CONNECTICUT PUBLIC UTILITIES REGULATORY AUTHORITY

Application of The Connecticut Light and	*	
Power Company d/b/a Eversource Energy	*	Docket No. 26-05-10
to Amend its Rate Schedules	*	

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DIRECT TESTIMONY

OF

WILLIAM O. TAYLOR, PhD

ON BEHALF OF

ACADIA CENTER

October 21, 2026

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II. INTRODUCTION

Q. Dr. Taylor, PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is William Taylor. My business address is 557 Prospect Ave #2032, West Hartford, CT 06105.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed as the Strategy Director, Infrastructure and Resilience, for Acadia Center, a 501(c)(3) nonprofit organization with a mission to advance bold, effective clean energy solutions for a livable climate and a stronger, more equitable economy.

As a strategy director for the organization, my work largely focuses on tackling large-scale climate, clean energy and energy justice challenges by connecting areas that offer promise for building a cleaner and more consumer-friendly economic future. My work includes developing comprehensive approaches to connect the areas of building energy and transportation systems while addressing energy affordability, community resiliency, reductions in climate pollution and community and system infrastructure needs. Other responsibilities of mine include analytical work, development of research publications and materials, supporting organizational participation in regulatory proceedings, and engagement with other

Acadia Center leadership to develop strategic priorities to inform the development of regional programs.

Q. PLEASE DESCRIBE YOUR EXPERIENCE, QUALIFICATIONS AND EDUCATION.

A. My focus at Acadia Center includes a focus on achieving an affordable, sustainable and clean energy future for the Northeastern U.S., and beyond. Before joining Acadia Center, I was a distributed energy resource (DER) Integration Strategist for Electric Power Research Institute (EPRI). During my tenure at EPRI I worked on challenges pertaining to DERs, non-wires solutions (NWS), interconnection and grid services, electric grid resilience, and clean energy project economics. I also was a part of the Climate READi team, which works to advance practices around climate-informed risk assessment and planning for the power system.

Prior to working at EPRI, I worked in the Clean and Affordable Energy unit at the Connecticut Public Utilities Regulatory Authority (PURA, or the Authority) from Oct. 2021 to Oct. 2023 under various titles (U.S. Department of Energy Solar Energy Innovators Fellow, Rate Specialist, and Associate Rate Specialist). Some of my responsibilities included acting as lead technical staff on proceedings related to the Residential Renewable Energy Solutions (RRES) Program, the Non-residential Renewable Energy Solutions (NRES) Program, the Energy Storage Solutions (ESS) Program, and the Clean and Renewable Energy Program Data and Report dockets (i.e., dockets assigned numbers with the format XX-08-01), and

supporting rate case proceedings. I also taught as an adjunct professor at the University of Connecticut Graduate School of Business, teaching OPIM 5603, Statistics in Business Analytics for the Fall 2023 semester.

I received my Ph.D. in Environmental Engineering from the University of Connecticut where I was a member of the research team and graduate fellow at the Eversource Energy Center. Further, I received a Master's degree in Business Analytics and Project Management from the University of Connecticut. I also received a Bachelor of Science degree in Mechanical Engineering with minors in mathematics and electronics and systems, graduating as an Honors Scholar from the University of Connecticut. My resume is attached as Exhibit WOT-1.

Q. HAVE YOU TESTIFIED BEFORE THE AUTHORITY OR BEEN OTHERWISE INVOLVED IN RELATED REGULATORY PROCEEDINGS?

A. I have not testified before the Authority in a formally adjudicated docket. However, I have participated in formally adjudicated dockets, including performing cross-examination as part of United Illuminating's rate case in Docket No. 22-08-08. As mentioned in the previous response, I have also participated in numerous PURA proceedings, generally in the role of lead technical staff.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE OTHER REGULATORY BODIES?

A. No. I have not.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING TESTIMONY?

A. I am submitting testimony on behalf of the Acadia Center.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes, they are as follows:

- WOT-1: A copy of my resume
- WOT-2: Outlier calculation notebook
- WOT-3: Ratepayer impact calculations
- WOT-4: Acadia Center Federal Energy Regulatory Commission (FERC) Docket No. ER26-2389-000 Initial Paper Hearing Brief
- WOT-5: BLS total factor productivity by major sectors
- WOT-6: BLS total factor productivity by major industries
- WOT-7: Acadia Center FERC Docket No. ER26-2389-000 Response Brief
- WOT-8: Pacific Northwest National Laboratory TFP Best Practices Presentation
- WOT-9: BLS productivity calculations

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my Direct Testimony is to provide my recommendations to the Authority on the productivity factor value used to determine the X-Factor in a revenue cap formula.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. Section I provides the table of contents. Section II provides introductory information about my background and the purpose of the testimony. Section III provides some background information on X-Factors and the revenue cap formula as proposed in the related PURA performance-based regulation proceedings. Section IV discusses the proposed X-Factor, and productivity factors if applied only to operations and maintenance (OM&A) costs. Section V discusses productivity factors if applied to the full revenue requirement (capital and OM&A costs). Section VI discusses methodological alternatives to the historical indexing approach and some general recommendations that apply regardless of how an X-Factor is applied. Section VII provides the conclusions of my testimony.

Q. HAVE YOU REVIEWED THE TESTIMONY AND OTHER SUPPORTING DOCUMENTS SUBMITTED BY EVERSOURCE IN THIS PROCEEDING?

A. Yes. I have reviewed: Exhibit CLP-PBR-1; Exhibit CLP-PBR-1, Attachment A; Exhibit CLP-PBR-2; Exhibit CLP-PBR-3; Exhibit CLP-ELP-1; Exhibit CLP-ELP-2; Exhibit CLP-ACOS-1; Exhibit CLP-ACOS-2; and relevant discovery to the topic of performance-based regulation.

Q. PLEASE SUMMARIZE THE CONCLUSIONS OF YOUR TESTIMONY.

A. I conclude that the Company has not demonstrated that their proposed productivity factors – OM&A and total – are just and reasonable. I conclude this because, as illustrated later in this testimony, assumptions can drastically change the output of

a model (in this case, the output of a TFP study), and the Company has failed to provide robust sensitivity analysis of key assumptions. I also conclude that the metrics selected to measure productivity can substantially impact productivity values, and that there may be alternative metrics (e.g., the output metrics used by BLS, or other metrics which may incorporate Company goals such as reliability and/or decarbonization) which would indicate that utility productivity is substantially different from the values proposed by the Company. I further conclude that the productivity factor selected by the Authority should be aligned with the goals of performance-based ratemaking of efficiency in business operations and investment, as well as affordable service. Thus, any productivity factor should consider the Company's past performance and what *good* utility performance is and not necessarily rely solely on a historical average. Last, I conclude frontier analysis would be beneficial in understanding existing utility best practices, knowing that such frontier may not be optimized due to the historical misalignment between financial incentives and utility productivity (insofar as it is defined as a ratio between customers served and capital expenditures), and provide helpful evidence to the Authority when approving productivity factors in the instant and future rate cases.

