UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy for Determining Return on Equity	))	Docket No. PL19-4-000

INITIAL COMMENTS OF AMERICAN ELECTRIC POWER COMPANY, INC.

I. INTRODUCTION

American Electric Power Company, Inc. (AEP) supports the Commission's recent effort in the *Coakley* Briefing Order[1] to improve its ROE policy by making it more predictable and consistent with investors' expectations. These efforts to reduce uncertainty will facilitate needed investments that improve reliability and reduce overall costs to consumers. The Commission's inquiry in this proceeding[2] provides an opportunity to reiterate the Commission's commitment to the sound policies it proposed in the *Coakley* Briefing Order and to build upon those policies by identifying refinements that can serve the Commission's policy objectives throughout the country. AEP respectfully submits these comments and requests that the Commission confirm its commitment to resolving ROE cases for electric utilities consistent with the *Coakley* Briefing Order.[3]

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[1] *Coakley v. Bangor Hydro-Elec. Co.*, 165 FERC ¶ 61,030 (2018) ("*Coakley* Briefing Order").

[2] *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, 84 Fed. Reg. 11,769 (Mar. 28, 2019), 166 FERC ¶ 61,207 (2019) ("NOI").

[3] AEP submits these initial comments in accordance with the schedule set forth in the NOI. *See* NOI at P 3, 84 Fed. Reg. at 11,770.

The improvements that the Commission proposed in *Coakley* and the refinements that it has the opportunity to advance through this inquiry embody the Commission's observation that it "must look to how investors analyze and compare their investment opportunities."[4] From this principle, the Commission explained that it was both necessary and appropriate to rely on real-world judgment in applying multiple financial models—just as other regulators, financial professionals, and investors would—rather than depend solely on a mechanical application of the theoretical assumptions of any one model.[5] The Commission thus should affirm the practical approach in its ROE policy adopted in *Coakley* and refine areas of its current policy that would better measure investors' expectations and reflect real-world rather than theoretical concerns.

In particular, two areas for refinement would have a particularly strong impact on improving the Commission's ROE policy:

- First, the Commission should revisit and improve upon its current policy of relying on the median as the measure of central tendency in cases involving a single utility's ROE;
    - the justification for relying on the median depends on theoretical sampling concepts that are not applicable to the Commission's carefully designed electric utility proxy groups to identify companies of comparable risk;

[4] *Coakley* Briefing Order at P 33.

[5] *See id.* at P 37.

- the Commission instead should consider the midpoint as the measure of central tendency because the full range of financial model results is likely to be relevant in understanding the returns the investors require for single utilities;
    - the attached analysis of "Measures of Central Tendency for Cost of Equity Estimates" prepared by Dr. William Avera, one of the expert witnesses who the Commission relied upon in the Coakley proceeding, and his colleague Dr. John Thompson demonstrates that relying on the midpoint to identify central tendency is more appropriate in the context of proxy groups that the Commission is likely to consider in electric utility ROE cases; and
    - Drs. Avera and Thompson find that relying on the median inappropriately discounts "valid and relevant observations" from the screened proxy group—and thus risks causing the Commission to commit "the cardinal sin of statistical analysis."[6]

- Second, the Commission should consider the practical effects of how and when it resolves ROE cases by ensuring that the policies it proposed in *Coakley* can be applied at the pleading stage of complaint proceedings so that the recent trend of never-ending and pancaked ROE complaints does not continue, and investors are able to better forecast the outcome of ROE cases.

[6] William Avera & John Thompson, *Measures of Central Tendency for Cost of Equity Estimates* at 18 (2018) ("Avera/Thompson Analysis"). Dr. Avera and Dr. Thompson affirm their analysis with affidavits; the analysis and affidavits are provided as Attachment A.

These and the other refinements discussed below will enhance the approach the Commission proposed in *Coakley* and make the Commission's ROE policy more consistent with the standards set forth by the Supreme Court in *Hope* and *Bluefield*.

II. COMMENTS

The Commission's inquiry in this proceeding seeks comments on questions in eight topic areas. For convenience, AEP's comments set forth below follow the order of those eight topics in the order of the NOI. However, AEP does not take positions on all eight topics, and it does not answer each specific question within the topics.[7]

A. Role and Objectives of the Commission's Base ROE Policy

The approach to resolving ROE cases set forth in the *Coakley* Briefing Order establishes a framework that supports investment in infrastructure. This, in turn, serves customers' needs and achieves the Commission's objectives with respect to ensuring predictability and a stable investment environment. These positive results from the *Coakley* framework necessarily overlap with the capital attraction standard set forth in *Hope* and *Bluefield* because investors, guided by their expectations regarding utilities' returns, are the conduit for the capital that is necessary to finance, construct, operate and maintain the nation's transmission grid that serves as the backbone for reliable service to residential, commercial, and industrial customers. The Commission appropriately recognizes in the first two questions of the NOI that "the predictability of ROE

[7] *See* NOI at P 30.

determinations" and investors' expectations and ability to forecast ROE results are critical aspects in aligning the Commission's ROE policy with its objectives.[8]

The approach outlined in *Coakley* promotes predictability both by analyzing required returns in a manner more consistent with real-world investor expectations and by establishing a method to determine a range of presumptively just and reasonable ROEs that will deter excessive, pancaked complaint proceedings that leave ROEs uncertain for years.[9] The *Coakley* approach thus improves the ability of investors, customers, and parties to ROE proceedings to assess: (a) whether a complaint challenging an existing ROE should be dismissed or set for hearing; and (b) the reasonably likely ROE outcomes in cases that the Commission sets for hearings.

In this proceeding, the Commission's first priority should be confirmation that it will not abandon the progress it has made in *Coakley*. In contrast, a failure to confirm its commitment to the *Coakley* approach would undermine the predictability established by that approach and introduce a new layer of uncertainty, thereby forcing utilities and their customers to first predict and then adapt to yet another new approach, and leaving investors with no clear direction to assess how each individual ROE proceeding might turn out.

In addition to confirming its commitment to the improvements set forth in the *Coakley* Briefing Order, the Commission should clarify and refine the *Coakley* approach to enhance its ability to solve the problem of never-ending complaints. The Commission

[8] *See* NOI at P 31 (questions A1 and A2).

[9] *See Coakley* Briefing Order at PP 16, 28, 33-35.

should emphasize that its intention "to dismiss an ROE complaint if the targeted utility's existing ROE falls within the range of presumptively just and reasonable ROEs for a utility of its risk profile—unless the presumption is sufficiently rebutted"[10]—means that it will vigorously review disputes about the parties' application of the three financial models at the pleading stage. To ensure predictability, the Commission should not allow complainants that submit analyses that do not follow *Coakley* to move forward to the hearing phase. As required under Section 206, Complainants must bear the burden of showing in their complaints that they have applied the financial models consistent with the *Coakley* approach, and if they fail to sustain that burden, their complaints should be summarily dismissed. Moreover, the Commission should clarify that the presumptive range is a strong presumption that Complainants must overcome before a case is set for hearing. In other words, the burden to demonstrate that an existing ROE within the presumptively just and reasonable range should be set for hearing is a heavy one, and complainants must do more than allege that capital market conditions or other case-specific factors are sufficient to overcome the presumption.

Refining the *Coakley* approach in this manner should reduce the number of complaints that will be set for hearing, which will benefit investors and customers by reducing uncertainty and repetitive (and costly) litigation. Uncertainty regarding utilities' ROEs drives up the cost of capital and, in the long run, diminishes investment in facilities that make service more reliable and cost effective for customers.

[10] *Coakley* Briefing Order at P 16.

The Commission's final question under this topic asks whether ROEs should reflect the cost of capital at the time of an investment (i.e., a "vintage" ROE) or contemporary investor requirements. The Commission's long-standing approach is to rely on contemporary investor requirements. It should not alter its ROE policy to consider the cost of capital at the time of investment because doing so would disrupt current expectations, increase the frequency and thus the cost of ROE proceedings, and take focus away from confirming the improvements the Commission has made in its ROE policy through the *Coakley* rulings. Pursuing the issue of vintage ROEs would not advance the objective of making ROE policy more predictable, and it would unsettle investors' current expectations regarding how the Commission assesses a company's ROE. Moreover, the need to determine what historical investor expectations were for companies at the time of prior investments would impose an astounding administrative burden and/or raise significant questions about due process if the Commission attempts to devise default ROEs as shortcuts.

B. ROEs for different Commission-regulated industries

The Commission should confirm that it will apply the approach set forth in the *Coakley* Briefing Order in electric utility ROE cases. AEP takes no position on whether the Commission should apply that policy to natural gas and oil pipelines.

C. Performance of the DCF Model

The DCF model is a long-established financial model that investors, regulators, and academics have consulted in evaluating equities, and should continue to be used by the Commission in evaluating utility ROEs. But, like all financial models, the DCF is

subject to model risk and should not be the only model that the Commission relies upon in adjudicating ROE cases. For example, in Opinion No. 531, the Commission found that the DCF model was subject to model risk because there was record evidence that the market conditions that are critical inputs to the model were "outside of the normal range."[11] In addition to concerns about model risk, sole reliance on the DCF model is not consistent with investors' expectations because "[i]nvestors do not necessarily subscribe to any one method."[12]

As the Commission explained in the *Coakley* Briefing Order, "relying exclusively on any single methodology increases the risk that the Commission could authorize an unjust and unreasonable ROE."[13] The analyses contemplated in questions C1 through C3 thus distract from the key consideration. Even if the Commission were to find that an analysis of earnings over the past 20 years showed that there were some periods of time when the results were consistent with the DCF model's assumptions (as contemplated in question C2), that would not establish that the DCF model is immune to model risk. An analysis of the past 10-20 years would not support sole reliance on any one model, including the DCF model.[14] For the same reason, the Commission should not attempt to develop an additional model of conditions in which the DCF model is more or less robust. Rather than going down that path, the Commission should affirm its prior

[11] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234 at P 145 & n.286 (2014). As noted in the NOI, the Court of Appeals vacated Opinion No. 531, but the court did not address the issue of model risk.

[12] *Coakley* Briefing Order at P 35 (quoting Roger A. Morin, New Regulatory Finance at 429).

[13] *Coakley* Briefing Order at P 38.

[14] *See Coakley* Briefing Order at PP 36-37.

conclusion that "combining estimates from different models is more accurate than relying on a single model."[15] Confirming its reliance on multiple models will best serve the objectives of the Commission's ROE policy.

D. Proxy Groups

The Commission's proxy selection criteria and tests of illogical low-end and high-end results provide a significant opportunity to further align the Commission's ROE methodology with its objectives.

Refining proxy selection criteria to ensure well-defined and sufficiently large proxy groups would improve the accuracy and predictability of the Commission's ROE determinations. Larger proxy groups would likely decrease the instances where a single data point has an outsized impact on the final outcome of a case. This is because larger proxy groups minimize the impact of measurement errors and transient variations in market data for a single company.

Due to changes in the energy industry, the lack of a large, representative comparison group has become an increasing concern in recent years. To ensure that proxy groups are sufficiently large, the Commission should avoid overly stringent screening criteria with respect to a company's percentage of revenues from regulated business or credit ratings. There is no evidence that investors evaluate comparability based on isolated statistics on the relative revenues from regulated and unregulated businesses. While credit ratings do play a role in investors' identification of companies with comparable risk, the Commission's one-notch rule often faces shortcoming in

[15] *Coakley* Briefing Order at P 38.

practice and can lead to an insufficient number of proxy companies. The one-notch rule also fails to take into account the evolution of an electric utility's credit rating. Finally, this metric is chiefly meaningful to debt holders whose primary concern is whether or not a company is financially viable enough to repay its debt. As a result, the Commission should evaluate the practical effects of its proxy screening criteria and ensure that proxy groups contain a sufficient number of companies.

One other way that the Commission could ensure sufficiently large proxy groups is by considering non-utility companies as eligible for proxy groups if the record demonstrates that those companies are comparable in the eyes of investors, as demonstrated by credit ratings, dividend policies and other markers of comparability.[16]

The Commission also should clarify its approach to screening companies with merger activity from the proxy group. The Commission should ensure that only transactions that significantly affect stock prices result in excluding companies from the proxy group. Doing so would avoid unnecessary contraction of proxy groups based on transactions that have no meaningful effect on investors' expectations.

1. Tests of low-end and high-end model results and the natural break analysis

The Commission should ensure that its tests of low-end and high-end results reflect economic logic that is relevant in the context of applying financial models to a defined proxy group, rather than theoretical statistical concepts that are divorced from

[16] *See, e.g.,* Answering Testimony of Adrien McKenzie at 113-118, Exhibit No. AEP-0001, Docket No. EL17-76 (Aug. 24, 2018). Mr. McKenzie is one of the witnesses that recommended the use of the four financial models that the Commission set forth in the *Coakley* Briefing Order.

economic reality (i.e., investors' expectations). The Commission's low-end test largely satisfies this standard because it reflects that, as a matter of economic logic, investors would not invest in equities unless the return was sufficiently above the return on a bond investment. However, the Commission should refine the low-end test by clarifying that parties may provide evidence to update the proper measure of the threshold above a bond investment that is required for investors to take on an equity investment. The 100 bp threshold that the Commission has used for a number of years is now outdated, so the Commission's test should consider evidence that analyzes more current spreads between debt and equity costs.

In contrast, the Commission's current 150% of the median high-end test and the natural break analysis both appear rooted in arbitrary statistical sampling concepts that have the potential to screen out results that are economically logical and thus undermine the accuracy of the analysis. Testimony submitted in cases before the Commission has explained that analyzing results based on their dispersion (i.e., how far certain results are from neighboring results or, in the case of the 150% test, the median result) incorrectly assumes that the Commission's high-end and low-end tests are sampling exercises.[17] In fact, the Commission's proxy screening criteria have already identified a proxy group that represents a complete set of utilities with comparable risk profiles; this group is ***not*** a sample that requires additional statistical manipulation to determine whether it is representative of the complete data set. As a result, the natural break analysis should be

[17] *See, e.g.,* Answering Testimony of Adrien McKenzie at 64-72, Exhibit No. AEP-0001, Docket No. EL17-76 (Aug. 24, 2018).

discarded in its entirety. A test based on whether a result has a wide dispersion from other results "is not a valid test of how well a specific [model] estimate reflects investors' expectations."[18]

This reasoning also supports changing the high-end results test so that it is not based on how far a high-end result is from the median result. The Commission should only exclude high-end results if doing so reflects reasoned judgment regarding whether a result is so high that investors would discount it as unsustainable. But there is no evidence that there is a logical test of high-end results that would apply generically in a manner similar to the Commission's well-reasoned low-end test. Dr. Avera and Dr. Thompson note in their analysis that "the standard for eliminating low outliers has nothing to do with the standard for eliminating high outliers."[19] In other words, the fact that there is a logical basis for a general low-end test rooted in the relationship between debt investments and equity investments does not prove that there must be a general high end test based on an arbitrary measure of how far a result is from the median result.

The Commission should not generically exclude model results that it obtains by applying three well-supported financial models to a proxy group of companies that the Commissions deems comparable in risk to the utility at issue. Instead, it should exclude results only if there is specific record evidence indicating that investors would regard the result as unsustainable. Absent such evidence, the Commission should rely on the fact

[18] *See, e.g.*, Answering Testimony of Adrien McKenzie at 70, Exhibit No. AEP-0001, Docket No. EL17-76 (Aug. 24, 2018).

[19] Avera/Thompson Analysis at 6.

that the results are for proxy companies that have passed criteria to ensure that those companies are comparable in risk to the utility at issue. For example, one factor that might produce an illogical outlier would be involvement in major merger activity that significantly distorts the inputs to a financial model, but the Commission's proxy criteria already provide the mechanism to remove those companies from the proxy group. As Dr. Avera and Dr. Thompson summarize, excluding additional results without an objective reason is highly problematic:

> Others have suggested that ROE estimates should be eliminated based on how far they are below or above the median or midpoint value. Unless there is some objective basis to establish the outer limits of reasonableness of an ROE from the measure of central tendency, such eliminations represent unjustified rejection of potentially useful observations in the face of limited comparable risk utilities available for inclusion in the proxy group. Throwing away useful data is a cardinal sin of statistical analysis.[20]

There is no reason to generically assume that a result for a comparable company is an illogical "outlier." Instead the presumption should be that the result is relevant information in assessing a just and reasonable ROE. The presumption that results should be included, not excluded generically, is especially strong for the two-stage DCF model; as the Commission concluded in Opinion No. 531, a two-stage DCF analysis that incorporates forecasts of GDP growth is unlikely to produce unsustainable results.[21] For

[20] Avera/Thompson Analysis at 7 (also noting that standard deviation is not an objective standard for exclusion in the context of the Commission's proxy groups because the Commission's proxy groups are "not random samples").

[21] Opinion No. 531 at P 118 ("Under the two-step DCF methodology, it is unnecessary to screen the proxy group for unsustainable growth rates because the methodology assumes that the long-term growth rate for each company is equal to GDP").

the CAPM and Expected Earnings approach, the Commission should allow case-by-case evidence of whether investors would regard a result as unsustainable, but it should clarify that the burden is on a party seeking to exclude a result to show that the result for a company from a proxy group of comparable risk companies is not sustainable or otherwise illogical based on an objective standard.

2. Midpoint versus median

Question D10 in this topic area concerns whether the midpoint or median is the appropriate measure of central tendency in the Commission's placement of the base ROE within the zone of reasonableness. This is the most significant area where the Commission should revisit and improve its current approach to ROE determinations. The Commission should apply the midpoint, not the median, in all of its electric utility ROE cases, including so-called single-utility ROE cases. In the case of RTO-wide ROEs, the Commission already has identified a clear reason why the full range of results (and thus the midpoint) should apply to both the MISO TOs and New England TOs,[22] but there is no economic reason why the Commission should ignore the full range of results in cases involving a single utility. The Commission thus should rely on the midpoint as the measure of central tendency in both FPA Section 205 cases and under the second prong of FPA Section 206 in single-utility ROE cases.

[22] *See, e.g.*, *Midwest Indep. Transmission Sys. Operator, Inc.*, 106 FERC ¶ 61,302 at PP 9-11 (2004); *ISO New England, Inc.*, 109 FERC ¶ 61,147 at P 203 (2004) (stating "the use of the midpoint return in this case will not result in a skewed range of distribution. Rather, it will appropriately reflect (and take due account of) the entire range of results indicated by the proxy group").

