LUMA EXHIBIT 75.0

COMMONWEALTH OF PUERTO RICO
PUERTO RICO ENERGY BUREAU

IN RE: PUERTO RICO ELECTRIC POWER AUTHORITY RATE REVIEW	**CASE NO.:** NEPR-AP-2023-0003

SURREBUTTAL TESTIMONY OF JOHN M. SHEARMAN
November 3, 2025

Summary of Surrebuttal Testimony of
JOHN M. SHEARMAN
ON BEHALF OF
LUMA ENERGY LLC AND LUMA ENERGY SERVCO, LLC

John M. Shearman ("Mr. Shearman"), Chief Executive Officer of ISL Analytics Inc. and a veteran utility asset management and reliability expert with more than 45 years of experience advising over 300 utilities worldwide, presents surrebuttal expert testimony on behalf of LUMA Energy LLC and LUMA Energy ServCo, LLC (collectively, "LUMA"). Mr. Shearman's testimony responds to critiques by Anthony Hurley ("Mr. Hurley") and Patrick Hogan ("Mr. Hogan"), witnesses appearing on behalf of National Public Finance Guarantee Corporation, GoldenTree Asset Management LP, Syncora Guarantee, Inc., Assured Guaranty Inc., and the PREPA Ad Hoc Group (collectively, the "Bondholders"), in Case No. NEPR-AP-2023-0003, *In Re: Puerto Rico Electric Power Authority Rate Review*. Mr. Shearman's surrebuttal addresses three areas: (1) the reasonableness of LUMA's methodology for estimating reliability benefits under current data constraints; (2) the consistency of LUMA's capital investment planning with globally recognized asset management standards; and (3) the executability of LUMA's proposed NFC budgets given historical spending performance and industry ramp-rate benchmarks.

First, Mr. Shearman explains that Mr. Hurley's critique relies on idealized modeling approaches suited to large, data-rich investor-owned utilities ("IOUs"). Mr. Shearman establishes that in Puerto Rico's transitional environment – marked by limited telemetry, incomplete connectivity models, and sparse failure-rate histories – LUMA's hybrid approach, combining structured engineering judgment with statistical allocation of benefits, is both reasonable and aligned with accepted practices for data-limited systems. As Mr. Shearman explains, LUMA's rational-function model is designed to reflect real-world diminishing returns from incremental reliability investments, allocating program-level benefits across targeted circuits and assets while avoiding false precision at the individual-project level. The coefficients derive from historical performance patterns, and the function's asymptotic behavior mirrors physical and economic constraints on achievable reliability improvements.

Mr. Shearman notes that LUMA's near-term reliance on engineering judgment – grounded in observed outage trends and supported by conservative assumptions – appropriately prioritizes worst-performing feeders and high-yield interventions such as distribution automation and sectionalization. Meaningful reductions in outage durations and specific cause categories, confirm the trajectory is sensible, with broader system metrics expected to improve as capital availability expands and data systems mature. In Mr. Shearman's view, the Puerto Rico Energy Bureau should maintain the current methodology and encourage phased refinement, rather than mandate premature, data-intensive models that would introduce false precision and divert resources from operational improvements.

Next, responding to Mr. Hurley's assertion that LUMA's planning is overly "top-down" and insufficiently engineering-driven, Mr. Shearman explains that modern asset management practice under the ISO 55000 family of standards requires a strategic value-based decision framework that translates mission and stakeholder objectives into balanced portfolio choices. LUMA's Recovery and Transformation Framework (RTF) serves this purpose, operating as an ISO-aligned Strategic Business Value Framework that scores and prioritizes investments across domains such as safety, system rebuild and resilience, operational excellence, customer experience, and sustainable energy transformation.