Q. PLEASE SUMMARIZE THE RECOMMENDATIONS OF YOUR TESTIMONY.

A. I have several recommendations.

The following recommendations carry equal weight and are dependent upon the Authority's ruling on whether to apply an X-Factor to only OM&A costs, or both capital and OM&A costs.

***If the Authority elects to implement an X-Factor that applies across capital and OM&A costs*, my primary recommendations are as follows:**

- Set the total factor productivity (TFP) value at 0.457%, equivalent with the average TFP value from 2005-2024 for utilities, as calculated using U.S. Bureau of Labor Statistics data.[1,2]

- Conduct or have conducted, ideally by a third party hired by the Authority,[3] robust sensitivity analysis of key assumptions and metrics used in LEI's TFP calculations. In the event the Authority cannot produce or acquire results to such an analysis through a hired third party on the required timeline for the instant case, I recommend that the Authority direct the Company to perform and submit results of such a sensitivity analysis.

- In addition to, or as part of the sensitivity analysis, explore an alternative weighting schema to the data provided by LEI as part of the TFP study submitted in the Company's rate application – specifically, that the

[1] Calculated using BLS data and calculated as described in Section V.C. of this testimony.
[2] Exhibit WOT-6; Exhibit WOT-9.
[3] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes § 16-8a to, for example, critically analyze and run alternative specifications on the TFP model." RE01 PFD Appendix A, p. vi.

Authority consider using the 62nd percentile performance in capital productivity, in line with their historical 11.7-13.5% outperformance of peers – rather than the average – in calculation of a capital PFP and a TFP (where 99th percentile is the most efficient capital performance).

- If the sensitivity or other analyses demonstrate a just and reasonable TFP value exists that leads to more affordable rates than a value of 0.457%, then the TFP from that analysis be applied.

Secondary recommendations:

- If the Authority declines to set a TFP of 0.457% or a TFP derived from the additional analyses described in the primary recommendations, I recommend that the Authority do not set the TFP below 0.

- If the Authority declines to set the TFP at 0.457%, to set the TFP based on analysis outlined in the primary recommendations, and declines to set a non-negative TFP, I then recommend using as a floor a TFP value of -1.04%, equivalent to the average TFP values as presented in Figure 2 of Exhibit CLP-PBR-2, excluding the statistical outlier year of 2019-2020.

- Regardless of TFP selected by the Authority, I recommend that the Authority strongly consider in setting the TFP that utilities under traditional cost-of-service regulation have historically had financial incentive to enlarge the rate base, which, using the formulas presented in the TFP study

submitted as part of the Company's rate application, would lead to lower (more negative) capital and total productivity values.

If the Authority elects to implement an X-Factor that applies across only OM&A costs as Eversource proposes, I recommend that the Authority:

- Consider as a floor an X-Factor of 0.675%, which is the average OM&A Partial Productivity Factor (PFP) after discarding the statistical outlier year of 2019-2020.

- Consider a higher X-Factor, 1) because the frontier of existing utility productivity based on existing best practices may not extend to its potential limit as utility business models do not financially incentivize productivity optimization like the private sector; 2) to align with the ideals of performance-based regulation of excellent operational performance including efficiency in business operations and investment, and affordable service, the X-Factor should be set at a fair value that represents *good* utility performance – which is not necessarily represented by historical averages that are estimated by a study where confidence in study results is limited due to the lack of robust sensitivity analysis.

- Conduct or have conducted, ideally by a third party hired by the Authority,[4] robust sensitivity analysis of key assumptions used in LEI's OM&A PFP calculations because assumptions and metrics can so substantially impact model outputs.

- Approve a productivity factor higher than 0.675% if the sensitivity or other analyses demonstrate a just and reasonable productivity value exists that leads to more affordable rates than a value of 0.675%.

Regardless of how the X-Factor is applied, I also recommend that the Authority should:

Consider hiring a consultant to perform a frontier analysis of utility productivity.

- Require robust sensitivity analysis in future rate cases, potentially including direction to ensure fair ranges of values are assessed for key assumptions. Such analysis may also require sensitivity to productivity input and output metrics. I further recommend that the party performing the analysis be hired by the Authority, if possible. If not possible, I recommend that the Authority

[4] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes§ 16-8a to, for example, critically analyze and run alternative specifications on the TFP model."RE01 PFD Appendix A, p. vi.

retain a consultant to assess the analysis submitted into the docketed proceeding.

All of these conclusions and recommendations are expanded on in the sections below.

III. REVENUE CAP FORMULA AND X-FACTOR BACKGROUND

Q. WHAT REVENUE CAP FORMULA DID THE AUTHORITY PROPOSE IN THE DOCKET NO. 21-05-15RE01 2025 Proposed Final Decision?

A. The Authority issued a proposed final decision (PFD) in Docket No. 21-05-15RE01, PURA Investigation Into Revenue Adjustment Mechanisms for a Performance-based Regulation Framework, on July 14, 2025 (RE01 PFD), which included a proposal to adopt a revenue cap formula with the equation. pp. 20-21.:

$$Rate\ Year\ 2\ rev.req. = \Big(Rate\ Year\ 1\ rev.req. * \big(1 + i - (x + s)\big)\Big) + z + CT$$[5]

The formula was proposed to apply to both capital and OM&A costs.

Q. WHAT DOES THE X-FACTOR REPRESENT IN THE REVENUE CAP FORMULA FROM THE RE01 PFD?

A. The X-Factor represents an expected level of productivity improvement. In the context of the revenue cap formula, the X-Factor reduces the inflation adjustment

[5] In the equation, i = an external index measure, such as inflation (I-Factor); x = a productivity factor (X Factor); s = a stretch factor or customer dividend (S-Factor); z = a factor for unusual costs outside the utility's control (Z-Factor); and CT = a factor for incremental capital funding (CT-Bar and Capital Tracker).

to reflect expected productivity gains, which helps to ensure that customers receive a share of efficiency improvements over time.[6]

Q. WHAT IS THE IMPACT OF A NEGATIVE X-FACTOR IN THE REVENUE CAP FORMULA?

A. A negative X-Factor in the revenue cap formula acts as an escalator, further increasing the year n+1 revenue requirement relative to year n (the preceding year). For example, if the 's' or stretch-factor were 0, a negative X-Factor would allow the year n+1 revenue requirement to increase more than inflation, or 'i'.

IV. PROPOSED X-FACTOR AND OM&A PFP

A. X-Factor Background

Q. HOW DOES EVERSOURCE CALCULATE ITS PROPOSED X-FACTOR?

A. In its rate case application, Eversource calculates an X-Factor using an indexing methodology, which uses the historical performance of companies to estimate TFP, OM&A PFP, and a capital PFP. TFP and PFP values are calculated as the ratio of an "output" metric to an "input" metric, or cost. Eversource proposes an X-Factor of -0.03%, which is equivalent to the OM&A PFP in the study conducted by London Economics Institute (LEI).[7] This value was chosen in part because

[6] RE01 PFD, pp. 21-22; Exhibit CLP-PBR-2, p. 10.

[7] Exhibit CLP-PBR-2, p. 12.

