated with the Company's ability to implement 12 CP transmission billing using its current billing system (Exhs. ES-RDC-Rebuttal-1, at 14; UMass 1-9; UMass 1-11; Tr. 8, at 833-835). Further, the Department acknowledges that not all customers have the appropriate information to evaluate and decide whether 12 CP transmission billing is a beneficial option. Based on these considerations, we find that it is prudent for the Company to implement 12 CP billing for transmission service on an opt-in basis for large general service customers, effective January 1, 2023. Further, the Company estimates an average cost of $500 to produce a single Rate T-5 bill each month under its current billing system (Exh. DPU 58-6; Tr. 8, at 946; RR-DPU-35). We find it reasonable for the Company to assess a $500 bill preparation fee for customers who choose to opt in to 12 CP transmission service; the $500 fee will not apply to a customer that does not elect this service. The

overall $500 fee shall remain in place until the Company has transitioned to its new billing system at the end of 2024 (Exh. UMass 1-11).[205]

Finally, with respect Rate G-1 demand customers, we find that it is appropriate for the Company to bill those customers a demand charge for transmission service rather than a volumetric charge. The existence of both a demand and non-demand charge inherently recognizes that different customers utilize the electric system differently. For customers where a demand charge for distribution service is preferable, and more accurately reflects the costs to serve such customers, it follows that transmission charges should be demand based as well. As such, the Department directs the Company to develop demand-based transmission charges for the Rate G-1 demand classes effective January 1, 2023.

6. Reconciling Rate Allocation Factors

a. Introduction

The Company proposes to condense the number of distribution revenue allocators ("DRA") and labor allocators, by calculating rate group values rather than rate class values (Exhs. ES-RDC-1, at 25; ES-RDC-2, Sch. 4, at 1 (Rev. 3)). The proposed rate groups are the same as those proposed for base distribution rate allocation except for small general service and streetlights forming a single group (Exh. ES-RDC-1, at 25). The DRA is a

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205 During evidentiary hearings, the Company noted that it as prepares to issue a request for proposals ("RFP") relative to its new billing system, it would be a "good opportunity" to evaluate the propriety of including automated 12 CP transmission service billing into system (Tr. 8, at 836). As such, we expect the Company to include this function as part of the RFP.

function of the proposed distribution revenue targets, and the labor allocator is developed in the ACOSS (Exh. ES-RDC-1, at 25).

The Company proposes to use these updated allocators to derive rate group target revenues for reconciling rates, by aggregating total revenue required for each reconciling rate and then assigning the appropriate allocator to each group to derive the total revenue target for each reconciling rate (Exhs. ES-RDC-1, at 25; ES-RDC-2, Sch. 5, at 1 (Rev. 3)). Next, the Company divides each group's target revenue by each group's test year kWh sales to derive a unit rate for each group for each reconciling factor (Exh. ES-RDC-2, Sch. 5, at 1 (Rev. 3)).

The proposed values are:

Rate Group	**Distribution Revenue Allocator**	**Labor Allocator**
Residential Service	52.254%	54.323%
Small General Service/Streetlights	20.282%	20.748%
Medium General Service	16.658%	14.836%
Large General Service	10.806%	10.092%

Exh. ES-RDC-2, Sch. 4, at 1 (Rev. 3). No other party addressed this issue on brief.

b. Analysis and Findings

The Company's proposed use of the rate group approach to calculate the DRA and labor allocator calculations is consistent with the Company's proposed alignment efforts in distribution and transmission rates. We find that the shift to rate group allocators for

reconciling rates and the use of single values for all rate classes within a group for reconciling rates, are consistent with the rate design goals of efficiency, simplicity, and fairness. Accordingly, the Department approves the move to rate group allocators and the use of those allocation factors to calculate the applicable reconciling rates. The Company in its compliance filing shall revise its tariff accordingly to implement the approved changes to the DRA and labor allocators.

C. Energy Efficiency Surcharge and Low-Income Discount

1. Introduction

On December 10, 2020, the Department opened an investigation to revise its Energy Efficiency Guidelines ("EE Guidelines") to incorporate changes in laws and Department policies and experience gained concerning energy efficiency. Updating Energy Efficiency Guidelines, Order Opening Investigation, D.P.U 20-150 (December 10, 2020).[206] In that Order, the Department presented proposed revisions to the EE Guidelines ("Revised EE Guidelines"),[207] with seven categories of revisions. D.P.U. 20-150, at 2-3. In particular, the Department proposed to update EE Guidelines, § 3.2.1.6 with a revised annual electric energy efficiency surcharge ("EES") calculation to better align the electric and gas EES calculations and to account for Department directives in Cost Based Rate Design,

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206 The Department first established its EE Guidelines in 2000. Methods and Practices to Evaluate and Approve Energy Efficiency Programs, D.T.E. 98-100 (2000). In 2013, the Department adopted updated EE Guidelines. Updating Energy Efficiency Guidelines, D.P.U. 11-120-A (2013).

207 The proposed Revised EE Guidelines were set forth in Appendix A to D.P.U. 20-150.

D.P.U. 12-126A through 12-126I at 23 (2013). D.P.U. 20-150, at 3, 13-14; Appendix A at 5-7.

The revised EES calculation would allocate low-income energy efficiency program costs between a single residential and low-income sector and the C&I sector using a DRA and collecting the resulting allocation from each rate class in the sector using a volumetric charge. D.P.U. 20-150, at 14, citing D.P.U. 12-126A through 12-126I at 23. This change would result in two surcharges, one for the residential sector, including low-income, and one for the C&I sector, which is the same structure as the gas EES. D.P.U. 20-150, at 14. Low-income customers would continue to receive a discount on their total electric bill. D.P.U. 20-150, at 14.

In its final Order adopting the Revised EE Guidelines, the Department agreed with comments from the Low-Income Network and other stakeholders that it would be better to implement the revised EES calculation as part of a proceeding where a full analysis of the bill impacts could be performed. D.P.U. 20-150-A at 34. The Department found that, given the interaction between the current electric EES structure and the low-income discount, it was appropriate to conduct this analysis as part of a base distribution rate case proceeding. D.P.U. 20-150-A at 34-35. The Department directed each electric distribution company to submit a revised EES tariff, consistent with the Revised EE Guidelines, as part of its next base distribution rate case proceeding. D.P.U. 20-150-A at 35-36.[208]

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[208] Throughout D.P.U. 20-150-A, the Department referred to the proposed revised EE Guidelines as the Straw Proposal.

In its initial filing, the Company submitted its Energy Efficiency Charges tariff, proposed M.D.P.U. No. 50D, which was not updated pursuant to the directives in D.P.U. 20-150-A (Exh. ES-RDC-6, Sch. 1, at 250-253). Subsequently, the Company submitted a revised tariff (proposed M.D.P.U. No. 50E) to address the Department's findings and directives in D.P.U. 20-150-A (Exh. DPU 1-2, Att.). During the proceedings, the Company also agreed to increase the low-income discount from 36 percent to 42 percent in order to mitigate the bill impact associated with the RPS solar carve out, the net metering recovery surcharge, and the transition to the revised EES (Exhs. DPU 39-1, Att. B (Supp. 1); LI-ES 1-4 & Att.; LI-ES 1-5; CLC-ES 7-2).

2. Positions of the Parties

a. Attorney General

The Attorney General argues that implementing the revised EES calculation at this time will result in significant bill impacts for ratepayers (Attorney General Brief at 17, citing Exh. DPU 39-1, Att. (c) (Supp. 2)). As such, the Attorney General asserts that the Department should delay the implementation of the revised EES calculation until the 2025-2027 three-year energy efficiency cycle to alleviate cost pressure on ratepayers (Attorney General Brief at 178-179). She also notes that delaying the implementation of the revised calculation would obviate the need to increase the low-income discount to 42 percent (Attorney General Brief at 179).

The Attorney General also submits that by delaying the implementation of the revised EES calculation for several years, it is likely that National Grid (electric) and Unitil (electric)

would have filed base distribution rate cases that would allow for the required EES-related tariff changes and implementation of the associated changes for those companies (Attorney General Brief at 179). The Attorney General also contends that this delay would allow for additional time to develop policies for the best long-term approach to low-income assistance in light of current economic uncertainties in the greater context of the Commonwealth's priorities for equity and affordability as the state transitions to a clean energy future (Attorney General Brief at 179).

b. DOER

DOER argues that implementation of the revised EES calculation will compound the effect of the Company's proposed increase in base distribution rates and cost increases external to the rate-making process (DOER Reply Brief at 6-7). DOER agrees with the Attorney General that implementation should be delayed until the 2025-2027 three-year energy efficiency cycle to allow for consistency in implementation for all EDCs (DOER Reply Brief at 7).

c. Low-Income Network

The Low-Income Network argues that the Department should not implement a new EES calculation at any time, and instead should retain the old calculation (Low-Income Network Brief at 1). The Low-Income Network points to significant bill increases for low-income customers if the new calculation is implemented (Low-Income Network Brief at 2-3, citing Exh. DPU 39-1, Att. (c) (Supp. 2)). The Low-Income Network contends that these bill impacts, combined with the "worldwide energy crisis", would adversely impact

low-income customers (Low-Income Network Brief at 23). Thus, the Low-Income Network asserts that the Department should "withdraw" any proposed increase to the EES (Low-Income Network Brief at 2).

d. Cape Light Compact

Cape Light Compact also argues that implementation of the Company's revised EES calculation will have significant bill impacts on ratepayers (CLC Brief at 37, citing Exh. DPU 39-1 (Supp. 2)). Further, Cape Light Compact contends that the Company's low-income ratepayers should not be subject to higher rates any sooner than low-income customers of National Grid (electric) and Unitil (electric) (CLC Brief at 37). As such, Cape Light Compact asserts that the Department should delay the implementation of the revised EES calculation until it can be done consistently across all EDCs (CLC Brief at 3, 37). In this regard, Cape Light Compact agrees with the Attorney General's timeline for implementation (CLC Reply Brief 15-16). Further, Cape Light Compact asserts that the Department should consider the impact on moderate income ratepayers in any investigation into a long-term approach to low-income assistance (CLC Reply Brief at 16).

3. Analysis and Findings

As an initial matter, the Department has reviewed the Company's proposed Energy Efficiency Charges tariff (proposed M.D.P.U. No. 50E) filed in response to information request DPU 1-2. The Department finds that that proposed tariff complies with the directives of D.P.U. 20-150-A at 34-36. In particular, the revised EES calculation therein allocates low-income energy efficiency program costs between a single residential and low-income

combined sector and the C&I sector using a DRA and collects the resulting allocation from each rate class in the sector using a volumetric charge (Exh. DPU 1-2, Att. at 1-3). D.P.U. 20-150-A at 34; D.P.U. 20-150, at 14, citing D.P.U. 12-126A through 12-126I at 23. We affirm that this EES calculation is reasonable. The Department conditionally approves the Company's proposed Energy Efficiency Charges tariff subject to the Company's providing a clean tariff as part of its compliance filing in this case.

Regarding the implementation of the revised EES calculation, the Department directs the Company to calculate a new EES, consistent with the formula presented in proposed M.D.P.U. No. 50E, for effect on July 1, 2023, as part of its next Energy Efficiency Reconciliation Factor ("EERF") filing.[209] The Department Order adopting the Revised EE Guidelines contemplated that each company would provide a revised EES calculation in its next base distribution rate case. D.P.U. 20-150-A at 34-35. Thus, we are not persuaded that the Department should wait until National Grid (electric) and Unitil (electric) have submitted their respective revised EES calculations to begin NSTAR Electric's implementation of the revised calculation. Nor will we revisit our decision to allow for the revised EES calculation, as suggested by the Low-Income Network. The Department, however, continues to share the Low-Income Network's concerns regarding the overall affordability of energy bills, as discussed below. Further, we find that the continuing discussion and development of policies to address low-income assistance are not dependent

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[209] The Cape Light Compact should also recalculate its EERFs based on the revised EES for July 1, 2023.

upon the Company's delaying the implementation of the revised EES calculation. The Department and relevant stakeholders will continue to examine these issues as appropriate in future dockets.

In light of the potential bill impacts resulting from changing the EES calculation and the adjustment to the low-income discount that reflects costs associated with the RPS solar carve out and the net metering recovery surcharge for low-income customers consistent with G.L. c. 164, § 141,[210] the Company agreed to increase the low-income discount from 36 percent to 42 percent (Exhs. DPU 39-1 & Atts. (Supp. 2); LI-ES 1-4 & Att.; LI-ES 1-5; CLC-ES 7-2). The Department finds that this increase in the discount rate is reasonable and approves the proposal. As low-income customers will continue to receive a discount on their total electric bill following implementation of the revised EES calculation, the increase in the discount to 42 percent will help to mitigate the actual impacts from the revised EES calculation, once implemented in the next EERF filing. Further, the Department notes that the implementation of the 42-percent low-income discount rate effective January 1, 2023, will help mitigate winter energy prices for low-income customers, prior to the implementation of

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210 Section 141 provides that in all decisions or actions regarding rate designs, the Department shall consider the impacts of such actions, including the impact of new financial incentives on the successful development of energy efficiency and on-site generation. Where the scale of on-site generation would have an impact on affordability for low-income customers, a fully compensating adjustment shall be made to the low-income rate discount. The Department notes that Section 141 was amended after evidentiary hearings in this proceeding and, therefore, the Department will not consider the revised language in this proceeding. 2022 Clean Energy Act, § 56. Nevertheless, the amended Section 141 would not have changed the Department's analysis.

the revised EES. Thus, the Department is satisfied that the revised EES calculation should be implemented consistent with the directive above.

The Department recognizes that the revised low-income discount rate constitutes a significant bill discount for low-income customers, and we are mindful of the impacts that increasing the discount rate may have for other customers. Costs associated with providing a low-income discount are recovered from all distribution customers. Accordingly, the Department balances the impact of increasing the discount rate against the impact on other customers, particularly moderate-income residential and small C&I customers. While the Department finds that the revision to the EES, which will result in a EERF reduction for non-low-income residential customers, and the adjustment to the low-income discount are reasonable at this time, the Department notes that adjustments to the low-income discount and framework may be required in the future to provide equity for all customers. The low-income discount rate was historically fixed at 25 percent. Pursuant to G.L. c. 164, § 141, the low-income discount rate has increased in recent years to provide a full offset of DG resources that have, to date, not been as widely adopted by low-income customers.[211] As the low-income discount rate increases, the delta between moderate-income

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[211] Recent changes in law and incentive programs, such as SMART and energy efficiency programs, seek to change the landscape of low-income solar adoption. See, e.g., 2021 Climate Act, §§ 54, 94; 2022 Clean Energy Act, §§ 24, 87A (each section establishing new solar incentive requirements or programs for low-income customers). As low-income participation increases, the Department may revisit the appropriate level of costs that should be offset by a low-income discount pursuant to G.L. c. 164, § 141.

and low-income customer energy costs has become significant. For future base distribution rate cases, EDCs should explore stratifying low-income discount rates in a manner that provides an equitable discount for customers, provides assistance for the most vulnerable customers, and mitigates the potential rate shock for customers that transition from low to moderate income.

The Department recognizes that energy bills have strained many family budgets, and we have learned from the COVID-19 pandemic and our experience with arrearage management that there is a need for a deeper understanding of the impact energy costs are having on households. Further, with the upcoming electric supply issues, ensuring a more in-depth understanding of energy burdens has become essential. To begin collecting more detailed and utility-specific information on energy burden, the Department directs NSTAR Electric to make detailed utility burden index analysis on electricity residential bills in their Annual Returns to the Department, beginning with the 2022 Annual Return submitted in Spring 2023.

With this directive, the Company must establish a credible process for tracking and calculating customers' energy burdens with the intention of using this information to develop more advanced and meaningful strategies to enhance customer engagement and support. The Department expects that the Company will provide a detailed household economic burden index analysis evaluating residential energy electric utility customer bills as percentages of household income by county and to provide the summary results of a detailed household burden index analysis by, at least census, block group. An electric customer's total bill

should include net metering from solar, low-income discounts, and other factors impacting the bill. Additionally, the Company shall show the analysis by household income for the statewide median household income and 50 percent, 100 percent, and 200 percent of the Federal Poverty Guidelines. This level of granularity in the data is intended to provide a clearer picture of specific areas of the Company's service territory with higher-than-average energy burden. The Department recognizes that for the beginning of this process, we are primarily focused on electric utility bills generated by EDCs. Therefore, the Department will issue directives to National Grid (electric) and Unitil (electric) to include in their 2022 Annual Returns to the Department similar analyses as discussed above. As more homes convert to electric heat, the Department may consider requiring an analysis of energy burden between heating and non-heating customers.

D. Rate-by-Rate Analysis

1. Introduction

The Department must determine on a rate-class-by-rate-class basis, the proper level at which to set the customer charge and distribution charges for each rate class. D.P.U. 17-05-B at 260. The Department's long-standing policy regarding the allocation of class revenue requirements is that a company's total distribution costs should be allocated on the basis of EROR. D.P.U. 17-05-B at 260-261; D.T.E. 02-24/25, at 256. This allocation method satisfies the Department's rate design goal of fairness. D.P.U. 17-05-B at 261. Nonetheless, the Department must balance its goal of fairness with its goal of continuity.

D.P.U. 17-05-B at 261. For this balancing, we have reviewed the changes in total revenue requirement by rate class and bill impacts by consumption level within rate classes.