Dr. Avera and Dr. Thompson explain that choosing a measure of central tendency is inherently interlinked with the selection of a proxy group of comparable risk utilities and the computation of financial model results for the proxy group.[23] They explain that because the Commission relies on proxy groups with limited populations ("in the tens") that are screened for risk comparability, the Commission's analysis is distinct from the statistical concepts that would apply in a case of "random sampling" among other data populations.[24] With this principle established, Dr. Avera and Dr. Thompson examine actual proxy groups that the Commission has encountered to identify advantages and disadvantages for relying on the midpoint or median. They observe from an analysis of a MISO proxy group that the "median value concentrates on the middle one or two values" and "does not directly consider the full range of ROEs."[25]

Dr. Avera and Dr. Thompson explain that the median has advantages when dealing with a distribution of values that "are skewed by unreasonable outliers."[26] Dr. Avera and Dr. Thompson then review research examining measures of skewness and what levels of skewness are significant enough to justify use of the median.[27] They show that the median is only necessary as a substitute for the midpoint when there is "egregious distortion" in a distribution.[28] They note that examples of proxy groups in

[23] Avera/Thompson Analysis at 4.

[24] Avera/Thompson Analysis at 5-6.

[25] Avera/Thompson Analysis at 8.

[26] Avera/Thompson Analysis at 9.

[27] Avera/Thompson Analysis at 10-13.

[28] Avera/Thompson Analysis at 12.

FERC cases showing that the "distribution is not substantially skewed."[29] They further explain that this is not some accident in the cases that they examined, but rather reflects the design of the Commission's proxy group framework

> The midpoint reflects information about the highest and lowest values from the entire range of reasonable ROE estimates. The statistical argument for ignoring these values is that they are outliers, and are therefore out of place in a distribution of just and reasonable ROEs. In other words, there should be no unreasonable outliers in a zone of reasonable ROEs. But since objective screening has already eliminated outliers in this case, the statistical argument for median is not applicable. Instead, midpoint is appropriate because the highest and lowest values are perfectly reasonable ROE estimates.[30]

The Commission's approach to proxy groups thus means that it will usually be the case that there is no justification for enduring the inevitable downside of the median—i.e., that the median ignores "the highest and lowest values of the reasonable range" and thereby "throw[s] away useful data."[31]

Finally, Dr. Avera and Dr. Thompson examine the key reasons that the Commission and Court of Appeals relied on when they adopted the median in a single utility rate case involving Southern California Edison Company. They conclude that these reasons "do not apply to all ROE distributions in individual electric utility proxy groups."[32] They find that in the absence of "empirical evidence that a proposed electric

[29] Avera/Thompson Analysis at 12-13.

[30] Avera/Thompson Analysis at 13.

[31] Avera/Thompson Analysis at 13.

[32] Avera/Thompson Analysis at 16.

utility proxy group includes such extreme values or exhibits a very skewed distribution, the median loses its comparative advantage over other measures of central tendency."[33]

This analysis thus demonstrates that the Commission should revisit this aspect of its ROE policy and utilize the midpoint, rather than the median, in all ROE cases unless there is evidence that the Commission's proxy group screening process did not work as intended and that the results are egregiously skewed.[34] But the Commission's ROE policy should not presume that its proxy screening process will fail in single utility ROE cases. Dr. Avera and Dr. Thompson conclude that:

> if the proxy group for an individual electric utility is screened to be of comparable risk to that utility, then each ROE estimate that passes economic and regulatory tests of logic are potentially just and reasonable for an individual utility in its rate case. In the absence of evidence that the midpoint misrepresents the distribution of ROE estimates, then it is the most logical measure of central tendency.[35]

In fact, AEP's circumstances provide strong examples demonstrating that even in a so-called single utility ROE case, the utility at issue often faces a wide range of risks that are similar to the risks faced by separate transmission owners within an RTO. AEP's operating companies in PJM operate in seven different states and have varying risk profiles. For example, they possess different credit ratings and encounter wide variations in regulatory environments among other differences. There are a number of similarities

[33] Avera/Thompson Analysis at 17.

[34] Even in cases where measures of skew are high for a distribution of proxy group results, the midpoint may still be appropriate if there are case-specific reasons that it is important for the Commission consider the full range of results. As discussed below, the breadth and diversity of the AEP companies indicates that this likely would be the case for AEP.

[35] Avera/Thompson Analysis at 18 (emphasis added).

between the AEP companies and a regional group of transmission owners, such as the NETOs or the MISO transmission owners. AEP companies make up approximately 25 percent of the PJM system and are larger than some RTOs/Independent System Operators (ISOs). As witnesses have testified in several cases before the Commission, utilities litigating their own ROEs, such as the AEP companies, must compete for capital with utilities like the MISO TOs as well as other companies across the nation, regardless of any mechanical policies used by the Commission to establish a point estimate ROE from within the DCF range. AEP's circumstances thus demonstrate that the Commission should apply the midpoint in single utility ROE cases just as it should for cases involving an RTO-wide ROE.

Ignoring the midpoint for single utility ROE cases would not be consistent with investors' approach or the Commission's rationale for using the midpoint in RTO-wide ROE cases. There is no evidence that investors limit themselves to considering only the median of their analyses and there is no reason to think that investors would ignore the full range of results in their analyses of individual utilities.

Finally, AEP notes that if the Commission addresses its proxy selection criteria in a manner that expands the size of proxy groups while ensuring risk comparability, then the discrepancies between results using the median and results using the midpoint likely will decrease and thus diminish the significance of this issue in the future.

E. Financial Model Choice

The Commission identified four appropriate models to use in its ROE determinations in the *Coakley* Briefing Order. The Commission also properly concluded

that it would weigh the four models equally in its analysis because doing so minimizes "judgmental error, measurement error and conceptual infirmities."[36] For the same reasons, the Commission should not attempt to identify a "best" model (see questions E3, E6) or identify particular conditions in which some models are better than others (questions E2, E5). As the Commission explained, the issue of anomalous market conditions becomes "largely irrelevant" in a context in which the Commission relies on four different financial models.[37] The Commission should confirm its recognition that relying on multiple models "will accurately reflect how investors are making their investment decisions."[38]

AEP also supports the Commission's treatment of state ROEs in the *Coakley* Briefing Order. State ROEs have some relevance in checking the results of the four financial models, but they should not be considered equally with the four financial models or used to measure the composite zone of reasonableness. The Commission thus correctly balanced the role of state ROEs when it allowed consideration of their level if accompanied by record evidence that investors consider these levels in their investment decisions.[39]

F. Mismatch between Market-based ROE determinations and Book-Value Rate Base

AEP is not addressing this topic area at this time.

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[36] *Coakley* Briefing Order at P 36 (quoting Morin at 429).

[37] *Coakley* Briefing Order at P 44.

[38] *Coakley* Briefing Order at P 44.

[39] *See Coakley* Briefing Order at P 35 n.72.

G. First Prong of ROE Determination

The established range of presumptively just and reasonable ROEs set forth in the *Coakley* Briefing Order is an appropriate method to analyze whether an existing ROE is unjust and unreasonable under the first prong of FPA Section 206. However, as discussed above in AEPs' comments on topic area A, the Commission should further refine this method to ensure that it is able to dismiss unnecessary complaints at the pleading stage in cases where complainants do not sustain their statutory burdens in the complaint itself. The *Coakley* approach, if supported by clear refinements that allow the Commission to rule on key issues at the pleading stage, would vastly improve the Commission's ability to identify unnecessary complaints and diminish – for the parties as well as the Commission − the burden imposed by litigation over successive pancaked complaints that were precipitated by the since-rejected "single ROE analysis."[40]

Midpoint versus median in determinations of a range of presumptively just and reasonable ROEs

Question G4 in this topic area raises the issue of whether the midpoint or the median is the appropriate measure of central tendency in identifying the range of presumptively just and reasonable ROEs in single-utility rate cases. As discussed above in Section D, the midpoint versus median issue is the most significant area where the Commission should revisit and improve its current ROE policies.

[40] *See, e.g., Emera Maine v. FERC*, 854 F.3d 9, 25-26 (D.C. Cir. 2017).

This question highlights a situation in which reliance on the median (as well as the upper and lower median) does not make sense for single utilities.[41] A middle quartile that is based on the lower median, median, and upper median would not identify a sufficiently "broad range" of just and reasonable ROEs to satisfy the Commission's objectives or the Court's holding in *Emera Maine*.[42] Instead, the Commission should utilize the quartiles surrounding the lower midpoint (for below average risk utilities), the midpoint (for average risk utilities) and the upper midpoint (for above average risk utilities) in its identification of the range of presumptively just and reasonable ROEs under the first prong of FPA Section 206, including in single utility rate cases. Doing so is appropriate not just because proxy results may cluster near the middle, but also because the midpoint considers the full range of results, which is consistent with the purpose of establishing a range of presumptively just and reasonable ROEs.

Dr. Avera and Dr. Thompson conclude that using midpoints, rather than medians, has particular advantages when defining a zone of reasonableness or other relevant ranges and non-central points within the zone. This is because midpoints produce "symmetrical" ranges.[43] In contrast, using medians in these contexts can lead to distortions as a result of the clustering effect noted by the Commission's question.[44]

[41] NOI at P 37 (noting that proxy results "tend to cluster" and render "the middle quartile relatively narrow").

[42] *See, e.g., Emera Maine*, 854 F.3d at 26.

[43] Avera/Thompson Analysis at 18.

[44] *See* Avera/Thompson Analysis at 19.

Moreover, the Commission should not apply one measure of central tendency at step 1 of its FPA Section 206 analysis and a different measure of central tendency at step 2 of the analysis. Instead, the Commission should apply the midpoint in both steps. If the Commission applied different measures at different steps, then it could potentially produce results at step 1 that are fundamentally at odds with the results under step 2. For example, if the Commission applied the highly clustered median approach at step 1, it could find itself setting a ROE for hearing and then determining at step 2 that the ROE placement based on the midpoint is higher than the original base ROE. Similarly, an ROE determined in a Section 205 case (presumably applying the same approach the Commission uses at step 2 under Section 206) might simultaneously be found to be unjust and unreasonable under step 1. These potential scenarios highlight the broader issue of introducing an unjustified inconsistency in the Commission's approach. The Commission thus should rely on the midpoint for both step 1 and step 2 of its FPA Section 206 analysis for single utilities.

H. Model Mechanics and Implementation

While the Commission need not reopen every last detail of the financial models and should instead rely on its development of the models in the Coakley and MISO TO proceedings, the NOI highlights a few areas where the Commission's guidance would provide greater clarity on issues where parties can seek improvements on the Commission's current approach.

First, the Commission should clarify that it will consider a refinement of the traditional CAPM analysis known as the empirical CAPM or ECAPM. The ECAPM is

based on widely known research showing that the traditional CAPM understates required returns for companies with betas that are less than one. Nearly every proxy company for the electric utility industry has a beta of less than one. As a result, the Commission could improve the accuracy of the Coakley framework by using the ECAPM. The advantages of the ECAPM in an evaluation of utility returns are recognized by both academic literature and other regulators. Utilizing the ECAPM thus would make the Commission's approach more consistent with investors' requirements. As the Regulatory Commission of Alaska explained, a "reasonable investor would be aware of these empirical results."[45] Dr. Morin's treatise *New Regulatory Finance* provides additional analysis on the advantages and how to apply the ECAPM.[46]

Second, the Commission should clarify that, in applying the DCF model, it will consider growth rates other than IBES data published by Yahoo! Finance (aka Thompson Reuters).[47] This does not mean that IBES data are inherently problematic. Rather the Commission should confirm what it has already held—that it will take a practical approach to determining which growth rate best reflects investors' requirements. Just as investors do not mechanically rely on a single financial model, they do not rely on a single source for growth rate estimates and other financial data. The Commission has recognized that its current preference for IBES growth rates is based on practical

[45] *In re Amerada Hess Pipeline Corp.*, 2002 WL 31953784, Docket Nos. P-97-4 & P-97-7, Order Nos. 151 & 110 at Section VI.A.3 (RCA Nov. 27, 2002).

[46] Roger A. Morin, *New Regulatory Finance* at 175-77, 189-92 (2006).

[47] This issue of growth rate sources relates to NOI Questions H.1.1 (and its subparts), H.1.5, and H.1.6. *See* NOI at P 38.

considerations and that "a comparable source" may be appropriate in some cases.[48] As a result, the rule that the Commission should consistently apply in all cases is not that one source is inherently superior to others, but rather that it will rely on growth rates that reflect investors' expectations, as demonstrated by the record in each case. As the Commission stated, "there may be more than one valid source of growth rate estimates."[49]

In providing guidance on issues of model mechanics and implementation, the Commission should not lose sight of the policy benefits of the *Coakley* approach, as discussed above in Section II.A. At this time, investors, customers, and industry participants need the Commission primarily to focus on the overall objective of providing greater predictability to its ROE decisions. The Commission can best advance that policy objective by adopting models that are practical and consistent with real-world expectations of investors. Both of the refinements AEP suggests above fit squarely within this priority. The Commission should not utilize this proceeding to revisit and attempt to resolve on a generic basis every last theoretical argument against the approach the Commission adopted in the *Coakley* Briefing Order. Generally reopening theoretical details of model mechanics will make it harder to move toward consistency in applying these models. Instead, these details that do not directly connect with real-world expectations of investors can be addressed in individual cases with fully developed records.

[48] Opinion No. 531 at P 39.

[49] Opinion No. 531 at P 90.

III. CONCLUSION

AEP respectfully requests that the Commission consider these comments and that the Commission resolve this inquiry by confirming that it will apply the approach set forth in the *Coakley* Briefing Order in its determinations of just and reasonable ROEs for electric utilities.

Respectfully submitted,

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June 26, 2019

Attachment A

Avera/Thompson Analysis and Affidavits

Measures of Central Tendency for Cost of Equity Estimates

William Avera, Ph.D., CFA

and

John Thompson, Ph.D., CVA

June 26, 2019

MEASURES OF CENTRAL TENDENCY FOR COST OF EQUITY ESTIMATES

Authors

William Avera received a B.A. degree with a major in economics from Emory University. After serving in the U.S. Navy he earned a Ph.D. in economics and finance at the University of North Carolina at Chapel Hill. Dr. Avera holds the Chartered Financial Analyst (CFA®) designation. He has taught economics, finance, and statistics at the University of North Carolina and at the University of Texas at Austin. He also taught these subjects in professional development courses for other universities as well as corporations and investment organizations worldwide. Dr. Avera served at the Public Utility Commission of Texas ("PUCT") as Director of the Economic Research Division. Since leaving government service he has testified before the Federal Energy Regulatory Commission ("FERC" or the "Commission"), as well as the Federal Communications Commission ("FCC"), the Surface Transportation Board (and its predecessor, the Interstate Commerce Commission), the Canadian Radio-Television and Telecommunications Commission, as well as regulatory agencies, courts, and legislative committees in over 40 states.

He is familiar with the issues surrounding measurements of central tendency from his education and his dissertation research which involved the use of statistical measures of central tendency in the management of investment portfolios. His subsequent research, teaching, consulting, and testimony have dealt with the application of measures of central tendency in the regulation of public utilities. Dr. Avera is undertaking this assignment as a retired principal of FINCAP, Inc. A resume containing Dr. Avera's experience and qualifications is presented in Attachment A which includes a list of his regulatory testimony.

John Thompson is an economist and valuation analyst. He has consulted on numerous matters relating to antitrust, business damages, and rate of return regulation. Dr. Thompson

holds a B.A. degree in Accounting from the University of Kansas and a Ph.D. in Economics from Auburn University. He has taught in the Economics Department at Purdue University and in the McCombs School of Business at the University of Texas. Currently he is a lecturer in the Department of Economics at the University of Texas, where he teaches introductory and intermediate microeconomics classes for economics and business majors. Dr. Thompson is also an academic affiliate at the consulting firms EmployStats and FINCAP, Inc. A resume of Dr. Thompson's education and experience is contained in Attachment B.

1. Introduction and Summary of Conclusions

Following a recent decision in *Emera Maine v FERC*,[1] the Commission issued a Notice of Inquiry ("NOI") to explore whether it should modify its policies relating to the determination of the return on equity ("ROE") to be used by public utilities.[2] Within their inquiry, the Commission solicited comments on eight topics and numerous specific questions within those topics. This paper is a reply, specifically, to the following questions:

> D10. The Commission currently uses midpoints to determine the central tendency of the zone of reasonableness when determining RTO-wide ROEs. Should the Commission adopt a policy of using medians for this purpose?
>
> G4. In single utility rate cases, the Commission determines the central tendency of the zone of reasonableness based on the median of the proxy group ROEs. Is the approach outlined in the Coakley and MISO briefing orders appropriate in single utility rate cases given that the proxy company ROEs tend to cluster near the center of the zone of reasonableness, making the middle quartile relatively narrow?
>
> G4.a. Would it be reasonable to determine the central tendencies of the upper and lower halves of the zone of reasonableness for single utilities based on a midpoint analysis, so as to produce approximately equal ranges of presumptively just and reasonable ROEs for below average, average, and above average risk utilities?

This paper recommends that the Commission should use midpoints to determine central tendency of the zone of reasonableness for RTO-wide ROEs and individual electric utilities

[1] 854 F.3d 9 (D.C. Cir. 2017) (Emera Maine).
[2] 166 FERC 61,207 [Docket No. PL19-4-000].

given current capital market conditions. The paper also documents reasons for using the equal ranges of the zone of reasonabless above and below the midpoint to reflect the difference in risk of individual utilities compared to the proxy group and for other regulatory purposes. These recommendations are motivated by the limited number of available electric utilities with the information necessary to be included in a comparable risk proxy group for ROE analysis. Our recommendations also reflect the fact that the distribution of ROE estimates developed under current FERC practices do not include extreme outliers that fail tests of economic and regulatory logic. Since all of the ROE estimates of electric utility proxy groups represent potentially just and reasonable returns, they should not be excluded from consideration on any arbitrary basis. All reliable and relevant observations should be used to assure the end result meets judicial tests of economic fairness.

The regulation of utilities requires establishing a just and reasonable rate of return. The benchmark for a just and reasonable rate of return is that it must be competitive with investments of comparable risk. Establishing a competitive return on equity for gas and electric utilities requires identifying a proxy group of companies with comparable risk and using accepted methodologies to estimate the returns investors require from those companies. In setting the just and reasonable return, the Commission must evaluate the results of these methodologies to determine what is the range of results that meet judicial standards and advance regulatory objectives. This analysis requires eliminating estimated ROEs from the proxy group that are objectively unreasonable and summarizing the results with statistical measures. The selection of a measure of central tendency of the ROE results from the proxy group has been the subject of considerable debate. Similarly, there has been controversy defining a range of just and reasonable ROEs around the measure of central tendency for regulatory purposes.