Eversource proposes that the X-Factor only be applied to OM&A costs, and not capital and OM&A costs as proposed by the Authority in the RE01 PFD.[8]

To calculate TFP and PFP values via an indexing methodology, LEI analyzed data from 88 utilities. Data is aggregated to an industry level, which is then evaluated for the growth of input and output indices over time, ultimately allowing for the estimation of TFP and PFP values.[9]

B. LEI Study Assumptions, Sensitivity, and Availability

Q: HAS THE COMPANY FILED A VERSION OF THE TFP MODEL USED TO DERIVE THEIR PROPOSED X-FACTOR FOR USE BY OTHER STAKEHOLDERS?

A: No, the Company has not. The Company filed a motion for protective order on the grounds that the model and analysis constitutes a trade secret.[10] The Company subsequently stated that they would share the model "subject to the execution of an appropriate confidentiality agreement with commercial terms."[11]

Q: HAS THE AUTHORITY PREVIOUSLY RECOMMENDED THAT ANY TFP STUDY BE AVAILABLE FOR STAKEHOLDERS TO USE?

[8] Exhibit CLP-PBR-2, p. 12; Exhibit CLP-ELP-1, pp. 86, 88-89; RE01 PFD, pp. 21-22.
[9] Exhibit CLP-PBR-2, pp. 18-19.
[10] Motion No. 10 Ruling, August 3, 2026.
[11] Interrogatory Response to CLF-AC-016, p. 3.

A: Yes. In the RE01 PFD the Authority stated that the recommended X-Factor in a rate case be based on a TFP study, where that study should be guided by OCC's recommendations. Those recommendations include:

> "all TFP Study data be provided to PURA and other parties and intervenors (under a non-disclosure agreement, if appropriate); (2) all data, meta-data, and assumptions be described in plain language; (3) all models be run on an open-source platform and the code be provided to PURA and other parties and intervenors (i.e., if using Excel or R, all formulas or code must be distributed to all stakeholders); (4) PURA may retain a consultant pursuant to General Statutes § 16-18a to, for example, critically analyze and run alternative specifications on the TFP model; (5) parties and intervenors have the opportunity to run alternative scenarios or request that the Authority and/or the EDCs run alternative scenarios; and (6) parties and intervenors have sufficient time to conduct an iterative and substantive process."[12]

Q: What are some of the benefits of it being available for analysis?

A: The benefits of a model being available for analysis – including having sufficient time to conduct an iterative and substantive process – include the ability to run

[12] RE01 PFD, p 21.

sensitivity analysis to see how model outputs change dependent on changes to various inputs and/or assumptions.

Notably, sensitivity analysis to key assumptions, including but not limited to, gross or net plant value, benchmark year, capital cost volatility smoothing, weighting schema, output measures, inclusion and exclusion of certain labor costs and distribution expenses, are recommended best practices for productivity studies.[13]

Q. CAN YOU PROVIDE AN EXAMPLE OF ASSUMPTIONS SUBSTANTIALLY CHANGING MODEL OUTPUTS?

A. Yes, one such example relates to the Federal Energy Regulatory Commission (FERC) Docket No. ER26-2389. In that proceeding, the Participating Transmission Owners Administrative Committee (PTO AC) requested an increase in ROE from 9.57% to 11.39%, saying that it had utilized a methodology that FERC had used to previously establish that 9.57% ROE ("Opinion 594 Methodology") "with exacting precision, only updating data to reflect current market conditions".[14] Subsequently, several parties in the docketed proceeding also performed analysis, claiming to adhere to "Opinion 594 Methodology", but changing *the assumptions*, arriving at substantially different ROE values, of approximately 9.31%, 9.60–9.86%, and 9.11%.[15] The approximately 2% difference in estimates of a reasonable ROE between what the PTO AC found and what other stakeholders in the docket found, resulting from variance in assumptions, clearly demonstrates that without robust

[13] Exhibit-WOT-8.
[14] Exhibit WOT-4, p. 2.
[15] Exhibit WOT-7, p. 33.

sensitivity analysis to various key assumptions, study outputs – including the TFP study provided by LEI – may output unreasonable values.

C. OM&A Handling of outliers

Q. WHAT ARE SOME OF THE BENEFITS LEI CLAIMS TO DERIVE FROM USING A HISTORICAL INDEX PRODUCTIVITY FACTOR?

A. LEI states the benefits of using a historical indexing approach to determine a productivity value include more simplistic calculations and robust solutions with fewer data points. The benefits also include more transparency when dealing with outliers.[16]

Q. ARE THERE ANY OUTLIERS IN THE HISTORICAL PRODUCTIVITY DATASET USED?

A. Yes. The selected study timeframe of 20 years covers the years of 2005-2024. Notably, during 2020 a global pandemic occurred which significantly impacted business operations and performance, not only across the United States but globally. This is reflected in statistical tests of the data – performed by me and as seen in Exhibit WOT-2. Using the standard interquartile range methodology of determining outliers, and using the annual OM&A productivity data from the

[16] Exhibit CLP-PBR-2, p. 18.

productivity study submitted by Eversource, one year is found to be an outlier: 2019-2020.[17]

Q. HOW DOES THE PROPOSED X-FACTOR COMPARE TO AN X-FACTOR CALCULATED AFTER EXCLUDING THE ANOMALOUS COVID YEAR (2020)?

A. The average OM&A PFP – the value used as an X-Factor in the Eversource rate case filing – rises from -0.03% to 0.675% when excluding the outlier year of 2019-2020 from the study period of 2005-2024.[18]

Q. HOW WAS THE BENEFIT OF TRANSPARENCY WHEN DEALING WITH OUTLIERS USED BY LEI?

A. It was not used. LEI stated that they declined to remove the outlier year from their analysis, and did not provide updated values after removing the outlier when asked in an interrogatory. Specifically, when asked to perform a sensitivity analysis removing the outlier year, rather than performing the analysis, the response was simply that "LEI does not consider excluding the 2019–2020 observation to be an appropriate sensitivity for purposes of estimating the industry OM&A PFP trend. The purpose of the TFP/PFP study is to measure industry productivity performance over time".[19]

[17] Exhibit WOT-2.
[18] Exhibit WOT-2.
[19] Interrogatory Response to OCC-538, p. 1.

D. OM&A input metric and alternative data sources

Q: WHAT IS THE INTENDED PURPOSE OF A PRODUCTIVITY FACTOR?

A. Generally, productivity factors are intended to measure how efficiently outputs – represented by an "output metric" – are produced relative to the amount of input – represented by an "input metric".

TFP is intended to measure how efficiently an industry uses all inputs to generate outputs. PFP measures how a major input (e.g., OM&A) contributes to productivity, demonstrating the efficiency of those specific inputs per unit of output. By evaluating PFPs it is possible to examine and explain what inputs are driving TFP results.[20]

Q. WHAT IS THE INPUT METRIC IN THE PROPOSED X-FACTOR CALCULATION?

A. Eversource proposes using OM&A costs, less some exclusions, as the input metric.[21]

Q: WHAT IS THE OUTPUT METRIC IN THE PROPOSED X-FACTOR CALCULATION?