2. Rate Design Overview

The basic components of the Company's delivery service rates are the customer charge, which is a fixed monthly amount, and the distribution charge (Exh. ES-RDC-1, at 7). The distribution charge includes an energy (kWh) charge based on usage, and, for some C&I customers, can also include a demand (kW) charge (Exh. ES-RDC-1, at 7). The customer charge is intended to recover fixed costs that do not vary with customer electricity use, such as the costs of billing and metering (Exh. ES-RDC-1, at 7). Energy charges are a function of customer use, and, therefore, impact a customer's bill in proportion to how much electricity a customer has consumed in a given month (Exh. ES-RDC-1, at 7). A demand charge may be a per-kW charge or per-kilovolt-ampere ("kVA") charge that is billed on the customer's highest usage at a single point in time (Exh. ES-RDC-1, at 7).

Since fixed charges (i.e., customer charges) remain the same irrespective of usage, increases to fixed charges can have a negative bill impact on customers with low usage (Exh. ES-RDC-1, at 8). This impact may produce a high percentage bill impact, but not necessarily a large total dollar bill impact (Exh. ES-RDC-1, at 8). Conversely, higher customer charges benefit high volume users because a higher customer charge means a lower volumetric charge to recover the class revenue requirement, and, as such, fewer dollars need to be collected on a volumetric basis (Exh. ES-RDC-1, at 8). In addition, lower customer charges and higher volumetric rates may send price signals aligned with the Commonwealth's

public policy objectives regarding on-site generation and energy efficiency. G.L. c. 164, § 141. Establishing the proper customer charge is a trade-off where the intra-class subsidization of costs between high- and low-consumption customers needs to be balanced against the customer bill impacts, as well as the relevant policy objectives under G.L. c. 164, § 141 (Exh. ES-RDC-1, at 8).

3. Residential Rates

a. Introduction

In D.P.U. 17-05-B at 89-92, the Department approved the consolidation of residential rates for all four legacy companies. Therefore, the Company has four residential rate classes offered across its EMA and WMA service areas: Rate R-1 is the residential non-heating rate class; Rate R-2 is the residential non-heating assistance rate class; Rate R-3 is the residential space heating rate class; and Rate R-4 is the residential space heating assistance rate class (Exhs. ES-RDC-1, at 16; ES-RDC-6, Sch. 1, at 8).

b. Company Proposal

i. Residential Rate R-1 and Residential Rate R-2

The Company's current residential Rate R-1 is available for all domestic purposes in individual private dwellings, individual apartments, or residential condominiums in which the principal means of heating the premises is not provided by permanently installed electric space heating equipment (Exh. ES-RDC-6, Sch. 2, at 53). The Company's current residential Rate R-2 is available to any Rate R-1 customer that is eligible for the Low-Income Home Energy Assistance Program ("LIHEAP"), or its successor program, or receives any

means-tested public benefit for which eligibility does not exceed 200 percent of the federal poverty level based on a household's gross income (Exh. ES-RDC-6, Sch. 2, at 55-57). Currently residential Rate R-1 and R-2 customers have a customer charge of $7.00 per month and an energy charge of $0.05165 per kWh (Exh. ES-RDC-2, Sch. 11, at 1 (Rev. 3)). The Company proposes to increase the monthly customer charge to $10.00 per month, and energy charge to $0.06107 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

ii. Residential Rate R-3 and Residential Rate R-4

The Company's current residential Rate R-3 is available for all domestic uses in a single private dwelling, in an individual apartment, or in a residential condominium where the principal means of heating the premises is provided by permanently installed electric space heating equipment (Exh. ES-RDC-6, Sch. 2, at 58). The Company's current residential Rate R-4 is available to any Rate R-3 customer that is eligible for LIHEAP, or its successor program, or receives any means-tested public benefit for which eligibility does not exceed 200 percent of the federal poverty level based on a household's gross income (Exh. ES-RDC-6, Sch. 2, at 60, 62). Currently Rate R-3 and R-4 customers have a customer charge of $7.00 per month and an energy charge of $0.04494 per kWh (Exh. ES-RDC-2, Sch. 11, at 2 (Rev. 3)). The Company proposes to increase the monthly customer charge to $10.00 per month, and the distribution energy charge to $0.05679 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

c. Positions of the Parties

i. Attorney General

The Attorney General argues that the Department should reject the Company's proposed residential customer charge (Attorney General Brief at 166). According to the Attorney General, the proposed increase of $3.00, or 43 percent, from $7.00 to $10.00, is inconsistent with promoting energy efficiency because it reduces economic incentives for ratepayers to control monthly utility bills through energy efficiency and conservation efforts (Attorney General Brief at 166). In addition, the Attorney General contends that an increase in the residential customer charge is not necessary, as the Company already collects a significant portion of its fixed costs through the current customer charge (Attorney General Brief at 168). Finally, the Attorney General asserts that the proposed increase in residential customer charges will have a disproportionately adverse impact on low-income ratepayers and fixed-income ratepayers, creating equity concerns (Attorney General Brief at 169).

ii. DOER

DOER argues that the proposed increase in the customer charge is not necessary for the Company's revenue stability and would cause rate shocks for consumers if the energy charge is not also reduced, especially considering other price increases across the economy (DOER Brief at 18). Further, DOER contends that if revenue decoupling is eliminated in the future, the method by which the Company will recover costs will change, and an increase in volumetric sales could lead to a decreased need to collect fixed costs (DOER Brief at 19).

iii. Cape Light Compact

Cape Light Compact argues that the Company's proposed increase in the residential customer charge is significant and should be rejected (CLC Brief at 28). In particular, Cape Light Compact asserts that the impact of the proposed increase would be difficult for those on a fixed income and who are low-income or low-use customers with little load to shift (CLC Brief at 28-31, citing Exh. CLC-JDW-1, at 5). Cape Light Compact recommends that the Company phase in the increase by $1.00 per year over a three-year period to achieve greater stability for customers (CLC Brief at 31-32, citing Exh. CLC-KFG-1, at 11, Table 3). Cape Light Compact asserts that the deficiency in revenue from this phased-in approach could be recovered through the residential energy charge (CLC Brief at 32).

iv. Company

The Company argues that the proposed residential customer charge increases are necessary because current charges are below the embedded cost levels that represent the customer cost to serve or are required to align classes more closely in the various legacy service areas (Company Brief at 426, citing Exh. CLF-1-4). Further, the Company contends that customer charges have barely increased since 1998 despite the addition of other rates that have made the customer charge an increasingly minor part of the total customer bill (Company Brief at 426, citing Exh. ES-RDC-Rebuttal-1, at 5). In addition, the Company asserts that the proposed $10.00 customer charge represents only seven percent of the total bill for an average customer, while the current customer charge of $7.00 represents five percent of the total bill for an average customer (Company Brief at 426, citing

Exh. ES-RDC-Rebuttal-1, at 5). According to the Company, this comparison demonstrates that more than 90 percent of an average customer bill is volumetric under both proposed and current rates (Company Brief at 426, citing Exh. ES-RDC-Rebuttal-1, at 5). Thus, the Company asserts that it does not recover most of its fixed customer-related costs outside of customer volumetric charges and average customers will continue to have the ability to reduce a vast portion of their bill (Company Brief at 426, citing Exh. ES-RDC-Rebuttal-1, at 5). The Company contends that the proposed customer charge is not a dramatic increase and will not impede conservation, but it will improve efficiency by more properly assigning fixed costs to fixed charges (Company Brief at 426, citing Exh. ES-RDC-Rebuttal-1, at 5).

Further, the Company argues that its proposed increase to the residential customer charge is intended to send the correct price signal to customers and to stabilize customer costs and is not intended to maintain revenue stability for the Company (Company Brief at 427, citing Exh. ES-RDC-Rebuttal-1, at 5). Moreover, the Company contends that the increased customer charge to low-income customers will be mitigated by the proposed increase in the low-income discount to 42 percent from 36 percent (Company Brief at 427, citing Exhs. LI-ES 1-4; LI-ES 1-5; CLC-ES 5-1; CLC-ES 7-2). Finally, the Company asserts that the rate burden to lower-use customers is not increased significantly more than for higher-use customers because, as noted above, more than 90 percent of an average customer bill is volumetric under both proposed and current rates (Company Brief at 427, citing Exhs. LI-ES 1-4; LI-ES 1-5; CLC-ES 5-1; CLC-ES 7-2).

d. Analysis and Findings

In recent years, the Department has frequently required companies to set demand and energy volumetric rates based on the revenue requirement remaining after revenues from the proposed customer charges have been taken into consideration. See, e.g., D.P.U. 18-150, at 542-562; D.P.U. 17-05-B at 260-323. The Department is charged with reviewing the resulting rates that the customer will experience, as well as the associated bill impact from changes to those rates, requiring us to weigh the goals of fairness, efficiency, simplicity, stability, and continuity. D.P.U. 18-150, at 543; D.P.U. 17-05-B at 260. As discussed in numerous places in this Order, the Department considers multiple factors in making its decisions regarding allowable costs, the resulting change in rates, and the resulting customer bills. There is no single optimal method of setting rates that will impact all customers equally. The Department recognizes that some changes can have disproportionate impacts on different customers. For a product that is priced using both a fixed charge and a variable charge, all else equal, a customer with low usage will experience a greater impact related to an increase in that fixed charge than a customer with high usage. Similarly, all else equal, a customer with high usage will experience a greater impact related to an increase in the volumetric charge than a lower usage customer.

The Company has demonstrated that its customer charges represent a relatively small amount of the total bill and, as such, the proposed increases will still provide appropriate price signals to customers to encourage implementation of conservation measures to lower their overall bill (Exh. ES-RDC-Rebuttal-1, at 5). Further, as noted in Section XVII.C.3

above, the Department approved an increase in the low-income discount rate from 36 percent to 42 percent. We find that the increase in the low-income discount rate will assist in mitigating the bill impacts to low-income customers of any rate increase. Based on these considerations, we are not persuaded that a phase-in of the proposed increase to the customer charge is warranted.

According to the Company's ACOSS, the existing embedded customer charge for rate classes R-1 and R-2 is $10.73 per month (Exh. ES-ACOS-2, at 9 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that a monthly customer charge of $10.00 for rate classes R-1 and R-2 best meets our rate design goals and objectives. Therefore, the Department approves a monthly customer charge of $10.00 for rate classes R-1 and R-2. The Company shall set the volumetric rate for rate classes R-1 and R-2 to recover the remaining class distribution revenue requirement approved in this Order.[212]

According to the Company's ACOSS, the existing embedded customer charge for rate classes R-3 and R-4 is $13.10 per month (Exh. ES-ACOS-2, at 9 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that a monthly customer charge of $10.00 for rate classes R-3 and R-4 best meets our rate design goals and objectives. Therefore, the Department approves a monthly customer charge of

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[212] The Department also directs NSTAR Electric, when designing the rates for the individual rate classes, to truncate the variable per kWh charges after five decimal places and truncate the variable per kW demand charges after two decimal places so that rates are designed to collect no more than the allowed revenue requirement.

$10.00 for rate classes R-3 and R-4. The Company shall set the volumetric rate for rate classes R-3 and R-4 to recover the remaining class distribution revenue requirement approved in this Order.

4. Small General Service Rates

a. Introduction

As discussed in Section XVII.B.3.b above, the Department approved the Company's proposal to group customers with less than 100 kW of demand annually into a small general service rate group. In doing so, some customers currently served on certain rate classes moved to different rate classes to allow for this alignment, and the Department allowed the Company's proposal to cancel multiple rate classes. Further, as discussed in Section XVII.B.3.b above, the Department allowed the Company's proposal to eliminate seasonal rate offerings (except for Rate T-1), to eliminate the energy block rate design and some demand ratchets where currently used, and to introduce a non-demand rate pricing option for proposed Rate G-1 (Exh. ES-RDC-1, at 41).[213]

b. Boston Edison Service Area

i. Company Proposal

(A) Rate G-1 Demand and Non-Demand

NSTAR Electric proposes Rate G-1 to be available for all non-residential uses of electricity to all customers in the Boston Edison service area where the service voltage is less

[213] In their next respective base distribution rate proceeding, the EDCs shall examine rate designs for all electric buildings to align with the Commonwealth's electrification policies.

than 14,000 volts and the load for billing purposes does not exceed or is estimated not to exceed 100 kW for twelve consecutive months (Exh. ES-RDC-6, Sch. 1, at 136). This offering will consist of two pricing options: (1) a non-demand pricing option, as currently exists for Rate G-1, and (2) a demand pricing option (Exhs. ES-RDC-1, at 44-45; ES-RDC-6, Sch. 1, at 136). The Company proposes that demand meters be installed for all new customers regardless of their elected price option but will assign new customers to the non-demand price option unless otherwise requested (Exh. ES-RDC-6, Sch. 1, at 136). Customers with demand that does not exceed 10 kW for twelve consecutive months may not elect the demand price option (Exh. ES-RDC-6, Sch. 1, at 136).

Currently, Rate G-1 non-demand customers have a monthly customer charge of $8.00, and summer and winter energy charges of $0.08267 per kWh and $0.05133 per kWh, respectively (Exh. ES-RDC-2, Sch. 12, at 1 (Rev. 3)). The Company proposes a monthly customer charge of $15.00 for the non-demand offering and an energy charge of $0.04874 for both summer and winter (Exh. ES-RDC-2, Sch. 12, at 1 (Rev. 3)).

Currently, Rate G-1 demand customers have a monthly customer charge of $11.00, summer and winter demand charges for customers with greater than 10 kW annual use of $0.97 per kW and $0.31 per kW, respectively, and declining block rate pricing for energy ranging from $0.02899 per kWh to $0.07679 per kWh for summer, and $0.02758 per kWh to $0.04778 per kWh for winter (Exh. ES-RDC-2, Sch. 12, at 1 (Rev. 3)). The Company proposes a monthly customer charge of $20.00 for the demand offering and a demand charge of $18.25 (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

As noted in Section XVII.B.3.b above, to align small C&I customers across the legacy companies, the Department allowed the Company's proposed transfer of some customers currently taking service under Rate G-2 and Rate T-2 to the newly introduced demand pricing option under Rate G-1. Further, the Department approved the Company's proposal to cancel current Rate G-2, given the alignment in definitions for small and medium rate classes. Current Rate G-2 customers have a customer charge of $18.00 per month, and a distribution demand charge for those using more than 10 kW annually of $22.90 per kW in the summer and $10.68 per kW in the winter (Exh. ES-RDC-2, Sch. 12, at 2-3 (Rev. 3)). Current Rate T-2 customers have monthly inclining block customer charges ranging from $27.00 to $360.00, summer demand charges of $22.21 per kW, and winter demand charges of $12.66 per kW (Exh. ES-RDC-2, Sch. 12, at 3 (Rev. 3)).

(B) Rate T-1 (Closed)

Rate T-1 is an optional TOU rate that is closed to new customers (Exh. ES-RDC-1, at 46). The rate is available for non-residential customers in the Boston Edison service area who take their electric service through a single meter, subject to the availability of TOU meters as determined by the Company (Exh. ES-RDC-6, Sch. 1, at 143). This rate is not available when a customer's load for billing purposes either exceeds or is estimated to exceed 10 kW in any billing month (Exh. ES-RDC-6, Sch. 1, at 143). This rate is used primarily by customers with standalone net metering facilities (Exh. ES-RDC-1, at 71).

Currently, Rate T-1 customers have a monthly customer charge of $10.00 and an energy charge of $0.17851 per kWh during the summer peak period[214] and $0.02353 per kWh during the summer off-peak period[215] (Exh. ES-RDC-2, Sch. 12, at 2 (Rev. 3)). Rate T-1 customers also have energy charges of $0.08369 per kWh and $0.02133 per kWh for the winter peak hours period and off-peak hours period, respectively (Exh. ES-RDC-2, Sch. 12, at 2 (Rev. 3)). The Company proposes to increase the monthly customer charge to $20.00 but make no changes to the current energy rates (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-1 and Rate T-1 is $11.39 per month (Exh. ES-ACOS-2, at 9, (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that a monthly customer charge of $15.00 for the Rate G-1 non-demand offering best meets our rate design goals and objectives. Similarly, the Department finds that a monthly customer charge of $20.00 and demand charge of $18.25 per kW for the Rate G-1 demand

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214 For Boston Edison Rate T-1, the Company defines the peak period as the hours between 9:00 a.m. and 6:00 p.m. on weekdays during the months of June through September and the hours between 8:00 a.m. and 9:00 p.m. during the months of October through May, when the peak period is the hours between 8 a.m. and 9 p.m. weekdays (Exh. ES-RDC-6, Sch. 2, at 77).

215 For Boston Edison Rate T-1, the Company defines off-peak hours as those that are not peak hours, including all hours during twelve Massachusetts holidays (Exh. ES-RDC-6, Sch. 2, at 77-78).

offering meets our rate design goals and objectives. Therefore, the Department approves (a) a monthly customer charge of $15.00 for the Rate G-1 non-demand offering and (b) a monthly customer charge of $20.00 for the Rate G-1 demand offering. The Company shall set a single volumetric rate for Rates G-1 demand and non-demand options. For Rate T-1, the Department finds a monthly charge of $20.00 to be appropriate and consistent with our rate design goals and objectives, therefore, we approve it. The Company shall set volumetric rates to recover the remaining class distribution revenue requirements approved in this Order, keeping the energy charges for the peak and off-peak hours and for the summer and winter periods in proportion with current rates. Further, the Department accepts the cancellation of current Rate G-2, given the proposed common definition of a small general service customer.

c. Cambridge Electric Light Service Area

i. Company Proposal

(A) Rate G-1

In Section XVII.B.3.b above, the Department allowed the Company's proposed realignment and consolidation of Cambridge Electric Light Rate G-1 to serve current Rate G-0, Rate G-1, and Rate G-4 customers (Exh. ES-RDC-1, at 20).[216] Cambridge Electric Light Rate G-1 will be available for all non-residential uses of electricity to all customers in the Cambridge Electric Light service area where the service voltage is less than 13,800 volts and demand does not exceed or is estimated not to exceed 100 kW in each of

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216 In addition, the Department allowed the Company's proposal to cancel Rate G-0 and Rate G-4 (Exhs. ES-RDC-1, at 20; ES-RDC-6, Sch. 1, at 152, 162).

twelve consecutive billing months (Exh. ES-RDC-6, Sch. 1, at 153). Current Rate G-0 has a customer charge of $5.00 and an energy charge of $0.03870 per kWh (Exh. ES-RDC-2, Sch. 12, at 4 (Rev. 3)). Current Rate G-1 has a customer charge of $8.00 and demand charges of $4.28 per kW for customers using 10 kW or less, and $7.98 for customers using more than 10 kW, as well as an energy charge of $0.01288 per kWh (Exh. ES-RDC-2, Sch. 12, at 4 (Rev. 3)). Current Rate G-4 has a customer charge of $12.00 per month and a demand charge of $4.74 per kW and an energy charge of $0.01188 per kWh (Exh. ES-RDC-2, Sch. 12, at 5 (Rev. 3)).