Contrary to Mr. Hurley's advocacy for a purely bottom-up, condition-focused regimen, Mr. Shearman emphasizes that mature utilities integrate condition analytics within strategy-led portfolio governance. Mr. Shearman posits that LUMA's weighting and spending concentration in reliability-related domains – system rebuild and resilience, and sustainable energy transformation – appropriately reflects Puerto Rico's degraded system condition and the urgency of grid restoration. In Mr. Shearman's assessment, LUMA's approach is consistent with leading IOUs that use ISO 55000-aligned frameworks and decision-support tools to transparently optimize capital portfolios, and the Energy Bureau should reject recommendations that narrow investment focus to single-criterion reliability measures.

Finally, addressing Mr. Hogan's claim that LUMA cannot execute its proposed NFC budgets, Mr. Shearman identifies a core analytical error: the commingling of federally funded programs with NFC capital budgets. Mr. Shearman explains that, when properly separated, LUMA's NFC spending over the past four years has met or slightly exceeded budgeted levels, undermining the suggestion of persistent underspend and rendering Mr. Hogan's extrapolation unsound. Further, industry benchmarks demonstrate that utilities have successfully achieved rapid increases in T&D capital spending – comparable to LUMA's proposed ramp – when justified by system needs and supported by programmatic governance.

Mr. Shearman details LUMA's preparation to scale NFC project delivery, including a robust PMI-aligned project delivery lifecycle with stage-gate controls, comprehensive portfolio governance and change-control, standardized contracting (MSAs) and engineering packages, early procurement and long-lead equipment strategies, and workforce development through LUMA's training programs and contractor partnerships. Mr. Shearman also notes LUMA's strengthened leadership in capital programs and its proactive adjustments to FEMA obligation processes to reduce delays. In Mr. Shearman's opinion, LUMA's organization, processes, tools, and leadership are now fit-for-purpose to deliver the constrained or optimum NFC budgets, and the Energy Bureau should reject Mr. Hogan's unsupported assertions and rely on established reporting and performance metrics to oversee execution.

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I. Introduction, Purpose and Summary of Testimony

Q.1 Please state your name, title, employer, and business address.

A. My name is John M. (Jack) Shearman. I am the Chief Executive Officer of ISL Analytics Inc., a software and advisory services company specializing in advanced analytics and operational intelligence solutions for the utility industry. My business address is 8275 South Eastern Ave Suite 200-541, Las Vegas, Nevada 89123.

Q.2 On whose behalf are you testifying before the Commonwealth of Puerto Rico Energy Bureau (the "PREB")?

A. My testimony is on behalf of LUMA Energy LLC and LUMA Energy ServCo, LLC ("LUMA") as part of the Energy Bureau's proceeding NEPR-AP-2023-003, the Puerto Rico Electric Power Authority ("PREPA") Rate Review.

Q.3 Please describe your educational background and experience.

A. I hold a Bachelor of Science degree in Electrical Engineering from Clarkson University and a Master of Business Administration in Finance from New York University. I also earned a Professional Engineering license in the State of New Jersey.

I have more than 45 years of experience in the electric and gas utility industry, spanning utility operations, management consulting, and executive leadership. My professional focus areas include Wildfire Risk Mitigation, Strategic Asset and Performance Management, Reliability Optimization, and Organizational Transformation. Over the course of my career, I have worked directly with more than 200 Electric, Gas and Water utilities across North America, Europe, Australia, South America and Asia, helping them design and implement programs to improve safety, reliability, efficiency, and regulatory performance.

Q.4 Please describe your professional experience.

A. I am currently the Chief Executive Officer and Co-Founder of ISL Analytics Inc. ISL Analytics develops and delivers predictive modeling and machine learning applications that empower utilities to optimize asset performance, reliability, and safety while accelerating the transition to a sustainable energy ecosystem. We also provide custom advanced analytics and modeling, performance and risk management, and strategic advisory services for the electric and gas utility sector.

Prior to establishing ISL Analytics, I was the Founder and Chief Executive Officer of UMS Group Inc., a global management consulting firm that became recognized as a leader in utility asset management, operational performance improvement and benchmarking. Under my leadership from 1989-2023, UMS Group served more than 300 utilities in North America, Europe, Asia, and Australia, helping them implement best practices in asset and performance management, reliability improvement, and organizational transformation. The firm also became internationally recognized for its benchmarking programs, which systematically compared the performance of utilities across generation, transmission, distribution, customer service, and corporate functions, and informed regulatory and operational decision-making throughout the industry. During my tenure as CEO of UMS Group I was a frequent speaker at industry conferences and best practice sharing forums and was well known for my perspectives on industry strategic directions.