A. Eversource proposes to use the number of customers as the output metric when evaluating productivity.[22]

[20] Exhibit CLP-PBR-2, p. 7.
[21] Exhibit CLP-PBR-2, pp.28-29.
[22] Exhibit CLP-PBR-2, p. 38.

Q: HOW ARE OM&A COSTS TREATED UNDER COST-OF-SERVICE REGULATORY STRUCTURE AND HOW DOES MINIMIZING THEM IMPACT THE PROFIT OF THE COMPANY?

A. Under the existing cost-of-service business model of the Company, OM&A costs – the input metric in the productivity factor calculation – are treated as pass through costs to customers. As such, minimizing these costs does not impact the Company's profit, which limits the structural incentive to reduce them.

Q. HOW MIGHT THE INPUT METRIC IN THE PROPOSED PRODUCTIVITY FACTOR CALCULATION DIFFER FROM THAT OF A PRIVATE COMPANY IN TERMS OF IMPACT ON COMPANY PROFITS?

A. The input metric (OM&A costs) differs substantially when compared to costs incurred by a private business for a couple of reasons. First, in general, if a company reduces costs and keeps the cost of product steady, their profits grow. This provides a financial incentive to minimize OM&A costs that utilities do not face. Second, if a private business were to pass through certain costs to customers without concern for minimizing those costs, resulting in higher prices for customers, those customers could switch to a lower cost competitor in the market. In the monopolized utility space, this is almost or never a possibility for customers.

E. OM&A PFP: Potential ratepayer impacts

Q. WHAT IS THE APPROXIMATE DIFFERENCE IN REVENUE CAP IN RATE YEAR 4 BETWEEN THE PROPOSED X-FACTOR AND AN X-

FACTOR EQUIVALENT TO 0.675%, AND HOW WAS THE APPROXIMATION CALCULATED?

A. The revenue cap in Rate Year 4 would be approximately $31,089,400 lower for an X-Factor of 0.675% than with an X-Factor of -0.03%.

To approximate the difference in revenue cap after four years, the below formula – the same revenue cap formula from the RE01 PFD – was used:

$$Rate\ Year\ 2\ rev.req. = \Big(Rate\ Year\ 1\ rev.req.* \big(1 + i - (x + s)\big)\Big) + z + CT$$[23]

In the equation, CT, z, and s were set to 0. I used an estimated inflation value of 3%. For the Rate Year 1 revenue requirement, I used the Company's proposed OM&A costs after including income taxes.[24] Using the inputs and equation described here, I then calculated the difference in Rate Year 4 revenue requirement between the proposed X-Factor of -0.03%, and 0.675%.[25]

Q. WHAT IS THE POTENTIAL DIFFERENCE IN CUMULATIVE COST TO RATEPAYERS FROM RATE YEAR 1 THROUGH RATE YEAR 4 BETWEEN THE PROPOSED X-FACTOR AND X-FACTOR

[23] In the equation, i = an external index measure, such as inflation (I-Factor); x = a productivity factor (X Factor); s = a stretch factor or customer dividend (S-Factor); z = a factor for unusual costs outside the utility's control (Z-Factor); and CT = a factor for incremental capital funding (CT-Bar and Capital Tracker).
[24] Exhibit CLP-ACOS-2, p. 8.
[25] Exhibit WOT-3.

EQUIVALENT TO 0.675%, AND HOW IS THE APPROXIMATION CALCULATED?

A. The cumulative cost to ratepayers is approximately $31,089,400 less with an X-Factor of 0.675% as compared to an X-Factor of -0.03%, equal to the change in revenue requirement over the multi-year rate plan. In years 2-4, the approximate annual incremental revenue values are $9,829,667; $10,356,046; and $10,903,687, respectively.

F. OM&A-Only X-Factor recommendation

Q. IF THE X-FACTOR IS ONLY APPLIED TO OM&A COSTS, WHAT VALUE SHOULD BE APPLIED, AND WHY?

A. If the Authority only applies the revenue cap formula to OM&A costs, I recommend that the Authority consider as a floor an X-Factor of 0.675%, which is the average OM&A PFP after discarding the statistical outlier year of 2019-2020. Further, I recommend that the Authority consider a higher X-Factor for several reasons.

First, the utility sector as a whole may have a deflated OM&A PFP versus what is possible, and would likely occur, if utilities had a financial incentive to minimize OM&A costs – the input value upon which the metric to determine productivity rests – like the business sector does to minimize such costs. In other words, historical OM&A trends from utilities likely do not reflect close to the frontier, or optimal, productivity that they could achieve with improved incentive to do so.

Notably, affordability is in the interest of ratepayers. As such, my recommendation is that the X-Factor be set at a value which is fair but also representative of *good* utility performance – in this case, OM&A costs – and not at a value that represents revenue cap increases under status quo utility activity. In my view, this aligns with the goals and priority outcomes of performance-based regulation of excellent operational performance including efficiency in business operations and investment, and affordable service.[26]

Secondly, as mentioned earlier in testimony, assumptions and metrics play a substantial role in determining model outputs. As such, it is possible that the 0.675% productivity factor is in fact an underrepresentation of utility OM&A productivity. Thus, I recommend that the Authority conduct or have conducted, including ideally by a third party hired by the Authority,[27] robust sensitivity analysis of key assumptions used in LEI's OM&A PFP calculations. Such assumptions may include, but are not limited to, gross or net plant value, benchmark year, capital cost volatility smoothing, weighting schema, output measures, inclusion and exclusion of certain labor costs and distribution expenses. I recommend that the sensitivity analysis be performed by a third party hired by the Authority to mitigate the possibility of assumptions, and/or ranges of assumptions,

[26] Final Decision, Apr. 26, 2023, Docket No. 21-05-15, PURA Investigation Into a Performance-Based Regulation Framework for the Electric Distribution Companies, p.16 (PBR FD).

[27] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes § 16-8a to, for example, critically analyze and run alternative specifications on the TFP model." RE01 PFD Appendix A, p. vi.

being cherry picked for testing. I recommend this because cherry-picked assumptions, or ranges of assumptions, can lead to results that support the selection of model inputs that result in outcomes that are financially favorable to the Company but provide little or no benefit to ratepayers. In the event the Authority cannot produce or acquire results to such an analysis through a hired third party on the required timeline for the instant case, I recommend that the Authority direct the Company to perform and submit results of such a sensitivity analysis. I recommend that if the sensitivity or other analyses demonstrate a reasonable productivity value exists that leads to more affordable rates than a value of 0.675%, then that productivity value should be applied.

V. REVENUE CAP FORMULA AND TFP

A. RE01 PFD X-Factor background

Q: TO WHAT COSTS WAS THE REVENUE CAP PROPOSED TO APPLY IN THE RE01 PFD?

A. In the RE01 PFD, the revenue cap formula was proposed to apply to both capital and OM&A costs, as it is inclusive of the Company's revenue requirement.[28]

[28] RE01 PFD, pp. 20-21.