For proposed Rate G-1, the Company proposes a monthly customer charge of $15.00, no demand charge, and an energy charge of $0.03448 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

(B) Rate G-5 (Closed)

Cambridge Electric Light Rate G-5 is proposed to be available only at existing service locations to customers in the Cambridge Electric Light service area who were taking service under this rate prior to December 1, 1985, for electric space heating through a separate meter where electricity is the sole means of heating the premises (Exh. ES-RDC-6, Sch. 1, at 163). Currently, customers taking service on Rate G-5 have a customer charge of $8.00 per month, as well as energy charges of $0.02024 per kWh for energy use equal to or less than 5,000 kWh, and $0.02659 per kWh for customers using more than 5,000 kWh per month (Exh. ES-RDC-2, Sch. 12, at 5 (Rev. 3)). The Company proposes to increase the customer

charge to $15.00 per month and proposes an energy charge for all levels of use of $0.02527 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

(C) Rate G-6 (Closed)

Cambridge Electric Light Rate G-6 is an optional TOU rate that is closed and used by standalone net metering customers (Exh. ES-RDC-1, at 47). The rate is available upon written application and the execution of an electric service agreement, for non-residential customers in the Cambridge Electric Light service area who take their electric service through a single meter, subject to the availability of TOU as determined by the Company (Exh. ES-RDC-6, Sch. 1, at 165). This rate is not available when a customer's load for billing purposes either exceeds or is estimated to exceed 10 kW in any three consecutive billing months (Exh. ES-RDC-6, Sch. 1, at 165). The current monthly customer charge for Rate G-6 is $9.00, and the energy charges for the peak load period ("peak use")[217] is $0.06346 per kWh, and for the low load period ("low load use")[218] is $0.02338 per kWh (Exh. ES-RDC-2, Sch. 12, at 4 (Rev. 3)). The Company proposes to increase the customer

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217 For purposes of Cambridge Electric Light Rate G-6, the Company defines the peak load period as that portion of the year when eastern daylight savings time is in effect, the period beginning at 9:00 a.m. and ending at 6:00 p.m. on all weekdays, Monday through Friday (Exh. ES-RDC-6, Sch. 2, at 110). When eastern standard time is in effect, the peak load period is the period beginning at 4:00 p.m. and ending at 9:00 p.m. on all weekdays, Monday through Friday (Exh. ES-RDC-6, Sch. 2, at 110).

218 For purposes of Cambridge Electric Light Rate G-6, the Company defines the low load period as all hours not included in the peak load period (Exh. ES-RDC-6, Sch. 2, at 110).

charge to $20.00 per month but proposes no changes to the current volumetric charges (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the embedded customer charge for proposed Rate G-1, Rate G-4, and Rate G-6 is $23.03 per month (Exh. ES-ACOS-2, at 10 (Rev. 3)). The embedded customer charge for proposed Rate G-5 is $33.88 per month (Exh. ES-ACOS-2, at 10 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that a monthly customer charge of $15.00 for Rate G-1 and Rate G-5 best meet our rate design goals and objectives. Therefore, the Department approves (a) a monthly customer charge of $15.00 for Rate G-1 and (b) a monthly customer charge of $15.00 for Rate G-5. For Rate G-1, the Company shall eliminate the current demand charge and recover the remaining class distribution revenue requirements approved in this Order using a single volumetric rate. For Rate G-5 the Company shall also implement a single volumetric rate to recover the remaining class distribution revenue requirements approved in this Order. In addition, for Rate G-6 the Department finds that a monthly customer charge of $20.00 also meets our rate design goals and objectives and, therefore, we approve it. For Rate G-6, the Company shall recover the remaining class distribution revenue requirements approved in this Order through the energy charges using the proposed method for establishing these rates.

d. Commonwealth Electric Service Area

i. Company Proposal

(A) Rate G-1

Commonwealth Electric Rate G-1 is proposed to be available to all customers in the South Shore, Cape Cod, and Martha's Vineyard service area except those customers whose load for billing purposes either exceeds or is estimated to exceed 100 kW in each of twelve consecutive billing months (Exh. ES-RDC-6, Sch. 1, at 183). The Company states that demand meters will be installed for all new customers (Exh. ES-RDC-6, Sch. 1, at 183). Commonwealth Electric Rate G-1 is proposed to serve customers currently taking service under both the annual and seasonal offerings, as well as current Rate G-5 customers (Exh. ES-RDC-1, at 72).[219] These rate classes currently have a monthly customer charge of $6.00 (Exh. ES-RDC-2, Sch. 12, at 6, 8 (Rev. 3)). Customers currently taking service under this offering have a demand charge of $5.59 per kW for customers using greater than 10 kW, as well as energy charges of $0.04684 per kWh for customers with less than or equal to 2,300 kWh of use, and $0.01269 per kWh for customers with greater than 2,300 kWh of use (Exh. ES-RDC-2, Sch. 12, at 6 (Rev. 3)). Current Rate G-1 for seasonal customers has a demand charge of $4.93 per kW for customers using greater than 10 kW, as well as energy charges of $0.08697 per kWh for customers with less than or equal to

[219] In Section XVII.B.3.b above, the Department allowed the Company's consolidation and alignment plan, and, therefore, allowed the Company's proposal to cancel Rate G-5 (Exh. ES-RDC-1, at 72).

1,800 kWh of use and $0.02763 per kWh for customers with greater than 1,800 kWh of use (Exh. ES-RDC-2, Sch. 12, at 6 (Rev. 3)).

For proposed Rate G-1, the Company proposes to eliminate the seasonal offering and the demand charge; and set the monthly customer charge at $15.00 and energy charge at $0.03755 per kWh for all hours of use (Exhs. ES-RDC-1, at 47; ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

(B) Rates G-7

Rate G-7 is an optional TOU rate offering available for all non-residential uses of electricity to customers in the South Shore, Cape Cod and Martha's Vineyard service area except those whose load for billing purposes either exceeds or is estimated to exceed 100 kW in each of twelve consecutive billing months (Exh. ES-RDC-6, Sch. 1, at 201). This rate currently serves annual as well as seasonal customers (Exh. ES-RDC-6, Sch. 1, at 201). The current Rate G-7 monthly customer charge is $10.00, and, for annual customers, the demand charge is $3.81 per kW, the peak use[220] energy charge is $0.02621 per kWh, and the low load use[221] energy charge is $0.01836 per kWh (Exh. ES-RDC-2, Sch. 12, at 7 (Rev. 3)).

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220 For purposes of Commonwealth Electric Rate G-7, the Company defines the peak load period as that portion of the year when eastern daylight savings time is in effect, the period beginning at 9:00 a.m. and ending at 6:00 p.m. on all weekdays, Monday through Friday (Exh. ES-RDC-6, Sch. 2, at 110). When eastern standard time is in effect, the peak load period is the period beginning at 4:00 p.m. and ending at 9:00 p.m. on all weekdays, Monday through Friday (Exh. ES-RDC-6, Sch. 2, at 164).

221 For purposes of Commonwealth Electric Rate G-7, the Company defines the low load period as all hours not included in the peak load period (Exh. ES-RDC-6, Sch. 2, at 164).

For current seasonal customers, the demand charge is $3.86 per kW, the peak use energy charge is $0.05113 per kWh, and the low load use energy charge is $0.04300 per kWh (Exh. ES-RDC-2, Sch. 12, at 7 (Rev. 3)).

The Company proposes to eliminate the seasonal offering and set the monthly customer charge at $20.00, the demand charge at $3.81 per kW, the peak use energy charge at $0.03747 per kWh, and the low load use energy charge at $0.02625 per kWh (Exhs. ES-RDC-1, at 47-48; ES-RDC-2, Sch. 1, at 1 (Rev. 3)). Furthermore, the Department allowed the Company's proposal to close Rate G-7 to curb the growth of discounted legacy rates and to facilitate alignment (Exh. ES-RDC-1, at 72).

(C) Rate G-4 (Closed)

Rate G-4 is closed to new customers (Exh. ES-RDC-1, at 48). It is available for general power purposes only at existing service locations to customers in the South Shore, Cape Cod, and Martha's Vineyard service area who were taking service under this rate schedule as of February 8, 1980 (Exh. ES-RDC-6, Sch. 1, at 194). This rate is not available for standby service in idle plants or buildings, or where operations have been reduced to a small part of normal capacity of the plant (Exh. ES-RDC-6, Sch. 1, at 194). For industrial service where the connected load is 50 horsepower or more, incidental lighting is allowed (Exh. ES-RDC-6, Sch. 1, at 194). The current monthly customer charge for Rate G-4 is $6.00, the demand charge is $1.99 per kW, and the energy charge is $0.02282 per kWh (Exh. ES-RDC-2, Sch. 12, at 8 (Rev. 3)). The Company proposes a monthly customer

charge of $15.00, a demand charge of $2.17 per kW, and an energy charge of $0.02490 per kWh (Exh. ES-RDC-2, Sch. 1, at 1, (Rev. 3)).

(D) Rate G-6 (Closed)

Rate G-6 is also closed to new customers (Exh. ES-RDC-1, at 48). It is available only at existing service locations to customers in the South Shore, Cape Cod, and Martha's Vineyard service area who were taking service as of February 8, 1980, under an all-electric school rate schedule or under a special contract for all-electric school service (Exh. ES-RDC-6, Sch. 1, at 198). This rate is available for annual service in public and private school buildings where electricity supplies the total energy requirements of the premises served (Exh. ES-RDC-6, Sch. 1, at 198).

The current monthly customer charge for Rate G-6 is $30.00, and the energy charge is $0.01867 per kWh. The Company proposes a monthly customer charge of $15.00 and an energy charge of $0.01974 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charges for proposed Rate G-1 and Rate G-7 is $15.32 per month, and for Rate G-5 is $16.07 per month (Exh. ES-ACOS-2, at 10-11 (Rev. 3)). For proposed Rate G-4, the embedded monthly customer charge is $35.90, and for proposed Rate G-6 the embedded monthly customer charge is $41.33 (Exh. ES-ACOS-2, at 11 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that a monthly customer charge of

$15.00 for Rate G-1, Rate G-4, and Rate G-6, as well as $20.00 for Rate G-7 best meet our rate design goals and objectives. Therefore, the Department approves (a) a monthly customer charge of $15.00 for Rate G-1, Rate G-4, and Rate G-6 and (b) a monthly customer charge of $20.00 for Rate G-7. As stated in Section XVII.B.3.b above, the Department approves the Company's proposal to eliminate the seasonal offerings under Rates G-1 and G-7. For Rate G-1, the Department also approves the Company's proposal to eliminate the demand charge as it meets the rate design goal of simplicity. Further, the Department approves the Company's proposed demand charges of $3.81 per kW for Rate G-7 customers and $2.17 per kW for customers taking service under Rate G-4 as they best meet our rate design goals and objectives at this time.

The Company shall recover the remaining distribution revenue requirement for Rate G-1 approved in this Order using a single volumetric rate. For Rate G-7, the Company shall change current peak use and low load use energy charges in proportion with current energy rates to collect the remaining distribution revenue requirement approved in this Order. For Rate G-4 and Rate G-6, the Company shall recover the remaining distribution revenue requirements approved in this Order for each class using a single volumetric rate for each rate class.

e. WMA Service Area

i. Company Proposal

(A) Rate 23 (Closed)

Rate 23 has not been available to new customers since February 1, 2011 (Exh. ES-RDC-6, Sch. 1, at 205). This rate is applicable to the use of electricity for water heating of any customer other than residential in the WMA service territory (Exh. ES-RDC-6, Sch. 1, at 205). This rate is available to residential customers where electricity supplies a portion of, but is not the sole source of, domestic hot water heating (Exh. ES-RDC-6, Sch. 1, at 205). It is also available for centrally supplied water heating in apartment buildings (Exh. ES-RDC-6, Sch. 1, at 205).

The monthly customer charge for Rate 23 is currently $17.00 and the energy charge is $0.03125 per kWh (Exh. ES-RDC-2, Sch. 12, at 9 (Rev. 3)). The Company proposes to increase the monthly customer charge to $20.00 and decrease the energy charge to $0.02356 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

(B) Rate 24 (Closed)

Rate 24 is applicable to the use of electricity for lighting and incidental power in an edifice set apart exclusively for public worship and only for those customers in the WMA service territory already receiving service on this rate (Exh. ES-RDC-6, Sch. 1, at 208).

The monthly customer charge for Rate 24 is currently $65.00, the demand charge is $4.84 per kW for demand over 2 kW, and the energy charge is $0.00617 per kWh (Exh. ES-RDC-2, Sch. 12, at 9 (Rev. 3)). The Company proposes no change to the

customer or demand charges and proposes to increase the energy charge to $0.00902 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)).

(C) Rate G-1

In Section XVII.B.3.b above, the Department allowed the Company's consolidation and alignment proposal for Rate G-1 to serve those customers currently taking service under Rate G-0, as well as Rate T-0, Rate T-4, and Rate G-2 customers using less than or equal to 100 kW of demand (Exhs. ES-RDC-1, at 72-73; ES-RDC-6, Sch. 2, at 171). Therefore, we allowed the Company's proposal to rename current Rate G-0 as Rate G-1, and to cancel Rate T-0 (Exh. ES-RDC-1, at 72). This rate is applicable to all uses of electricity at a single location in the WMA service territory that does not exceed a demand of 100 kW (Exh. ES-RDC-6, Sch. 1, at 210). The Company states that demand meters will be installed for all new customers regardless of the elected price option (Exh. ES-RDC-6, Sch. 1, at 210). Further, NSTAR Electric states that all electricity delivered under this rate shall be measured through one metering equipment, except that, where the Company deems it impractical to deliver electricity through one service, or where more than one meter has been installed, then the measurement of the amount of electricity consumed may be by two or more meters (Exh. ES-RDC-6, Sch. 1, at 210). The Company states that all electricity supplied shall be for the exclusive use of the customer and shall not be resold (Exh. ES-RDC-6, Sch. 1, at 210). The Company further states that, with its permission, a customer may furnish electricity to persons or entities who occupy space in the building to which service is supplied hereunder, but on the express condition that the customer shall not

resell, make a specific charge for, or re-meter (or sub-meter) or measure or control the use of, any of the electricity furnished (Exh. ES-RDC-6, Sch. 1, at 210). Finally, the Company states that all new customers will be assigned the non-demand price option unless otherwise requested by the customer, and that unmetered customers may not elect the demand price option (Exh. ES-RDC-6, Sch. 1, at 210).

The current monthly customer charge for Rate G-0 is $30.00 for metered customers and $15.00 for unmetered customers (Exh. ES-RDC-2, Sch. 12, at 10 (Rev. 3)). The demand charge for customers with demand more than 2 kW is $10.83 per kW and the energy charge is $0.00213 per kWh (Exh. ES-RDC-2, Sch. 12, at 10 (Rev. 3)). Current Rate T-0 is a TOU rate, with a current monthly customer charge of $30.00, a demand charge of $10.50 per kW for use over 2 kW, a peak period energy charge of $0.00329 per kWh, and an off-peak period energy charge of $0.00088 per kWh (Exh. ES-RDC-2, Sch. 12, at 11 (Rev. 3)). Current Rate T-4 is also a TOU rate,[222] with a monthly customer charge of $353.00, a demand charge for customers using less than or equal to 50 kW of $1.99 per kW, a demand charge of $9.37 per kW for customers using more than 50 kW, a peak energy charge of $0.00315 per kWh, and an off-peak energy charge of $0.00089 per kWh (Exh. ES-RDC-2, Sch. 12, at 12 (Rev. 3)). Current Rate G-2 has a monthly customer charge of $353.00, a demand charge of $1.99 per kW for use equal to or less than 50 kW, a

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222 For Rate T-4 and all WMA TOU rates, the Company defines the peak period as weekdays from noon to 8 p.m., while all other hours are the off-peak period (Exh. ES-RDC-6, Sch. 2, at 178, 182, 186).

demand charge of $9.37 per kW for use over 50 kW, and an energy change of $0.00210 per kWh (Exh. ES-RDC-2, Sch. 12, at 12 (Rev. 3)).