I also served as Senior Vice President of E Source Companies LLC, where I led strategic initiatives focused on innovation, analytics, and data-driven decision-making within the energy sector. Earlier in my career, I was a senior member of Booz Allen & Hamilton's utility practice, where I advised large investor-owned utilities on strategic planning, restructuring, and performance management.

Before entering consulting, I held leadership roles at Public Service Electric and Gas (PSE&G) in New Jersey and Consolidated Edison (Con Edison) in New York, where I gained practical experience in utility operations, engineering, and asset management.

Throughout my career, I have led large-scale transformation and project and program management initiatives for major utilities worldwide, guiding clients through organizational redesign, process modernization, and technology adoption to improve reliability, resilience, and regulatory compliance. These initiatives often included the creation of comprehensive grid hardening and reliability improvement strategies, strengthening of program management capabilities, development of asset health and risk strategies, and implementation of value and risk-based investment planning frameworks aligned with international standards such as PAS 55 and ISO 55000. I also led UMS Group's initiative to become certified by the UK Institute of Asset Management as an Endorsed Assessor for PAS 55, which established the firm's global credentials in physical infrastructure asset management.

In addition to detailed insights from reliability best practice industry consortia organized by UMS Group (i.e., within Transmission, Distribution and Substations), I have conducted or led scores of detailed reliability assessments for electric utilities across the US. These assessments often involved deep-dive analysis into multi-year reliability performance data (i.e., outages, causes, durations, impacts on system and customer metrics, trends, drivers, and segmentation to find the areas with greatest opportunity for improvement). Synthesis of the optimum reliability and investment strategies then emerged in strategic reports to senior management and / or to regulatory staff if the driver of the project was a rate case or other regulatory concern.

In recent years, I have been deeply engaged in addressing climate and wildfire risk mitigation challenges, particularly in California and Australia. Working with utilities facing

catastrophic wildfire exposure, I helped design and implement integrated, technology-driven strategies for network inspection, hazard identification, and infrastructure hardening—often in situations where no ready-made solutions existed. In 2019, I co-founded the International Wildfire Risk Mitigation Consortium (IWRMC) to foster global collaboration and knowledge sharing among utilities and infrastructure operators confronting extreme climate and environmental risk.

In addition to my work as a consultant and executive, I have also served as an expert witness on numerous occasions before U.S. state utility commissions and other international regulatory bodies, providing testimony on topics such as industry direction, grid hardening, reliability improvement, regulatory incentives, performance benchmarking, and prudent investment practices.

My professional work as described in more detail in EXHIBIT 75.1: Curriculum Vitae of John M. Shearman, continues to emphasize the integration of analytical rigor, practical field experience, and regulatory awareness, ensuring that utilities and their regulators can make decisions grounded in evidence, resilience, and prudent investment.

II. PURPOSE AND OUTLINE OF MY TESTIMONY

Q.5 What is the purpose of your testimony?

A. The purpose of my testimony is to rebut certain assertions by two witnesses for National Public Finance Guarantee Corporation, GoldenTree Asset Management LP, Syncora Guarantee, Inc., Assured Guaranty Inc., and the PREPA Ad Hoc Group ("PREPA's Bondholders"), NPFGC Exhibit 51; specifically - Mr. Anthony Hurley's assertions regarding LUMA's Capital Investment Planning effectiveness, and regarding the appropriateness of LUMA's Calculation of Reliability

Benefits, and Mr. Patrick Hogan's assertions regarding the executability of LUMA's Optimum and Constrained NFC Budget for the Rate Case Period.

Q.6 How is your testimony structured?