B. TFP Handling of outliers & LEI study challenges

Q. IS THE TFP VALUE FOR 2019-2020 AS PRESENTED IN FIGURE 2 OF EXHIBIT CLP-PBR-2 A STATISTICAL OUTLIER?

A. Yes, using the interquartile range methodology the 2019-2020 year is a statistical outlier.[29]

Q. WHAT IS THE AVERAGE TFP FROM THE LEI STUDY AFTER REMOVING THE OUTLIER YEAR OF 2019-2020?

A. The average TFP from the study conducted by LEI across the years of 2005-2024 before removing the outlier is -1.41%. The average TFP across the same study period exclusive of the outlier year is -1.04%.[30]

Q. CAN ASSUMPTIONS SUBSTANTIALLY ALTER THE OUTCOMES OF THE TFP VALUES IN THE LEI TFP STUDY AS PREVIOUSLY DISCUSSED IN SECTION IV.B. OF THIS TESTIMONY?

A. Yes, they can.

C. TFP alternative data sources

Q. ARE THERE ALTERNATIVE, PUBLICLY AVAILABE DATA SOURCES THAT PROVIDE ALTERNATIVE PRODUCTIVITY FACTOR VALUES FOR UTILITIES, AND WHAT DOES THE DATA SHOW FOR 2005-2024?

[29] Exhibit CLP-PBR-2, p.12; Exhibit WOT-2.
[30] Exhibit CLP-PBR-2, p.12; Exhibit WOT-2.

A. Yes, the U.S. BLS has productivity factor data available for public use. BLS has TFP data available specifically for the utility industry. Using the calculation provided in Figure 8 of Exhibit CLP-PBR-2, and the 2024 and 2005 TFP index values for the utilities industry from BLS, TFP growth is estimated at 0.457%.[31]

Q. WHAT ARE SOME OF THE POTENTIAL DRIVERS OF THE DIFFERENCE IN TFP BETWEEN THE BLS DERIVED VALUE AND THE VALUE FROM THE LEI STUDY?

A. One potential difference is that the BLS data includes more than just electric utilities. Specifically, it includes electric distribution – but also electric generation, electric transmission, natural gas, steam supply, water supply, and sewage removal.[32] A second reason is that the output metric used is different, and as stated by the Company,

> "BLS uses real sectoral output, which measures the goods and services produced by an industry for delivery outside that industry; sectoral output is based on gross output (including sales, receipts and other operating income in dollars), less transactions within the same industry. BLS therefore measures changes in the quantity and mix of goods and services produced, rather than changes in the number of customers served… Thus, customer growth and BLS real

[31] Exhibit WOT-9; Exhibit WOT-6.
[32] Interrogatory Response to CLF-AC-016 part a, p. 1.

output can move differently, for example, output per customer or the mix of utility services can change even when customer numbers remain unchanged."[33]

Q. CAN THE BLS TFP VALUE BE USED AS A COMPARISON TOOL FOR THE RESULTS OF THE LEI TFP STUDY?

A. Yes. Notably, the Company argues that the difference in input and output metrics, combined with the fact that electric distribution utilities are only a subset of utilities BLS is measuring the productivity of, limits the usefulness of the BLS value as a validation benchmark.[34] On the contrary, I believe it serves as a useful metric to validate the need for additional scrutiny and analysis to supplement the LEI study. Notably, the difference in TFP values between BLS and LEI highlights how LEI's metric selection may be deflating the productivity LEI identifies.

If that is not the case, and electric distribution utilities in fact have an equivalent or lower productivity using the BLS methodology relative to the LEI methodology, simple mathematics says that the average productivity of the rest of the utilities BLS is reporting data on must be greater than the average BLS productivity value of 0.459%. This would mean that electric distribution utilities, are, on average, at least 1.869 percentage points[35] less productive than the other utilities, including

[33] Interrogatory Response to CLF-AC-016 part c, pp. 2-3.
[34] Interrogatory Response to CLF-AC-016 part a, p. 2.
[35] Value derived from 0.459% less the average utility TFP of -1.41% from Table 2 in Exhibit CLP-PBR-2.

electric transmission and generation utilities. While this is not an impossible outcome, it at a minimum warrants additional analysis as to whether it is really the case, or the LEI study finds deflated TFP values relative to using the BLS methodology.

Q. IS IT POSSIBLE THAT DIFFERENT TFP METRICS FROM THOSE PROPOSED IN THE LEI STUDY WOULD RESULT IN A HIGHER TFP VALUE?

A. Yes, it is entirely possible that using another metric would change, and increase, the TFP value from what is found in the LEI study.

Q: IS THERE PUBLICLY AVAILABLE DATA ON BUSINESS SECTOR TFP OVER THE PERIOD FROM 2005-2024, AND WHAT DOES IT SHOW?

A. Yes, BLS has data on the TFP for the private business sector. Using the calculation provided in Figure 8 of Exhibit CLP-PBR-2, and the 2024 and 2005 TFP index values for the private business industry from BLS, TFP growth is estimated at 0.678%.[36]

D. TFP input metric and private sector comparison

Q. WHAT IS THE PROPOSED INPUT METRIC FOR TFP IN EXHIBIT CLP-PBR-2?

[36] Exhibit WOT-9.

A. The input for the TFP metric is the composite of capital inputs and OM&A outputs. The process for calculating the capital and OM&A inputs is detailed on pages 27-44 of Exhibit CLP-PBR-2.

Q. HOW DO CAPITAL COSTS IMPACT THE COMPANY'S PROFIT UNDER THE EXISTING COST-OF-SERVICE BUSINESS MODEL, AND WHAT INCENTIVE DOES THIS GIVE THE COMPANY?

A. Under the existing cost-of-service business model that Eversource is subject to in Connecticut, the Company's profits are directly tied to capital expenditure. The Company makes its profit by being guaranteed the opportunity to recover its expenses plus some return, specifically on prudent capital expenses – often referred to as the rate base. This provides financial incentive for the Company to increase its rate base when and where possible, because the larger the rate base, the greater the opportunity for profit. As part of a publicly traded company, Eversource has a fiduciary duty to act in the best interest of its shareholders, which provides pressure to continue to increase profit over time.

Q. DO COMPANIES IN THE PRIVATE BUSINESS SECTOR SHARE THE SAME FINANCIAL INCENTIVE TO INCREASE CAPITAL COSTS THAT THE COMPANY HAS?

A. No. Private companies have the potential to increase their profit margin by reducing costs relative to the size of their market share. This is an inverse relationship to

profits than utilities have under a cost-of-service structure, since utilities profits are tied to the magnitude of their capital expenditures.

Q. IS THIS DIFFERENCE POTENTIALLY REFLECTED IN THE PRODUCTIVITY FACTOR DATA PRESENTED IN PBR-2?

A. Yes, in Exhibit CLP-PBR-2, the capital PFP input, which reflects the change in the ratio of customers served to the capital expenditures over time, is negative for every year of the time period of 2005-2024. As TFP is calculated with the composite of capital and OM&A inputs, this outsized growth in capital expenditures relative to customer growth directly impacts, and decreases, the TFP values as calculated in the study presented in Exhibit CLP-PBR-2 in this rate case. This sentiment is stated directly in the exhibit, "Overall, the capital PFP trend suggests that capital input growth is the main driver of the broader decline in measured productivity."[37]

The consistently negative capital PFP values – which carry through to and impact TFP – indicate the Company is doing well in serving its fiduciary responsibility to shareholders, at the expense of ratepayers who are ultimately responsible for paying for these capital costs.