The Company proposes the new Rate G-1 offerings to have a monthly customer charge of $30.00 for metered customers and $15.00 for unmetered customers (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)). For non-demand Rate G-1 customers, the Company proposes an energy charge of $0.03614 per kWh. For demand Rate G-1 customers, the Company proposes a demand charge for customers using more than two kW of $10.83 per kW and an energy charge of $0.00434 per kWh (Exh. ES-RDC-2, Sch. 1, at 1 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded monthly customer charge for proposed Rate 23 is $20.00 and the embedded monthly customer charge for proposed Rate 24 is $50.08 (Exh. ES-ACOS-2, at 11 (Rev. 3)). For proposed Rate G-1, the embedded monthly customer charge is $26.49 per month (Exh. ES-ACOS-2, at 12 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $20.00 for Rate 23 and $65.00 for Rate 24 best meets our rate design goals and objectives and, therefore, are approved. Similarly, monthly customer charges of $30.00 for metered and $15.00 for unmetered Rate G-1 customers best meets our rate design goals and objectives and, therefore, are approved.

The Department also finds that the proposed demand charge of $4.84 per kW for Rate 24 customers using more than two kW meets our rate design goals and objectives and, therefore, is approved. Similarly, for the Rate G-1 demand offering, the Department approves the Company's proposed demand charge of $10.83 per kW for customers using more than two kW as it is equal to the current charge for customers taking service under Rate G-0, and, therefore, meets the Department's goal of continuity. Further, the Company shall set energy rates for Rate 23, Rate 24, and Rate G-1 to recover each class's remaining class distribution revenue requirements approved in this Order.

5. Medium General Service Rates

a. Introduction

As previously mentioned, in Section XVII.B.3.b the Department accepted the Company's proposal to group customers with less than 100 kW of demand annually into a small general service rate group (Exh. ES-RDC-1, at 19). In doing so, the Company moved some customers previously considered to be in the small C&I rate group into the medium C&I rate group (Exh. ES-RDC-1, at 19-20). Therefore, some customers currently served at rates previously defined as small and medium C&I will move to different rate classes to allow for this alignment (Exh. ES-RDC-1, at 19-20). Generally, the definition for the medium C&I rate group is customers with demand greater than 100 kW that are not otherwise served by a large C&I rate class (Exh. ES-RDC-1, at 20). Similar to its approach to small C&I rates, the Department allowed the Company's proposal to eliminate

seasonal pricing in the Boston Edison service area and to eliminate most instances of demand block design where used (Exh. ES-RDC-1, at 50).

b. Boston Edison Service Area

i. Company Proposal

(A) Rate G-2

Above, the Department allowed the Company to rename current Rate T-2 as Rate G-2. Rate G-2 is available for all non-residential uses of electricity to all customers in the Boston Edison service area where the service voltage is less than 14,000 volts and the demand is equal to or greater than 100 kW for twelve consecutive months (Exhs. ES-RDC-1, at 20; ES-RDC-6, Sch. 1, at 146). Currently, Rate T-2 has a four-block customer charge ranging from $27.00 to $360.00 per month, a summer period demand charge of $22.21 per kW, and a winter period demand charge of $12.66 per kW (Exh. ES-RDC-2, Sch. 13, at 2 (Rev. 3)). The Company proposes no changes to the monthly customer charges for the first three blocks, and to increase the fourth block from $360.00 per month to $370.00 per month (for customers using more than 1,000 kW) (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). Further, the Company proposes a single demand charge of $17.31 per kW (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed this issue on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the embedded customer charge for proposed Rate G-2 is $66.07 per month (Exh. ES-ACOS-2, at 9 (Rev. 3)). Based on a review of

embedded costs and the bill impacts on customers, the Department finds that the current monthly customer charge structure, $27.00 for customers using up to 150 kW, $110.00 for customers using more than 150 kW but equal to or less than 300 kW, $160.00 for customers using more than 300 kW but less than or equal to 1,000 kW, and $370.00 for customers using more than 1,000 kW, for current Rate T-2 best meets our rate design goals and objectives and, therefore, we approve these customer charges for proposed Rate G-2. The Company shall set a single demand rate for all Rate G-2 customers to recover the remaining class revenue requirement approved in this Order.

c. Cambridge Electric Light Service Area

i. Company Proposal

(A) Rate G-2

Cambridge Electric Light Rate G-2 is available for all uses of electricity to customers in the Cambridge Electric Light service area where the service voltage is less than 13,800 volts and the demand exceeds or is estimated to exceed 100 kW for at least twelve consecutive billing months (Exh. ES-RDC-6, Sch. 1, at 155). The current monthly customer charge for Rate G-2 is $97.00, the demand charge for customers using less than or equal to 100 kVA is $4.63 per kVA, and $5.73 per kVA for customers using more than 100 kVA, and the energy charge is $0.01085 per kWh (Exh. ES-RDC-2, Sch. 13, at 3 (Rev. 3)). The Company proposes to increase the monthly customer charge to $110.00, to broaden the current demand charge of $4.63 per kVA to all customers taking service under

this rate, and to increase the energy charge to $0.01479 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed this issue on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-2 is $89.69 per month (Exh. ES-ACOS-2, at 10 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $110.00 best meets our rate design goals and objectives and, therefore, is approved. The Company shall set the demand charge to $4.63 per kW, as proposed, as it is equal to the current first block demand charge and therefore meets our goal of continuity. The Company shall further develop a single energy charge to recover the remaining class distribution revenue requirement approved in this Order.

d. Commonwealth Electric Service Area

i. Company Proposal

(A) Rate G-2

Commonwealth Electric Rate G-2 is a TOU rate, available for all uses of electricity to customers in the South Shore, Cape Cod, and Martha's Vineyard service area with demands in excess of 100 kW but not greater than 500 kW for at least twelve consecutive months (Exh. ES-RDC-6, Sch. 1, at 186). The current monthly customer charge for Rate G-2 is $370.00, the demand charge is $1.78 per kW, and the energy charges are $0.02076 per kWh for peak load period, $0.01747 per kWh for low load period A, and $0.01133 per kWh for

low load period B[223] (Exh. ES-RDC-2, Sch. 13, at 5 (Rev. 3)). The Company proposes to maintain the current monthly customer charge, set the demand charge to $3.02 per kW, and set the energy charge for all hours to $0.01401 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed this issue on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the embedded customer charge for proposed Rate G-2 is $205.68 per month (Exh. ES-ACOS-2, at 10 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $370.00 best meets our rate design goals and objectives and,

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223 The Company defines the load periods for this rate as follows:

> Peak Load Period: During that portion of the year when eastern daylight savings time is in effect, the period beginning at 9:00 a.m. and ending at 6:00 p.m. on all weekdays, Monday through Friday. During that portion of the year when eastern standard time is in effect, the period beginning at 4:00 p.m. and ending at 9:00 p.m. on all weekdays, Monday through Friday.
>
> Low Load Period: All hours not included in the Peak Load Period. The Low Load Period shall be further divided into 2 separate time periods as follows:
>
> Low Load Period A: All hours not included in the Peak Load Period or Low Load Period B.
>
> Low Load Period B: During both eastern daylight savings time and eastern standard time, the period beginning at 10:00 p.m. and ending at 7:00 a.m. on all weekdays, Monday through Friday, and all hours on Saturday and Sunday.

(Exh. ES-RDC-6, Sch. 2, at 140).

therefore, is approved. The Department also finds that the proposed demand charge of $3.02 per kW meets our rate design goals and objectives and, therefore, is approved. The Company shall develop a single volumetric rate for Rate G-2 to recover the remaining class revenue requirement approved in this Order.

e. WMA Service Area

i. Company Proposal

(A) Rate G-2

WMA Rate G-2 is available only to the entire use of electricity at a single location in the WMA service area with demand use greater than 100 kW, but not in excess of 349 kW (Exh. ES-RDC-6, Sch. 1, at 214). All electricity use is required to be measured through one meter, except that, where the Company deems it impractical to deliver electricity through one service, or where more than one meter has been installed, then the measurement of electricity use may be by two or more meters (Exh. ES-RDC-6, Sch. 1, at 214). All electricity supplied is required to be for the exclusive use of the customer and cannot be resold (Exh. ES-RDC-6, Sch. 1, at 214). With the approval of the Company, the customer may furnish electricity to persons or entities who occupy space in the building to which service is supplied hereunder, but on the express condition that the customer shall not resell, make a specific charge for, or re-meter (or sub-meter) or measure or control the use of, any of the electricity so furnished (Exh. ES-RDC-6, Sch. 1, at 214). Rate 23 may be used in conjunction with this rate and is separately billed (Exh. ES-RDC-6, Sch. 1, at 214).

Rate G-2 is proposed to serve customers using more than 100 kW of demand from current Rate G-0 and Rate G-2 (Exh. ES-RDC-1, at 61, 63).

The current monthly customer charge for Rate G-0 is $30.00 for metered service and $15.00 for unmetered service, the demand charge is $10.83 per kW for customers with demand greater than 2 kW, and the energy charge is $0.00213 per kWh (Exh. ES-RDC-2, Sch. 13, at 5 (Rev. 3)). The current monthly customer charge for Rate G-2 is $353.00, the demand charge is $1.99 per kW for demand less than or equal to 50 kW, $9.37 per kW for demand over 50 kW, and the energy charge is $0.00210 per kWh (Exh. ES-RDC-2, Sch. 13, at 6 (Rev. 3)). For Rate G-2 the Company proposes a monthly customer charge of $110.00, a demand charge of $9.37 per kW, and an energy charge of $0.00417 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)).

(B) Rate T-4

WMA Rate T-4 is a TOU offering applicable only to the entire use of electricity at a single location in the WMA service area, for demand greater than 100 kW but not to exceed 349 kW (Exh. ES-RDC-6, Sch. 1, at 217). All electricity delivered is required to be measured through one meter (Exh. ES-RDC-6, Sch. 1, at 217). Also, all electricity supplied is required to be for the exclusive use of the customer and shall not be resold (Exh. ES-RDC-6, Sch. 1, at 217). With the approval of the Company, the customer may furnish electricity to persons or concerns who occupy space in the building to which service is supplied hereunder, but on the express condition that the customer shall not resell, make a specific charge for, or re-meter (or sub-meter) or measure, or control the use of, any of the

electricity so furnished (Exh. ES-RDC-6, Sch. 1, at 217). Rate T-4 is proposed to serve customers using more than 100 kW of demand from current Rates T-0 and T-4 (Exh. ES-RDC-1, at 63).[224]

The current monthly customer charge for Rate T-0 is $30.00, the demand charge is $10.50 per kW for customers with demand greater than 2 kW, the peak energy charge is $0.00329 per kWh, and the off-peak energy charge is $0.00088 per kWh (Exh. ES-RDC-2, Sch. 13, at 6 (Rev. 3)). The current monthly customer charge for Rate T-4 is $353.00, the demand charge is $1.99 per kW for demand under or equal to 50 kW, and $9.37 per kW for demand over 50 kW, the peak energy charge is $0.00315 per kWh, and the off-peak energy charge is $0.00089 per kWh (Exh. ES-RDC-2, Sch. 13, at 7 (Rev. 3)). For Rate T-4 the Company proposes a monthly customer charge of $110.00, a demand charge of $9.37 per kW, a peak energy charge of $0.00891 per kWh, and an off-peak energy charge of $0.00252 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the embedded customer charge for proposed Rate G-2 and Rate T-4 is $122.79 per month (Exh. ES-ACOS-2, at 12 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $110.00 best meets our rate design goals and

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224 As noted above, the Department approved the cancellation of Rate T-0.

objectives and, therefore, is approved for each rate. The Company shall set the demand charge, as proposed, to $9.37 per kW as this is less than or equal to all current demand charges for most of the relevant customers, and therefore meets our goal of continuity. For Rate G-2 the Company shall set the energy charge to recover the remaining class distribution revenue requirement approved in this Order. For Rate T-4 to recover the remaining class distribution revenue requirement approved in this Order, the Company shall set the peak and off-peak energy charges such that they maintain the same ratio to the current energy charges.

6. Large General Service Rates

a. Introduction

Similar to the medium C&I rate grouping, in Section XVII.B.3.b above, the Department allowed the Company's proposal to eliminate seasonal pricing and eliminate the demand block design where used (Exh. ES-RDC-1, at 53). The rate structure for Boston Edison and Cambridge Electric Light will not change (Exh. ES-RDC-1, at 18).

b. Boston Edison Service Area

i. Company Proposal

(A) Rate G-3

Boston Edison Rate G-3 is available for all use at a single location in the Boston Edison service area on contiguous private property if service is supplied to the customer and metered at 14,000 volts nominal or greater and if the customer furnishes, installs, owns, and maintains at its expense all protective devices, transformers, and other equipment required by the Company (Exh. ES-RDC-6, Sch. 1, at 140). The current monthly customer charge for Rate G-3 is $250.00, the summer period demand charge is $16.60 per kW, and the winter

period demand charge is $9.78 per kW (Exh. ES-RDC-2, Sch. 14, at 1 (Rev. 3)). The Company proposes to increase the monthly customer charge to $370.00 and to implement a single demand charge of $15.34 per kW (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)).

(B) Rate WR

Rate WR is available for electricity supplied and delivered in bulk for the purpose of construction and operation of the Deer Island Wastewater Treatment Facility from NSTAR Electric's K Street Transmission Station (Exh. ES-RDC-6, Sch. 1, at 149). The customer charge is currently $150.48 per month and there are no volumetric charges (Exh. ES-RDC-2, Sch. 14, at 1 (Rev. 3)). The Company proposes to increase the customer charge to $157.16 per month (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-3 is $129.72 per month (Exh. ES-ACOS-2, at 9 (Rev. 3)). The existing embedded monthly customer charge for proposed Rate WR is $127.32 (Exh. ES-ACOS-2, at 9 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $370.00 for Rate G-3 best meets our rate design goals and objectives and, therefore, is approved. The Company shall set a single demand rate for Rate G-3 to recover the remaining class distribution revenue requirement for Rate G-3 approved in this Order. Further, the Company shall set a single customer charge for Rate WR to recover the class revenue requirement as approved in this

Order. Such rate design satisfies our simplicity goal, as well as our continuity goal because it produces bill impacts that are moderate and reasonable, considering the size of the increase.

c. Cambridge Electric Light Service Area

i. Company Proposal

(A) Rate G-3

Cambridge Electric Light Rate G-3 is available for all uses of electricity to customers in the Cambridge Electric Light service area whose metered load exceeds or is estimated to exceed 100 kW for at least twelve consecutive billing months and the service voltage is 13,800 volts or higher (Exh. ES-RDC-6, Sch. 1, at 159). The current monthly customer charge for Rate G-3 is $97.00, the demand charge is $4.74 per kVA for customers with load greater than 100 kVA of demand, and the energy charge at $0.00381 per kWh (Exh. ES-RDC-2, Sch. 14, at 2 (Rev. 3)). The Company proposes to increase the monthly customer charge to $370.00, set the demand charge for all levels of use at $5.92 per kW, and to maintain the energy charge at $0.00381 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3); Sch. 14, at 2 (Rev. 3)).

(B) Rate SB-1/MS-1/SS-1 (Closed)

Rate SB-1 is a closed rate for customers with a written application and execution of an electric service agreement, for those in the Cambridge Electric Light service area with an alternative source of power who requests firm delivery of standby service and for whom the Company has an obligation to serve (Exh. ES-RDC-6, Sch. 1, at 168). The Company must

have the ability to meter the alternative source of power (Exh. ES-RDC-6, Sch. 1, at 168). Standby service is intended to deliver to the customer a replacement supply of power when the customer's alternative source of power is either partially or totally unavailable (Exh. ES-RDC-6, Sch. 1, at 168). A customer requesting standby service is required to take service under this rate schedule if the customer's alternative source of power (1) exceeds 100 kW, and (2) supplies at least 20 percent of the customer's total integrated electrical load (Exh. ES-RDC-6, Sch. 1, at 168).

Rate MS-1 is a closed rate for customers with a written application and execution of an electric service agreement, for those in the Cambridge Electric Light service area with an alternative source of power who requests delivery of maintenance service, and for whom the Company has an obligation to serve (Exh. ES-RDC-6, Sch. 1, at 173). The Company must have the ability to meter the alternative source of power. Maintenance service is intended to deliver to the customer electric energy and capacity to replace energy and capacity ordinarily generated by the facilities that make up the customer's alternative source of power when such facilities are withdrawn from service for maintenance scheduled in accordance with defined provisions (Exh. ES-RDC-6, Sch. 1, at 173). A customer requesting maintenance service is required to take service under this rate schedule if the customer's alternative source of power (1) exceeds 100 kW, and (2) supplies at least 20 percent of the customer's total integrated electrical load (Exh. ES-RDC-6, Sch. 1, at 173).

Rate SS-1 is a closed rate for customers with a written application and execution of an electric service agreement, for those in the Cambridge Electric Light service area with an

alternative source of power in operation prior to October 31, 2003, and for whom the Company has an obligation to serve (Exh. ES-RDC-6, Sch. 1, at 178). The Company must have the ability to meter the alternative source of power (Exh. ES-RDC-6, Sch. 1, at 178). Supplemental service is intended to deliver power to supplement the output of the customer's alternative source of power where the alternative source of power is less than the customer's maximum electrical load (Exh. ES-RDC-6, Sch. 1, at 178). A customer requesting supplemental service is required to take service under this rate schedule if the customer's alternative source of power (1) exceeds 100 kW, and (2) supplies at least 20 percent of the customer's total integrated electrical load (Exh. ES-RDC-6, Sch. 1, at 173).