A. My testimony is outlined as follows:

- JMS Background and Experience
- Purpose and Outline of My Testimony
- Summary Findings & Conclusions
- Rebuttal of Mr. Hurley's Assertions Regarding LUMA's Calculation of Reliability Benefits
- Rebuttal of Mr. Hurley's Assertions Regarding LUMA's Capital Investment Planning
- Rebuttal of Mr. Hogan's Assertions Regarding the Executability of LUMA's Optimum and Constrained NFC Budget for the Rate Case Period
- Recap of My Overall Findings & Conclusions

Q.7 Have you previously testified before the Energy Bureau?

A. No, I have not.

Q.8 Are you sponsoring any exhibits for your testimony?

A. Yes. I am sponsoring Exhibits 75.1 – 75.18, which I reference throughout my testimony, and which are attached as Appendix A to my written testimony.

- EXHIBIT 75.1: Curriculum Vitae of John M. Shearman
- EXHIBIT 75.2: List of Speeches and Publications by John M. Shearman
- EXHIBIT 75.3: Representative List of Utility Clients
- EXHIBIT 75.4: List of LUMA Interviews Conducted
- EXHIBIT 75.5: List of Relevant Documents Reviewed

- EXHIBIT 75.6: List of Testimonies Reviewed
- EXHIBIT 75.7: Illustrative Application of the Reliability Benefits Calculator
- EXHIBIT 75.8: Organizational Strategy and Plans Drive Asset Management
- EXHIBIT 75.9: LUMA Recovery and Transformation Framework (RTF)
- EXHIBIT 75.10: RTF Sub-Objectives
- EXHIBIT 75.11: Comparative Utility Benchmarking of Strategic Domain Weightings
- EXHIBIT 75.12: Asset Management: Evolving Views
- EXHIBIT 75.13: ISL Analytics (formerly UMS Group Digital Solutions Division) – Client Experience in Strategic Business Value Frameworks and the Spend Optimization Suite (SOS), 1999–2025
- EXHIBIT 75.14: Strategic Business Value Framework (SBVF) Investment Evaluation and Relative Strategic Objective Weightings
- EXHIBIT 75.15: LUMA Budget vs Actual Performance for FEMA vs NFC Budgets Over Past 5 Years
- EXHIBIT 75.16: Stable Average Utility T&D Capital Spending Levels
- EXHIBIT 75.17: LUMA Proposed NFC Capital Spending / Customer vs Peers
- EXHIBIT 75.18: Benchmark Tables / Utilities T&D Capital Spending Ramp Rates

Q.9 Which documents did you consider in preparing your testimony?

A. The documents I considered in preparing my testimony are listed in Exhibit 75.5 and Exhibit 75. 6, and include numerous files within each of the following categories:

- Answering Testimonies
- Regulatory Filings and Rulings
- Legal / Governmental Policy Documents

- Third-Party Studies
- LUMA Reports and Other Internal Documents
- Direct Testimonies from LUMA
- Rate Case Exhibits
- Surrebuttal Testimonies from LUMA

III. SUMMARY FINDINGS & CONCLUSIONS

Q.10 What are your findings in connection with Mr. Hurley's views and recommendations regarding LUMA's Reliability Benefits Calculation?

A. Mr. Hurley's critique rests on an overreliance on idealized modeling practices developed in large, data-rich investor-owned utilities (IOUs) and fails to account for the unique constraints of Puerto Rico's electric system. His recommendation that PREB require LUMA to "adopt a new approach" is neither feasible nor grounded within the current operational and data context.

LUMA's existing methodology—rooted in structured engineering judgment informed by historical outage patterns—is not only reasonable but is consistent with accepted practices in emerging or data-limited power systems.

Q.11 What are your findings in connection with Mr. Hurley's views and recommendations regarding LUMA's Investment Planning?

A. Mr. Hurley's assertions that LUMA's Capital Planning effectiveness and project prioritization are inadequately focused on Reliability Improvement, which is inconsistent does not align with Utility Industry Best Practices for Investment Planning.