Q. ARE PRIVATE BUSINESSES MORE LIKELY TO HAVE POSITIVE TFP VALUES USING THE PROPOSED CALCULATIONS FROM EXHIBIT CLP-PBR-2?

[37] Exhibit CLP-PBR-2, p. 7.

A. Yes. Private businesses have substantially more financial incentive to lower OM&A, and especially capital, costs relative to the size of their customer base than utilities. In fact, reducing the relative proportion of capital costs for private businesses affords them the opportunity to make more money through increased profit margins, driving a financial incentive for a positive productivity value. For utilities, the incentive is flipped: increased capital has a direct tie to increased profit, driving a financial incentive for negative productivity using the input and output metrics for TFP as proposed in Exhibit CLP-PBR-2.

Q. IS THE SELECTED CALCULATION FOR TFP AS PROPOSED IN THE RATE CASE FILINGS AN OPTIMAL REPRESENTATION OF THE PRODUCTIVITY OF THE COMPANY?

A. No, it is my opinion that the TFP calculation does not do justice to the productivity of the Company or electric utilities more wholly. As mentioned earlier in my testimony, the Company has a legal responsibility to provide safe and reliable service. It also has a responsibility to meet state decarbonization goals. However, the Company does not have incentive to increase productivity as represented by an equation that reflects how the ratio of customers served to cost (capital and OM&A) changes over time. Ultimately, it is my opinion that there may be output metrics which can more effectively measure how productive the Company is.

While the company arguably has little control over the number of customers,[38] the numerator of the proposed metric used to calculate TFP, it is actively financially incentivized to increase total costs (the denominator) – driven by the fact profits are directly tied to capital expenditures. Thus, if the company is doing a good job of increasing profits, productivity – using this metric – will appear negative over time, regardless of how well the company is doing at accomplishing any ratepayer-beneficial goals, such as improving affordability, providing cleaner energy, and enhancing grid reliability. Ultimately, using such a productivity metric can allow the company to increase revenue regardless of how well they are meeting such goals. This runs counter to the stated goals of performance-based regulation in Connecticut: greenhouse gas reduction, affordable service, and excellent operational performance including efficiency in business operations and investment.[39]

E. TFP potential ratepayer impacts

Q. IF APPLIED TO THE FULL REVENUE REQUIREMENT (CAPITAL AND OM&A COSTS), WHAT IS THE APPROXIMATE DIFFERENCE IN REVENUE CAP IN RATE YEAR 4 BETWEEN USING THE AVERAGE TFP FROM THE LEI STUDY BEFORE (-1.41%) AND AFTER REMOVING THE OUTLIER YEAR OF 2019-2020 (-1.04%), AND BOTH THE

[38] See, Interrogatory Response to CLF-AC-018.
[39] PBR FD, p.16.

AVERAGE UTILITY (0.457%) AND AVERAGE PRIVATE BUSINESS SECTOR (0.678%) TFPS FROM BLS DATA?

A. The answers are as follows. Approximately:

- $104,013,590 lower for a TFP value of 0.457% as compared to a value of -1.04%
- $119,114,375 lower for a TFP value of 0.678% as compared to a value of -1.04%
- $130,188,037 lower for a TFP value of 0.457% as compared to a value of -1.41%
- $145,288,821 lower for a TFP value of 0.678% as compared to a value of -1.41%

Q. HOW WERE THE APPROXIMATIONS IN THE RESPONSE TO THE PREVIOUS QUESETION CALCULATED?

A. To approximate the difference in revenue cap after four years, the below formula – the same revenue cap formula from the RE01 PFD – was used:

$$Rate\ Year\ 2\ rev.req. = \Big(Rate\ Year\ 1\ rev.req.* \big(1 + i - (x + s)\big)\Big) + z + CT$$[40]

In the equation, CT, z, and s were set to 0. An estimated inflation value of 3% was used. For the Rate Year 1 revenue requirement, the Company's proposed Rate Year

[40] In the equation, i = an external index measure, such as inflation (I-Factor); x = a productivity factor (X-Factor); s = a stretch factor or customer dividend (S-Factor); z = a factor for unusual costs outside the utility's control (Z-Factor); and CT = a factor for incremental capital funding (CT-Bar and Capital Tracker).

1 Base Distribution Revenue Requirement, with Storm Cost was used.[41] Using the inputs and equation described here, the difference in Rate Year 4 revenue requirement was approximated using each TFP value as a proxy for X-Factor. As appropriate, to obtain the final solutions, the difference between the relevant revenue caps was then calculated.[42]

Q. IF APPLIED TO THE FULL REVENUE REQUIREMENT (CAPITAL AND OM&A COSTS), WHAT IS THE APPROXIMATE POTENTIAL DIFFERENCE IN CUMULATIVE COST TO RATEPAYERS FROM RATE YEAR 1 THROUGH RATE YEAR 4 BETWEEN USING THE AVERAGE TFP FROM THE LEI STUDY BEFORE (-1.41%) AND AFTER REMOVING THE OUTLIER YEAR OF 2019-2020 (-1.04%), AND BOTH THE AVERAGE UTILITY (0.457%) AND AVERAGE PRIVATE BUSINESS SECTOR (0.678%) TFPS FROM BLS DATA?

A. The estimated impact to ratepayers is the same as the difference in revenue cap at the end of the multi-year rate plan. Consequently, there are approximately:

- $104,013,590 in ratepayer savings between a TFP value of 0.457% and -1.04%
- $119,114,375 in ratepayer savings between a TFP value of 0.678% and -1.04%

[41] Exhibit CLP-ACOS-2, p. 3.
[42] Exhibit WOT-3.

- $130,188,037 in ratepayer savings between a TFP value of 0.457% and -1.41%
- $145,288,821 in ratepayer savings between a TFP value of 0.678% and -1.41%

F. TFP benchmarking

Q. HOW DO THE COMPANY'S HISTORICAL CAPITAL, OM&A, AND TOTAL COSTS COMPARE WITH PEER UTILITIES?

A. The Company's benchmarked capital costs over 2015-2024 cost performance compared 11.7-13.5% favorably compared to peers. Eversource's OM&A costs compared 11.9-22.9% less favorably than peers. Total cost performance was 2.3-2.6% favorable relative to peers, per the study conducted by LEI.[43]

G. TFP recommendation

Q: IF AN X-FACTOR IS APPLIED TO THE REVENUE REQUIREMENT (INCLUDING OM&A AND CAPITAL COSTS) WHAT IS YOUR EXPERT OPINION ON WHAT TFP VALUE SHOULD BE UTILIZED IN THIS RATE CASE TO SET THE X-FACTOR, AND WHY?

A. I have several recommendations.

[43] Exhibit CLP-PBR-3, pp. 6-11.