Proposed rates Rate SB-1 and Rate MS-1 have a current monthly customer charge of $781.00 (Exh. ES-RDC-2, Sch. 14, at 2 (Rev. 3)). The standby demand charge for these rate classes is $6.48 per kW (Exh. ES-RDC-2, Sch. 14, at 2 (Rev. 3)). The supplemental demand charge for Rate SS-1, for customers with demand greater than 100 kVA, is $4.74 per kVA (Exh. ES-RDC-2, Sch. 14, at 2 (Rev. 3)). The supplemental energy charge for Rate SS-1 is equal to the energy charge for the otherwise applicable rate schedule, or Rate G-3, which is currently $0.00381 per kWh (Exh. ES-RDC-2, Sch. 14, at 2 (Rev. 3)). The Company proposes to increase the standby demand charge for Rates SB-1 and MS-1 to $7.59 per kW and the supplemental demand charge for Rate SS-1 to $5.92 per kVA, assuming the otherwise applicable rate class for the supplemental service customer is Rate G-3, for all demand levels (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). The Company

proposes to maintain the current customer charge and supplemental distribution energy charge (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-3 is $97.10 per month (Exh. ES-ACOS-2, at 10 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charge of $370.00 best meets our rate design goals and objectives and, therefore, is approved. The Company shall set the demand charge as proposed to $5.92 per kW, as this also best meets our rate design goals and objectives at this time. The Company shall develop a single energy rate for Rate G-3 to recover the remaining class revenue requirement for Rate G-3 approved in this Order. The Department further approves the Company's current and proposed monthly customer charge of $781.00 for Rate SB-1 and Rate MS-1. The Company shall set a single demand charge to recover the remaining class revenue requirement approved in this Order for Rate SB-1 and a single demand charge to recover the remaining class revenue requirement approved in this Order for Rate MS-1. Rate SS-1 shall be charged using the rates approved for the otherwise applicable rate, usually Rate G-3.[225]

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[225] The Department notes that the Company's proposed Rate SS-1 tariff appears to incorrectly refer to "Standby Service" in the last sentence of the Availability clause (Exh. ES-RDC-6, Sch. 1, at 178). The Company is directed to make any necessary corrections to this sentence in its compliance filing.

d. Commonwealth Electric Service Area

i. Company Proposal

(A) Rate G-3

Commonwealth Electric Rate G-3 is available for all uses of electricity to customers in the South Shore, Cape Cod, and Martha's Vineyard service area who establish demands in excess of 500 kW for at least twelve consecutive months (Exh. ES-RDC-6, Sch. 1, at 190). The current monthly customer charge for Rate G-3 is $930.00, the demand charge is $1.01 per kVA, the peak load energy charge is $0.01443 per kWh, the low load A period energy charge is $0.01328 per kWh, and the low load B period energy charge is $0.00919 per kWh (Exh. ES-RDC-2, Sch. 12, at 3 (Rev. 3)). The Company proposes to maintain the monthly customer charge at $930.00, increase the demand charge to $3.33 per kW, and implement a single energy charge for all hours of $0.01156 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed this issue on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-3 is $494.05 per month (Exh. ES-ACOS-2, at 11 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that maintaining the monthly customer charge of $930.00, as proposed, and a demand charge of $3.33 per kW best meet our rate design goals and objectives and, therefore, are approved. Finally, the Company shall develop a single energy rate to recover the remaining class distribution revenue requirement for Rate G-3 approved in this Order.

e. WMA Service Area

i. Company Proposal

(A) Rate G-3

Proposed WMA Rate G-3 is applicable to current customers taking service under Rate T-2 (Exh. ES-RDC-1, at 65). This proposed rate class is only for use of electricity at a single location in the WMA service area. All electricity is required to be measured through a single TOU meter installed by the Company, except that, where the Company deems it impractical to deliver electricity through one service, or where more than one meter has been installed, then the measurement of electricity may be by two or more meters (Exh. ES-RDC-6, Sch. 1, at 220). All electricity supplied shall be for the exclusive use of the customer and shall not be resold (Exh. ES-RDC-6, Sch. 1, at 220). With the approval of the Company, the customer may furnish electricity to persons or concerns who occupy space in the building to which service is supplied, but on the express condition that the customer shall not resell, make a specific charge for, or re-meter (or sub-meter) or measure, or control the use of, any of the electricity so furnished (Exh. ES-RDC-6, Sch. 1, at 220).

The current monthly customer charge for Rate T-2 is a three-block rate, ranging from $760.00 to $2,700.00 (Exh. ES-RDC-2, Sch. 14, at 3 (Rev. 3)). The current demand charge is $7.29 per kW, the current peak energy charge is $0.00297 per kWh, and the current off-peak energy charge is $0.00087 per kWh (Exh. ES-RDC-2, Sch. 14, at 3 (Rev. 3)). For Rate G-3, the Company proposes to maintain the existing customer charges and energy

charges for current Rate T-2, as well as proposes to increase the distribution demand charge to $10.28 per kW (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)).

(B) Rate T-5

Rate T-5 is only available where the entire use of electricity is at a single location in the WMA service area (Exh. ES-RDC-6, Sch. 1, at 223). All electricity is measured through a single TOU meter installed by the Company, except that, where the Company deems it impractical to deliver electricity through one service, or where more than one meter has been installed, then the measurement of electricity may be by two or more meters (Exh. ES-RDC-6, Sch. 1, at 223). Also, all electricity supplied is required to be for the exclusive use of the customer and shall not be resold (Exh. ES-RDC-6, Sch. 1, at 223). With the approval of the Company, the customer may furnish electricity to persons or concerns who occupy space in the building to which service is supplied hereunder, but on the express condition that the customer shall not resell, make a specific charge for, or re-meter (or sub-meter) or measure or control the use of any of the electricity so furnished (Exh. ES-RDC-6, Sch. 1, at 223).

The current customer charge for Rate T-5 is $3,800.00 per month and the current demand charge is $5.18 per kW (Exh. ES-RDC-2, Sch. 14, at 4 (Rev. 3)). The Company also has a peak energy charge of $0.00296 per kWh and an off-peak energy charge of $0.00087 per kWh (Exh. ES-RDC-2, Sch. 14, at 4 (Rev. 3)). The Company proposes to maintain the current customer charge and off-peak energy charge but increase the demand

charge to $8.08 per kW and to increase the peak energy charge to $0.00297 per kWh (Exh. ES-RDC-2, Sch. 1, at 2 (Rev. 3)). No party addressed these issues on brief.

ii. Analysis and Findings

According to the Company's ACOSS, the existing embedded customer charge for proposed Rate G-3 (i.e., current Rate T-2) is $432.36 per month and for proposed Rate T-5 is $1,910.10 per month (Exh. ES-ACOS-2, at 12 (Rev. 3)). Based on a review of embedded costs and the bill impacts on customers, the Department finds that the proposed monthly customer charges of $760.00 for use between 350 kW and 1,000 kW, $1,625.00 for customers using equal to or greater than 1,000 kW but less than 1,500 kW, and $2,700.00 for customers using equal to or greater than 1,500 kW but less than 2,500 kW for proposed Rate G-3 and $3,800.00 for Rate T-5 best meet our rate design goals and objectives. Therefore, the Department approves each of these monthly customer charges. The Company shall develop separate demand charges for Rate G-3 and Rate T-5, as well as peak and off-peak energy rates for both Rate G-3 and Rate T-5 together, to recover the remaining class distribution revenue requirements approved in this Order in proportion with the current energy rates.

7. Streetlighting and LED Streetlight Rates

a. Introduction

The Company proposes new rate design for Rates S-1 and S-2; Company and customer-owned streetlights, respectively (Exh. ES-RDC-1, at 65). The Company states that currently, similar to distribution rates for other customers, streetlight rates contain customer

and demand components that represent the cost of service to provide them (Exh. ES-RDC-1, at 65-66). In addition, streetlight rates have direct assigned costs that constitute a facilities charge, which differentiates the rates for Company-owned streetlights from customer-owned streetlights (Exh. ES-RDC-1, at 66). The Company proposes to use the total costs for customer, demand, O&M, and facility components for Rate S-1, and the total costs for customer and demand for Rate S-2 (Exh. ES-RDC-1, at 66).

For Rate S-1, the Company proposes to adjust all rates by the percentage needed to reach the target revenue requirement (Exh. ES-RDC-1, at 66). Specifically, for Rate S-1, the Company proposes to increase the rates for each luminaire, pole, and accessory by 19.9 percent to meet the adjusted class target revenue for Rate S-1 (Exhs. ES-RDC-1, at 66; ES-RDC-5, Sch. 1 (Rev. 3)). The class target revenue requirement was adjusted to exclude the proposed revenues from LED lights (Exh. ES-RDC-5, Sch. 2, at 2-4 (Rev. 3)).

As LED light pricing has decreased in recent years, the Company proposes to revise LED streetlight pricing to reflect the total installed cost for each offering (Exhs. ES-RDC-1, at 67; ES-RDC-5, Sch. 3, at 1 (Rev. 3). The Company proposes to then apply a carrying charge to the LED installed cost, to derive the total revenue requirement, which is then divided by twelve to derive a monthly fixed charge (Exh. ES-RDC-1, at 67).

For Rate S-2, the Company proposes to develop a per-kWh charge to meet the target revenue requirement (Exhs. ES-RDC-1, at 66, ES-RDC-5, Sch. 2, at 6 (Rev. 3). Rate S-2 customers in the EMA service area have a customer charge and an energy charge; Rate S-2 customers in the WMA service area are billed based on lamp wattage (Exh. ES-RDC-1,

at 68). For both the EMA and WMA service areas the Company proposes to implement a per-kWh energy rate calculated by dividing the class target revenue by the annual kWh sales for the rate class (Exh. ES-RDC-1, at 67-68). No party addressed these issues on brief.

b. Analysis and Findings

The Department has reviewed the Company's proposed changes for calculating streetlighting rates (Exhs. ES-RDC-1, at 65-68; ES-RDC-5 (Rev. 3)). The Department finds that the proposed rate design for both Company-owned and customer-owned streetlights is reasonable and meets our rate design goals and objectives, and therefore, are approved. In addition, the Department approves the revised LED streetlight pricing as proposed. Accordingly, the Department approves the rate design for streetlighting using the method proposed by the Company.

XVIII. TARIFF CHANGES

A. Terms and Conditions – Distribution Service

1. Introduction

The Company proposes four categories of changes to the appendices within its Terms and Conditions – Distribution Service tariff: (1) updates to the Schedule of Fees and Charges in Appendix A; (2) updates to the revenue multiplier in Appendix B used to credit customers for any contribution in aid of construction ("CIAC"); (3) the addition of "clarifying language" to the Appendix B sections that address line extension responsibilities; and (4) updates to the list of cities and towns in Appendix C (Exhs. ES-RDC-1, at 70; ES-RDC-6,

Sch. 2, at 20, 25, 26, 34, 35, 39, 44, 46, 48, 50-52). No party addressed these proposed changes on brief.

2. Analysis and Findings

With respect to the Schedule of Fees and Charges in Appendix A, the Company proposes to maintain the Returned Check Fee of $11.00; increase its Account Restoration Charge for meters from $30.00 to $103.00; increase its Account Restoration Charge for poles from $101.00 to $123.00; increase its Account Restoration Charge for manholes from $161.00 to $181.00; increase its Warrant Fee from $98.00 to $240.00; and decrease its Sales Tax Abatement Fee from $52.00 to $32.00 (Exhs. ES-RDC-6, Sch. 2, at 20; ES-RDC-7, WPs 3 through 5 (Rev. 2)).

Fees for ancillary services such as processing returned checks are intended to reimburse a company for actual costs incurred in providing these services. See, e.g., D.P.U. 17-05, at 735; D.P.U. 95-118, at 84; Whitinsville Water Company, D.P.U. 89-67, at 4-5 (1989); D.P.U. 956, at 62. The Department has found that fees for these various services must be based on the costs associated with these functions that the company actually incurred. DPU 17-05, at 735; D.P.U. 08-35, at 58; D.P.U. 89-67, at 4; D.P.U. 956, at 62. While the Department has accepted gradual adjustments to fees, excessive increases in a single step may violate the Department's continuity goal. D.P.U. 17-05, at 735; D.T.E. 05-27, at 354-355.

The Department has reviewed NSTAR Electric's proposed changes to its Schedule of Fees and Charges and the supporting calculations and assumptions, and we find that the

changes are reasonable and based on the costs associated with these functions that the Company incurs (Exhs. ES-RDC-6, Sch. 2, at 20; ES-RDC-7, WPs 3 through 5 (Rev. 2); DPU 11-21; DPU 31-12; Tr. 8, at 868-879). Further, the Department finds that the Company has correctly incorporated the additional revenues associated with the fee increases as a revenue credit in its proposed costs of service (Exhs. ES-REVREQ-1, at 50-51; ES-REVREQ-2, Schs. 1, 6 (Rev. 4); ES-REVREQ-3, WP 6 (Rev. 4)). We note, however, that the Company rounded, rather than truncated, the proposed fees and charges identified in Appendix A. To ensure that the proposed fees and charges do not collect more than the costs for providing the particular service, the Department directs the Company to truncate the amounts at whole dollars (Exh. DPU 31-12). Accordingly, the Company's approved Schedule of Fees and Charges are: Returned Check Fee of $10.00;[226] Account Restoration Charge for meters of $102.00; Account Restoration Charge for poles of $123.00; Account Restoration Charge for manholes of $180.00; Warrant Fee of $240.00; and Sales Tax Abatement Fee of $31.00 (Exhs. DPU 31-4 & Att.; ES-RDC-7, WPs 3 through 5 (Rev. 2)). The effect of the approved fees and charges on the Company's revenues are reflected in the Department's Schedule 9 below.

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[226] NSTAR Electric proposed to maintain the current Returned Check Fee of $11.00 based on the Company's proposed ten-year PBR term (Exh. DPU 31-4). The Company concedes, however, that the cost for this service is $10.00 (Exh. DPU 31-4). Moreover, the Department has rejected the Company's proposed ten-year PBR term (see Section IV.D.5.a above).

Next, the Company proposes to update the revenue multiplier in Appendix B used to credit customers for any CIAC (Exhs. ES-RDC-1, at 70; ES-RDC-6, Sch. 2, at 39, 48). NSTAR Electric's current line extension policy provides that if a developer makes a CIAC for a line extension located within a way that is accepted by the municipality as a public way, that developer shall be refunded an amount equal to 3.6 times the annual revenues estimated to be received by the Company associated with the line extension for the development, subject to a maximum refund that is no greater than the contribution itself (Exh. ES-RDC-6, Sch. 2 at 39, 48). The Company proposes to increase this revenue multiplier to 4.1 times the annual revenues that the Company estimates will be received from the line extension (Exhs. ES-RDC-6, Sch. 2 at 39, 48; ES-RDC-7, WP 6, (Rev. 2)). The Department has reviewed the Company's supporting calculations (Exhs. ES-RDC-6, Sch. 2, at 39, 48; ES-RDC-7, WP 6 (Rev. 2); DPU 11-21; Tr. 8, at 880). The Department directs the Company to recalculate the CIAC revenue multiplier using the revenue requirement components as determined in this Order and submit the calculations as part of its compliance filing.

NSTAR Electric also proposes to include in Appendix B language regarding certain responsibilities for costs that arise during maintenance, repair, or restoration work by the Company on customer property (Exhs. ES-RDC-1, at 70; ES-RDC-6, Sch. 2, at 25, 26, 34, 35, 44, 46). The Department has reviewed the proposed language and the supporting record, and we find the proposed language acceptable (Exhs. DPU 29-1; Tr. 8, at 885-894;

RR-AG-21 through RR-AG-24). As such, the Company may include this language in its Terms and Conditions – Distribution Service tariff.

Finally, NSTAR Electric proposes to update the list of cities and towns that the Company serves in its EMA and WMA service areas (Exhs. ES-RDC-1, at 70; ES-RDC-6, Sch. 2, at 50-52). The Department finds this proposal to be reasonable and appropriate and, therefore, we approve the proposed changes to Appendix C.

Based the considerations above, NSTAR Electric is directed to file a revised Terms and Conditions – Distribution Service tariff with its compliance filing, consistent with the findings above.

B. Other Tariff Provisions

The Company proposes changes to its other tariffs to reflect the proposals submitted in this case or to update current tariff language (see generally Exh. ES-RDC-6, Sch. 2). In the various sections of this Order, the Department has addressed Company proposals that implicate a number of the proposed tariff changes (e.g., PBR mechanism proposals, vegetation management proposals, storm fund proposals). The Department directs the Company to make all appropriate tariff changes consistent with the Department's findings in those sections. The Department has reviewed all remaining proposed tariff changes not specifically addressed elsewhere in this Order or not associated with an issue that is specifically addressed in this Order. We find these proposed changes to be reasonable, and, therefore, we approve the changes. The Company shall file revised tariffs, as appropriate, with its compliance filing.

XIX. SCHEDULES

A. Schedule 1 – Revenue Requirements and Calculation of Revenue Increase

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
COST OF SERVICE				
Total O&M Expense	461,098,686	1,264,605	(34,145,265)	428,218,026
Uncollectible O&M due to increase	619,920	27,280	(202,161)	445,039
Depreciation & Amortization	252,847,877	(7,740,625)	(27,087,735)	218,019,517
Taxes Other Than Income Taxes	147,739,020	12,868,998	(5,919,880)	154,688,138
Income Taxes	92,636,063	(4,567,460)	(8,987,989)	79,080,614
Return on Rate Base	311,997,775	(7,753,952)	(26,938,141)	277,305,682
Total Cost of Service	1,266,939,341	(5,901,154)	(103,281,171)	1,157,757,016
OPERATING REVENUES				
Total Distribution Revenues	1,146,568,761	(11,390,573)	(74,004,799)	1,061,173,390
Other Revenues	30,892,717	1,523,794	(88,188)	32,328,323
Total Operating Revenues	1,177,461,478	(9,866,779)	(74,092,987)	1,093,501,713
Total Revenue Deficiency	**89,477,863**	**3,965,625**	**(29,188,185)**	**64,255,303** *

* The Total Revenue Deficiency is adjusted for AMR/legacy CIS & MDMS, Vegetation Management, and SMART Program that are currently recovered or were proposed to be recovered in base rates and will be transferred or remain for recovery through reconciling mechanisms pursuant to the directives in this proceeding.