I believe that LUMA's approach to Capital Planning, Portfolio Design and Project Prioritization is consistent with industry best practices, but rather, has been appropriately tailored to reflect the significantly degraded condition of the T&D system inherited by LUMA and the

urgency of improving electric safety and reliability / system resilience, while supporting compliance with other regulatory and legal mandates.

Both of these points are further expanded upon later in my testimony.

Q.12 What are your findings in connection with Mr. Hogan's views and recommendations regarding the Executability of LUMA's Planned NFC Budget?

A. Mr. Hogan's assertions regarding the Executability of LUMA's Optimum and Constrained NFC Budgets for the Rate Case Period were based on faulty analysis which inappropriately comingled FEMA and NFC project budgets and work accomplished. His claim that the NFC spending ramp rate proposed by LUMA is unachievable and therefore the PREB should reject the requested budget increase, is not consistent with industry data on what is achievable, nor reflective of LUMA's preparatory steps in anticipation of increased NFC spending levels.

Further, LUMA's approach to capital program and portfolio management is consistent with best industry practices and I have high confidence in their ability to support the significant ramp rate in planned annual NFC spending over the next 3 years. They have a highly motivated and skilled team with excellent experience in conducting this kind of diverse portfolio of capital projects.

My analysis shows that LUMA's budget spending performance across its NFC project portfolio has been near-perfect over the past 4 years, with virtually no underspend. Similarly, industry benchmarking of the levels of capital spending ramp rates that have been successfully achieved by numerous utilities over the past 15 years shows that Hogan's claim that the planned increase is unachievable is also ungrounded by data or analysis.

IV. REBUTTAL OF MR. HURLEY'S ASSERTIONS REGARDING LUMA'S CALCULATION OF RELIABILITY BENEFITS - IN GENERAL AND IN PARTICULAR WITH RESPECT TO LUMA'S OPTIMUM AND CONSTRAINED NFC BUDGETS FOR THE RATE CASE PERIOD

Q.13 Have you reviewed Mr. Hurley's testimony regarding LUMA's Calculation of Reliability Benefits for the Optimum and Constrained NFC Budgets over the Rate Case Period?

A. Yes. I have carefully reviewed Mr. Hurley's Answering Testimony dated September 8, 2025. In several sections, Hurley critiques LUMA's methodology for estimating reliability benefits from various improvement programs. He states that LUMA has estimated the incremental reliability impact of spending based on a statistical analysis of historical data. His understanding is that LUMA uses a mathematical model with program cost as the input and expected benefit to customer interruptions as the output. He interprets LUMA's description of the methodology to imply that reliability benefits from each capital program are measured separately, and the cumulative reliability benefit estimate from LUMA's capital budgets is calculated as the simple sum of the benefit from each program.

Hurley asserts that the top-down mathematical modeling that LUMA has adopted is flawed. Problematically, he states LUMA's model implicitly assumes that any spending will automatically have a benefit to customers. Such an approach fails to recognize that the order of capital spending matters as much as the total amount invested. As an example, LUMA could construct the most advanced, state-of-the-art substation anywhere on the island; however, if the upstream transmission lines supplying that substation are riddled with degraded assets and poor performance, the substation's performance will be limited to the

reliability of the upstream circuit.

Hurley then recommends that the PREB should direct LUMA to correct its flawed modeling approach, which based on its simplistic approach, misestimates the reliability impact of capital projects.

Q.14 What are your findings in connection with Mr. Hurley's views and recommendations regarding LUMA's Reliability Benefits Calculation?

A. Mr. Hurley's critique rests on an overreliance on idealized modeling practices developed in large, data-rich investor-owned utilities (IOUs) and fails to account for the unique constraints of Puerto Rico's electric system that preclude their use. His recommendation that PREB require LUMA to "adopt a new approach" is neither feasible nor reflective of the current operational and data context.

LUMA's existing methodology—rooted in structured engineering judgment informed by historical outage patterns—is not only reasonable but consistent with accepted practices in emerging or data-limited power systems. Other utilities with similar climate risk exposure undergoing system modernization, such as **Florida Power & Light (FPL)** following the 2004–2005 hurricanes, observed gradual but measurable reliability stabilization over multi-year investment cycles, validating the trajectory of judgment-informed reliability planning.[1]

Q.15 Did Mr. Hurley propose any practical methods to improve LUMA's reliability estimation process?