These three questions raised in the NOI center around the applicability of median versus midpoint in selecting the central ROE value from the range of estimated ROEs. The two

measures of central tendency used by the Commission — **median** (the middle value of the observations) and **midpoint** (the sum of the highest reasonable observation and the lowest reasonable observation divided by 2) — are not the only measures of central tendency that have proved useful in applications of statistics. Alternative measures of central tendency include the **arithmetic mean** (the result of adding up all observations and dividing by the number of observations), the **geometric mean** (the product of multiplying observed values together and taking the root of the result equal to the number of observations), the **harmonic mean** (the reciprocal of the arithmetic mean of the reciprocal of the observations), the **mode** (the most frequently occurring value of the observations), and the **quadratic mean** (also known as the root mean square, the square root of the arithmetic mean of the squared value of each observation). The term "mean" commonly refers to the arithmetic mean rather than the other alternative measures of central tendency.

In this paper we investigate the use of median and midpoint measures of central tendency in the context of electric utility regulation at FERC considering the facts and circumstances of the electric utilities regulated by the Commission. A key circumstance that militates in favor of the midpoint is the challenge of selecting a proxy group of comparable risk utilities in today's capital markets. Included in this discussion is the related issue of how to eliminate ROEs that a so low or high as to be excluded from the range of reasonable ROEs. The paper then discusses the application of median and midpoint to a proxy group of reasonable ROE estimates. Where applicable, our discussion demonstrates the application of these statistical methods to actual proxy group data from benchmark cases.

2. Statistical Challenges of Selecting a Proxy Group of Comparable Risk Utilities

A relevant proxy group for estimating a range of just and reasonable ROEs must consist of companies viewed by investors as having comparable risk to the utility or group of utilities that will be subject to the ROE order. The selection of companies with similar risk should use

objective measures of risk that are relied upon by investors. Such measures include bond ratings (Moody's, Standard & Poor's, etc.) and published common stock risk assessments of investment advisory services (e.g., Value Line). Since significant corporate events may render usual measures of risk and methods of estimating ROE less reliable, those companies undergoing such events are also excluded from proxy groups when there is an objective basis to believe such distortions have occurred. As utilities jurisdictional to the Commission have undergone profound consolidation and restructuring in recent years, the set of companies suitable for selection in proxy groups has significantly declined.[3]

Much of modern statistical inference is based on the use of random sampling to assure results representative of a population. For example, in survey research, random samples with hundreds of observations would support approximate probability statements about an entire population of millions from which that random sample is drawn. The usefulness of standard deviation in statistics derives from its application to random samples where the sample arithmetic means can be shown to converge to the normal distribution as the sample size increases.[4] Of course, even with carefully designed random samples, population inferences may prove wrong.[5] Since only a limited number of utility companies have the necessary publicly available data which are required for comparable risk analysis, random sampling is not an option. The total population of companies that are suitable candidates for a gas or electric utility proxy

[3] For example, in the July 29, 1998 "Order on Rehearing" Docket No. RP95-197-032, et al. (Transcontinental Gas Pipe Line Corporation) the Commission observed that even during the pendency of the case one of the members of the original proxy group had to be eliminated due to the acquisition of Pan Energy [sic] by Duke Energy. This resulted in a reduction from six to five companies that met the standard for the proxy group (see footnote 23, pp. 7-8). The Commission was subsequently able to increase the proxy group to six companies. Incidentally, this is the case when the Commission adopted the median as a measure of central tendency for gas utilities under its jurisdiction.

[4] The convergence of arithmetic means to the normal distribution as the size of the random sample increases follows from the Central Limit Theorem, a fundamental tenet of modern statistical analysis.

[5] Since the theoretical normal distribution tails extend to infinity, there is always some probability an event can occur that is far from the sample mean. These events are commonly termed "black swans" since the probability of observing a black swan is extremely low, though black swans are occasionally hatched in the population of white swans.

group numbers in the tens, not in the thousands or millions as is often the case where random sampling is applied.

Once a group of similar risk utilities is identified and acceptable methods for estimating investors' required ROE is applied, the results must be screened for ROEs that may be unreasonably low or high due to unforeseen errors in measuring risk or applying ROE methodologies. In other words, unreasonable "outliers" must be identified and discarded. To this end, FERC has established objective standards for identifying outliers. On the low end, the minimum ROE of the reasonable range must exceed a comparable yield on bonds by a sufficient margin that rational investors would accept the higher risk of holding equity rather than opt for the relative safety of a bond. It is accepted economic doctrine that a risky utility simply could not attract adequate capital if they do not at least offer investors the yield on bonds plus a risk premium to account for equity risk. On the high end, the maximum ROE of the reasonable range is based on historical policy at FERC. Generally, ROEs that beyond the range allowed for electric utilities are discarded. The Commission also excludes ROE estimates that are based on growth rate estimates that investors may view to be unsustainable. With outliers thrown out, a "zone of reasonableness" emerges to offer guidance as to what ROE a utility would have to offer equity investors in order to attract capital in competitive financial markets.

Some have suggested that the reasonable range be further reduced by arbitrarily eliminating ROEs on the high end to match the number of eliminations on the low end. There is no statistical basis for such illogical eliminations. The economic criteria for eliminating low outliers is distinct from the standard for eliminating high outliers. The fact that the data may result in an unreliable estimate for one company does not imply that the ROE estimate for another utility should be suspect just because it is high, but not so high as to meet the objective criteria for elimination. With the number of comparable risk utilities so limited in today's capital markets, rejecting observations that have already passed objective criteria for

reasonableness would be statistically wasteful. It is irresponsible to throw away the information from an observation that is not objectively unreasonable.

Others have suggested that ROE estimates should be eliminated based on how far they are below or above the median or midpoint value. Unless there is some objective basis to establish that an otherwise reasonable and reliable ROE estimate is too far from the measure of central tendency, such eliminations represent unjustified rejection of potentially useful observations. Given the limited comparable risk utilities available for inclusion in the proxy group, eliminations of potentially relevant observations compromises the integrity of the statistical analysis. Throwing away useful data is a cardinal sin of statistical analysis. Moreover, the use of standard deviation (as some have suggested) as the basis of elimination does not solve the problem of arbitrarily ignoring potentially relevant data in investors' required ROEs. The **standard deviation** is defined as the square root of the arithmetic average of the squared differences between the individual observations and the arithmetic mean. The standard deviation is useful in making probability statements about a **normal distribution**, the familiar bell-shaped curve. While using the standard deviation is widespread in statistical inference it is an unsuitable measure to eliminate observations given the circumstances in an electric utility proxy groups. As noted above, the use of standard deviation to make probability statements is tied to the normal distribution that is a product of random sampling. The utilities that make up proxy groups are not a random sample, and the range of their ROE estimates should not be limited by application of standard deviation predicated on random samples.

3. Applying Midpoint and Median to a Utility Proxy Group

Once a proxy group of utilities is formed and ROE estimates that have met the objective tests of relevance and reasonableness are generated, a central tendency can measure can be calculated. An example is illustrated in Attachment C, which lists the proxy group that was analyzed in the 2004 Midwest ISO ("MISO") rate case when the Commission accepted the

midpoint as the measure of central tendency.[6] There are 18 suitable and reliable ROE observations in the proxy group.[7] These utilities and their ROEs are ranked from the lowest to the highest ROE value in Attachment C. The median value of the range is the middle observation, or the simple average of the two middle observations in the case of an even number of observations. In other words, the median is the middle rank such that an equal number of observations are lower and higher. For this MISO proxy group, the median value of the zone of reasonable ROEs is 11.85%.[8] This median is calculated by adding 11.51% (the 9th ranked value) to 12.38% (the 10th ranked value) and dividing by 2. The median value concentrates on the middle one or two values of this distribution of ROEs. It considers the full range of ROEs only to the extent that there are an equal number (9) ranked higher and lower. The median median value will change if higher or lower observations are added to or deleted from the proxy group distribution of ROE estimates.

However, if a much higher ROE estimate is substituted for an ROE estimate that was already higher than the median, the median will not change. Consider if a new proxy group ROE member is introduced with an estimated ROE of 11.50%. Now there are 19 observations (an odd number of observations) and the median becomes 11.51% since the lower observation added to the distribution increases the rank of the 11.51% from 9th (of 18) to 10th (of 19). If the new observation were 8.80% instead of 11.50%, the new median would still be 11.51%. Indeed, any value added under 11.51% would move the median down to the same 11.51% value. Similarly, any observation added that was above 12.18% would move the median to 12.18% regardless of the magnitude of the ROE added.

In the MISO case in 2004 the Commission selected the midpoint value of the range (the sum of the low and high endpoints divided by 2) as the basis of the ROE for the MISO

[6] *MISO* (2004), 106 FERC 61,302 [Docket No. ER02-485-003].
[7] Some members of MISO did not have suitable and reliable information for estimating reasonable ROEs so they were excluded from the proxy group.
[8] This is calculated as the simple average of the two middle values of 11.51% and 12.18%.

companies in order to encompass the range of values of the MISO member utilities. Attachment C shows the midpoint value of the zone of reasonable ROEs is 12.38%.[9] The midpoint value concentrates on the endpoints of the range, which are established by the full range of observations. If an observation were added to this proxy group, the midpoint would change only if the new ROE estimate was lower than 8.79% or higher than 15.96%. Attachment C also reports one other measure of central tendency, the mode. The mode is the most frequently occurring observation, which in this case is 12.28% because it is the only value occurring twice.

Measuring central tendency when a distribution departs significantly from symmetry is problematic because unreasonably high or low values may unduly influence the representative or central value of a sample depending on which measure of central tendency is used. A popular statistics textbook points to one advantage of using median as a measure of central tendency when the distribution departs from symmetry:

> We have stressed that, for data containing one or two very large or very small values, the arithmetic mean may not be representative. The center for such data can be better described by a measure of location called the median.[10,11]

The median may be a more appropriate measure of central tendency where distributions are skewed by unreasonable outliers. For example, in finance, median price/earnings ratios are generally reported as the central tendency since some companies that have low or negative earnings may distort the arithmetic mean. Similarly, the presence of extremely high-income individuals may distort an income distribution, so median is often the preferred measure of central tendency in this case. The textbook quotation above does not address the midpoint as a measure of central tendency. As will be discussed below, the midpoint has significant advantages over using median when the distribution only contains values deemed to be reasonable and representative.

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[9] This is calculated as the simple average of the lowest value 8.79% and the highest value 15.96%.

[10] The benchmark normal distribution (the bell-shaped curve) is perfectly symmetric with the arithmetic mean, mode, midpoint, and median being identical and the portion of the curve with values less than these central tendencies are a mirror image of the values above.

[11] Lind, Marchal and Wathen, *Statistical Techniques in Business and Economics* (15th Ed.), 2012, p. 64.

Attachment C also reports three standard measures of skewness used by statisticians to evaluate the degree to which extreme observations may impact the symmetry of the distribution. A negative skewness indicates that low values are present and may distort the symmetry of the distribution while positive skewness indicates that high values are present and may distort the symmetry of the distribution. The **adjusted moment of skewness** is calculated by raising the difference between each observation and the arithmetic mean to the third power and then dividing by the number of observations and the standard deviation raised to the third power. The adjusted moment of skewness is the statistic reported by the Excel software under the skewness function. By convention, statisticians consider a distribution noticeably skewed if the absolute value of the adjusted moment of skewness is greater than 0.5.[12] Two other measures that are commonly used because they are easy to calculate are **Pearson's Coefficient of Skewness #1**, which is based on the mode, and **Pearson's Coefficient of Skewness #2**, which is based on median. The former measure is calculated by simply dividing the difference between the mode and the arithmetic mean by the standard deviation. The latter measure is calculated by multiplying the difference between the median and the arithmetic mean by three, and then dividing by the standard deviation. Professor Edward J. Kane, a distinguished scholar at the Ohio State University, Princeton, and Boston College has written that Pearson's coefficients of skewness between -1.0 and +1.0 indicate only moderate skewness.[13] All three measures of skewness reported in Attachment C generally indicate that the distribution of 18 ROE estimates has slight skewness well below the statistical significance levels cited by Professor Kane. Thus there are no extreme outliers.

In the 1998 Transcontinental Pipe Line case the Commission implemented the median as the measure of central tendency for gas utilities. Unlike their practice with electric utilities, the Commission did not eliminate unreasonable values in the Transcontinental Pipe Line case. In its

[12] Edward J. Kane, *Economic Statistics & Econometrics*, 1968, p. 84.
[13] Ibid, p. 85.

"Order on Rehearing" the Commission noted that "[b]y utilizing the median rather than the midpoint of the range, the Commission is giving consideration to more of the companies in the proxy rather than only those at the top and bottom. This will lessen the impact of any single proxy company whose ROE is atypically high or low."[14] With electric utilities, the Commission uses objective rules to eliminate illogical and unreasonable ROE estimates. In the Transcontinental Pipe Line case no ROE estimates were eliminated from the six company proxy group for being unreasonably high or low. The high ROE estimate in the Transcontinental Pipe Line case was based on a 5-year earnings growth rate of 15.00%.[15] Such a growth rate would be deemed unsustainable for an electric utility and the associated ROE estimate would have been eliminated from the proxy group.

4. The Commission's Distinction Between ROEs for Groups and Single Utilities

The Commission has, at times, adopted a different measure of central tendency in the determination of a just and reasonable ROE for a group of electric utilities as compared to a single electric utility. In its Initial Order in the Midwest Independent Transmission System Operator ("MISO") the Commission affirmed the use of midpoint for the group of utilities in MISO.[16] In that Order the Commission noted:

> The Commission has consistently used the midpoint in setting the ROE for electric utilities [citing Consumers Energy, 98 FERC at 62,416; SoCal, 92 FERC at 61,266] and see no reason to depart from our precedent here. We are unpersuaded by appeals to use the methodology utilized in setting the ROE for gas pipelines, for we have consistently emphasized that significant differences exist between the electric and gas industries [citing Consumers Energy, 98 FERC at 61,261-62; Systems Energy, 92 FERC at 61,443-45].[17]

The MISO order was remanded by the D.C. Circuit for further explanation of the selection of the midpoint.[18] In its Remand Order the Commission reaffirms their decision to use

[14] "Transcontinental Pipe Line Order on Rehearing", p. 38.
[15] Ibid, p. 41, APPENDIX A.
[16] 100 FERC 61,292.
[17] The Commission has used different forms of the Discounted Cash Flow Models ("DCF") for gas utilities and electric utilities.
[18] Order on Remand, March 26, 2004 Docket No. ER02-485-003.

the midpoint approach for ROE calculation for entities that have ceded operational control of their transmission facilities to the Midwest ISO. In so doing, the Commission states that "[b]ecause the ROE in this case will apply to a diverse group of companies, the entire range of results yielded by the subset is relevant here. Thus, we find that using the midpoint is the most appropriate measure for determining a single ROE for all Midwest ISO TOs, since it fully considers that range."[19] In discussing the applicability of using median, the Commission further states that "[t]he median may be a more refined measure for a utility facing average risk, but it places more weight on the middle values, thus, potentially producing a value that is not appropriate for application to a diverse group of utilities."

The Commission went on to observe: "While it may be true that, **under certain circumstances**, the midpoint may be inappropriate because of **egregious distortion** by the highest or lowest number, such a distortion is not a concern here and, therefore the median is not a more appropriate measure" [emphasis added]. The crux of the issue of whether the median is the superior measure of central tendency is whether extreme outliers in the ROE distribution cause an egregious distortion of the midpoint. In the Remand Order the Commission specifically examines the distribution of ROE estimates and the relative position of the median and the high and low estimates and concludes: "Here, the distribution is not substantially skewed, and the high-end value, 15.96, is not an extreme outlier."[20] The three skewness measures displayed in Appendix C confirm that the MISO distribution is not substantially skewed. Further, the Commission quotes with favor the D.C. Circuit statement: "[t]he midpoint doesn't completely disregard the middle … numbers; the highest and lowest number achieve their status by reference to all of the other numbers [citing Canadian Ass'n of Petroleum Producers v. FERC, 254 F.3d 289, 298 D.C. Cir. 2001]".[21]

[19] Ibid, p. 1.
[20] Ibid, p. 5.
[21] Ibid, p. 5.

The midpoint reflects information about the highest and lowest values from the entire range of reasonable ROE estimates. The statistical argument for ignoring these values is that they are outliers, and are therefore out of place in a distribution of just and reasonable ROEs. In other words, there should be no unreasonable outliers in a zone of reasonable ROEs. But since objective examination of the distribution of estimated ROE found no outliers in this case, the statistical argument for median is not applicable. Instead, midpoint is appropriate because the highest and lowest values are confirmed to be relevant and reliable ROE estimates. Ignoring the highest and lowest values of this reasonable range, as the utilization of median would do, would be to throw away useful data. The use of midpoint avoids any "egregious distortion" as referenced in the MISO case. The Commission's examination of the distribution confirmed it contained no extreme outliers. Further following the observation of the D.C. Circuit, the midpoint value avoids the flaw of the median's myopic focus on the middle values by instead considering the full range of reasonable ROEs. In establishing a just and reasonable allowed return for a group of utilities it is appropriate as the D.C. Circuit and the Commission have found to consider the full range of values, as the midpoint does, so that all utilities in the group have an opportunity to earn a fair rate of return as required by the *Hope* and *Bluefield* cases.[22]

Attachment D presents proxy group ROEs from the MISO case in 2015. After implementing objective standards to eliminate unreasonable ROE estimates, a zone of 37 reasonable ROEs emerged.[23] The midpoint would consider the entire range of reasonable ROEs from 7.23% to 11.35%, while the median value of 8.69% considers only the middle value of the distribution. Reliable and relevant ROE values of 7.23% and 11.35% would be ignored if the median return were applied to entire MISO group. The three skewness measures in Attachment D are well within the accepted thresholds of no significant skewness (between -1.0 and +1.0 for

[22] Bluefield Water Works & Improvement Co., 262 U.S. 679 (1923) and Hope Natural Gas, 320 U.S. 591 (1944).
[23] In the earlier MISO case the proxy group was chosen from MISO members. In subsequent RTO cases the Commission expanded the scope of the RTO proxy groups to include electric utilities that had comparable risk to the members of the RTO. Thus the proxy group in this case included MISO members as well as other utilities with a similar risk profile.