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

B. Schedule 2 – Operations and Maintenance Expenses

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Test Year O&M Expense	410,768,033	(2,150,638)	0	408,617,395
ADJUSTMENTS TO O&M EXPENSE:				
Compensation: Payroll Expense	13,138,206	105	0	13,138,311
Compensation: Variable Compensation	(6,821,176)	0	(3,232,371)	(10,053,547)
Dues and Memberships	0	0	(363,166)	(363,166)
Employee Benefits Costs	7,164,314	955,023	0	8,119,337
Enterprise IT Projects Expense (includes AMI and SMART)	10,869,443	(2,963,414)	(3,657,238)	4,248,791
Insurance Expense And Injuries & Damages	1,462,386	709,186	(500,410)	1,671,162
Work Asset Management Training	0	0	(2,777,920)	(2,777,920)
Postage Expense	100,368	0	0	100,368
Lease Expense	942,762	(303,318)	0	639,444
Regulatory Assessments	0	(1,182,653)	0	(1,182,653)
Rate Case Expense	763,234	(141,596)	0	621,638
Uncollectible Expense	(1,166,264)	(4,238)	0	(1,170,502)
Resiliency Tree Work Program	0	0	(23,200,000)	(23,200,000)
Storm Fund Adjustment	21,000,000	0	0	21,000,000
Storm Cost Adjustment	(4,200,000)	0	0	(4,200,000)
Residual O&M Inflation Adjustment	7,077,380	6,346,148	(414,160)	13,009,368
Total Adjustment to O&M Expense	50,330,653	3,415,243	(34,145,265)	19,600,631
Total O&M Expense	**461,098,686**	**1,264,605**	**(34,145,265)**	**428,218,026**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

C. Schedule 2A – Inflation Table

Test Year O&M Expense	$	408,617,395
	$	408,617,395
Less: Company Adjustments		
Compensation: Payroll Expense	$	144,958,863
Compensation: Variable Compensation	$	16,503,810
Dues and Memberships	$	802,347
Employee Benefits Costs	$	15,617,670
Enterprise IT Projects Expense	$	33,020,432
Insurance Expense and Injuries & Damages	$	4,035,454
Postage Expense	$	4,338,141
Lease Expense	$	7,010,708
Regulatory Assessments	$	11,804,920
Uncollectibles Expense	$	15,281,020
Vegetation Management Expense[227]	$	43,207,619
Storm Fund Adjustment	$	10,000,000
Storm Cost Adjustment	$	12,000,000
Total Company O&M Adjustments	$	318,580,984
Residual O&M Expense Subject to Inflation per Company	$	90,036,411
Inflation Factor		14.909%
Inflation Allowance per Company	$	13,423,528
Less: Department Adjustments		
Work Asset Management Training	$	2,777,920
Department Sub-total	$	2,777,920
Residual O&M Expense Subject to Inflation per DPU	$	87,258,491
Inflation Factor		14.909%
Inflation Allowance per DPU	$	13,009,368

227 The Department transferred $23,200,000 from the Company's test year Vegetation Management expense to a reconciling mechanism in Section XI.C.4.b above. That transfer, however, is not reflected here because it would necessitate a corresponding adjustment to the test year O&M expense of $408,617,395, and thus, would result in no change to the approved inflation allowance.

D. Schedule 3 – Depreciation and Amortization Expenses

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Depreciation and Amortization Expense	231,820,683	(7,126,708)	(27,087,735)	197,606,240
Amortization of Deferred Assets	21,027,194	(613,917)	0	20,413,277
Total Depreciation and Amortization Expense	**252,847,877**	**(7,740,625)**	**(27,087,735)**	**218,019,517**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

E. Schedule 4 – Rate Base and Return on Rate Base

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Utility Plant in Service	8,158,167,577	(257,233,638)	(328,863,241)	7,572,070,698
LESS:				
Reserve for Depreciation	2,611,720,164	(62,449,509)	(120,017,193)	2,429,253,462
Reserve for Amortization	49,613,183	(2,196,844)	0	47,416,339
Net Utility Plant in Service	5,496,834,230	(192,587,285)	(208,846,048)	5,095,400,897
ADDITIONS TO PLANT:				
Cash Working Capital	53,688,003	1,276,279	(3,616,840)	51,347,443
Materials and Supplies	52,956,389	4,165,283	0	57,121,672
Total Additions to Plant	106,644,392	5,441,562	(3,616,840)	108,469,115
DEDUCTIONS FROM PLANT:				
Reserve for Deferred Income Tax	733,301,500	11,030,397	(47,343,789)	696,988,108
FAS 109 Regulatory Liability (net)	560,994,216	(28,674,651)	0	532,319,565
Customer Deposits	5,032,962	(789,353)	0	4,243,609
Customer Advances	40,487,331	(237,788)	0	40,249,543
Total Deductions from Plant	1,339,816,009	(18,671,395)	(47,343,789)	1,273,800,825
RATE BASE	4,263,662,613	(168,474,328)	(165,119,099)	3,930,069,187
COST OF CAPITAL	7.32%	0.11%	-0.37%	7.06%
RETURN ON RATE BASE	**311,997,775**	**(7,753,952)**	**(26,938,141)**	**277,305,682**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

F. Schedule 5 – Cost of Capital

	PER COMPANY			
	PRINCIPAL	PERCENTAGE	COST	RATE OF RETURN
Long-Term Debt	$4,020,000,000	45.71%	3.60%	1.65%
Preferred Stock	$43,000,000	0.49%	4.56%	0.02%
Common Equity	$4,731,109,220	53.80%	10.50%	5.65%
Total Capital	$8,794,109,220	100.00%		7.32%
Weighted Cost of				
Debt				1.65%
Preferred				0.02%
Equity				5.65%
Cost of Capital				7.32%

	ADJUSTED PER COMPANY			
	PRINCIPAL	PERCENTAGE	COST	RATE OF RETURN
Long-Term Debt	$4,470,000,000	46.34%	3.93%	1.82%
Preferred Stock	$43,000,000	0.45%	4.56%	0.02%
Common Equity	$5,133,109,220	53.21%	10.50%	5.59%
Total Capital	$9,646,109,220	100.00%		7.43%
Weighted Cost of				
Debt				1.82%
Preferred				0.02%
Equity				5.59%
Cost of Capital				7.43%

	PER ORDER			
	PRINCIPAL	PERCENTAGE	COST	RETURN
Long-Term Debt	$4,470,000,000	46.34%	3.93%	1.82%
Preferred Stock	$43,000,000	0.45%	4.56%	0.02%
Common Equity	$5,133,109,220	53.21%	9.80%	5.22%
Total Capital	$9,646,109,220	100.00%		7.06%
Weighted Cost of				
Debt				1.82%
Preferred				0.02%
Equity				5.22%
Cost of Capital				**7.06%**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

G. Schedule 6 – Cash Working Capital

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Electric O&M Expenses	461,098,686	1,264,605	(34,145,265)	428,218,026
Less Uncollectible Accounts	14,114,756	(4,238)	0	14,110,518
Taxes Other Than Income	147,739,020	12,868,998	(5,919,880)	154,688,138
Total Costs Applicable to Cash Working Capital	**594,722,950**	**14,137,841**	**(40,065,145)**	**568,795,646**
Cash Working Capital Factor (32.95 Days/365)	9.03%	9.03%	9.03%	9.03%
Cash Working Capital Adjustment	**53,688,003**	**1,276,279**	**(3,616,840)**	**51,347,443**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

H. Schedule 7 – Taxes Other Than Income Taxes

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Property Taxes	134,635,202	12,868,998	(5,919,880)	141,584,320
FICA	9,519,756	0	0	9,519,756
Medicare	2,893,609	0	0	2,893,609
Federal Unemployment	33,112	0	0	33,112
State Unemployment	281,813	0	0	281,813
State Insurance Premium Excise Tax	86,154	0	0	86,154
Universal Health (MA)	34,708	0	0	34,708
State Sales and Use Tax	253,980	0	0	253,980
Paid Family Medical Leave	686	0	0	686
Total Taxes Other Than Income Taxes	**147,739,020**	**12,868,998**	**(5,919,880)**	**154,688,138**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

I. Schedule 8 – Income Taxes

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Rate Base	4,263,662,613	(168,474,328)	(165,119,099)	3,930,069,187
Return on Rate Base	311,997,775	(7,753,952)	(26,938,141)	277,305,682
ADJUSTMENTS				
Flow Through and Permanent Items	4,100,992	0	0	4,100,992
FAS 109 Income Taxes and ITC	147,235	0	0	147,235
Interest Expense	(70,196,941)	(4,396,914)	3,027,295	(71,566,560)
Excess ADIT Amortization	0	0	0	0
Total Deductions	(65,948,714)	(4,396,914)	3,027,295	(67,318,333)
Taxable Income Base	246,049,061	(12,150,866)	(23,910,847)	209,987,349
Gross Up Factor	1.3759	1.3759	1.3759	1.3759
Taxable Income	338,538,904	(16,718,376)	(32,898,934)	288,921,593
Mass Income Tax (8%)	27,083,112	(1,337,470)	(2,631,915)	23,113,727
Federal Taxable Income	311,455,792	(15,380,906)	(30,267,019)	265,807,866
Federal Income Tax (21%)	65,405,716	(3,229,990)	(6,356,074)	55,819,652
Total Income Taxes Calculated	92,488,828	(4,567,460)	(8,987,989)	78,933,379
FAS 109 Income Taxes and ITC	147,235	0	0	147,235
Less: Excess ADIT Amortization	0	0	0	0
Total Income Taxes	**92,636,063**	**(4,567,460)**	**(8,987,989)**	**79,080,614**

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

J. Schedule 9 – Revenues

	PER COMPANY	COMPANY ADJUSTMENT	DPU ADJUSTMENT	PER ORDER
Distribution Revenue *	973,557,967	0	(48,911,081)	924,646,886
Revenue Decoupling - (Prior Year Billed)	13,545,230	0	0	13,545,230
Revenue Decoupling - Accrual	34,496,381	0	0	34,496,381
Resiliency Tree Work Pilot- RTW	23,200,000	0	(23,200,000)	0
Solar Expansion Revenue	21,700,536	0	0	21,700,536
Solar Program WMA Revenue	33,394	(33,394)	0	(0)
MA Smart Solar Revenue	1,893,718	0	(1,893,718)	0
Grid Mod Tracked Revenue	11,357,179	(11,357,179)	0	0
Additional PBR Revenue	66,784,356	0	0	66,784,356
Total Distribution Revenue	1,146,568,761	(11,390,573)	(74,004,799)	1,061,173,390
Other Revenues				
Sales for Resale	43,330	0	0	43,330
Provision for Rate Refunds	0	0	0	0
Forfeited Accounts	704,134			704,134
Misc. Service Revenues	5,046,344	43,916	(88,188)	5,002,072
Rent from Electric Property	15,197,523	1,479,878	0	16,677,401
Other Electric Revenue	9,901,386	0	0	9,901,386
Revenues from Transmission of Electricity of Others	0	0	0	0
Total Other Revenues	30,892,717	1,523,794	(88,188)	32,328,323
Adjusted Total Operating Revenues	**1,177,461,478**	**(9,866,779)**	**(74,092,987)**	**1,093,501,713**

* The DPU Adjustment is to remove revenue to be collected through the new AMI factor.

Numbers may not add due to rounding. Minor discrepancies between these numbers and those in the text are due to rounding.

K. Schedule 10 – Allocation to Rate Groups and Rate Classes

Schedule 10 – Group – For illustrative purposes only

Rate Group	Total Revenue at Current Rates	Base Distribution Revenue at Current Rates*	Base Rate Transfers	Base Distribution Revenue at EROR	Change in Reconciling Revenue	Base Distribution Revenue Increase at EROR
	(a)	(b)	(c)	(d)	(e)	(f)
Residential	$2,082,953,605	$519,018,176	-$13,403,878	$574,063,620	$35,189,655	$55,045,444
Small General Service	$965,130,376	$223,538,825	-$5,772,991	$217,025,171	$9,717,048	-$6,513,655
Medium General Service	$1,007,330,174	$194,675,611	-$5,027,585	$193,655,596	-$2,844,217	-$1,020,015
Large General Service	$823,018,000	$105,805,745	-$2,732,481	$125,912,174	$3,654,648	$20,106,429
Lighting - Company	$15,029,424	$8,115,357	-$209,583	$10,393,544	$28,617	$2,278,187
Lighting - Customer	$11,316,117	$2,143,829	-$55,365	$2,701,846	-$42,848	$558,017
Total Company	$4,904,777,696	$1,053,297,543	-$27,201,883	$1,123,751,951	$45,702,903	$70,454,408

* The Total Company Base Distribution Revenue at Current Rates shown in column (b) differs from the Total Distribution Revenues shown on Schedule 1 because the total shown above in column (b) was calculated using rates in effect January 1, 2022 and 2021 calendar year billing quantities, while the total distribution revenues shown on Schedule 1 was determined by taking normalized test year distribution revenues and adjusting them for the additional PBR revenues, transfers from reconciling items, and revenue decoupling. The difference in the distribution revenues between the two schedules also results in a difference in the revenue deficiency between these two schedules.

TOTAL REVENUE CAP						
	ITERATION 1					
Rate Group	**10% Total Revenue Cap**	**Total Revenue Increase Greater Than 10%**	**Base Distribution Revenue Allocator**	**Allocation of Revenues Greater Than 10%**	**Total Revenue Increase After Reallocation**	**Total Revenue Increase Greater Than 10%**
	(g)	(h)	(i)	(j)	(k)	(l)
Residential	$208,295,360	$0	$574,063,620	$414,483	$90,649,582	$0
Small General Service	$96,513,038	$0	$217,025,171	$156,695	$3,360,089	$0
Medium General Service	$100,733,017	$0	$193,655,596	$139,822	-$3,724,409	$0
Large General Service	$82,301,800	$0	$125,912,174	$90,910	$23,851,988	$0
Lighting - Company	$1,502,942	$803,861	$0	$0	$1,502,942	$0
Lighting - Customer	$1,131,612	$0	$2,701,846	$1,951	$517,120	$0
Total Company	$490,477,770	$803,861	$1,113,358,407	$803,861	$116,157,311	$0

Schedule 10 – Group continued – For illustrative purposes only

BASE DISTRIBUTION REVENUE CAP						
	ITERATION 1					
Rate Group	**200% Base Distribution Revenue Increase Cap**	**Base Distribution Revenue Increase Greater Than 200%**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenues Greater Than 200%**	**Base Distribution Revenue Increase After Reallocation**	**Base Distribution Revenue Increase Greater Than 200%**
	(m)	(n)	(o)	(p)	(q)	(r)
Residential	$69,433,597	$0	$574,063,620	$3,908,501	$59,368,428	$0
Small General Service	$29,904,742	$0	$217,025,171	$1,477,612	-$4,879,347	$0
Medium General Service	$26,043,458	$0	$193,655,596	$1,318,500	$438,308	$0
Large General Service	$14,154,559	$6,042,780	$0	$0	$14,154,559	$0
Lighting - Company	$1,085,662	$388,664	$0	$0	$1,085,662	$0
Lighting - Customer	$286,799	$273,169	$0	$0	$286,799	$0
Total Company	$140,908,816	$6,704,613	$984,744,387	$6,704,613	$70,454,408	$0

BASE DISTRIBUTION REVENUE FLOOR					
	ITERATION 1				
Rate Group	**Base Distribution Revenue Decrease**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenue Decrease**	**Base Distribution Revenue After Reallocation**	**Base Distribution Revenue Decrease**
	(s)	(t)	(u)	(v)	(w)
Residential	$0	$574,063,620	$3,089,195	$56,279,233	$0
Small General Service	$4,879,347	$0	$0	$0	$0
Medium General Service	$0	$193,655,596	$1,042,114	-$603,807	$603,807
Large General Service	$0	$125,912,174	$677,568	$13,476,991	$0
Lighting - Company	$0	$10,393,544	$55,931	$1,029,732	$0
Lighting - Customer	$0	$2,701,846	$14,539	$272,259	$0
Total Company	$4,879,347	$906,726,780	$4,879,347	$70,454,408	$603,807

Schedule 10 – Group continued – For illustrative purposes only

	ITERATION 2			
Rate Group	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenue Decrease**	**Base Distribution Revenue After Reallocation**	**Base Distribution Revenue Decrease**
	(x)	(y)	(z)	(aa)
Residential	$574,063,620	$486,099	$55,793,134	$0
Small General Service	$0	$0	$0	$0
Medium General Service	$0	$0	$0	$0
Large General Service	$125,912,174	$106,619	$13,370,372	$0
Lighting - Company	$10,393,544	$8,801	$1,020,931	$0
Lighting - Customer	$2,701,846	$2,288	$269,971	$0
Total Company	$713,071,184	$603,807	$70,454,408	$0