[1] *T&D World, "FPL Hardens System Against Storm Outages,"* 2016 (investments since 2006; reliability improvements; hardened line performance statistics); U.S. Department of Energy (FPL presentation), *"Energizing America's Economic Opportunity,"* presentation materials (restoration durations in major storms vs. hardening era; program chronology); and Florida Power & Light Company (FPL), corporate reliability pages / news releases documenting continued reliability gains through 2024.

A. No. His discussion of prioritization methods (e.g., transmission-first sequencing, reliability-centered maintenance frameworks) mirrors U.S. mainland best practices where utilities possess advanced SCADA, AMI, and outage management systems (OMS) with validated asset connectivity models.

In contrast, LUMA operates in an environment with limited telemetry, an incomplete GIS-based connectivity model, and sparse historical failure-rate data. Under such circumstances, reliance on empirical formulas and expert engineering judgment is not a flaw but an adaptation to existing conditions. This hybrid approach aligns with methodologies endorsed by **EPRI** and **CIGRÉ** for utilities operating under immature data systems or transitioning reliability measurement infrastructures.[2]

Hurley's inquiry into LUMA's application of Engineering Judgement for estimating the benefits expected from replacing defective assets or upgrading the network configuration or capacity was inadequate to understand or critique their methodology. He did not visit the site, nor interview the LUMA individuals that conduct this work, and the RFI's he submitted failed to cover these data deficiencies or their impacts on LUMA's constraints prior to applying normal industry practices from the mainland.

Q.16 Were the standards that Mr. Hurley applied in assessing LUMA's methods appropriate?

[2] Electric Power Research Institute (EPRI), *Guideline for Expert Elicitation of Equipment Reliability Experiences* (explicit guidance on using expert judgment to fill data gaps), 2011, Report 1023073; EPRI, *Reliability of Electric Utility Distribution Systems* (white paper; assessment models, data, and practical guidance), 2001, Report 1001873; EPRI, *Guideline for Reliability Assessment and Reliability Planning* (distribution reliability quantification and planning methods), publication year n/a; EPRI, *Distribution System Reliability Modeling: Research Status Report* (integration of reliability into planning / analytics), publication year n/a; and International Council on Large Electric Systems (CIGRÉ), *Distribution Planning for Reliability and Resilience* (session materials), 2024.

A. No. Mr. Hurley's contention is correct that utility industry normal practice is to evaluate the projected impact on various benefits sought through each investment (e.g., benefits expected from each investment in: reliability, system resilience, safety, regulatory compliance, environmental vulnerability, wildfire risk, cost savings, customer satisfaction, etc.), and then to aggregate those expected benefits from individual projects, to the program level, and to then prioritize investments based on benefit to cost ratios.

However, LUMA lacks much of the data and key information necessary to identify the probable benefits of each project. In particular, it lacks accurate reliability and connectivity data. Instead, LUMA applies "engineering judgement" based on the historical impact they have seen from various types of capital replacement or upgrade investments.

Q.17 How does Mr. Hurley's standard differ from industry norms applied elsewhere across the industry under similar constraints?

A. Mr. Hurley applies aspirational approaches suitable for data-rich IOUs such as Duke Energy or PG&E, but inappropriate for a utility in a post-disaster reconstruction environment. In the absence of fully integrated AMI and ADMS, LUMA's estimation approach—combining statistical reliability projection functions and structured engineering evaluation—aligns with globally recognized reliability engineering principles for transitional utilities.[3]

Q.18 How did Mr. Hurley reach his conclusions about the way LUMA estimates reliability benefits from capital investments?