Pearson's coefficients of skewness and below 0.5 for the adjusted moment of skewness). Moreover, no ROE estimate in the remaining proxy group can be eliminated for being illogical or inconsistent with regulatory practice based on FERC criteria for electric utilities. There is no way based on this objective evidence to infer that the distribution includes unreasonable or extreme outliers. Instead, all observations are potentially just and reasonable ROEs.

5. Disadvantages of Using Different Measures for RTOs and Individual Utilities

In contrast to its past use of midpoint as a measure of central tendency for groups of electric utilities, the Commission has migrated to the median for individual electric utilities in more recent cases. In a December 2007 filing, SoCal Edison proposed an ROE which was calculated using the midpoint from a proxy group. They argue that as recent as 2007 (in *Golden Spread*) the Commission followed a policy of using midpoint and not median. SoCal Edison argues that "only the midpoint *emphasizes* the range, as it is equally placed between the top and bottom values", and that distortions occur when using the median because it disregards the range of returns created by a DCF analysis.

In its 2010 Order, SoCal's argument for the midpoint was rejected:

> The Commission believes that using the median is advantageous for a single utility of average risk because it takes into account more of the companies in the proxy group, and not just those at the top and the bottom. It also minimizes the impact of a potentially skewed proxy group.

On rehearing SoCal Edison argued that the Commission had not offered a rational explanation for why utilities should receive different ROEs under different filing scenarios, some scenarios favoring median versus others favoring midpoint. The Commission's explanations do not justify its use of the midpoint for setting the ROE for ISO-wide applicants and its use of the median for individual utilities, even when those individual utilities are members of ISOs. The Commission's use of the median rather than the midpoint ignores the fact that the same ISO member who files as an individual utility will not receive the same financial support that they would have if they had filed as a member of an ISO. SoCal Edison asserts that the

Commission's goal would be better served by using the midpoint of the proxy group range for all ISO members, regardless of whether they file individually or as part of an ISO. In its rehearing order the Commission reaffirms their use of median for individual utilities and midpoint for groups of utilities. By applying the median, rather than the midpoint, the Commission argued that they give consideration to more of the companies in the proxy group, rather than only those at the top and bottom.

In its 2013 decision in *SoCal. Edison v FERC*, the D.C. Circuit supported the Commission preference for the median for three reasons: (1) "[T]he median lessens the impact of atypical outliers in the proxy group;" (2) The median "gives consideration to more of the companies in the proxy group, rather than only those at the top and bottom," and (3)

> The laws of statistics support the Commission's use of the median in setting [the] ROE for a company facing average risk because it has important advantages over the mean and midpoint approaches in determining central tendency. The median best represents central tendency in a skewed distribution over the mean because the latter is drawn in the direction of the skew more than the median. That is, in a very positively skewed distribution, the mean will be higher than the median. In a very negatively skewed distribution, the mean will be lower than the median. These statistical facts make the median an appropriate average to use to represent the typical observation in a skewed distribution because it is less affected by extreme numbers than the mean. Similarly, the median is also less affected by extreme numbers than the midpoint in a skewed distribution. Since the midpoint is the average of the highest and lowest numbers in the group, it is clearly subject to distortion by extremely high or low values.[24]

The three reasons cited by the D.C. Circuit do not apply to all ROE distributions in individual electric utility proxy groups. While it is true that the median does soften the impact of "atypical outliers in the proxy group," if there are no atypical outliers in the proxy group then the feared distortion is not present, and the Court's justification for median disappears. This paper has demonstrated that the electric utility proxy groups created for groups of electric utilities using FERC policies are unlikely to have extreme outliers and therefore any skewness does not cause a distortion. The policy of eliminating illogical ROE estimates that do not offer a reasonable

[24] Southern California Edison Co. v. F.E.R.C., 717 F.3d 177 (2013).

premium over bond returns on the low side, and are based on unsustainable growth rates or are above regulatory norms on the high side, mitigates the potential distortion from extreme and atypical ROE estimates for individual electric utility proxy groups.

The argument about the consideration of more companies has been argued both ways in past D.C. Circuit decisions. As cited above in the MISO remand the D.C. Circuit cited: "[t]he midpoint doesn't completely disregard the middle … numbers; the highest and lowest number achieve their status by reference to all of the other numbers [citing Canadian Ass'n of Petroleum Producers v. FERC, 254 F.3d 289, 298 D.C. Cir. 2001]".[25] The mathematical fact is that the two measures of central tendency considered in this paper account for additional ROEs in the proxy group in different ways. The median considers only how many observations are lower and how many are higher, with the median being the observation that happens to have the middle rank of the array of ROEs. The actual value of the other ROEs only matters to the extent that they are higher or lower than the median. In contrast, the midpoint considers the values of the highest and lowest observations which as stated by the D.C. Circuit in 2001 requires consideration of all of the other observations to determine the highest and lowest value. In that sense, both measures of central tendency consider all of the observations but extract different information about central tendency. The median considers the relative rank of each ROE estimate while the midpoint considers the relative value of each ROE estimate. Of necessity, any summary measure of central tendency communicates a limited view of the underlying distribution and in so doing focuses on particular aspects of the distribution at the expense of other aspects. Hence statisticians have developed a plethora of summary measures of central tendency so that the measure most useful in identifying the most relevant features of a particular distribution for a specific purpose can be used.

[25] Ibid, p. 5.

The third reason for preferring the median cited by the D.C. Circuit Court is problematic. It mentions midpoint at the outset, but then focuses on the arithmetic mean. The Commission does not currently use the arithmetic mean as a measure of central tendency for either single electric utilities or groups of electric utilities. The quote correctly notes that the median has advantages in the case of "very negatively skewed distributions" and avoids distortions from "extremely high or low values." But as discussed earlier, proxy groups for electric utilities are at most modestly skewed and extreme values have been eliminated as unreasonable and/or illogical for use in setting a just and reasonable ROE. Absent empirical evidence that a proposed electric utility proxy group includes such extreme values or exhibits a very skewed distribution, the median loses its comparative advantage over the midpoint as a measure of central tendency. In short, the advantage of using the median occurs only if the ROE estimates from the proxy group actually exhibit extreme and unreasonable values or significant levels of skewness.

These is one other problematic statistical statement in the SoCal Opinion: "Its suggestion that because the Commission screens the proxy group for atypically high or low ROEs, the Commission is not justified in using the median to lessen the impact of extreme data points is flawed. Although the use of screening parameters *lessens* the effect of high or low data points, the Commission's basic point is that use of the median, as a mathematical principle, reduces the influence of extremes."[26] If all of the ROEs in the proxy group have passed the test of economic logic and regulatory practice, then they are relevant and reliable. Ignoring reliable and relevant observations is the cardinal sin of statistical analysis, particularly in the case where the number of available proxy companies of comparable risk is so limited.

The applicability of using the midpoint as a measure of central tendency is illustrated in Attachment E, which reflects a proxy group recently developed for Avista, an electric utility primarily serving the State of Washington. The proxy group contains 15 electric utilities whose

[26] Southern California Edison Co. v. F.E.R.C., 717 F.3d 177 (2013) p. 9.

ROE estimates have passed tests of economic and regulatory logic. The median is 9.78% and the midpoint is 9.79%. (The mode is "N/A" because no ROE estimate appears more than once.) The two relevant measures of skewness that relate to these data are well below the threshold levels of significant skewness (0.13 compared to 0.5 for the adjusted moment of skewness and 0.34 compared to the -1.0 to +1.0 range for the Pearson's coefficient of skewness). The midpoint is suitable for this recent proxy group and would have the advantage of considering the full range of values from the relevant and reliable ROE estimates from the set of 15 electric utilities available for a suitable comparable risk proxy group.

The use of different measures of central tendency for groups of electric utilities and individual electric utilities is illogical. For a group of utilities, the proxy group must be of comparable risk members to the group to meet *Hope* and *Bluefield* standards. Hence each ROE estimate that meets standards of economic logic and regulatory suitability is regarded as potentially just and reasonable for individual electric utilities in the proxy group. Similarly, if the proxy group for an individual electric utility is screened to be of comparable risk and and the ROE estimates are tested against economic and regulatory logic then all ROE estimates can be presumed to be relevant and reliable. In the absence of evidence that the midpoint misrepresents the distribution of ROE estimates, then it is the most logical measure of central tendency. If the Commission consistently uses the midpoint as a measure of central tendency for electric utility cases based on objective economic and market considerations as outlined above, then FERC would clearly avoid opportunistic regulation as discussed in Duquesne Light Co. v. Barasch, 488 U.S. 299 (1989).

6. Advantages of Using Midpoints to Define a Zone of Reasonableness

The Commission currently uses midpoints to determine the central tendency of the zone of reasonableness when determining RTO-wide ROEs. This leads to using the midpoint of the upper range and lower range in establishing ROE benchmarks for different purposes such as

adjusting for risk and incentives. The advantage of this practice is that the ranges are symmetrical in that they cover the same range of values readily defined as a number of basis points. This is a reasonable approach because it recognizes equal ranges to account for risk above and below the midpoint and is not distorted by clusters of individual ROE estimates. Using a measure based on medians and percentiles could lead to discontinuous and unequal ranges. This vulnerability to discontinuities results from the relatively few proxy group candidates available in the current universe of publicly traded electric utilities that have sufficient information to measure investors' perceptions of relative risk and apply models of estimating ROEs.

The use of ranges based on midpoints is also effective for individual electric utilities. In the past the Commission has used the ranges above and below the midpoint to adjust for the risk of the utility relative to the proxy group.[27] The same framework could be used if the Commission wants to adjust the allowed ROE for other regulatory purposes such as awarding incentives or recognition for superior performance.

[27] Southern California Edison, 92 FERC at 61,266 (2001).

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Summary of Qualifications

Ph.D. in economics and finance; Chartered Financial Analyst (CFA ®) designation; extensive expert witness testimony before courts, alternative dispute resolution panels, regulatory agencies and legislative committees; lectured in executive education programs around the world on ethics, investment analysis, and regulation; undergraduate and graduate teaching in business and economics; appointed to leadership positions in government, industry, academia, and the military.

Employment

Principal, FINCAP, Inc. (Sep. 1979 to present)	Financial, economic and policy consulting to business and government. Perform business and public policy research, cost/benefit analyses and financial modeling, valuation of businesses (almost 200 entities valued), estimation of damages, statistical and industry studies. Provide strategy advice and educational services in public and private sectors, and serve as expert witness before regulatory agencies, legislative committees, arbitration panels, and courts.
Director, Economic Research Division, Public Utility Commission of Texas (Dec. 1977 to Aug. 1979)	Responsible for research and testimony preparation on rate of return, rate structure, and econometric analysis dealing with energy, telecommunications, water and sewer utilities. Testified in major rate cases and appeared before legislative committees and served as Chief Economist for agency. Administered state and federal grant funds. Communicated frequently with political leaders and representatives from consumer groups, media, and investment community.
Manager, Financial Education, International Paper Company New York City (Feb. 1977 to Nov. 1977)	Directed corporate education programs in accounting, finance, and economics. Developed course materials, recruited and trained instructors, liaison within the company and with academic institutions. Prepared operating budget and designed financial controls for corporate professional development program.

Lecturer in Finance, The University of Texas at Austin (Sep. 1979 to May 1981) Assistant Professor of Finance, (Sep. 1975 to May 1977)	Taught graduate and undergraduate courses in financial management and investment theory. Conducted research in business and public policy. Named Outstanding Graduate Business Professor and received various administrative appointments.
Assistant Professor of Business, University of North Carolina at Chapel Hill (Sep. 1972 to Jul. 1975)	Taught in BBA, MBA, and Ph.D. programs. Created project course in finance, Financial Management for Women, and participated in developing Small Business Management sequence. Organized the North Carolina Institute for Investment Research, a group of financial institutions that supported academic research. Faculty advisor to the Media Board, which funds student publications and broadcast stations.

Education

Ph.D., Economics and Finance, University of North Carolina at Chapel Hill (Jan. 1969 to Aug. 1972)	Elective courses included financial management, public finance, monetary theory, and econometrics. Awarded the Stonier Fellowship by the American Bankers' Association and University Teaching Fellowship. Taught statistics, macroeconomics, and microeconomics. Dissertation: *The Geometric Mean Strategy as a Theory of Multiperiod Portfolio Choice*
B.A., Economics, Emory University, Atlanta, Georgia (Sep. 1961 to Jun. 1965)	Active in extracurricular activities, president of the Barkley Forum (debate team), Emory Religious Association, and Delta Tau Delta chapter. Individual awards and team championships at national collegiate debate tournaments.

Professional Associations

Received Chartered Financial Analyst (CFA) designation in 1977; Vice President for Membership, Financial Management Association; President, Austin Chapter of Planning Executives Institute; Board of Directors, North Carolina Society of Financial Analysts; Candidate Curriculum Committee, Association for Investment Management and Research; Executive Committee of Southern Finance Association; Vice Chair, Staff Subcommittee on Economics and National Association of Regulatory Utility Commissioners (NARUC); Appointed to NARUC Technical Subcommittee on the National Energy Act.

Teaching in Executive Education Programs

University-Sponsored Programs: Central Michigan University, Duke University, Louisiana State University, National Defense University, National University of Singapore, Texas A&M University, University of Kansas, University of North Carolina, University of Texas.

Business and Government-Sponsored Programs: Advanced Seminar on Earnings Regulation, American Public Welfare Association, Association for Investment Management and Research, Congressional Fellows Program, Cost of Capital Workshop, Electricity Consumers Resource Council, Financial Analysts Association of Indonesia, Financial Analysts Review, Financial Analysts Seminar at Northwestern University, Governor's Executive Development Program of Texas, Louisiana Association of Business and Industry, National Association of Purchasing Management, National Association of Tire Dealers, Planning Executives Institute, School of Banking of the South, State of Wisconsin Investment Board, Stock Exchange of Thailand, Texas Association of State Sponsored Computer Centers, Texas Bankers' Association, Texas Bar Association, Texas Savings and Loan League, Texas Society of CPAs, Tokyo Association of Foreign Banks, Union Bank of Switzerland, U.S. Department of State, U.S. Navy, U.S. Veterans Administration, in addition to Texas state agencies and major corporations.

Presented papers for Mills B. Lane Lecture Series at the University of Georgia and Heubner Lectures at the University of Pennsylvania. Taught graduate courses in finance and economics for evening program at St. Edward's University in Austin from January 1979 through 1998.

Expert Witness Testimony

Testified in more than 400 cases before regulatory agencies addressing cost of capital, regulatory policy, rate design, and other economic and financial issues.

Federal Agencies: Federal Communications Commission, Federal Energy Regulatory Commission, Surface Transportation Board, Interstate Commerce Commission, and the Canadian Radio-Television and Telecommunications Commission.

State Regulatory Agencies: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Missouri, Montana, Nevada, New Mexico, Montana, Nebraska, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Testified in 42 cases before federal and state courts, arbitration panels, and alternative dispute tribunals (92 depositions given) regarding damages, valuation, antitrust liability, fiduciary duties, and other economic and financial issues.

Board Positions and Other Professional Activities

Co-chair, Synchronous Interconnection Committee established by Texas Legislature to study interconnection of Texas with national grid; Audit Committee and Outside Director, Georgia System Operations Corporation (electric system operator for member-owned electric cooperatives in Georgia); Chairman, Board of Print Depot, Inc. and FINCAP, Inc.; Appointed by Hays County Commission to Citizens Advisory Committee of Habitat Conservation Plan, Operator of AAA Ranch, a certified organic producer of agricultural products; Appointed to Organic Livestock Advisory Committee by Texas Agricultural Commissioner; Appointed by Texas Railroad Commissioners to study group for *The UP/SP Merger: An Assessment of the Impacts on the State of Texas; A*ppointed by Hawaii Public Utilities Commission to team reviewing affiliate relationships of Hawaiian Electric Industries; Chairman, Energy Task Force, Greater Austin-San Antonio Corridor Council; Consultant to Public Utility Commission of Texas on cogeneration policy and other

matters; Consultant to Public Service Commission of New Mexico on cogeneration policy; Evaluator of Energy Research Grant Proposals for Texas Higher Education Coordinating Board.

Community Activities

Treasurer, Dripping Springs Presbyterian Church; Board of Directors, Sustainable Food Center; Chair, Board of Deacons, Finance Committee, and Elder, Central Presbyterian Church of Austin; Founding Member, Orange-Chatham County (N.C.) Legal Aid Screening Committee.

Military

Captain, U.S. Naval Reserve (retired after 28 years service); Commanding Officer, Naval Special Warfare Engineering (SEAL) Support Unit; Officer-in-Charge of SWIFT patrol boat in Vietnam; Enlisted service as weather analyst (advanced to second class petty officer).

Bibliography

Monographs

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"Definition of Industry Ethics and Development of a Code" and "Applying Ethics in the Real World," in *Good Ethics: The Essential Element of a Firm's Success,* Association for Investment Management and Research (1994)

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"Consumer Expectations and the Economy," *Texas Business Review* (Nov. 1976)

"Portfolio Performance Evaluation and Long-run Capital Growth," with Henry A. Latané in *Proceedings of the Eastern Finance Association* (1973)

Book reviews in *Journal of Finance* and *Financial Review*. Abstracts for *CFA Digest*. Articles in *Carolina Financial Times*.

Selected Papers and Presentations

"ROE and Risk and Capital Flows" 2014 National Association of Water Companies Water Summit, Ft. Lauderdale, FL (Oct. 2014)

"ROE Debate" 2014 National Association of Water Companies New England Spring Meeting, Providence, RI (April 2014)

"Economic Perspective on Water Marketing in Texas," 2009 Water Law Institute, The University of Texas School of Law, Austin, TX (Dec. 2009).