Rate Group	**Final Base Distribution Revenue Increase**	**Rate Group Base Distribution Revenue Target**	**Total Revenue Increase**	**Rate Group Total Revenue Target**
	(ab)	(ac)	(ad)	(ae)
Residential	$55,793,134	$574,811,310	$90,982,789	$2,173,936,393
Small General Service	$0	$223,538,825	$9,717,048	$974,847,424
Medium General Service	$0	$194,675,611	-$2,844,217	$1,004,485,957
Large General Service	$13,370,372	$119,176,117	$17,025,020	$840,043,021
Lighting - Company	$1,020,931	$9,136,287	$1,049,547	$16,078,972
Lighting - Customer	$269,971	$2,413,800	$227,124	$11,543,240
Total Company	$70,454,408	$1,123,751,951	$116,157,311	$5,020,935,007

Rate Group	Percent Increase in Distribution Revenue	Percent Increase in Total Revenue	Unit Distribution Demand Cost at EROR (per kWh or kW)
	(af)	(ag)	(ah)
Residential	10.75	4.37	$0.07051
Small General Service	-	1.01	$0.04961
Medium General Service	-	(0.28)	$15.10
Large General Service	12.64	2.07	$11.27
Lighting - Company	12.58	6.98	$0.17967
Lighting - Customer	12.59	2.01	$0.67188
Total Company	6.69	2.37	

Column definitions:
(a): Exh. ES-RDC-2, Sch 5, (Rev. 3)
(b): Exh. ES-RDC-2, Sch 5, (Rev. 3)
(c): Exh. ES-RDC-2, Sch 4, (Rev. 3) adjusted for allowed transfers and RAAF adjustment per low-income discount increase
(d): Exh. ES-ACOS-2, (Rev. 3) adjusted per Order
(e): Exh. ES-RDC-2, Sch 5 (Rev. 3) adjusted for allowed transfers and RAAF adjustment per low-income discount increase
(f): (d) – (b)
Total Revenue Cap:
(g): 10% of (a)
(h): if (e) + (f) > (g), then (e) + (f); else 0
(i): if (h) = 0, (d); else 0
(j): [total (h)] * {(i) / [total (i)]}
(k): (e) + (f) - (h) + (j)
(l): if (k) > (g), then (k) - (g); else 0
Base Distribution Revenue Cap:
(m): 200% of (b) * {[total (k)] – [total (e)]} / [total (b)]
(n): if [(k) - (e)] > (m), then [(k) - (e)] – (m); else 0
(o): if (n) = 0, then (d); else 0
(p): if (o) > 0, then [total (n)]*{p / [total (p)]}; else 0
(q): (k) – (e) - (n) + (p)
(r): if [(q) > m], then [(q) – (m)]; else 0
Base Distribution Revenue Floor:
(s): if (q) > 0, then 0; else -(q)
(t): if (s) = 0, then (d); else 0
(u): if (t) > 0, then [total (s)] * (t) / [(total (t)]
(v): (q) + (s) – (u)
(w): if (v) > 0, then 0; else -(v)
(x): if (w) = 0 AND (s) = 0, then (d); else 0
(y): if (x) > 0, then [total (w)] * (x) / [(total (x)]
(z): (v) + (w) – (y)
(aa): if (z) < 0, (z); else 0
Per Order:
(ab): (z)
(ac): (b) + (z)
(ad): (e) + (ab)
(ae): (a) + (ad)
(af): [(ab) / (b)] * 100
(ag): [(ad) / (a)] * 100
(ah): (ac) / test year kWh (residential, small C&I, streetlighting) or kW (medium C&I and large C&I)

Schedule 10 – Residential – For illustrative purposes only

Rate Class	Total Revenue at Current Rates	Base Distribution Revenue at Current Rates	Base Rate Transfers	Unit Distribution Demand Cost at EROR (per kWh)
R-1/R-2 Residential	$1,860,455,924	$468,373,502	$(12,099,808)	$0.07051
R-3/R-4 Residential Heating	$222,497,681	$50,644,673	$(1,308,338)	$0.07051
Total Residential	$2,082,953,605	$519,018,176	$(13,408,146)	

Rate Class	Base Distribution Revenue at Group Unit Cost	Change in Reconciling Revenue	Base Distribution Revenue Increase at Group Unit Cost
R-1/R-2 Residential	$1,860,455,924	$27,470,018	$40,277,922
R-3/R-4 Residential Heating	$222,497,681	$7,719,637	$15,515,257
Total Residential	$1,860,455,924	$35,189,655	$55,793,179

TOTAL REVENUE CAP						
	ITERATION 1					
Rate Class	**10% Total Revenue Cap**	**Total Revenue Increase Greater Than 10%**	**Base Distribution Revenue Allocator**	**Allocation of Revenues Greater Than 10%**	**Total Revenue Increase After Reallocation**	**Total Revenue Increase Greater Than 10%**
R-1/R-2 Residential	$186,045,592	$-	$508,651,424	$985,127	$68,733,066	$0
R-3/R-4 Residential Heating	$22,249,768	$985,127	$-	$-	$22,249,768	$0
Total Residential	$208,295,360	$985,127	$508,651,424	$985,127	$90,982,834	$0

BASE DISTRIBUTION REVENUE CAP						
	ITERATION 1					
Rate Class	**200% Base Distribution Revenue Increase Cap**	**Base Distribution Revenue Increase Greater Than 200%**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenues Greater Than 200%**	**Base Distribution Revenue Increase After Reallocation**	**Base Distribution Revenue Increase Greater Than 200%**
R-1/R-2 Residential	$62,658,470	$-	$508,651,424	$7,754,944	$49,017,993	$-
R-3/R-4 Residential Heating	$6,775,186	$7,754,944	$-	$-	$6,775,186	$-
Total Residential		$7,754,944	$508,651,424	$7,754,944	$55,793,179	$-

BASE DISTRIBUTION REVENUE FLOOR					
Rate Group	**Base Distribution Revenue Decrease**	**Final Base Distribution Revenue Increase**	**Rate Group Base Distribution Revenue Target**	**Total Revenue Increase**	**Rate Group Total Revenue Target**
R-1/R-2 Residential	$-	$49,017,993	$517,391,495	$76,488,010	$1,936,943,934
R-3/R-4 Residential Heating	$-	$6,775,186	$57,419,860	$14,494,824	$236,992,505
Total Residential	$-	$55,793,179	$574,811,355	$90,982,834	$2,173,936,439

Rate Group	Percent Increase in Distribution Revenue	Percent Increase in Total Revenue
R-1/R-2 Residential	10.47	4.11
R-3/R-4 Residential Heating	13.38	6.51
Total Residential	10.75	4.37

Schedule 10 – Small C&I – For illustrative purposes only

Rate Class	Total Revenue at Current Rates	Base Distribution Revenue at Current Rates	Base Rate Transfers	Unit Distribution Demand Cost at EROR (per kWh)
G-1/T-1 (<=100 kW) (Boston Edison)	$597,554,938	$145,618,566	$(3,761,863)	$0.04961
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$45,370,801	$8,374,859	$(216,353)	$0.04961
G-5 Comm. Space Heat (Cambridge Electric Light)	$864,930	$118,103	$(3,051)	$0.04961
G-1 Gen. Serv. (Commonwealth Electric)	$189,569,184	$38,532,022	$(995,424)	$0.04961
G-7 Optional TOU (Commonwealth Electric)	$12,137,989	$2,119,466	$(54,754)	$0.04961
G-4 General Power (Commonwealth Electric)	$453,460	$83,949	$(2,169)	$0.04961
G-5 Comm. Space Heat (Commonwealth Electric)	$1,976,099	$411,198	$(10,623)	$0.04961
G-6 All Electric School (Commonwealth Electric)	$861,601	$94,725	$(2,447)	$0.04961
23 Optional Water Heating (WMA)	$12,952	$5,247	$(136)	$0.04961
24 Optional Church (WMA)	$1,004,634	$303,975	$(7,853)	$0.04961
G-1 (<=100 kW) (WMA)	$115,323,788	$27,876,714	$(720,158)	$0.04961
Total Small C&I	$965,130,376	$223,538,825	$(5,774,829)	

Rate Class	Base Distribution Revenue at Group Unit Cost	Change in Reconciling Revenue	Base Distribution Revenue Increase at Group Unit Cost
G-1/T-1 (<=100 kW) (Boston Edison)	$133,224,258	$3,058,335	$(12,394,308)
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$11,513,911	$1,326,544	$3,139,051
G-5 Comm. Space Heat (Cambridge Electric Light)	$229,098	$23,567	$110,995
G-1 Gen. Serv. (Commonwealth Electric)	$45,429,184	$3,235,565	$6,897,161
G-7 Optional TOU (Commonwealth Electric)	$3,161,495	$225,169	$1,042,029
G-4 General Power (Commonwealth Electric)	$118,265	$13,716	$34,317
G-5 Comm. Space Heat (Commonwealth Electric)	$447,650	($27,494)	$36,452
G-6 All Electric School (Commonwealth Electric)	$245,741	$59,460	$151,016
23 Optional Water Heating (WMA)	$2,605	$115	$(2,642)
24 Optional Church (WMA)	$234,306	$10,312	$(69,670)
G-1 (<=100 kW) (WMA)	$28,932,312	$1,791,760	$1,055,598
Total Small C&I	$223,538,825	$9,717,048	$0

TOTAL REVENUE CAP						
	ITERATION 1					
Rate Class	**10% Total Revenue Cap**	**Total Revenue Increase Greater Than 10%**	**Base Distribution Revenue Allocator**	**Allocation of Revenues Greater Than 10%**	**Total Revenue Increase After Reallocation**	**Total Revenue Increase Greater Than 10%**
G-1/T-1 (<=100 kW) (Boston Edison)	$59,755,494	$-	$133,224,258	$138,489	$(9,197,484)	$-
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$4,537,080	$-	$11,513,911	$11,969	$4,477,564	$-
G-5 Comm. Space Heat (Cambridge Electric Light)	$86,493	$48,070	$-	$-	$86,493	$-
G-1 Gen. Serv. (Commonwealth Electric)	$18,956,918	$-	$45,429,184	$47,225	$10,179,951	$-
G-7 Optional TOU (Commonwealth Electric)	$1,213,799	$53,398	$-	$-	$1,213,799	$-
G-4 General Power (Commonwealth Electric)	$45,346	$2,686	$-	$-	$45,346	$-
G-5 Comm. Space Heat (Commonwealth Electric)	$197,610	$-	$447,650	$465	$9,424	$-

G-6 All Electric School (Commonwealth Electric)	$86,160	$124,316	$-	$-	$86,160	$-
23 Optional Water Heating (WMA)	$1,295	$-	$2,605	$3	$(2,525)	$-
24 Optional Church (WMA)	$100,463	$-	$234,306	$244	$(59,114)	$-
G-1 (<=100 kW) (WMA)	$11,532,379	$-	$28,932,312	$30,076	$2,877,434	$-
Total Small C&I	$96,513,038	$228,470	$219,784,225	$228,470	$9,717,048	$-
BASE DISTRIBUTION REVENUE CAP						
	ITERATION 1					
Rate Class	**200% Base Distribution Revenue Increase Cap**	**Base Distribution Revenue Increase Greater Than 200%**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenues Greater Than 200%**	**Base Distribution Revenue Increase After Reallocation**	**Base Distribution Revenue Increase Greater Than 200%**
G-1/T-1 (<=100 kW) (Boston Edison)	$19,480,685	$-	$133,224,258	$3,769,018	$(8,486,801)	$-
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$1,120,379	$2,030,641	$-	$-	$1,120,379	$-
G-5 Comm. Space Heat (Cambridge Electric Light)	$15,800	$47,126	$-	$-	$15,800	$-
G-1 Gen. Serv. (Commonwealth Electric)	$5,154,770	$1,789,616	$-	$-	$5,154,770	$-
G-7 Optional TOU (Commonwealth Electric)	$283,540	$705,091	$-	$-	$283,540	$-
G-4 General Power (Commonwealth Electric)	$11,231	$20,400	$-	$-	$11,231	$-
G-5 Comm. Space Heat (Commonwealth Electric)	$55,010	$-	$447,650	$12,664	$49,582	$-
G-6 All Electric School (Commonwealth Electric)	$12,672	$14,028	$-	$-	$12,672	$-
23 Optional Water Heating (WMA)	$702	$-	$2,605	$74	$(2,566)	$-
24 Optional Church (WMA)	$40,665	$-	$234,306	$6,629	$(62,797)	$-
G-1 (<=100 kW) (WMA)	$3,729,315	$-	$28,932,312	$818,518	$1,904,192	$-
Total Small C&I	$29,904,767	$4,606,902	$162,841,131	$4,606,902	$0	$-

BASE DISTRIBUTION REVENUE FLOOR		
Rate Group	**Base Distribution Revenue Decrease**	
G-1/T-1 (<=100 kW) (Boston Edison)	$-	Since there is no change to the current distribution revenue for the entire group, revenue floor iterations would continue until each rate class received no change in base distribution revenues.
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$-	
G-5 Comm. Space Heat (Cambridge Electric Light)	$-	
G-1 Gen. Serv. (Commonwealth Electric)	$-	
G-7 Optional TOU (Commonwealth Electric)	$-	
G-4 General Power (Commonwealth Electric)	$-	
G-5 Comm. Space Heat (Commonwealth Electric)	$-	
G-6 All Electric School (Commonwealth Electric)	$(43,619)	
23 Optional Water Heating (WMA)	$-	
24 Optional Church (WMA)	$-	
G-1 (<=100 kW) (WMA)	$-	
Total Small C&I	$(43,619)	

Rate Group	Final Base Distribution Revenue Increase	Rate Group Base Distribution Revenue Target	Total Revenue Increase	Rate Group Total Revenue Target	Percent Increase in Distribution Revenue	Percent Increase in Total Revenue
G-1/T-1 (<=100 kW) (Boston Edison)	$-	$145,618,566	$3,058,335	$600,613,273	-	0.51
G-1/G-6 (<=100 kW) (Cambridge Electric Light)	$-	$8,374,859	$1,326,544	$46,697,344	-	2.92
G-5 Comm. Space Heat (Cambridge Electric Light)	$-	$118,103	$23,567	$888,498	-	2.72
G-1 Gen. Serv. (Commonwealth Electric)	$-	$38,532,022	$3,235,565	$192,804,749	-	1.71
G-7 Optional TOU (Commonwealth Electric)	$-	$2,119,466	$225,169	$12,363,158	-	1.86
G-4 General Power (Commonwealth Electric)	$-	$83,949	$13,716	$467,176	-	3.02
G-5 Comm. Space Heat (Commonwealth Electric)	$-	$411,198	$(27,494)	$1,948,605	-	(1.39)
G-6 All Electric School (Commonwealth Electric)	$-	$94,725	$59,460	$921,061	-	6.90
23 Optional Water Heating (WMA)	$-	$5,247	$115	$13,066	-	0.89

24 Optional Church (WMA)	$-	$303,975	$10,312	$1,014,945	-	1.03
G-1 (<=100 kW) (WMA)	$-	$27,876,714	$1,791,760	$117,115,549	-	1.55
Total Small C&I	$-	$223,538,825	$9,717,048	$974,847,424	-	1.01

Schedule 10 – Medium C&I – For illustrative purposes only

Rate Class	Total Revenue at Current Rates	Base Distribution Revenue at Current Rates	Base Rate Transfers	Unit Distribution Demand Cost at EROR (per kW)
G-2 TOU (Boston Edison)	$773,206,844	$160,011,887	$(4,133,695)	$15.10
G-2 TOU (Cambridge Electric Light)	$99,209,689	$13,658,395	$(352,847)	$15.10
G-2 TOU (Commonwealth Electric)	$72,882,017	$10,357,394	$(267,570)	$15.10
G-2/T4 (WMA)	$62,031,623	$10,647,936	$(275,075)	$15.10
Total Medium C&I	$1,007,330,174	$194,675,611	$(5,029,186)	

Rate Class	Base Distribution Revenue at Group Unit Cost	Change in Reconciling Revenue	Base Distribution Revenue Increase at Group Unit Cost
G-2 TOU (Boston Edison)	$142,147,912	($7,471,813)	$(17,863,975)
G-2 TOU (Cambridge Electric Light)	$20,131,914	$2,745,488	$6,473,519
G-2 TOU (Commonwealth Electric)	$17,171,062	$1,669,464	$6,813,668
G-2/T4 (WMA)	$15,224,724	$212,644	$4,576,788
Total Medium C&I	$194,675,611	$(2,844,217)	$0

TOTAL REVENUE CAP						
	ITERATION 1					
Rate Class	**10% Total Revenue Cap**	**Total Revenue Increase Greater Than 10%**	**Base Distribution Revenue Allocator**	**Allocation of Revenues Greater Than 10%**	**Total Revenue Increase After Reallocation**	**Total Revenue Increase Greater Than 10%**
G-2 TOU (Boston Edison)	$77,320,684	$-	$142,147,912	$956,916	$(24,378,872)	$-
G-2 TOU (Cambridge Electric Light)	$9,920,969	$-	$20,131,914	$135,525	$9,354,532	$-
G-2 TOU (Commonwealth Electric)	$7,288,202	$1,194,931	$-	$-	$7,288,202	$-
G-2/T4 (WMA)	$6,203,162	$-	$15,224,724	$102,490	$4,891,922	$-

Total Medium C&I	$100,733,017	$1,194,931	$177,504,550	$1,194,931	$(2,844,217)	$-

BASE DISTRIBUTION REVENUE CAP						
	ITERATION 1					
Rate Class	**200% Base Distribution Revenue Increase Cap**	**Base Distribution Revenue Increase Greater Than 200%**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenues Greater Than 200%**	**Base Distribution Revenue Increase After Reallocation**	**Base Distribution Revenue Increase Greater Than 200%**
G-2 TOU (Boston Edison)	$21,406,207	$-	$142,147,912	$12,269,786	$(4,637,273)	$-
G-2 TOU (Cambridge Electric Light)	$1,827,204	$4,781,840	$-	$-	$1,827,204	$-
G-2 TOU (Commonwealth Electric)	$1,385,600	$4,233,137	$-	$-	$1,385,600	$-
G-2/T4 (WMA)	$1,424,469	$3,254,810	$-	$-	$1,424,469	$-
Total Medium C&I	$26,043,480	$12,269,786	$142,147,912	$12,269,786	$0	$-

