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**REPORT FOR ELECTRIC UTILITY
INFRASTRUCTURE STORM
HARDENING PURSUANT TO
SUBSTANTIVE RULE §25.95**

**BEFORE THE
PUBLIC UTILITY COMMISSION
OF TEXAS**

**ONCOR ELECTRIC DELIVERY COMPANY LLC'S ELECTRIC UTILITY
INFRASTRUCTURE STORM HARDENING PLAN SUMMARY
PURSUANT TO SUBSTANTIVE RULE § 25.95**

I. Introduction

Oncor Electric Delivery Company LLC ("Oncor" or "the Company") operates the largest transmission and distribution ("T&D") system in Texas, delivering power to over 3.6 million electric delivery points through more than 121,000 miles of distribution and over 17,000 miles of transmission lines. The Company's goal is to provide safe, reliable, cost-effective electric delivery service to customers. Accordingly, Oncor has been, and continues to be, actively engaged in significant activities to assure the performance and resiliency of its T&D system during all weather conditions. This Storm Hardening Plan Summary communicates updates to activities described in Oncor's Storm Hardening Plan.

II. Elements of the Storm Hardening Plan

Oncor's Storm Hardening Plan ("Plan") describes current practices and future plans, and demonstrates Oncor's compliance with the requirements of the Public Utility Commission of Texas' ("PUCT's" or "Commission's") Substantive Rule § 25.95(e), 16 Tex. Admin. Code § 25.95(e) ("TAC"). The Plan is for a five-year period beginning June 30, 2016. The summary below is organized in outlined sections consistent with the requirements of 16 TAC § 25.95(e).

1. Construction Standards, Policies, Procedures, and Practices

Oncor recognizes the National Electrical Safety Code ("NESC") as a minimum safety standard for the provision of safe delivery service. Oncor's construction standards

are reviewed and modified as necessary to reflect the most recent revision of the NESC. Implementation of construction standards, policies, procedures, and practices is described in the Plan.

2. Vegetation Management Plan for Distribution Facilities

Oncor has a Vegetation Management Plan for distribution facilities prepared pursuant to 16 TAC § 25.96. See Oncor's Distribution Vegetation Management Plan, a summary of which is filed in Docket No. 41381.

3. Infrastructure Improvements Based on Smart Grid Concepts

Through the Telecom Refresh Program ("TRP"), Oncor continues to deploy a variety of both fiber and high-speed wireless communications technologies at substations. These high-speed communications technology options include microwave, fiber optic connections, 700/900 MHz radios, public cellular, and private machine-to-machine communications. As of December 31, 2019, 722 out of approximately 1,400 total Remote Terminal Units ("RTUs") at substations had been upgraded. After Oncor's recent transaction with InfraREIT/Sharyland, Oncor integrated the affected InfraREIT/Sharyland assets into the Oncor portfolio by connecting Oncor's existing substations into the assets previously owned by InfraREIT/Sharyland via wireless or fiber technologies.

Oncor's implementation of the TRP will continue to provide modern communication solutions to newly deployed substation RTUs as well as upgrade the remaining substation RTUs through 2022. The program will enhance internal communications systems and will include upgrades to Oncor's data centers to ensure continued delivery and availability of communications technology supporting the Transmission Management System ("TMS"), Distribution Management System ("DMS"), Advanced Metering System ("AMS"), physical security and access control traffic, and enterprise network data traffic.

The TRP also supports Oncor's needs for a mission-control two way push-to-talk Land Mobile Radio ("LMR") system, mobile voice communications, and other ways to optimize Oncor's internal and external communication systems. In 2015, Oncor began the multi-year TRP effort to design and build new solutions to support long-term communications network capabilities. Planning, design, and procurement efforts are

substantially complete, with equipment deployments (radios, routers, fiber, etc.) in-progress across Oncor's service area.

In 2017, Oncor upgraded the base platform and the primary database, and provided improved functionality for the Outage Management System ("OMS") to provide improved work flow with better integration capabilities. Additional features were added to reduce restoration time in response to feeder lockouts. Load flow on any device modeled by OMS can now be estimated by utilizing historical AMS meter information. During distribution storm events, "DMS Reports," a web-based application, allows Oncor to monitor and manage crews. Oncor continues to enhance storm management processes through the use of this application and has added redundant integration between DMS Reports and Oncor's call center.

Oncor's Transmission Management System ("TMS") has undergone several improvements, including improved management of temporarily installed equipment and the ability to display power flow estimations on the operator's console. A more advanced method for implementing voltage reduction has also been deployed on Oncor's TMS to allow overall grid load reduction by more globally adjusting the transmission voltage to help avoid load shed during an ERCOT short supply event. Oncor's TMS is currently undergoing a replacement project, which involves new data center infrastructure, network and security upgrades, system interface implementations, and database and display improvements. This effort will include in-depth SCADA testing and a system recertification process with North American Electric Reliability Corporation and Texas Reliability Entity. Oncor also plans to build-out a new backup control center and implement other facility improvements at key Oncor sites in DFW.