"Estimating Utility Cost of Equity in Financial Turmoil," SNL EXNET 15th Annual FERC Briefing, Washington, D.C. (Mar. 2009)

"The Who, What, When, How, and Why of Ethics," San Antonio Financial Analysts Society (Jan. 16, 2002). Similar presentation given to the Austin Society of Financial Analysts (Jan. 17, 2002)

"Ethics for Financial Analysts," Sponsored by Canadian Council of Financial Analysts: delivered in Calgary, Edmonton, Regina, and Winnipeg, June 1997. Similar presentations given to Austin Society of Financial Analysts (Mar. 1994), San Antonio Society of Financial Analysts (Nov. 1985), and St. Louis Society of Financial Analysts (Feb. 1986)

"Cost of Capital for Multi-Divisional Corporations," Financial Management Association, New Orleans, Louisiana (Oct. 1996)

"Ethics and the Treasury Function," Government Treasurers Organization of Texas, Corpus Christi, Texas (Jun. 1996)

"A Cooperative Future," Iowa Association of Electric Cooperatives, Des Moines (December 1995). Similar presentations given to National G & T Conference, Irving, Texas (June 1995), Kentucky Association of Electric Cooperatives Annual Meeting, Louisville (Nov. 1994), Virginia, Maryland, and Delaware Association of Electric Cooperatives Annual Meeting, Richmond (July 1994), and Carolina Electric Cooperatives Annual Meeting, Raleigh (Mar. 1994)

"Information Superhighway Warnings: Speed Bumps on Wall Street and Detours from the Economy," Texas Society of Certified Public Accountants Natural Gas, Telecommunications and Electric Industries Conference, Austin (Apr. 1995)

"Economic/Wall Street Outlook," Carolinas Council of the Institute of Management Accountants, Myrtle Beach, South Carolina (May 1994). Similar presentation given to Bell Operating Company Accounting Witness Conference, Santa Fe, New Mexico (Apr. 1993)

"Regulatory Developments in Telecommunications," Regional Holding Company Financial and Accounting Conference, San Antonio (Sep. 1993)

"Estimating the Cost of Capital During the 1990s: Issues and Directions," The National Society of Rate of Return Analysts, Washington, D.C. (May 1992)

"Making Utility Regulation Work at the Public Utility Commission of Texas," Center for Legal and Regulatory Studies, University of Texas, Austin (June 1991)

"Can Regulation Compete for the Hearts and Minds of Industrial Customers," Emerging Issues of Competition in the Electric Utility Industry Conference, Austin (May 1988)

"The Role of Utilities in Fostering New Energy Technologies," Emerging Energy Technologies in Texas Conference, Austin (Mar. 1988)

"The Regulators' Perspective," Bellcore Economic Analysis Conference, San Antonio (Nov. 1987)

"Public Utility Commissions and the Nuclear Plant Contractor," Construction Litigation Superconference, Laguna Beach, California (Dec. 1986)

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"The Relative Value of Statistics of Ex Post Common Stock Distributions to Explain Variance," with Charles G. Martin, Southern Finance Association, Atlanta (Nov. 1977)

"An ANOVA Representation of Common Stock Returns as a Framework for the Allocation of Portfolio Management Effort," with Charles G. Martin, Financial Management Association, Montreal (Oct. 1976)

"A Growth-Optimal Portfolio Selection Model with Finite Horizon," with Henry A. Latané, American Finance Association, San Francisco (Dec. 1974)

"An Optimal Approach to the Finance Decision," with Henry A. Latané, Southern Finance Association, Atlanta (Nov. 1974)

"A Pragmatic Approach to the Capital Structure Decision Based on Long-Run Growth," with Henry A. Latané, Financial Management Association, San Diego (Oct. 1974)

"Growth Rates, Expected Returns, and Variance in Portfolio Selection and Performance Evaluation," with Henry A. Latané, Econometric Society, Oslo, Norway (Aug. 1973)

WILLIAM E. AVERA

SUMMARY OF TESTIMONY BEFORE REGULATORY AGENCIES

`No.	Utility Case	Agency	Docket	Date	Nature of Testimony
1.	El Paso Electric Company	Texas PUC	522	Mar-78	Residential Rate Structure
2.	Texas Power & Light Company	Texas PUC	1517	Mar-78	Rate Design
3.	Lower Colorado River Authority	Texas PUC	1521	Mar-78	Rate Design
4.	Dallas Power & Light Company	Texas PUC	1526	Mar-78	Rate Design
5.	Gulf States Utilities	Texas PUC	1528	Apr-78	Rate of Return
6.	Continental Telephone	Texas PUC	1529	Mar-78	Rate of Return
7.	Southwestern Bell Telephone Company	Texas PUC	1704	May-78	Rate of Return
8.	Texas Electric Service Co., Texas Power & Light Co., Dallas Power & Light Co.	Texas PUC	1517, 1813, 1903	Feb-79	Fuel Cost Refunds and Fuel Adjustment Clauses
9.	Houston Lighting & Power Company	Texas PUC	2001	Sep-78	Rate of Return
10.	Kimble Electric Cooperative	Texas PUC	2380	Mar-79	Rate of Return
11.	Lower Colorado River Authority	Texas PUC	2503	Jun-79	Rate of Return
12.	Southwestern Bell Telephone Company	Texas PUC	3340	Sep-80	Rate of Return
13.	Kansas Gas & Electric Company	Kansas CC	128139-U	May-81	Rate of Return
14.	City of Austin Electric Department	City of Austin	--	Jun-81	PURPA Rate Design Standards
15.	Tarrant County Water Control and Improvement District No. 1	Texas Water Commission	None	Sep-81	Equity Contributions
16.	Connecticut Light & Power Company, Hartford Electric Light Company	Connecticut DPUC	810602 & 810604	Sep-81	Rate Structure
17.	Delmarva Power & Light Company	Delaware PSC	81-12	Oct-81	Relative Customer Class Risk
18.	Chemical Express Carriers	Texas RRC	024777ZZT	Dec-81	Rate Design
19.	Owentown Gas Company	Texas RRC	2720	Jan-82	Historical Transactions and Regulatory Policy
20.	Guadalupe Valley Electric Cooperative	Texas PUC	4516	Aug-82	Relative Customer Class Risk
21.	Kansas Gas & Electric Company	Kansas CC	134792-U	Aug-82	Rate of Return

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
22.	Cinncinati Gas & Electric Company	Ohio PUC	82-485-EL-AIR	Jan-83	CWIP Inclusion in Rate Base
23.	Gencom Inc.	FCC	Various	Dec-83	Rate Comparisons
24.	Public Service of Oklahoma	Oklahoma CC	28665	Jan-84	Avoided Costs for QFs
25.	Public Service of Oklahoma	Oklahoma CC	28754	Apr-84	Avoided Costs for QFs
26.	Texas-New Mexico Power Company	Texas PUC	5568	Apr-84	Relative Customer Class Risk
27.	Kansas Gas & Electric Company	Kansas CC	84-KG&E-197-R; 142098-U	Oct-84 Jun-85	Rate of Return and Effects of Regulation on Securities
28.	Southwestern Bell Telephone Company	FCC	84-800	Nov-84	Risk Premium Cost of Equity Formula
29.	Southwestern Public Service Company	Texas PUC	6055	Mar-85	PURA NOI Regulatory Policy
30.	Kansas City Power & Light Company	Missouri PSC	ER-85-128; ER-85-185	Aug-85	Comparative Costs of Nuclear Plants
31.	Southwestern Electric Power Company	Texas PUC	6242	Oct-85	Avoided Energy Costs
32.	Westar Transmission Company	Texas RRC	5787	Nov-85	Rate Design
33.	City of Austin Electric Department	Texas PUC	6560	Jan-86	Cost-Based Rates and Relative Customer Class Risk
34.	Southwestern Bell Telephone Company	Missouri PSC	TR-86-84	Mar-86	Risk Premium Cost of Equity
35.	Enstar Natural Gas Company	Alaska PUC	U-68-8	Apr-86	Regulatory Treatment of Settlement Payments
36.	Kansas Gas & Electric Company	FERC	ER-85-461-001, et al.	Apr-86	Regulatory Policy Surrounding Nuclear Plant Cost
37.	Houston Lighting & Power Company	Texas PUC	5994	May-86 Jun-86 Jul-86	Avoided Energy Costs and Capacity Value of Non-firm QF Energy
38.	Southwestern Electric Power Company	Texas PUC	6611	Aug-86	Avoided Energy Costs
39.	Celanese Chemical Company, Inc.	Texas RRC	5848 et al.	Aug-86 Nov-86	Regulatory Policy Re: BTU Refunds

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
40.	Houston Lighting & Power Company	Texas PUC	7044	Nov-86 Jan-87 Feb-87 Mar-87	Interim Rate Relief and Pricing of Firm and Non-firm Energy
41.	Brazos River Authority	Texas Water Commission	RC-020	Jan-87	Regulatory Policy Re: Contracts
42.	El Paso Electric Company	Texas PUC	7460	Jul-87	Nuclear Plant Capacity Treatment
43.	West Texas Utilities Company	Texas PUC	7510	Aug-87	Customer Class Risk
44.	Lower Colorado River Authority	Texas PUC	8032	Jun-88	Revenue Requirements
45.	City of Austin Electric Department	Austin City Council	--	Jun-88	Cost-Based Rates and Relative Customer Class Risk
46.	Southwestern Bell Telephone Company	Missouri PSC	TC-89-14	Nov-88	Risk Premium Cost of Equity and Divisional Cost of Capital
47.	Houston Lighting & Power Company	Texas PUC	8046	Jan-89 Oct-89 Mar-90	Limitation of Liability
48.	Southwestern Bell Telephone Company	Texas PUC	8585	May-89 Nov-89 Mar-90	FIT, Risk Premium Cost of Equity, and Stipulation
49.	Kansas Gas & Electric Company	Kansas CC	84-KG&E-197-R; 142098-U	Oct-89	Financial Impacts of Intervenor Proposals
50.	Southwestern Bell Telephone Company	FCC	89-624	Feb-90 Apr-90	Rate of Return on Equity
51.	North Carolina Power	N. Carolina Util. Comm.	E-22, Sub 314	May-90 Nov-90	Rate of Return on Equity
52.	Burlington Northern Railroad	ICC	40224	Jun-90	Coal Transportation Rates
53.	Lower Colorado River Authority	Texas PUC	9427	Aug-90 Sep-90	Debt Service Coverage
54.	Brazos River Authority	Texas Water Commission	8169-M	Aug-90 Dec-90	Contract Rates
55.	Texas-New Mexico Power Company	Texas PUC	9491	Sep-90	Avoided Cost Policy and History

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
56.	Southern Bell Telephone Company	S. Carolina PSC	90-626-C	Dec-90	Rate of Return on Equity
57.	Public Service Co. of Colorado	Colorado PUC	91S-091EG	Jan-91	Rate of Return on Equity
58.	Southwestern Bell Telephone Company	Oklahoma CC	PUD 00662 000837	Mar-91 Sep-91 Sep-91 Sep-91	Rate of Return and Incentive Regulation Plans
59.	Cincinnati Gas & Electric Company	Ohio PUC	91-410-EL-AIR	Apr-91	Rate of Return on Equity
60.	City of Fort Worth Water Department	Texas Water Commission	8291-A; 8748-A	Apr-91	Regulatory Policy
61.	El Paso Electric Company	Texas PUC	9945	May-91	Regulatory History
62.	Public Service Co. of Colorado	Colorado PUC	90F-226E	May-91	Rate of Return on Equity
63.	Southwestern Bell Telephone Company	Texas PUC	10382; 10381	Sep-91 Oct-91	Incentive Regulation Plan
64.	Virginia Electric and Power Company	Virginia Corp. Comm.	PUE-910047	Oct-91 Jan-92	Rate of Return on Equity
65.	State Farm Fire and Casualty, and Automobile Insurance Company	Texas Board of Insurance	1845 1846	Nov-91 Dec-91 Dec-91 Dec-91	Regulatory Policy
66.	Texas-New Mexico Power Company	Texas PUC	10200	Dec-91	Avoided Cost Policy and History
67.	Allegheny Generating Company	FERC	ER92-242-000	Apr-92 May-92	Rate of Return on Equity
68.	Southwestern Bell Telephone Company	Arkansas PSC	91-204-U	Apr-92	Incentive Regulation Plans
69.	Virginia Electric and Power Company	Virginia Corp. Comm.	PUE-920041	May-92 Mar-93	Rate of Return on Equity
70.	The Potomac Edison Company	Maryland PSC	8469	Jul-92 Dec-92	Rate of Return on Equity
71.	North Carolina Power	N. Carolina Util. Comm.	E-22, Sub 333	Jul-92 Jan-93	Rate of Return on Equity
72.	West Penn Power Company	Pennsylvania PUC	R-0092-2378	Aug-92 Dec-92	Rate of Return on Equity

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Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
73.	U.S. Telephone Association	FCC	92-133	Sep-92	Rate of Return Represcription Policy
74.	Cincinnati Gas & Electric Company	Ohio PUC	92-1463-GA-AIR; 92-1464-EL-AIR	Sep-92	Rate of Return on Equity
75.	Southwestern Electric Power Company	Texas PUC	9655	Sep-92	Settlement – Avoided Costs
76.	Texas Automobile Insurance Plan	Texas Board of Insurance	1932	Jan-93 Feb-93	Cost-based Rates
77.	Public Service Co. of Colorado	Colorado PUC	93S-001EG	Jan-93 Jun-93	Rate of Return on Equity
78.	Southwestern Bell Telephone Company	Missouri PSC	T0-93-192; TC-93-224	Feb-93 May-93 Jun-93	Incentive Regulation and Rate of Return on Equity
79.	Entergy/Gulf States Utilities	Texas PUC	11292	Feb-93	Reasonableness of Purchase Price
80.	AGT Limited	Canadian Radio-Tel. & Tel. Comm.		Apr-93 Aug-93	Rate of Return on Equity
81.	The Potomac Edison Company	Virginia Corp. Comm.	PUE-930033	Apr-93	Rate of Return on Equity
82.	Southwestern Bell Telephone Company	Arkansas PSC	92-260-U	Jun-93 Sep-93	Incentive Regulation and Rate of Return on Equity
83.	Pond Branch Telephone Company	S. Carolina PSC	93-750-C	Feb-94	Rate of Return
84.	West Penn Power Company	Pennsylvania PUC	R-0094-2986	Mar-94 Aug-94	Rate of Return on Equity
85.	The Potomac Edison Company	West Virginia PSC	94-0027-E-T	Apr-94 Aug-94	Rate of Return on Equity
86.	Monongahela Power Company	West Virginia PSC	94-0035-E-42T	Apr-94 Aug-94	Rate of Return on Equity
87.	The Potomac Edison Company	Maryland PSC	8652	Apr-94	Rate of Return on Equity
88.	Texas Utilities Electric Company	Texas PUC	13100	Jun-94 Aug-94	Competitive and Developmental Rates

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
89.	El Paso Electric Company	Texas PUC	12700	Jun-94	Interruptible Rates
90.	The Potomac Edison Company	Virginia CC	PUE-94005	Jun-94 Nov-94	Rate of Return on Equity
91.	Idaho Power Company	Idaho PUC	IPC-E-94-5	Jun-94 Dec-94	Rate of Return on Equity
92.	Chevron Pipe Line Company	ICC	40131	Jun-94	Rate of Return
93.	Houston Lighting and Power Company	Texas PUC	12065	Jul-94	Federal Income Tax and Regulatory Policy
94.	Allegheny Generating Company	FERC	EL94-24-000	Sep-94	Rate of Return on Equity
95.	The Potomac Edison Company	FERC	EL95-39-000	Oct-94	Rate of Return on Equity
96.	AGT Limited	Canadian Radio-Tel. & Tel. Comm.	94-58	Jan-95	Rate of Return on Equity Policy
97.	Southwestern Bell Telephone Company	Texas PUC	13282	Feb-95	CCN Policy
98.	Monongahela Power Company	Ohio PUC	94-1918-EL-AIR	Feb-95	Rate of Return on Equity
99.	Duke Power Company	FERC	EL95-0	Feb-95	Rate of Return on Equity
100.	Farmers Telephone Cooperative, Inc.	South Carolina PSC	94-024-C	Mar-95	Rate of Return
101.	Southern Company Services, Inc.	FERC	EL94-85-0	Mar-95	Rate of Return on Equity
102.	Burlington Northern Railroad	ICC	41191 (SEALED)	May-95 Aug-95	Market Dominance
103.	Burlington Northern and Santa Fe Railroads	ICC	Finance 32549	Jun-95	Merger Impact on Competition
104.	Southern New England Telephone	Connecticut DPUC	95-03-01	Jun-95	Rate of Return on Equity
105.	West Texas Utilities Company	Texas PUC	13369	Jul-95	Regulatory Policy
106.	Calaveras Telephone Company	California PUC	95-12-075	Dec-95 Sep-96	Rate of Return
107.	California-Oregon Telephone Co.	California PUC	95-12-073	Dec-95 Sep-96	Rate of Return