Primary recommendations: If an X-Factor is applied to both OM&A and capital costs, I currently recommend that the Authority consider setting the TFP value at 0.457%, equivalent with the average TFP value from 2005-2024 for utilities, as calculated using BLS data. As previously noted, the BLS calculations do include more utilities than strictly electric distribution utilities. However, with the substantial variation in TFP calculations that can come from changes to metrics and assumptions, and a lack of robust sensitivity analysis to key assumptions and metrics in the TFP study from LEI, it is my opinion that the Company has not demonstrated that the average TFP in the LEI study is just and reasonable. Instead, I believe it is reasonable to use the independent assessment of utility productivity as reported by BLS, as that analysis includes electric distribution utilities, and could potentially save ratepayers over a hundred million dollars over the course of a multi-year rate plan relative to the Company's proposal – and notably, affordable service is a priority outcome of performance-based regulation as according to PURA.

Additionally, as mentioned earlier in testimony, assumptions and metrics play a substantial role in determining model outputs. As such, I recommend that the Authority conduct or have conducted, including ideally by a third party hired by the Authority,[44] robust sensitivity analysis of key assumptions used in LEI's TFP

[44] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes § 16-8a to, for example, critically analyze and run alternative specifications on the TFP model." RE01 PFD Appendix A, p. vi.

calculations. Such assumptions may include, but are not limited to, gross or net plant value, benchmark year, capital cost volatility smoothing, weighting schema, output measures, inclusion and exclusion of certain labor costs and distribution expenses. The analysis may also include sensitivity to various input and/or output metrics. In the event the Authority cannot produce or acquire results to such an analysis through a hired third party on the required timeline for the instant case, I recommend that the Authority direct the Company to perform and submit results of such a sensitivity analysis.

In addition to, or as part of the sensitivity analysis, I recommend that the Authority explore an alternative weighting schema to the data provided by LEI as part of the TFP study conducted and submitted in the Company's rate application. Specifically, per the benchmarking in Exhibit CLP-PBR-3, the Company has outspent peers on OM&A costs on a per customer basis by 11.9-22.9%, historically. This makes improvement to the average a good and fair target under a performance-based regulation approach, particularly when considering the equivalent historical lack of financial incentive to optimize OM&A costs across all cost-of-service regulated utilities. However, historically the Company has underspent peers by 11.7-13.5% in capital costs on a per customer basis. Thus, growing capital costs by a historical average of all utilities would represent a stark increase in costs from the past decade. In fact, the Company has overall cost benchmarks that outperform (meaning, spent less than on a per customer basis) the average utility over the last

decade by 2.3-2.6%.[45] If the goals of performance-based regulation include achieving enhanced business operation efficiency and providing affordable service, then revenue cap increase allowances should not be greater than what have been provided to the Company over the past decade. Consequently, I recommend that the Authority consider using the 62nd percentile performance in capital productivity, in line with their historical 11.7-13.5% outperformance of peers – rather than the average – in calculation of a capital PFP and a TFP (where 99th percentile is the most efficient capital performance).

If the sensitivity or other analyses demonstrate a just and reasonable TFP value that leads to more affordable rates for ratepayers than a value of 0.457%, I recommend that TFP from that analysis be applied.

Secondary recommendations: If the Authority declines to set a TFP of 0.457% or a TFP derived from the additional analyses described in the primary recommendations, I recommend that the Authority do not set the TFP below 0. Notably, LEI shows an average TFP over the study period of 2005-2024 that is negative. However, as discussed earlier in testimony, changes in assumptions can substantially alter the outputs of a model – in this case, the average TFP. Further, changes in metrics can potentially have similarly large impacts on the TFP results – an idea which is partially reinforced by the large observed gap between the TFP presented by LEI and that calculated for utilities by BLS. With the potential for

[45] Exhibit CLP-PBR-3, p. 11.

drastically different model outputs dependent on metrics and assumptions, paired with the lack of robust sensitivity analysis demonstrating that a negative TFP is just and reasonable, and noting that affordability is in the interest of ratepayers, I do not believe that a negative TFP in the instant proceeding is justified.

However, if the Authority declines to set the TFP at 0.457%, to set the TFP based on analysis outlined in the primary recommendations, and declines to set a non-negative TFP, I then recommend using as a floor a TFP value of -1.04%, equivalent to the average TFP values as presented in Figure 2 of Exhibit CLP-PBR-2, excluding the statistical outlier year of 2019-2020.

General recommendation: Regardless of TFP selected by the Authority, I recommend that the Authority strongly consider in setting the TFP that utilities under traditional cost-of-service regulation have historically had financial incentive to enlarge the rate base, which, using the formulas presented in the TFP study submitted as part of the Company's rate application, would lead to lower (more negative) capital and total productivity values. I would recommend that the Authority keep this in mind while also considering the goals of performance-based regulation to achieve affordable service and business operation and investment efficiency; and also consider that past utility success in growing the rate base – and thus growing the opportunity for profit – is directly reflected in the TFP values presented in Exhibit CLP-PBR-2. Further, I would recommend that any TFP value be set with consideration of what good and expected utility performance is, not

necessarily a historical average under a framework that strongly financially incentivizes decreasing capital (and total) productivity.

VI. METHODOLOGICAL ALTERNATIVES AND GENERAL RECOMMENDATIONS

Q: ARE THERE ALTERNATIVE METHODOLOGIES FOR CALCULATING PRODUCTIVITY VALUES (TFP AND PFP)?

A. There are multiple methods that can be used to estimate productivity trends for a given industry. One alternative method to indexing is using stochastic frontier analysis. A frontier analysis identifies a best practice productivity value and then assesses the company's gap to optimal performance. It also allows for separating noise from actual efficiency.

Q. CAN A FRONTIER ANALYSIS BE MORE INFORMATIVE AS TO HOW TO SET A REVENUE CAP IN LINE WITH THE GOALS OF AFFORDABILITY AND PERFORMANCE-BASED REGULATION?

A. Yes. The stated goals of performance-based regulation in Connecticut include investment and business operations efficiency, as well as affordable service, as priority outcomes. A frontier analysis identifies best practices and measures how far utilities are from those best practices. It should be noted that a frontier analysis may still fall short of true operational efficiency of utilities because utilities have broadly been operating under cost-of-service frameworks that, as mentioned elsewhere in my testimony, encourage utilities to reduce productivity (insofar as it

is defined as a ratio between customers served and capital expenditures). Therefore, as an industry, existing best practices may not go so far as to optimize business efficiency.

However, having an understanding of what the existing frontier of best practices operationally is, and understanding that frontier may be able to be pushed even further provided different incentive structures, the Authority would have an even greater body of evidence to support selection of productivity factors that represent good utility performance – mitigating the need to use the historical average when financial incentives for utilities have been directly at odds with productivity.