4. Enhanced Post-Storm Damage Assessment

Oncor continues to conduct post-storm damage assessment as described in the Plan. In addition, Oncor's Damage Assessment mobile application was deployed in 2017 and is operational. Additional functionality and improvements to this mobile application were completed in 2018 and allow storm response Damage Evaluators and off-system crews to be managed within Oncor's OMS and "DMS Reports" applications. Other

improvements to the mobile application allow crews to create and close work orders on assigned outage events as necessary.

Oncor is continuously driving to improve the customer experience. For example, Oncor deployed the Wire-down/Unit onsite Process Improvement Tool ("WUPIT") in 2018 with the primary purpose of soliciting images from end-use customers to identify and respond faster to potentially life threatening hazards on the electric system caused by a storm event. A significant secondary benefit is a potential reduction of unnecessary resource allocation due to the additional information provided by images that show non-hazardous situations.

5. Pole Construction Standards, Pole Attachment Policies, and Pole Testing Schedule

Oncor's pole construction standards are discussed in Section II.A. of the Plan. (See Section II.1., above.) Oncor's Joint Use Management Department has established processes governing attachments by other entities to Oncor's distribution poles. In addition, Oncor performs a structural analysis before allowing the attachment of a communication antenna to an Oncor transmission pole or tower. Oncor's employees perform pole inspections as part of their normally scheduled duties. Oncor also instructs its vegetation management and line contractors to report any conditions they observe that are potential issues for remediation and employs an external firm to conduct more extensive pole assessment and strengthening. Each year, Oncor plans to inspect, treat, and test a portion of the population of wood poles on its transmission system and develops plans for the reinforcement or replacement of poles identified through that inspection process.

6. Distribution Feeder Inspection Schedule

Please see the discussion in Section II.5, above.

7. Transmission and Distribution Automation

As described below, Oncor's technology deployment is designed to provide enhanced outage resilience and faster outage restoration, which results in increased service availability for end-use customers during all weather conditions.

Automated Fault Detection

Oncor has deployed Digital Fault Recorders ("DFRs") at select transmission stations and deploys DFRs at all new transmission stations. As of December 31, 2019, Oncor had 263 DFRs installed on its system. Oncor developed an event classification system to expedite analysis, and automate event prioritization of the DFR operations. The system automatically retrieves and processes over 35,250 DFR operations annually.

Synchrophasor Technology

Oncor is participating in a U.S. Department of Energy Synchrophasor Demonstration Project. As of December 31, 2019, Oncor had 24 transmission stations equipped with Phasor Measurement Units ("PMUs") supply data to ERCOT, and that data is also available for post-event analysis.

Dynamic Reactive Devices

As of December 31, 2019, there were Dynamic Reactive Devices ("DRDs") installed at eight Oncor stations. Even though these DRDs were not installed specifically for storm hardening purposes, they provide a measure of system resiliency by protecting against grid impacts caused by the loss of critical transmission or generation facilities.

Distribution Automation

Oncor has deployed, and plans to continue to deploy, various Distribution Automation technologies, which include reclosers, intelligent switches, and reclosing fuses, to reduce customer outage time. As of December 31, 2019, Oncor has installed Distribution Automation devices on 54% of distribution feeders.

8. Compliance with Most Recent NESC Wind Loading in Hurricane-Prone Areas

See Section II.1, above.

9. NESC Grade B for Distribution Facilities

See Section II.1, above.

10. Damage/Outage Prediction Model

Oncor continues to work on a variety of approaches to improve damage/outage modeling capability. Utilizing weather, outage, and restoration data, Oncor has explored and continues to develop a predictive model that will project the amount and type of damage a storm will create. This research has led to initial correlations between wind speed, population density, and outages. Using a statistical analytics tool, this correlation has given Oncor the ability to determine causation for certain types of damage and the statistical geographic distribution of these outages. The model was created and is continuously enhanced to make storm restoration efforts more proactive (as opposed to reactive), help reduce crew travel time, and help preemptively place crews to repair damage.

Available meter data (voltage and outage) is utilized for outage/restoration verification and is consistently incorporated into the connectivity model to enhance performance. Significant improvements were made to Oncor's distribution connectivity model in 2017. Oncor routinely reviews its outage response during high outage activity levels to ensure best practices and processes are followed. These reviews allow for continuous improvement through the inclusion of "lessons learned" in training used to facilitate and prepare for the best outage response. In addition, Oncor continues to focus on improvement by integrating identified outage information with advanced analytics to ((1) better perform outage prediction and restoration, (2) identify enhancements to restoration processes, and (3) provide proactive and accurate communication with customers during outages.

11. Use of Structures Owned by Other Entities

Oncor applies its own construction standards when attaching Oncor's distribution facilities to structures owned by other entities.

12. Restoration of Service to Priority Loads

Implementation of service restoration to priority loads continues as described in the Plan.

III. Applicable Time Period

This Summary is for a one-year period beginning May 1, 2020.

Respectfully submitted,

Oncor Electric Delivery Company LLC



The image shows a handwritten signature in blue ink, which appears to read "Keith Hull".

Keith Hull

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