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
108.	Ducor Telephone Company	California PUC	95-12-076	Dec-95 Sep-96	Rate of Return
109.	Foresthill Telephone Co.	California PUC	95-12-078	Dec-95 Sep-96	Rate of Return
110.	Sierra Telephone Company, Inc.	California PUC	95-12-077	Dec-95 Sep-96	Rate of Return
111.	Southwestern Bell Telephone Company	Texas PUC	14659	Jan-96	Rate of Return
112.	Southern Company Services, Inc.	FERC	ER95-1468-000	Jan-96	Rate of Return on Equity
113.	Duke Power Company	FERC	ER95-760-000	Feb-96	Rate of Return on Equity
114.	Allegheny Power Service Corp.	FERC	ER96-58-000	Feb-96	Rate of Return on Equity
115.	Duke Power Company	FERC	EL95-31-000	Mar-96 May-96	Rate of Return on Equity
116.	Allegheny Generating Company	FERC	EL96-33-000	Apr-96	Rate of Return on Equity
117.	Southern Company Services, Inc.	FERC	ER95-1468-000	Jul-96	Rate of Return on Equity
118.	Southwestern Bell Telephone Company	Texas PUC	16189, et al.	Sep-96	Rate of Return
119.	Southwestern Bell Telephone Company	Missouri PSC	TO-97-40 TO-07-67	Sep-96 Sep-96	Rate of Return
120.	Southwestern Bell Telephone Company	Arkansas PSC	96-257-U	Sep-96	Rate of Return
121.	Southwestern Bell Telephone Company	Oklahoma CC	PUD 960 000 218	Sep-96 Sep-96	Rate of Return
122.	General Telephone of the Southwest	Texas PUC	16300 16335	Oct-96	Rate of Return
123.	Southwestern Bell Telephone Company	Kansas CC	97-SCCC-167-ARB	Nov-96	Rate of Return
124.	Southern Company Services, Inc.	FERC	ER96-1794-000	Nov-96	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
125.	General Telephone of the Southwest	Texas PUC	16402	Nov-96	Rate of Return
126.	General Telephone of the Southwest	Texas PUC	16473 16476	Nov-96	Rate of Return
127.	Southwestern Bell Telephone Company	Arkansas PSC	96-395-U	Dec-96 Jan-97	Rate of Return
128.	Southwestern Bell Telephone Company	Kansas CC	97-AT&T-290-ARB	Dec-96 Jan-97	Rate of Return
129.	El Paso Electric Company	New Mexico PUC	2722	Mar-97 Jun-98	Rate of Return
130.	Telus Communications, Inc.	Canadian Radio-Tel. & Tel. Comm.	PN 97-11	Jun-97	Rate of Return on Equity
131.	West Penn Power Company	Pennsylvania PUC	R-0097-3981	Aug-97	Rate of Return on Equity and Competition
132.	Southwestern Bell Telephone Company	Oklahoma CC	PUD 970 000 213	Aug-97	Rate of Return
133.	Connecticut Light and Power Company	Connecticut DPUC	97-05-12	Sep-97 Oct-97	Rate of Return on Equity
134.	Southwestern Bell Telephone Company	Texas PUC	16189, et al.	Sep-97	Rate of Return
135.	DQE, APS, and AYP Sub, Inc.	Pennsylvania PUC	A-1101; 50F-0015	Sep-97	Rate of Return on Equity
136.	FirstEnergy Corporation	FERC	ER97-412-000; ER97-413-000	Oct-97 Jun-98	Rate of Return on Equity
137.	Southwestern Bell Telephone Company	Oklahoma CC	PUD 970 000 442	Nov-97	Rate of Return
138.	Maui Electric Company	Hawaii PUC	97-0346	Dec-97	Diversification and Cost of Capital
139.	Hawaii Electric Light Company	Hawaii PUC	97-0420	Mar-98	Diversification and Cost of Capital
140.	Duke Energy Moss Landing, LLC	FERC	ER98-2668-000	Apr-98	Rate of Return on Equity
141.	Duke Energy Oakland, LLC	FERC	ER98-2669-000	Apr-98	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
142.	Southwestern Bell Telephone Company	Kansas CC	97-SCCC-149-GIT	Jun-98	Rate of Return
143.	The Potomac Edison Company	Maryland PSC	8738	Jun-98 Mar-99	Rate of Return on Equity
144.	Allegheny Power Service Corp.	FERC	ER98-2048-000	Jun-98	Rate of Return on Equity
145.	Union Pacific Railroad	STB	32760	Jul-98	Regulatory Policy
146.	The Washington Water Power Company	Idaho PUC	WWP-E-98-11	Dec-98 May-99	Rate of Return
147.	Interstate Access Carriers	FCC	CC Docket 98-166	Jan-99 Mar-99 Apr-99	Rate of Return Policy
148.	FirstEnergy Corporation	FERC	ER99-2609-000	Apr-99	Rate of Return on Equity
149.	Union Pacific Railroad	STB	Fin Doc. No. 33726	May-99 Jun-99	Regulatory Policy
150.	Nevada Bell Telephone Company	Nevada PUC	98-6004	May-99 Jan-00	Cost of Capital Study
151.	Monongahela Power Company & Potomac Edison Company	West Virginia PSC	98-0453-E-GI	Jul-99	Rate of Return on Equity
152.	Avista Corp.	Washington UTC	UE-99-1606; UG-99-1706	Oct-99 May-00	Cost of Capital
153.	Hawaii Electric Light Company	Hawaii PUC	99-0207	Oct-99 Jun-99	Diversification and Cost of Capital
154.	Dayton Power & Light Company	Ohio PUC	99-1687-EL-ETP	Dec-99	Rate of Return on Equity
155.	Southern New England Bell	Connecticut DPUC	00-01-02	Apr-00	Cost of Capital
156.	El Paso Electric Company	New Mexico PUC	3170	Jun-00	Rate of Return on Equity
157.	Wisconsin Bell Telephone Co.	Wisconsin PSC	6720-T1-161	Jun-00 Feb-01	Cost of Capital
158.	Ameritech-Illinois	Illinois CC	98-0252	Jul-00 Dec-00 Jan-01	Economy and Risk

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
159.	American Transmission Co., LLC	FERC	ER00-3316-000	Jul-00	Cost of Capital
160.	Ameritech-Indiana	Indiana URC	40849, 40785-51 & 41058	Sep-00	Cost of Capital
161.	Burlington Northern Santa Fe, Inc.	STB	42054	Mar-01	Implications of Deregulation & Coal Plant Utilization
162.	Avista Corp.	Washington UTC	UE-010395	Mar-01	Power Cost Deferral and Cost of Equity
163.	Rural Telephone Co.	Kansas CC	01-RRLT-083-AUD	Apr-01	Cost of Capital
164.	El Paso Electric Co.	New Mexico PRC	3606	Apr-01	Rate of Return on Equity
165.	Southwestern Bell Telephone Co.	Missouri PSC	TO-2001-455	Apr-01	Cost of Capital
166.	Southwestern Bell Telephone Co.	Missouri PSC	TO-2001-438	Jun-01 Nov-01	Cost of Capital
167.	Commonwealth Edison Co.	FERC	ER01-2992-000	Aug-01	Rate of Return on Equity
168.	Craw-Kan Telephone Cooperative	Kansas CC	01-CRKT-713-AUD	Oct-01	Cost of Capital
169.	TransConnect, LLC	FERC	RT01-15-0000	Nov-01	Rate of Return on Equity
170.	Midwest ISO	FERC	ER02-485-000	Nov-01 Mar-02	Rate of Return on Equity
171.	Avista Corp.	Washington UTC	UE-011595	Dec-01	Cost of Capital
172.	Southwestern Bell Telephone Co.	Missouri PSC	TO-2002-222	Dec-01	Cost of Capital
173.	Kerman Telephone Company	California PUC	0201004	Jan-02 Feb-03	Cost of Capital
174.	Florida Power & Light Co.	Florida PSC	001148-EI	Jan-02	Rate of Return on Equity
175.	Ameritech Indiana	Indiana URC	40611-S1	Feb-02	Cost of Capital
176.	Southwestern Bell Telephone Co.	Texas PUC	25188	Mar-02	Cost of Capital

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
177.	Citizens Communications Co.	Arizona CC	E-01032C-00-0751	Mar-02 Mar-02	Power Cost Deferral and Regulatory Policy
178.	Blue Valley Telephone Company	Kansas CC	02-BLVT-377-AUD	Jul-02	Cost of Capital
179.	Florida Power & Light Co.	Florida PSC	020262-EI, 020263-EI	Jul-02 Sep-02	Financial Impact of Purchased Power
180.	S&T Telephone Cooperative.	Kansas CC	02-S&TT-390-AUD	Jul-02	Cost of Capital
181.	SBC Pacific Bell	California PUC	01-02-024, et al.	Oct-02 Feb-03 Mar-03	Cost of Capital
182.	Southwestern Bell Telephone	Texas PUC	25834	Nov-02	Cost of Capital
183.	SBC Illinois	Illinois CC	02-0864	Dec-02 Jan-04 Mar-04	Cost of Capital
184.	International Transmission Co.	FERC	EC03-40-000	Dec-02	Rate of Return on Equity
185.	Kansas Gas Service	Kansas CC	03-KGSG-602-RTS	Jan-03 Aug-03	Cost of Capital
186.	Westar Energy, Inc.	Kansas CC	01-WSRE-949-GIE	Feb-03	Impact of Restructuring Plan on Financial Integrity
187.	Avista Corporation	Oregon PUC	UG-153	Apr-03	Rate of Return on Equity
188.	SBC Michigan	Michigan PSC	U-13531	May-03 Mar-04	Cost of Capital
189.	Humboldt Telephone Co.	Nevada PUC	03-7011	Jul-03 Oct-03	Cost of Capital
190.	SBC Indiana	Indiana URC	42393	Jul-03 Sep-03	Cost of Capital
191.	El Paso Electric Co.	New Mexico PRC	03-___UT	Jul-03	Rate of Return on Equity
192.	Northeast Utilities Service Co.	FERC	ER03-1247-000	Aug-03	Rate of Return on Equity
193.	Sierra Pacific Resources Operating Cos.	FERC	ER03-1328-000	Sep-03	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
194.	Idaho Power Company	Idaho PUC	IPC-E-03-13	Oct-03 Mar-04	Rate of Return on Equity
195.	Nevada Power Co.	Nevada PUC	03-10002	Oct-03 Jan-04	Rate of Return on Equity
196.	Sierra Pacific Power Co.	Nevada PUC	03-12002	Oct-03 Mar-04	Rate of Return on Equity
197.	The Allegheny Power System Operating Companies, *et al.* (PJM Interconnection Transmission Owners)	FERC	ER04-156-000	Oct-03	Rate of Return on Equity and Cost/Benefit of Incentives
198.	Bangor Hydro-Electric Company, *et al.* (New England Transmission Owners)	FERC	ER04-157-000	Nov-03 Oct-04 Dec-04 Jan-05 Dec-06	Rate of Return on Equity
199.	SBC Texas	Texas PUC	28600	Dec-03 Jan-04	Cost of Capital
200.	SBC Communications, Inc.	FCC	WC 03-173	Jan-04	Cost of Capital Methodology
201.	Avista Corp.	Idaho PUC	AVU-E-04-01; AVU-G-04-01	Feb-04 Jul-04	Rate of Return on Equity
202.	Florida Power & Light Co.	Florida PSC	040206-EU	Mar-04	Financial Impact of Purchased Power
203.	SBC Wisconsin	Wisconsin PSC	6720-TI-187	Mar-04 Jul-04	Cost of Capital
204.	SBC Ohio	Ohio PUC	02-1280-TP-UNC	Mar-04	Cost of Capital
205.	Avista Corp.	Washington UTC	UG-041515	Aug-04	Rate of Return on Equity
206.	Sierra Pacific Resource Operating Cos.	FERC	ER05-14-000	Sep-04	Rate of Return on Equity
207.	PACIFICORP	Utah PSC	04-035-30	Oct-04	Financial Impacts of Purchased Power
208.	Hawaii Electric Company	Hawaii PUC	04-0113	Nov-04	Diversification and Cost of Capital
209.	SBC Arkansas	Arkansas PSC	04-109-U	Nov-04 May-05	Cost of Capital

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
210.	KanOkla Telephone Association, Inc.	Kansas CC	05-KOKT-060-AUD	Nov-04	Cost of Capital
211.	Oklahoma Natural Gas Co.	Oklahoma CC	PUD 200400610	Jan-05 Jun-05	Cost of Capital
212.	Baltimore Gas and Electric Co., *et al.*	FERC	ER-05-515-000	Jan-05	Rate of Return on Equity
213.	Florida Power & Light Co.	Florida PSC	041291-EI	Mar-05	Storm Cost Recovery and Rate of Return on Equity
214.	Avista Corp.	Washington UTC	UE-050482 UG-050483	Mar-05 Sep-05	Rate of Return on Equity
215.	Florida Power & Light Co.	Florida PSC	050045-EI	Mar-05 Jul-05	Rate of Return on Equity
216.	Baltimore Gas and Electric Co.	Maryland PSC	9036	May-05 Sep-05 Sep-05	Rate of Return on Equity
217.	Westar Energy, Inc.	FERC	ER05-925-000	May-05	Rate of Return on Equity
218.	Westar Energy, Inc.	Kansas CC	05-WSE-981-RTS	May-05 Oct-05 Oct-05	Rate of Return on Equity
219.	The United Illuminating Co.	Connecticut DPUC	05-06-04	Jul-05	Rate of Return on Equity
220.	Idaho Power Co.	Idaho PUC	IPC-E-05-28	Oct-05	Rate of Return on Equity
221.	PACIFICORP	Utah PSC	03-035-14	Sep-05	Financial Impacts of Purchased Power
222.	Arizona Public Service Co.	Arizona CC	E-01345A-05-0816	Nov-05 Jan-06 Sep-06	Rate of Return on Equity
223.	Idaho Power Co.	FERC	ER06-787	Mar-06 Apr-07	Rate of Return on Equity
224.	CenturyTel	Missouri PSC	TO-2006-0299	Mar-06 Mar-06	UNE Cost Studies & Regulatory Policy
225.	MidAmerican Energy Co.	FERC	ER-96-719 ER05-59	Apr-06	Rate of Return on Equity
226.	Kansas Gas Service	Kansas CC	06-KGSG-1209-RTS	May-06 Oct-06	Cost of Capital

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
227.	Hawaii Electric Light Company, Inc.	Hawaii PUC	05-0315	May-06	Diversification and Cost of Capital
228.	Duke Power Company LLC	FERC	ER06-1040	May-06	Rate of Return on Equity
229.	Black Hills Power, Inc.	South Dakota PUC	EL06-019	Jun-06	Rate of Return on Equity
230.	Pacific Gas & Electric Company	FERC	ER06-1325	Jul-06	Rate of Return on Equity
231.	CPL Retail Energy, LP	Texas PUC	32758	Aug-06	Customer Credits and Regulatory Policy
232.	Monongahela Power Co. & Potomac Edison Co.	West Virginia PSC	06-0960-E-42T	Sep-06 Feb-07	Rate of Return on Equity
233.	Hawaii Electric Company, Inc.	Hawaii PUC	2006-0386	Dec-06	Diversification and Cost of Capital
234.	State Farm Lloyds	Texas Dept. of Insurance	454-06-3176.F	Jan-07 Mar-07	Cost of Capital and Financial Integrity
235.	Maui Electric Company, Ltd.	Hawaii PUC	2006-0387	Feb-07	Diversification and Cost of Capital
236.	Trans-Allegheny Interstate Line Co.	FERC	ER07-562	Feb-07 Nov-07	Rate of Return on Equity
237.	Baltimore Gas and Electric Co.	FERC	ER07-576	Feb-07	Rate of Return on Equity
238.	Cheyenne Light, Fuel and Power Co.	Wyoming PSC	20003-90-ER-7 30005-112-GR-7	Feb-07	Rate of Return on Equity
239.	Commonwealth Edison Co.	FERC	ER07-583	Mar-07	Rate of Return on Equity
240.	Oncor Electric Delivery Company	Texas PUC	34077	Apr-07 Sep-07 Oct-07 Dec-07	Public Interest Determination for Merger
241.	Avista Corp.	Washington UTC	UE-070804 UG-070805	Apr-07	Rate of Return on Equity
242.	Idaho Power Co.	Idaho PUC	IPC-E-07-8	May-07 Jan-08	Rate of Return on Equity
243.	Pacific Gas & Electric Co.	California PUC	07-05-008	May-07 Sep-07	Rate of Return on Equity
244.	American Electric Power Cos.	FERC	ER07-1069	June-07	Rate of Return on Equity
245.	Arizona Public Service Co.	FERC	ER07-1142	Jul-07	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
246.	Pacific Gas & Electric Co.	FERC	ER07-1213	Jul-07	Rate of Return on Equity
247.	Georgia Power Company	Georgia PSC	24506U	Jul-07	AFUDC and Rate of Return on Internal Funds
248.	Pepco Holdings, Inc. *et al.*	FERC	ER08-10	Sep-07	Rate of Return on Equity
249.	Avista Corp..	Oregon PUC	UG-181	Oct-07	Rate of Return on Equity
250.	Florida Power & Light Co.	Florida PSC	070001-EI	Oct-07	Replacement Power Costs from Nuclear Outage
251.	Oklahoma Gas and Electric Co.	FERC	ER08-281	Nov-07	Rate of Return on Equity
252.	Pacific Gas & Electric Co.	FERC	ER08-267	Nov-07	Rate of Return on Equity
253.	Xcel Energy Services, Inc.	FERC	ER08-313	Dec-07	Rate of Return on Equity
254.	Potomac-Appalachian Transmission Highline, LLC	FERC	ER08-386	Dec-07	Rate of Return on Equity
255.	Westar Energy, Inc.	FERC	EL08-31	Dec-07	Rate of Return on Equity
256.	Indiana Michigan Power Co.	Indiana URC	43306	Jan-08 Oct-08	Rate of Return on Equity
257.	Public Service Co. of Colorado	FERC	ER08-527	Feb-08	Rate of Return on Equity
258.	Niagara Mohawk Power Company	FERC	ER08-552	Feb-08	Rate of Return on Equity
259.	Avista Corp.	Washington UTC	UE-080416 UG-080417	Mar-08	Rate of Return on Equity
260.	Arizona Public Service Co.	Arizona CC	E-01345A-08-0172	Mar-08 May-08	Rate of Return on Equity
261.	Avista Corp.	Idaho PUC	E-08-01 G-08-01	Mar-08	Rate of Return on Equity
262.	Southwestern Public Service Co.	FERC	ER08-749	Mar-08	Rate of Return on Equity
263.	Pepco Holdings, Inc. *et al.*	FERC	ER08-686	Mar-08	Rate of Return on Equity
264.	Florida Power & Light Co.	Florida PSC	080001-EI	May-08	Replacement Power Costs from Nuclear Outage
265.	Black Hills/Iowa Gas Utility Co., LLC	Iowa UB	RPU-08-03	May-08 Jan-09 Feb-09	Rate of Return on Equity
266.	Idaho Power Co.	Idaho PUC	IPC-E-08-10	Jun-08 Dec-08	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
267.	Southwestern Public Service Co.	Texas PUC	35763	Jun-08 Nov-08	Rate of Return on Equity
268.	American Electric Power Cos.	FERC	ER08-1329	Jul-08	Rate of Return on Equity
269.	Kentucky Utilities Co.	Kentucky PSC	2008-00251	Jul-08 Dec-08	Rate of Return on Equity
270.	Louisville Gas & Electric Co.	Kentucky PSC	2008-00252	Jul-08 Dec-08	Rate of Return on Equity
271.	Black Hills/Colorado Gas Utility Co., LP	Colorado PUC	08S-290G	Jul-08 Jan-09	Rate of Return on Equity
272.	Pacific Gas & Electric Co.	FERC	ER08-1318	Jul-08	Rate of Return on Equity
273.	The United Illuminating Co.	Connecticut DPUC	08-07-04	Aug-08	Rate of Return on Equity
274.	Pepco Holdings, Inc. *et al.*	FERC	ER08-1423	Aug-08	Rate of Return on Equity
275.	Northeast Utilities Service Co. and National Grid USA	FERC	ER08-1548	Sep-08	Rate of Return on Equity
276.	Black Hills Power Co.	FERC	ER08-1584	Sep-08	Rate of Return on Equity
277.	Kentucky Utilities Co.	FERC	ER08-1588	Sep-08	Rate of Return on Equity
278.	NSTAR Electric Co.	FERC	ER09-14	Oct-08	Rate of Return on Equity
279.	Tallgrass Transmission, LLC	FERC	ER09-35	Oct-08	Rate of Return on Equity
280.	Prairie Wind Transmission, LLC	FERC	ER09-36	Oct-08	Rate of Return on Equity
281.	Pioneer Transmission, LLC	FERC	ER09-75	Oct-08	Rate of Return on Equity
282.	Avista Corp.	Idaho PUC	E-09-01 G-09-01	Jan-09	Rate of Return on Equity
283.	Avista Corp.	Washington UTC	UE-090134 UG-090135	Jan-09	Rate of Return on Equity
284.	Trans-Allegheny Interstate Line Co.	FERC	ER09-590	Jan-09	Rate of Return on Equity
285.	National Grid Generation, LLC.	FERC	ER09-628	Jan-09	Rate of Return on Equity
286.	Baltimore Gas and Electric Co.	FERC	ER09-745	Feb-09	Rate of Return on Equity
287.	Florida Power & Light Co.	Florida PSC	080677-EI	Mar-09 Aug-09	Rate of Return on Equity
288.	Appalachian Power Co.	Virginia SCC	2009-00039	May-09 Sep-09	Rate of Return on Equity