Q. DO YOU HAVE ANY OTHER RECOMMENDATIONS FOR THE AUTHORITY REGARDING PRODUCTIVITY FACTORS, AND WHY?

A. Yes, the Authority should, in this or another appropriate docketed proceeding – perhaps the Docket No. 21-05-15 reopeners – hire a consultant to perform a frontier analysis of utility performance. Doing so will give the Authority deeper insight into existing best practices and how far the Company is from that standard. PURA would then have the option to set the productivity factor in future rate cases somewhere between individual or average historical utility performance and the frontier of real-world utility performance – a frontier which likely has some room for growth in a future where financial incentives for utilities are better aligned with more efficient performance and improved productivity. Having an improved understanding of what the productivity of a frontier or "best-practice" utility looks

like is beneficial, as it provides additional context when setting targets and allowances that should correspond with good utility performance. Such an evaluation may consider sensitivity analysis to the reference year, different weightings of utility data (instead of strictly an average), using different percentiles of data as opposed to the mean, as well as various considerations of inputs and outputs to calculate productivity metrics. For example, there is some research demonstrating how the incorporation of variables can impact productivity. In an analysis of Great Britain electric productivity, when incentives to the utilities for achieving customer minutes lost – a reliability metric – were considered as part of operating expenses, productivity measures went from -0.5% in the most recent period to 5.8%.[46] Ultimately, as is possible, metrics should be considered that reflect productivity and better incorporate the goals of utilities, particularly any that tie to statutes, potentially including improved reliability and decarbonization.

I also recommend that in future rate cases robust sensitivity analysis be required, potentially including direction to ensure fair ranges of values are assessed for key assumptions. Such analysis may also require sensitivity to productivity input and output metrics. I further recommend that the party performing the analysis be hired by the Authority, if possible. If not possible, I recommend that the Authority retain a consultant to assess the analysis submitted into the docketed proceeding since

[46] V. Ajayi, K. Anaya, M. Pollitt (2021) Incentive regulation, productivity growth and environmental effects: the case of electricity networks in Great Britain. Working Paper No. 012, The Productivity Institute.

assumptions and metrics can have such substantial impact on model outputs, potentially resulting in over a hundred million dollars difference in ratepayer impacts over the course of a multi-year rate plan.

VII. CONCLUSIONS

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I have several recommendations.

The following recommendations, as split between whether an X-Factor be applied to only OM&A costs, or both capital and OM&A costs, carry equal weight and are dependent on the Authority's decision on how to apply an X-Factor.

***If the Authority elects to implement an X-Factor that applies across capital and OM&A costs*, my primary recommendations are as follows:**

I recommend that the Authority consider setting the total factor productivity (TFP) value at 0.457%, equivalent with the average TFP value from 2005-2024 for utilities, as calculated using U.S. Bureau of Labor Statistics data.[47,48] I make this recommendation – as outlined earlier in the testimony in more detail – because the BLS productivity value is considerably more favorable to ratepayers than what is proposed by the Company, and without robust sensitivity analysis to key

[47] Calculated using BLS data and calculated as described in Section V.C. of this testimony.
[48] Exhibit WOT-6; Exhibit WOT-9.

assumptions it is my opinion that the Company has not demonstrated that the proposed TFP is just and reasonable.

Additionally, I recommend that the Authority conduct or have conducted, ideally by a third party hired by the Authority,[49] robust sensitivity analysis of key assumptions and metrics used in LEI's TFP calculations. In the event the Authority cannot produce or acquire results to such an analysis through a hired third party on the required timeline for the instant case, I recommend that the Authority direct the Company to perform and submit results of such a sensitivity analysis.

In addition to, or as part of the sensitivity analysis, I recommend that the Authority explore an alternative weighting schema to the data provided by LEI as part of the TFP study conducted and submitted in the Company's rate application – specifically, that the Authority consider using the 62nd percentile performance in capital productivity, in line with their historical 11.7-13.5% outperformance of peers – rather than the average – in calculation of a capital PFP and a TFP (where 99th percentile is the most efficient capital performance).

I recommend that if the sensitivity or other analyses demonstrate a just and reasonable TFP value exists that leads to more affordable rates than a value of 0.457%, then the TFP from that analysis be applied.

[49] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes § 16-8a to, for example, critically analyze and run alternative specifications on the TFP model." RE01 PFD Appendix A, p. vi.

Secondary recommendations: If the Authority declines to set a TFP of 0.457% or a TFP derived from the additional analyses described in the primary recommendations, I recommend that the Authority do not set the TFP below 0. With the variance in productivity factors derived from BLS versus that proposed in the instant proceeding, paired with the knowledge that assumptions and metrics can substantially influence model outputs, I do not believe it has been demonstrated that a TFP value below 0 is just and reasonable.

However, if the Authority declines to set the TFP at 0.457%, to set the TFP based on analysis outlined in the primary recommendations, and declines to set a non-negative TFP, I then recommend using as a floor a TFP value of -1.04%, equivalent to the average TFP values as presented in Figure 2 of Exhibit CLP-PBR-2, excluding the statistical outlier year of 2019-2020.

Regardless of TFP selected by the Authority, I recommend that the Authority strongly consider in setting the TFP that utilities under traditional cost-of-service regulation have historically had financial incentive to enlarge the rate base, which, using the formulas presented in the TFP study submitted as part of the Company's rate application, would lead to lower (more negative) capital and total productivity values.

If the Authority elects to implement an X-Factor that applies across only OM&A costs as Eversource proposes, I recommend that the Authority consider as a floor an X-Factor of 0.675%, which is the average OM&A Partial Productivity Factor

(PFP) from the LEI study after discarding the statistical outlier year of 2019-2020. Further, I recommend that the Authority consider a higher X-Factor, 1) because the frontier of existing utility productivity based on existing best practices may not extend to its potential limit as utility business models do not financially incentivize productivity optimization like the private sector; 2) to align with the ideals of performance-based regulation of excellent operational performance including efficiency in business operations and investment, and affordable service, the X-Factor should be set at a fair value that represents *good* utility performance – which is not necessarily represented by historical averages that are estimated by a study where confidence in study results is limited due to the lack of robust sensitivity analysis.

Secondly, because assumptions and metrics can so substantially impact model outputs – in this case measured productivity – I recommend that the Authority conduct or have conducted, ideally by a third party hired by the Authority,[50] robust sensitivity analysis of key assumptions used in LEI's OM&A PFP calculations. I recommend that if the sensitivity or other analyses demonstrate a just and reasonable productivity value exists that leads to more affordable rates than a value of 0.675%, then that productivity value should be applied.

[50] As noted by the Authority in the RE01 PFD, "PURA may retain a consultant pursuant to General Statutes § 16-8a to, for example, critically analyze and run alternative specifications on the TFP model." RE01 PFD Appendix A, p. vi.

Regardless of how the X-Factor is applied, I also conclude that the Authority should consider hiring a consultant to perform a frontier analysis of utility productivity to provide the Authority with a greater information base with which to select appropriate productivity factors in future rate cases.

I also recommend that in future rate cases robust sensitivity analysis be required, potentially including direction to ensure fair ranges of values are assessed for key assumptions. Such analysis may also require sensitivity to productivity input and output metrics. I further recommend that the party performing the analysis be hired by the Authority, if possible. If not possible, I recommend that the Authority retain a consultant to assess the analysis submitted into the docketed proceeding since assumptions and metrics can have such substantial impact on model outputs, potentially resulting in over a hundred million dollars difference in ratepayer impacts over the course of a multi-year rate plan.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.