BASE DISTRIBUTION REVENUE FLOOR		
Rate Group	**Base Distribution Revenue Decrease**	Since there is no change to the current distribution revenue for the entire group, revenue floor iterations would continue until each rate class received no change in base distribution revenues.
G-2 TOU (Boston Edison)	$(4,637,273)	
G-2 TOU (Cambridge Electric Light)	$-	
G-2 TOU (Commonwealth Electric)	$-	
G-2/T4 (WMA)	$-	
Total Medium C&I	$(4,637,273)	

Rate Group	**Final Base Distribution Revenue Increase**	**Rate Group Base Distribution Revenue Target**	**Total Revenue Increase**	**Rate Group Total Revenue Target**	**Percent Increase in Distribution Revenue**	**Percent Increase in Total Revenue**
G-2 TOU (Boston Edison)	$-	$160,011,887	$(7,471,813)	$765,735,032	-	(0.97)
G-2 TOU (Cambridge Electric Light)	$-	$13,658,395	$2,745,488	$101,955,177	-	2.77

G-2 TOU (Commonwealth Electric)	$-	$10,357,394	$1,669,464	$74,551,481	-	2.29
G-2/T4 (WMA)	$-	$10,647,936	$212,644	$62,244,267	-	0.34
Total Medium C&I	$-	$194,675,611	$(2,844,217)	$1,004,485,957	-	(0.28)

Schedule 10 – Large C&I – For illustrative purposes only

Rate Class	Total Revenue at Current Rates	Base Distribution Revenue at Current Rates	Base Rate Transfers	Unit Distribution Demand Cost at EROR (per kW)
Rate G-3 TOU (Boston Edison)	$476,406,008	$70,293,999	$(1,815,952)	$11.27
Rate WR (Boston Edison)	$15,594,462	$1,806	$(47)	
Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	$97,910,318	$8,201,486	$(211,875)	$11.27
Rate G-3 TOU (Commonwealth Electric)	$69,184,332	$6,863,136	$(177,300)	$11.27
Rate G-3 TOU (WMA)	$105,722,954	$14,976,652	$(386,902)	$11.27
Rate T-5 TOU (WMA)	$58,199,925	$5,468,667	$(141,276)	$11.27
Total Large C&I	$823,018,000	$105,805,745	$(2,733,351)	

Rate Class	Base Distribution Revenue at Group Unit Cost	Change in Reconciling Revenue	Base Distribution Revenue Increase at Group Unit Cost
Rate G-3 TOU (Boston Edison)	$65,326,833	-$2,036,435	-$4,968,971
Rate WR (Boston Edison)		-$83,047	
Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	$15,639,075	$2,146,030	$7,437,589
Rate G-3 TOU (Commonwealth Electric)	$12,013,668	$1,411,501	$5,150,532
Rate G-3 TOU (WMA)	$17,368,563	$387,012	$2,391,912
Rate T-5 TOU (WMA)	$8,827,991	$1,829,587	$3,359,324
Total Large C&I	$119,176,130	$3,654,648	$13,370,386

TOTAL REVENUE CAP						
	ITERATION 1					
Rate Class	**10% Total Revenue Cap**	**Total Revenue Increase Greater Than 10%**	**Base Distribution Revenue Allocator**	**Allocation of Revenues Greater Than 10%**	**Total Revenue Increase After Reallocation**	**Total Revenue Increase Greater Than 10%**
Rate G-3 TOU (Boston Edison)	$47,640,601	$0	$65,326,833	$0	-$7,005,406	$0
Rate WR (Boston Edison)	$1,559,446	$0	$0	$0	-$83,047	$0

Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	$9,791,032	$0	$15,639,075	$0	$9,583,619	$0
Rate G-3 TOU (Commonwealth Electric)	$6,918,433	$0	$12,013,668	$0	$6,562,033	$0
Rate G-3 TOU (WMA)	$10,572,295	$0	$17,368,563	$0	$2,778,923	$0
Rate T-5 TOU (WMA)	$5,819,992	$0	$8,827,991	$0	$5,188,912	$0
Total Large C&I	$82,301,800	$0	$119,176,130	$0	$17,025,034	$0

BASE DISTRIBUTION REVENUE CAP						
	ITERATION 1					
Rate Class	**200% Base Distribution Revenue Increase Cap**	**Base Distribution Revenue Increase Greater Than 200%**	**Base Distribution Revenue Allocator**	**Allocation of Base Distribution Revenues Greater Than 200%**	**Base Distribution Revenue Increase After Reallocation**	**Base Distribution Revenue Increase Greater Than 200%**
Rate G-3 TOU (Boston Edison)	$9,403,850	$0	$65,326,833	$13,588,878	$8,619,906	$0
Rate WR (Boston Edison)	$242	$0	$0	$0	$0	$0
Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	$1,097,185	$6,340,404	$0	$0	$1,097,185	$0
Rate G-3 TOU (Commonwealth Electric)	$918,142	$4,232,390	$0	$0	$918,142	$0
Rate G-3 TOU (WMA)	$2,003,559	$388,352	$0	$0	$2,003,559	$0
Rate T-5 TOU (WMA)	$731,592	$2,627,732	$0	$0	$731,592	$0
Total Large C&I	$14,154,571	$13,588,878	$65,326,833	$13,588,878	$13,370,386	$0

BASE DISTRIBUTION REVENUE FLOOR					
Rate Group	**Base Distribution Revenue Decrease**	**Final Base Distribution Revenue Increase**	**Rate Group Base Distribution Revenue Target**	**Total Revenue Increase**	**Rate Group Total Revenue Target**
Rate G-3 TOU (Boston Edison)	$0	$8,619,906	$78,913,905	$6,583,472	$482,989,480
Rate WR (Boston Edison)	$0	$0	$1,806	-$83,047	$15,511,416
Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	$0	$1,097,185	$9,298,671	$3,243,215	$101,153,534
Rate G-3 TOU (Commonwealth Electric)	$0	$918,142	$7,781,279	$2,329,643	$71,513,975
Rate G-3 TOU (WMA)	$0	$2,003,559	$16,980,211	$2,390,571	$108,113,526
Rate T-5 TOU (WMA)	$0	$731,592	$6,200,259	$2,561,179	$60,761,104
Total Large C&I	$0	$13,370,386	$119,176,130	$17,025,034	$840,043,034

Rate Group	Percent Increase in Distribution Revenue	Percent Increase in Total Revenue
Rate G-3 TOU (Boston Edison)	12.26	1.38
Rate WR (Boston Edison)	-	(0.53)
Rate G-3/SB1/MS1/SS1 (Cambridge Electric Light)	13.38	3.31
Rate G-3 TOU (Commonwealth Electric)	13.38	3.37
Rate G-3 TOU (WMA)	13.38	2.26
Rate T-5 TOU (WMA)	13.38	4.40
Total Large C&I	12.64	2.07

XX. ORDER

Accordingly, after due notice, hearing, opportunity for comment, and consideration, it is

ORDERED: That the tariffs filed by NSTAR Electric Company on January 14, 2022, to become effective February 1, 2022, are DISALLOWED; and it is

FURTHER ORDERED: That NSTAR Electric Company shall file new schedules of rates and charges designed to collect the cost of service as set forth in the Schedules above; and it is

FURTHER ORDERED: That NSTAR Electric Company shall file all rates and charges required by this Order and shall design all rates in compliance with this Order; and it is

FURTHER ORDERED: That NSTAR Electric Company shall comply with all other directives contained in this Order; and it is

FURTHER ORDERED: That the new rates shall apply to electricity consumed on or after January 1, 2023, but, unless otherwise ordered by the Department, shall not become effective earlier than seven days after the rates are filed with supporting data demonstrating that such rates comply with this Order.

By Order of the Department,

Matthew H. Nelson, Chair

Robert E. Hayden, Commissioner

Cecile M. Fraser, Commissioner

An appeal as to matters of law from any final decision, order or ruling of the Commission may be taken to the Supreme Judicial Court by an aggrieved party in interest by the filing of a written petition praying that the Order of the Commission be modified or set aside in whole or in part. Such petition for appeal shall be filed with the Secretary of the Commission within twenty days after the date of service of the decision, order or ruling of the Commission, or within such further time as the Commission may allow upon request filed prior to the expiration of the twenty days after the date of service of said decision, order or ruling. Within ten days after such petition has been filed, the appealing party shall enter the appeal in the Supreme Judicial Court sitting in Suffolk County by filing a copy thereof with the Clerk of said Court. G.L. c. 25, § 5.

Attachment A

Clean Tariff

NSTAR Electric Company (East)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
I. Transmission Plant			
1	350	Land and Land Rights	0.00%
2	352	Structures and Improvements	2.19%
3	353	Station Equipment	2.53%
4	354	Towers and Fixtures	2.03%
5	355	Poles and Fixtures	2.25%
6	356	Overhead Conductor and Devices	2.19%
7	357	Underground Conduit	2.06%
8	358	Underground Conductor and Devices	2.15%
9	359	Roads and Trails	1.63%
II. General Plant			
10	389	Land and Land Rights	0.00%
11	390	Structures & Improvements	2.79%
12	390.1	Hyde Park Service Center	6.13%
13	390.1	Prudential Center	3.59%
14	390.1	Walpole Service Center	4.08%
15	390.1	Waltham Service Center	4.47%
16	390.1	Other Lease Improvements	2.35%
17	391	Office Furniture and Equipment	5.00%
18	391	Computer Equipment	14.29%
19	392	Transportation Equipment	4.44%
20	393	Stores Equipment	4.00%
21	394	Tools, Shop & Garage Equipment	4.00%
22	395	Laboratory Equipment	5.00%
23	396	Power Operated Equipment	1.26%
24	397	Communication Equipment	6.67%
25	397	Communication Equipment - GPS	20.00%
26	397	Communication Equipment - Microwave	2.89%
27	398	Miscellaneous Equipment	5.00%
III. Intangible Plant			
28	303	Miscellaneous Intangible Plant - 5 Year	20.00%
29	303	Miscellaneous Intangible Plant - 10 Year	10.00%
30	303	Miscellaneous Intangible Plant - 15 Year	6.67%

NSTAR Electric Company (West)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
I. Transmission Plant			
1	350	Land and Land Rights	0.00%
2	352	Structures and Improvements	2.17%
3	353	Station Equipment	1.90%
4	353	Cobble Mtn	1.90%
5	354	Towers and Fixtures	2.26%
6	355	Poles and Fixtures	1.95%
7	356	Overhead Conductor and Devices	2.32%
8	357	Underground Conduit	2.47%
9	358	Underground Conductor and Devices	2.66%
10	359	Roads and Trails	1.35%
II. General Plant			
11	389	Land and Land Rights	0.00%
12	390	Structures & Improvements	2.79%
13	391	Office Furniture & Equipment	5.00%
14	391	Computer Equipment	14.29%
15	392	Transportation Equipment	4.44%
16	393	Stores Equipment	4.00%
17	394	Tools, Shop & Garage Equipment	4.00%
18	395	Laboratory Equipment	5.00%
19	396	Power Operated Equipment	1.26%
20	397	Communication Equipment	6.67%
21	397	Communication Equipment - GPS	20.00%
22	397	Communication Equipment - Microwave	2.89%
23	398	Miscellaneous Equipment	5.00%
III. Intangible Plant			
24	303	3 Year life Intangible	33.33%
25	303	5 Year life Intangible	20.00%

Attachment B

Marked Tariff

NSTAR Electric Company (East)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
I. Transmission Plant			
1	350	Land and Land Rights	0.00%
2	352	Structures and Improvements	2.19%
3	353	Station Equipment	2.53%
4	354	Towers and Fixtures	2.03%
5	355	Poles and Fixtures	2.25%
6	356	Overhead Conductor and Devices	2.19%
7	357	Underground Conduit	2.06%
8	358	Underground Conductor and Devices	2.15%
9	359	Roads and Trails	1.63%
II. General Plant			
10	389	Land and Land Rights	~~8.11~~0.00%
11	390	Structures & Improvements	~~3.10~~2.79%
12	390.1	Hyde Park Service Center	~~7.55~~6.13%
~~13~~	~~390.1~~	~~Mass Ave Garage~~	~~21.17%~~
~~14~~13	390.1	Prudential Center	~~14.53~~3.59%
~~15~~14	390.1	Walpole Service Center	~~16.35~~4.08%
~~16~~15	390.1	Waltham Service Center	~~14.52~~4.47%
~~17~~16	390.1	Other Lease Improvements	~~4.79~~2.35%
~~18~~17	391	Office Furniture and Equipment	5.00%
~~19~~18	391	Computer Equipment	14.29%
~~20~~19	392	Transportation Equipment	~~4.76~~4.44%
~~21~~	~~392~~	~~Class 1 Car~~	~~9.22%~~
~~22~~	~~392~~	~~Class 2 Light Trucks~~	~~11.85%~~
~~23~~	~~392~~	~~Class 3 Medium Trucks~~	~~6.81%~~
~~24~~	~~392~~	~~Class 4 Heavy Trucks~~	~~5.82%~~
~~25~~	~~392~~	~~Class 5 Rolling Equipment~~	~~8.33%~~
~~26~~	~~392~~	~~Class 6 Trailers~~	~~5.06%~~
~~27~~	~~392~~	~~Electric Vehicle Charge Station~~	~~20.00%~~
~~28~~	~~392~~	~~Fleet Vehicles~~	~~33.33%~~
~~29~~20	393	Stores Equipment	4.00%
~~30~~21	394	Tools, Shop & Garage Equipment	4.00%
~~31~~22	395	Laboratory Equipment	5.00%
~~32~~23	396	Power Operated Equipment	~~4.65~~1.26%
~~33~~24	397	Communication Equipment	6.67%

NSTAR Electric Company (East)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
~~34~~25	397	Communication Equipment - GPS	20.00%
~~35~~26	397	Communication Equipment - Microwave	~~1.95~~2.89%
~~36~~27	398	Miscellaneous Equipment	5.00%
III. Intangible Plant			
~~37~~28	303	Miscellaneous Intangible Plant - 5 Year	20.00%
~~38~~29	303	Miscellaneous Intangible Plant - 10 Year	10.00%
~~39~~30	303	Miscellaneous Intangible Plant - 15 Year	6.67%

NSTAR Electric Company (West)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
I. Transmission Plant			
1	350	Land and Land Rights	0.00%
2	352	Structures and Improvements	2.17%
3	353	Station Equipment	1.90%
4	353	Cobble Mtn	1.90%
5	354	Towers and Fixtures	2.26%
6	355	Poles and Fixtures	1.95%
7	356	Overhead Conductor and Devices	2.32%
8	357	Underground Conduit	2.47%
9	358	Underground Conductor and Devices	2.66%
10	359	Roads and Trails	1.35%
II. General Plant			
11	389	Land and Land Rights	~~8.11~~0.00%
12	390	Structures & Improvements	~~3.10~~2.79%
13	391	Office Furniture & Equipment	5.00%
14	391	Computer Equipment	14.29%
15	392	Transportation Equipment	~~4.76~~4.44%
~~16~~	~~392~~	~~Class 1 Car~~	~~8.26%~~
~~17~~	~~392~~	~~Class 2 Light Trucks~~	~~7.38%~~
~~18~~	~~392~~	~~Class 3 Medium Trucks~~	~~3.75%~~
~~19~~	~~392~~	~~Class 4 Heavy Trucks~~	~~3.60%~~
~~20~~	~~392~~	~~Class 5 Rolling Equipment~~	~~8.33%~~
~~21~~	~~392~~	~~Class 6 Trailers~~	~~4.40%~~
~~22~~	~~392~~	~~Electric Vehicle Charge Station~~	~~20.00%~~
~~23~~	~~392~~	~~Fleet Vehicles~~	~~33.33%~~
~~24~~16	393	Stores Equipment	4.00%
~~25~~17	394	Tools, Shop & Garage Equipment	4.00%
~~26~~18	395	Laboratory Equipment	5.00%
~~27~~19	396	Power Operated Equipment	~~4.65~~1.26%
~~28~~20	397	Communication Equipment	6.67%
~~29~~21	397	Communication Equipment - GPS	20.00%
~~30~~22	397	Communication Equipment - Microwave	~~1.95~~2.89%
~~31~~23	398	Miscellaneous Equipment	5.00%

NSTAR Electric Company (West)
Appendix D to Attachment F of the ISO New England OATT
Depreciation and Amortization Rates

Line No.	FERC Account Number	FERC Account Description	Annual Rate Percentage
III. Intangible Plant			
~~31~~24	303	3 Year life Intangible	33.33%
~~32~~25	303	5 Year life Intangible	20.00%

Attachment C

Service List

This filing is being served on electric utility regulatory agencies for the six New England states, the New England Conference of Public Utilities Commissioners and the New England Power Pool ("NEPOOL") Participants Committee.

For the electric utility regulatory agencies for the six New England states (Connecticut Public Utilities Regulatory Authority; Maine Public Utilities Commission; Massachusetts Department of Public Utilities; New Hampshire Public Utilities Commission; Rhode Island Public Utilities Commission; Vermont Public Utility Commission) and the New England Conference of Public Utilities Commissioners:

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The names and email addresses of the NEPOOL Participants Committee members are posted on the ISO-NE website at https://www.iso-ne.com/committees/participants/participants-committee/.