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
289.	Kentucky Utilities Co. d/b/a Old Dominion Power Co.	Virginia SCC	2009-00029	Jun-09	Rate of Return on Equity
290.	Avista Corp.	Oregon PUC	UG-186	Jun-09	Rate of Return on Equity
291.	Pacific Gas & Electric Co.	FERC	ER09-1521	Jul-09	Rate of Return on Equity
292.	Appalachian Power Co.	Virginia SCC	2009-00030	Jul-09 Aug-09 Mar-10	Rate of Return on Equity
293.	Idaho Power Co.	Oregon PUC	UE-213	Jul-09	Rate of Return on Equity
294.	Cheyenne Light, Fuel and Power Co.	Wyoming PSC	20003 -103-EP-09	Aug-09	Rate of Return on Equity for Affiliate
295.	The Potomac Edison Company & Monongahela Power Company	West Virginia PSC	09-1352-E-42T	Sep-09 Mar-10	Rate of Return on Equity
296.	Maui Electric Co.	Hawaii PUC	2009-0163	Sep-09	Diversification and Cost of Capital
297.	Westar Energy, Inc.	FERC	ER09-1762	Sep-09	Rate of Return on Equity
298.	Black Hills Power, Inc.	South Dakota PUC	EL09-018	Sep-09 Jun-10	Rate of Return on Equity
299.	Public Service Co. of Colorado	FERC	ER10-192	Oct-09	Rate of Return on Equity
300.	NorthWestern Energy	Montana PSC	D2009.9.129	Oct-09 Jul-10	Rate of Return on Equity
301.	Black Hills Power, Inc.	Wyoming PSC	20002-75-ER-09	Oct-09	Rate of Return on Equity
302.	West Penn Power Co.	Pennsylvanian PUC	M-2009-2123951	Oct-09 Nov-09	Rate of Return on Equity
303.	Trans Bay Cable LLC.	FERC	ER10-116	Oct-09	Rate of Return on Equity
304.	Hawaiian Electric Light Co.	Hawaii PUC	2009-0164	Nov-09	Diversification and Cost of Capital
305.	AEP Transmission Co. L.L.C.	FERC	ER10-355	Dec-09	Rate of Return on Equity
306.	Christian County Generation, LLC	FERC	ER10-27	Dec-09	Rate of Return on Equity
307.	Southern Indiana Gas & Electric Co.	Indiana URC	43839	Dec-09 Jul-10	Rate of Return on Equity
308.	Kentucky Power Co.	Kentucky PSC	2009-00459	Dec-09 May-10	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
309.	Black Hills/Nebraska Gas Utility Co. LLC.	Nebraska PSC	NG-0061	Dec-09 May-10	Rate of Return on Equity
310.	Black Hills/Colorado Electric Co., L.P.	Colorado PUC	10AL-008E	Jan-10	Rate of Return on Equity
311.	Indiana Michigan Power Co.	Michigan PSC	U-16180	Jan-10 Jul-10	Rate of Return on Equity
312.	Florida Power & Light Co.	Florida PSC	090505-EI	Jan-10 Feb-10	Regulatory Policy and Replacement Power Costs
313.	Kentucky Utilities Co.	Kentucky PSC	2009-00548	Jan-10 May-10	Rate of Return on Equity
314.	Louisville Gas & Electric Co.	Kentucky PSC	2009-00549	Jan-10 May-10	Rate of Return on Equity
315.	Atmos Energy Corporation	Kansas SCC	10-ATMG-495-RTS	Jan-10 Jun-10	Rate of Return on Equity
316.	Avista Corp.	Washington UTC	UE-100467 UG-100468	Mar-10	Rate of Return on Equity
317.	Avista Corp.	Idaho PUC	E-10-01 G-10-01	Mar-10	Rate of Return on Equity
318.	Northern States Power Co. (Wisconsin)	FERC	ER10-992	Apr-10	Rate of Return on Equity
319.	Florida Power & Light Co.	FERC	ER10-1149	Apr-10	Rate of Return on Equity
320.	Baltimore Gas and Electric Co.	Maryland PSC	9230	May-10 Aug-10	Rate of Return on Equity
321.	Black Hills/Iowa Gas utility Co., LLC	Iowa UB	RPU-2010-0002	Jun-10	Rate of Return on Equity
322.	Appalachian Power Co. & Wheeling Power Co.	West Virginia PSC	10-0699-E-42T	Jul-10 Nov-10	Rate of Return on Equity
323.	Tampa Electric Co.	FERC	ER10-1782	Jul-10	Rate of Return on Equity
324.	Tampa Electric Co.	FERC	ER10-2061	Jul-10	Rate of Return on Equity
325.	Pacific Gas & Electric Co.	FERC	ER10-2026	Jul-10	Rate of Return on Equity
326.	Hawaiian Electric Co., Inc.	Hawaii PUC	2010-0080	Jul-10	Diversification and Cost of Capital
327.	Avista Corp.	Oregon PUC	UG-201	Sep-10	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
328.	West Penn Power Co.	Pennsylvania PUC	P-2010-2158084	Sep-10	Rate of Return on Equity
329.	Northern Pass Transmission LLC	FERC	ER11-2377	Dec-10	Rate of Return on Equity
330.	Public Service Co. of Colorado	FERC	ER11-2853	Feb-11	Rate of Return on Equity
331.	Duke Energy Carolinas, LLC	FERC	ER11-2895	Feb-11	Rate of Return on Equity
332.	Columbus Southern Power Company / Ohio Power Company	Ohio PUC	11-351-EL-AIR / 11-352-EL-AIR	Mar-11 Oct-11	Rate of Return on Equity
333.	Kentucky Utilities Co. d/b/a Old Dominion Power Co.	Virginia SCC	2011-00013	Mar-11 Oct-11	Rate of Return on Equity
334.	Appalachian Power Co.	Virginia SCC	2011-00037	Apr-11 Sep-11	Rate of Return on Equity
335.	Black Hills/Colorado Electric Co., L.P.	Colorado PUC	11AL-387E	Apr-11 Oct-11	Rate of Return on Equity
336.	Avista Corp.	Washington UTC	UE-11-0876 UG-11-0877	May-11	Rate of Return on Equity
337.	NorthWestern Energy	South Dakota PUC	NG11-003	May-11	Rate of Return on Equity
338.	PacifiCorp	FERC	ER11-3643	May-11	Rate of Return on Equity
339.	Arizona Public Service Co.	Arizona CC	E-01345-A-11-0224	May-11	Rate of Return on Equity
340.	Black Hills/Colorado Electric Co., L.P.	FERC	ER11-3826	Jun-11	Rate of Return on Equity
341.	Idaho Power Co.	Idaho PUC	IPC-E-11-08	Jun-11	Rate of Return on Equity
342.	Avista Corp.	Idaho PUC	E-11-01 G-11-01	Jun-11	Rate of Return on Equity
343.	Indiana Michigan Power Co.	Michigan PSC	U-16801	Jun-11 Dec-11	Rate of Return on Equity
344.	The United Illuminating Co.	FERC	ER11-3977	Jun-11	Rate of Return on Equity
345.	RITELine Indiana, LLC RITELine Illinois, LLC	FERC	ER11-4070	Jul-11	Rate of Return on Equity
346.	Idaho Power Co.	Oregon PUC	UE-233	Jul-11	Rate of Return on Equity
347.	NorthWestern Energy	FERC	ER10-1138-0001	Jul-11	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
348.	Maui Electric Co.	Hawaii PUC	2011-0092	Jul-11	Diversification and Cost of Capital
349.	Indiana Michigan Power Co.	Indiana URC	44075	Sep-11 May-12	Rate of Return on Equity
350.	Louisville Gas & Electric Co. Kentucky Utilities Co.	Kentucky PSC	2011-00161 2011-00162	Oct-11 Nov-12	Rate of Return on Equity
351.	Bangor Hydro-Electric Co., *et al.*	FERC	EL11-66	Oct-11 Nov-11 Nov-12 Feb-13 Apr-13 Apr-13 Aug-14	Rate of Return on Equity
352.	Cheyenne Light, Fuel and Power Co.	Wyoming PSC	20003-114-ER-11 30005-157-GR-11	Dec-11 May-12	Rate of Return on Equity
353.	Mountaineer Gas Company	West Virginia PSC	11-1627-G-42T	Dec-11 Jul-12	Rate of Return on Equity
354.	Delmarva Power & Light Co.	FERC	ER05-515	Jan-12	Rate of Return on Equity
355.	Lone Star Transmission, LLC	Texas PUC	40020	Jan-12 Jul-12	Rate of Return on Equity
356.	Atmos Energy Corporation	Kansas SCC	12-ATMG-564-RTS	Jan-12 Jun-12	Rate of Return on Equity
357.	Indiana Michigan Power Co.	FERC	ER12-1173	Feb-12	Rate of Return on Equity
358.	Florida Power Corporation	FERC	EL-12-39	Mar-12	Rate of Return on Equity
359.	Florida Power & Light Co.	Florida	120015-EI	Mar-12 Jul-12	Rate of Return on Equity
360.	Public Service Co. of Colorado	FERC	ER12-1589	Apr-12	Rate of Return on Equity
361.	Pacific Gas & Electric Co.	California PUC	12-04-018	Apr-12 Aug-12	Rate of Return on Equity
362.	Avista Corp.	Washington UTC	UE-120436 UG-120437	Apr-12 Nov-12	Rate of Return on Equity
363.	Kentucky Power Co.	Kentucky PSC	2-11-00401	Apr-12	Rate of Return on Equity
364.	Southwestern Public Service Co.	FERC	EL12-59	May-12	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
365.	Interstate Power & Light Co.	Iowa UB	RPU-2012-0002	May-12	Rate of Return on Equity
366.	Black Hills/Colorado Gas Co., L.P.	Colorado PUC	12AL-628G	May-12 Sep-12	Rate of Return on Equity
367.	Columbus Southern Power Co. & Ohio Power Co.	Ohio PUC	11-346-EL-SSO / 11-349-EL-SSO	Jun-12	Rate of Return on Equity
368.	Hawaii Electric Light Company, Inc.	Hawaii PUC	2012-0099	Aug-12	Diversification and Cost of Capital
369.	Transource Missouri, LLC	FERC	ER12-2554	Aug-12	Rate of Return on Equity
370.	Pacific Gas & Electric Co.	FERC	ER12-2701	Sep-12	Rate of Return on Equity
371.	Niagara Mohawk Power Co.	FERC	EL12-101	Sep-12	Rate of Return on Equity
372.	Avista Corp.	Idaho PUC	AVU-E-12-08 AVU-G-12-07	Oct-12	Rate of Return on Equity
373.	Interstate Power & Light Co.	Iowa UB	RPU-2012-0003	Nov-12 Mar-13	Rate of Return on Equity
374.	Black Hills Power, Inc.	South Dakota PUC	EL12-061	Dec-12	Rate of Return on Equity
375.	Appalachian Power Co.	FERC	ER13-539	Dec-12	Rate of Return on Equity
376.	Niagara Mohawk Power Co.	FERC	ER13-16	Dec-12	Rate of Return on Equity
377.	Bangor Hydro-Electric Co., *et al.*	FERC	EL13-33	Jan-13	Rate of Return on Equity
378.	Potomac-Appalachian Transmission Highline, LLC	FERC	ER12-2708	Feb-13 Jul-14 Feb-15 Mar-15	Rate of Return on Equity
379.	The United Illuminating Co.	Connecticut PURA	13-01-19	Feb-13	Rate of Return on Equity
380.	Pacific Gas & Electric Co.	FERC	ER13-1188	Mar-13	Rate of Return on Equity
381.	Kentucky Utilities Co. d/b/a Old Dominion Power Co.	Virginia SCC	2013-00013	Apr-13 Sep-13	Rate of Return on Equity
382.	Baltimore Gas & Electric Co.; Pepco Holdings, Inc.	FERC	EL13-48	Apr-13	Rate of Return on Equity
383.	Baltimore Gas & Electric Co.	Maryland PSC	9326	May-13 Sep-13	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
384.	Duke Energy Florida, Inc.	FERC	EL13-63	Jun-13	Rate of Return on Equity
385.	Kentucky Power Co.	Kentucky PSC	2013-00197	Jun-13	Rate of Return on Equity
386.	Pacific Gas & Electric Co.	FERC	ER13-2022	Jul-13	Rate of Return on Equity
387.	Connecticut Natural Gas Co.	Connecticut PURA	13-06-08	Jul-13	Rate of Return on Equity
388.	Southwestern Public Service Co.	FERC	EL13-78	Aug-13	Rate of Return on Equity
389.	Avista Corporation	Oregon PUC	UG 246	Aug-13	Rate of Return on Equity
390.	Kentucky Utilities Co.	FERC	ER13-2428	Sep-13	Rate of return on Equity
391.	Public Service Company of Colorado	FERC	EL13-86	Sep-13	Rate of Return on Equity
392.	Cheyenne Light, Fuel and Power Co.	Wyoming PSC	20003-132-ER-13	Dec-13	Rate of Return on Equity
393.	Cheyenne Light, Fuel and Power Co.	Wyoming PSC	30005-182-GR-13	Dec-13	Rate of Return on Equity
394.	Public Service Company of Colorado *	FERC	ER12-1589	Dec-13 Jan-14 Apr-14	Rate of Return on Equity
395.	Ohio Power Co.	Ohio PUC	Case No. 13	Dec-13	Rate of Return on Equity
396.	Midwest Independent System Operator, *et al.* *	FERC	EL14-12	Jan-14 Apr-15 Jun-15	Rate of Return on Equity
397.	Atmos Energy Corporation *	Kansas SCC	12-ATMG-	Jan-14 Jun-14	Rate of Return on Equity
398.	Niagara Mohawk Power Corp.*	FERC	EL14-29	Feb-14	Rate of Return on Equity
399.	Cheyenne Light, Fuel and Power Co.*	FERC	ER14-1425	Mar-14	Rate of Return on Equity
400.	Black Hills Power, Inc.	South Dakota PUC	EL14-026	Mar-14	Rate of Return on Equity
401.	MidAmerican Central California Transco, LLC*	FERC	ER14-1661	Apr-14	Rate of Return on Equity
402.	Appalachian Power Co.	Virginia SCC	2014-00026	Apr-14 Sep-14	Rate of Return on Equity
403.	Black Hills / Colorado Electric Utility Co., LP.	Colorado PUC	14-AL-0393E	May-14 Aug-14	Rate of Return on Equity

William E. Avera
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
404.	Hawaiian Electric Company	Hawaii PUC	2013-0373	Jun-14	Diversification and Cost of Capital
405.	Pacific Gas & Electric Co.	FERC	ER14-2529	Jul-14	Rate of Return on Equity
406.	Baltimore Gas & Electric Co.	Maryland PSC	9355	Jul-14	Rate of Return on Equity
407.	Appalachian Power Co. & Wheeling Power Co.	West Virginia PSC	14-1152-E-42T	Aug-14 Jan-15	Rate of Return on Equity
408.	Entergy Arkansas, Inc.*	FERC	ER13-1508-001	Aug-14 Dec-14	Rate of Return on Equity
409.	Bangor Hydro-Electric Co., *et al.*	FERC	EL14-86	Sep-14 Feb-15 Apr-15 May-15	Rate of Return on Equity
410.	Duke Energy Florida*	FERC	EL14-90	Sep-14	Rate of Return on Equity
411.	Kentucky Utilities Co. Louisville Gas & Electric Co.*	Kentucky PSC	2014-00371 2014-00372	Nov-14 Apr-15	Rate of Return on Equity
412.	New York Transco, LLC*	FERC	EL15-572	Dec-14	Rate of Return on Equity
413.	Kentucky Power Co.*	Kentucky PSC	2014-00396	Dec-14 May-15	Rate of Return on Equity
414.	Maui Electric Company*	Hawaii PUC	14-0318	Dec-14	Diversification and Cost of Capital
415.	Baltimore Gas & Electric Co.; Pepco Holdings, Inc.	FERC	EL13-48 EL15-270	Jun-15	Rate of Return on Equity

* Joint testimony with Mr. Adrien M. McKenzie

Attachment B

JOHN S. THOMPSON PhD CVA

johnthompson@utexas.edu
jthompson@employstats.com

SUMMARY

Dr. Thompson is an economist, valuation analyst, and economics lecturer. His experience in valuation and economic consulting has focused on estimating competitive rates of return for regulated utilities, and valuing economic damages suffered by firms and individuals arising from business disputes, labor disputes, and personal injury. He also has seventeen years experience in economics instruction including intermediate microeconomics as well as microeconomics for MBA students. Currently Dr. Thompson teaches at the University of Texas and is a faculty member in the Department of Economics.

ECONOMIC CONSULTING

FINCAP, Inc.

Academic Affiliate, 2019–present. Financial modeling and research relating to the cost of capital for regulated utilities.

EmployStats

Academic Affiliate, 2015–present. Focusing primarily on damages analyses related to breach of contract, covenants not to compete, lost earnings capacity from employment disputes, as well as class certification. Industries have included oilfield services, medical devices and physician services.

Corporate Sciences

Senior Manager and Economist, 2005–2006. Worked with managing principal to analyze damages and value privately held businesses. Lost profits analysis for retail gasoline lessee yielded $2M judgment. Business and real estate valuation for high temperature alloys partner yielded $6M judgment.

Econ One Research

Economist, 2002–2005. Worked with managing principal, senior economists and analysts to analyze damages from antitrust and intellectual property disputes. Oversaw antitrust damages model which resulted in a $140M jury verdict for a medical device manufacturer in federal court. Managed case concerning class certification in the medical waste disposal industry. Performed damages calculations and undertook industry research on numerous other matters.

Other Independent Projects

Performed an overview of macroeconomic conditions in the Cayman Islands for the Cayman Islands Government (2008). Reviewed and critiqued a study of poverty in the Cayman Islands for the Cayman Islands Government (2008). Analyzed the economic impact of a commercial development project for a Cayman Islands consulting firm (2010).

Attachment B

TEACHING

University of Texas

Lecturer (finance and economics), 2015–present. Teaching microeconomic theory, microeconomic theory for business and introduction to microeconomics. Previously taught MBA microeconomics.

Purdue University

Continuous Term Lecturer (economics), 2012–2014. Taught intermediate microeconomics, MBA macroeconomics, principles of macroeconomics and game theory. Area Coordinator for principles of macroeconomics.

Visiting Assistant Professor (economics), 2009–2010. Taught labor, intermediate and advanced microeconomics.

Fu Jen Catholic University, ONPS International Summer School

Instructor (economics), 2013. Taught principles of microeconomics and macroeconomics, and econometrics.

Kansas State University

Visiting Assistant Professor (economics), 2010–2011. Taught intermediate microeconomics and principles of macroeconomics. Observed, evaluated and advised teaching GTAs.

University College of the Cayman Islands

Director of Graduate Studies and Executive Training (department), 2007–2008. Worked with the President and Dean to manage the inception of a new academic department and profit center that saw $500,000 in new revenues during the first year. Coordinated the planning and execution of the first graduate program at UCCI – the Masters in Human Resource Management. Worked with the business community to organize numerous training programs including CPA and CFA review courses. Created several customized programs to facilitate training needs of the local government.

Chair of Business Studies (department), 2006–2007. Managed staff of twelve faculty members, responsible for hiring, academic scheduling, and strategic planning.

Associate Professor (economics), 2006–2008. Taught numerous economics courses including labor, econometrics, international, and managerial economics.

Louisiana State University

Visiting Assistant Professor (economics), 1999–2002. Taught numerous economics courses including intermediate microeconomics, industrial organization and managerial (MBA) economics.

Instructor (economics), 1997–1999. Taught survey of economics and principles of economics.

Attachment B

TEACHING AWARDS and HONORS

Distinguished Teacher (Krannert School of Management):

ECON252 – Principles of Macroeconomics: Spring 2014, Fall 2013, Fall 2012

ECON340 – Intermediate Microeconomics: Fall 2013, Fall 2012

ECON451 – Game Theory: Spring 2013

Excellence in Teaching, Louisiana State University (College Freshmen), 1999.

Instructor of the Year, Louisiana State University (College of Business), 1998.

Graduate Teaching Assistant of the Year, Auburn University (Department of Economics), 1996.

EDUCATION

PhD in Economics, Auburn University, 1998. Specializations in Industrial Organization and International Economics. Dissertation on empirical methods in antitrust economics.

BS in Accounting, Kansas University, 1994.

Certified Valuation Analyst, National Association of Certified Valuation Analysts, 2010.

RESEARCH

"After the fall: Stock price movements and the deterrent effect of antitrust enforcement," (co-authored), *Review of Industrial Organization*, vol. 19, no. 3 (2001).

"Joint supply and modern economic theory: An historical perspective," (co-authored), *History of Political Economy*, vol. 33, no. 3 (2001).

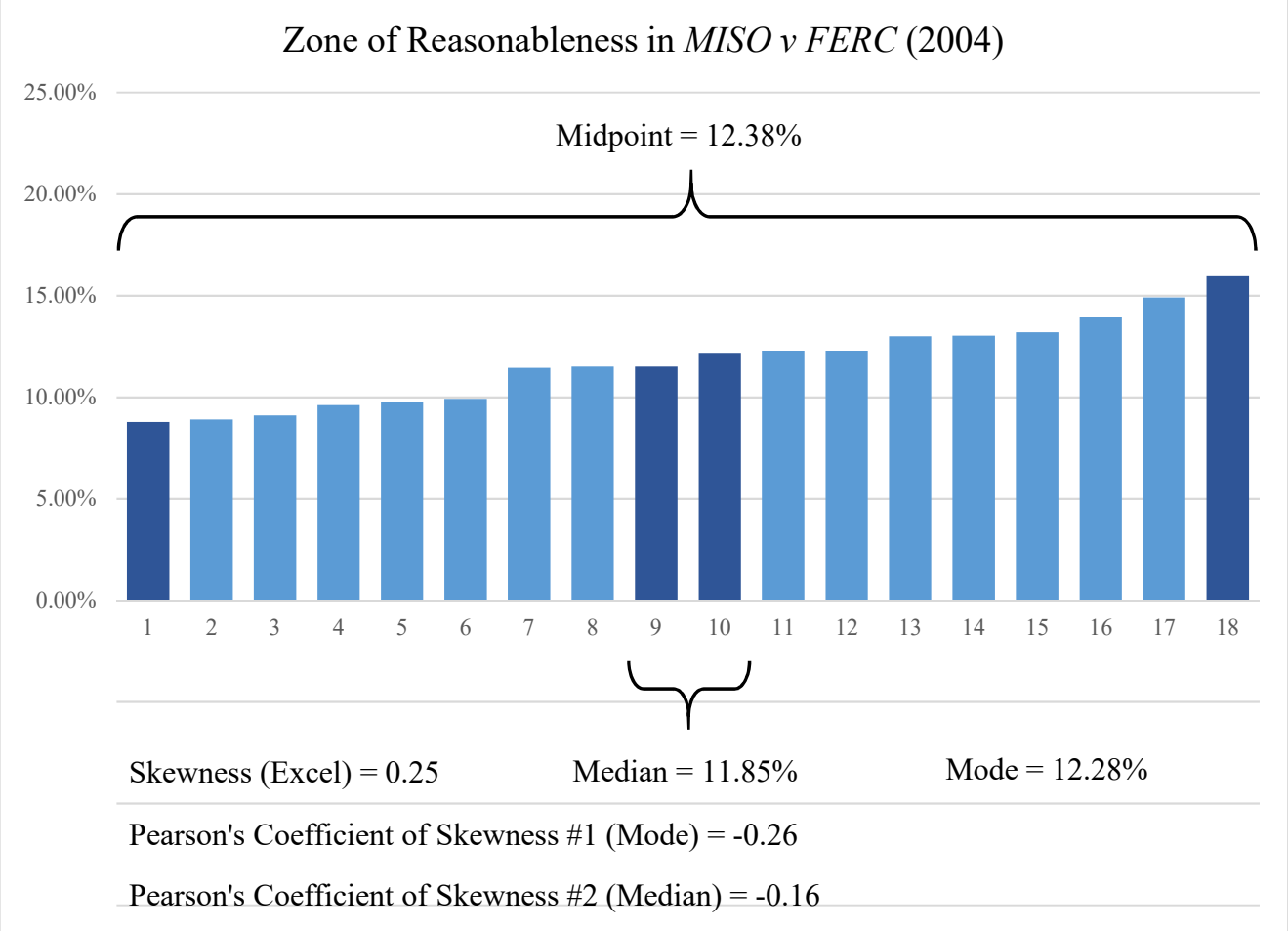
"A note on multiple choice exams, with respect to students' risk preference and confidence, (co-authored), *Assessment & Evaluation in Higher Education*, vol. 26, no. 3 (2001).

REFERENCES

Available upon request.

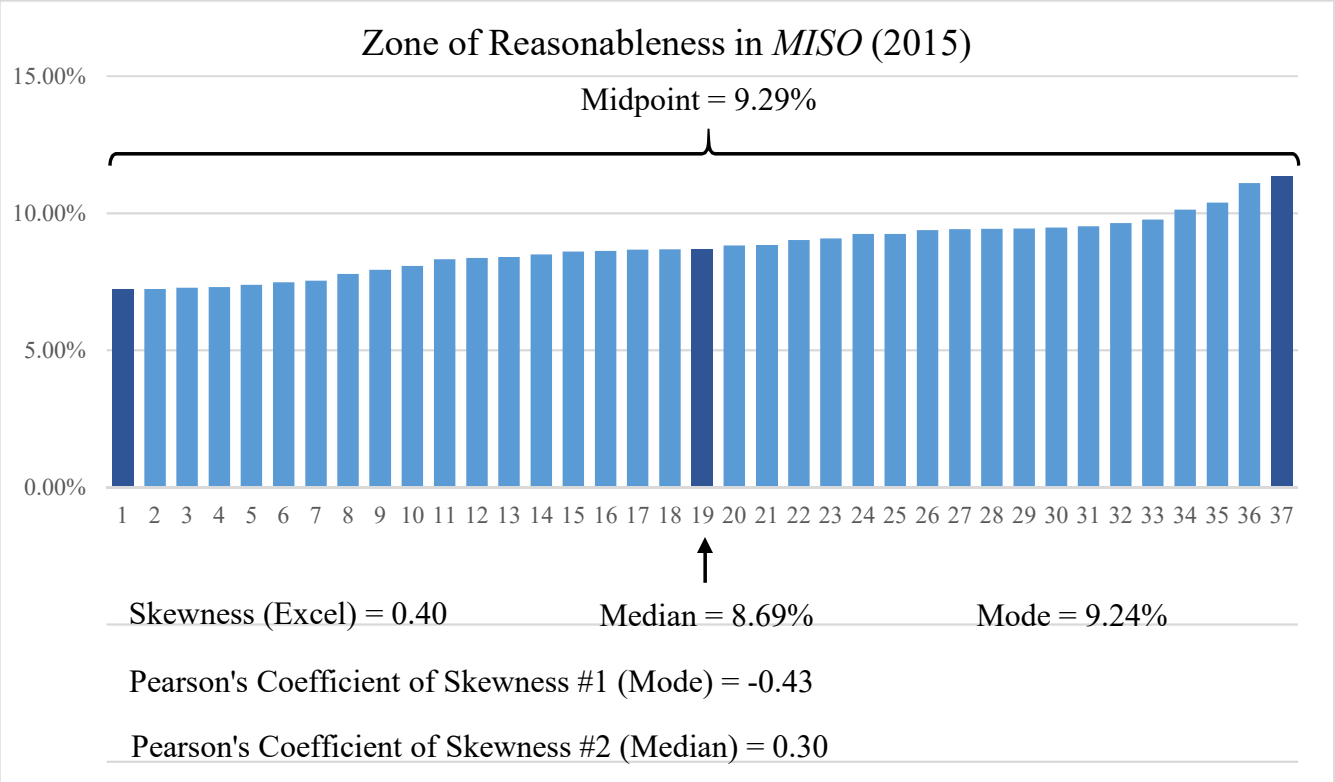
Attachment C
Proxy Group from MISO (2004)

	Proxy Company	Value		Proxy Company	Value
1	Alliant (low)	8.79%	10	Alliant (high)	12.18%
2	DTE (low)	8.90%	11	Cinergy (high)	12.28%
3	Otter Tail (low)	9.10%	12	DTE (high)	12.28%
4	Vectren (low)	9.61%	13	Allete (high)	12.99%
5	Aquila (low)	9.77%	14	Montana Dakota Utilities (low)	13.02%
6	Otter Tail (high)	9.91%	15	Vectren (high)	13.20%
7	Xcel (low)	11.44%	16	Xcel (high)	13.93%
8	Cinergy (low)	11.50%	17	Montana Dakota Utilities (high)	14.90%
9	Allete (low)	11.51%	18	Aquila (high)	15.96%



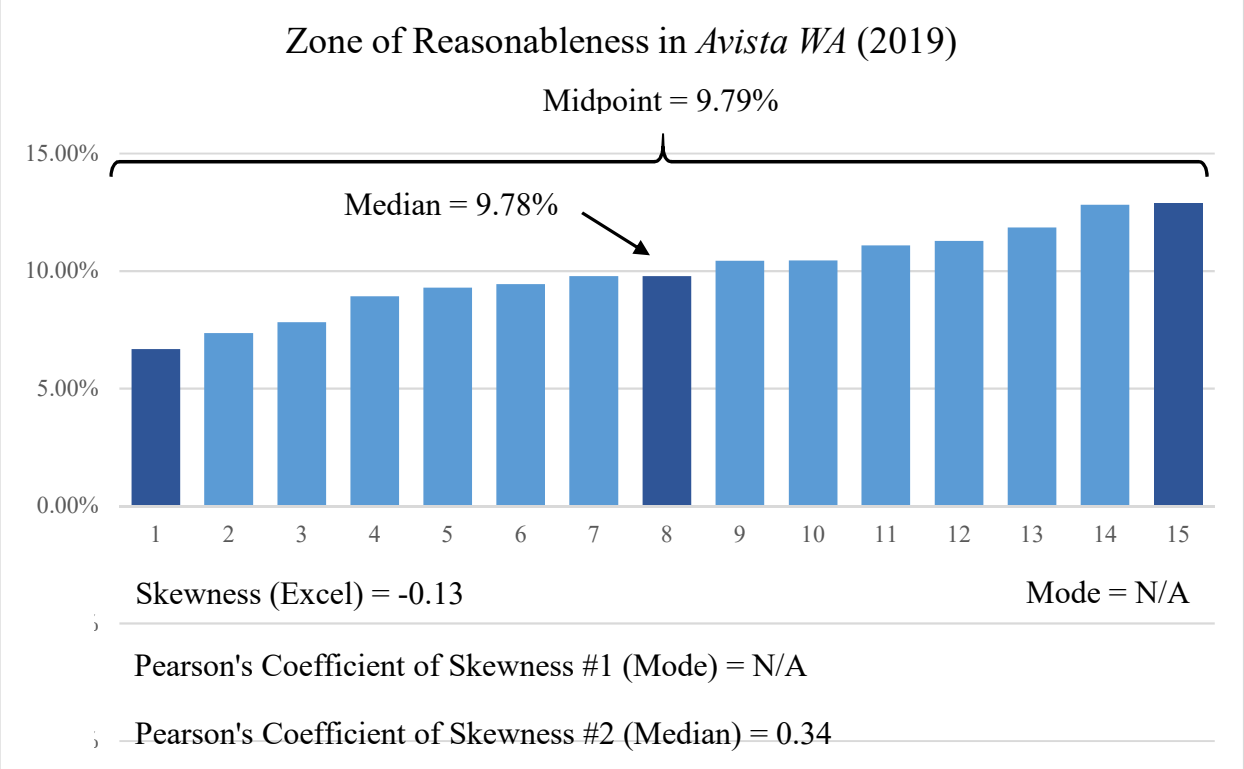
Attachment D
Proxy Group from MISO 2015

	Proxy Company	Value		Proxy Company	Value
1	Public Service Enterprise Group	7.23%	20	Avista Corp.	8.82%
2	Consolidated Edison, Inc.	7.24%	21	Pinnacle West Capital Corp.	8.83%
3	OGE Energy Corp.	7.28%	22	Empire District Electric Co.	9.02%
4	IDACORP Inc.	7.31%	23	Dominion Resources, Inc.	9.08%
5	PPL Corporation	7.39%	24	Eversource Energy	9.24%
6	CenterPoint Energy, Inc.	7.48%	25	El Paso Electric Co.	9.24%
7	Westar Energy Inc.	7.54%	26	Ameren Corp.	9.38%
8	Portland General Electric Co.	7.78%	27	CMS Energy Corp.	9.41%
9	DTE Energy Co.	7.93%	28	ALLETE Inc.	9.43%
10	PG&E Corp.	8.07%	29	Sempra Energy	9.44%
11	SCANA Corp.	8.32%	30	Great Plains Energy, Inc.	9.47%
12	The Southern Co.	8.37%	31	Black Hills Corp.	9.52%
13	Xcel Energy Inc.	8.40%	32	Otter Tail Corp.	9.64%
14	NorthWestern Corp.	8.49%	33	Exelon	9.76%
15	Duke Energy Corp.	8.60%	34	PNM Resources	10.13%
16	American Electric Power Co.	8.62%	35	UIL Holdings	10.38%
17	NextEra Energy, Inc.	8.67%	36	ITC Holdings Corp.	11.10%
18	Vectren Corp.	8.68%	37	TECO Energy	11.35%
19	Alliant Energy Corp.	8.69%			



Attachment E
Zone of Reasonableness in *Avista WA* (2019)

	Proxy Company	Value		Proxy Company	Value
1	PNM Resources	6.68%	9	Dominion Energy	10.43%
2	DTE Energy	7.35%	10	Ameren Corp.	10.45%
3	El Paso Electric	7.81%	11	Hawaiian Electric	11.09%
4	Edison International	8.92%	12	Sempra Energy	11.28%
5	CenterPoint Energy	9.29%	13	Otter Tail Corp.	11.84%
6	Avista Corp.	9.44%	14	Algonquin Power	12.82%
7	CMS Energy Corp.	9.77%	15	Avangrid Inc.	12.89%
8	Emera Inc.	9.78%			



UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy for Determining Return on Equity	))	Docket No. PL19-4-000

AFFIDAVIT OF WILLIAM E. AVERA

William E. Avera, being first duly sworn, deposes and says that he is the William E. Avera referred to in the foregoing Affidavit, that he has read such Affidavit and is familiar with the contents thereof and that the statements therein are true and correct to the best of his knowledge, information, and belief.

William E. Avera

Subscribed and sworn to before me this 22nd day of June, 2019, by William E. Avera, proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Notary Public

Commission Expires on: 2/4/23

NOTARY PUBLIC STATE OF TEXAS
ADRIEN McKENZIE
ID #10006771
My Commission Expires
February 04, 2023

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy for Determining Return on Equity	))	Docket No. PL19-4-000

AFFIDAVIT OF JOHN S. THOMPSON

John S. Thompson, being first duly sworn, deposes and says that he is the John S. Thompson referred to in the foregoing Affidavit, that he has read such Affidavit and is familiar with the contents thereof and that the statements therein are true and correct to the best of his knowledge, information, and belief.

John S. Thompson

Subscribed and sworn to before me this 22nd day of June, 2019, by John. S. Thompson, proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Notary Public

Commission Expires on: 2/4/23

ADRIEN McKENZIE
ID #10006771
My Commission Expires
February 04, 2023

Document Content(s)