A. I have not spoken to Mr. Hurley directly about this, but it appears to me, based on the record, that Mr. Hurley reviewed documents, sent questions to LUMA and formed his opinions

[3] Jamaica Public Service Company Limited (JPS), *Annual Filing to the Office of Utilities Regulation (OUR)* (performance indices, programs, regulatory context), 2022; Barbados Fair Trading Commission (FTC), *Decision on Standards of Service for BLPC,* 2022; and *Jamaica Gleaner,* reporting on regulatory oversight context and outage performance subject to further OUR review, 2024.

without any direct discussions or observations of what or how LUMA conducts its business in this matter.

It does not appear that Mr. Hurley considered the data and measurement constraints faced by LUMA, nor examined the workarounds that have been developed for these constraints. To my knowledge, he did not explore that subject through submittal of RFI's, nor ask about the relative impact these constraints have had on LUMA's capital investment prioritization or decision-making. To assert that LUMA's methods are inappropriate for prioritizing projects and ensuring that capital is invested in ways and places where it will produce the greatest value for customers, without first fully understanding those methods seems to be a serious shortcoming of Mr. Hurley's testimony.

It would have also been helpful if Mr. Hurley had visited the Island and interviewed the LUMA staff that conducts this analytic work and supports management decision making and investment optimization. Alternatively, had such a visit not been possible, he should have asked for more detail regarding the nature and effect of these constraints and how LUMA has managed to find workarounds for each.

Q.19 Why do you believe that LUMA's approach to estimating reliability impacts is reasonable?

A. Under the current circumstances (i.e., data gaps and inaccuracies), the best LUMA can hope to do in estimating the benefits that will be produced by investments in each Program, is to target the areas that represent the greatest improvement opportunities based on historical outage data (by D-circuit, T-Line, Substation, etc.) and then apply engineering judgement to estimate the achievable reliability improvement by replacing defective assets (e.g., poles, breakers, cutouts, UG Cable, etc.), and / or upgrading system configuration (e.g., adding sectionalizers, installing

loop feeds or load transfer paths, voltage conversions, changing overhead lines to covered conductor, undergrounding formerly overhead lines, etc.)

Q.20 What is LUMA's approach to estimating the reliability benefits that various capital investments will deliver?

A. In its RFI Response: NPFGC-of-LUMA-CAPEX-9, LUMA has stated that rather than using a commercial software tool, [*they*] employ a structured engineering judgment approach, supported by historical performance data.[4] They estimate the impact of projects on reliability metrics such as System Average Interruption Duration Index (SAIDI) or System Average Interruption Frequency Index (SAIFI) using the formula:

$R(x) = \frac{ax^2+bx+c}{dx^2+ex+f}$, where R is reliability benefit.[5]

But the formula serves mainly to allocate and define the trajectory of reliability benefits within each Program. The estimate of reliability benefits from each Program comes primarily from their "*Engineering Judgement*" and *"historical performance*" data on each of the circuits and substations being addressed by improvement projects within each Program.

'Historical performance' refers to outage rates (i.e., this can be # of events, # of Customer Interruptions (CI's) and / or # of Customer Minutes Interrupted (CMI's), for the outage cause addressed by each program (e.g., animal contacts, pole top transformer failures, tree contacts, or lightning strikes, etc.) on the specific assets being addressed by the capital project (e.g., individual circuits, segments, or equipment failures within specific asset classes).

[4] *Responses for Information on Permanent Rates,* Case No. NEPR-AP-2023-0003, Response: NPFGC-of-LUMA-CAPEX-9.

Pedro A. Meléndez-Meléndez's Surrebuttal.Testimony -Exhibit 74.

[5] *This formula is described more fully in my testimony below.*

The *Engineering Judgement* comes from LUMA's reliability experts (i.e., Humberto Campán Colón, LUMA's *Director of Reliability and Automation* and his staff of engineers), working together with their partners in engineering and operations, to provide an estimate of *potential reliability improvement* (e.g., estimated degree of mitigation of historical outage rates) if the reliability solution is employed on a circuit, or within a substation, for each type of capital investment. (e.g., pole replacements, reconductoring, undergrounding, adding sectionalizers, installing animal guards, replacing substation transformers, etc.)

Consistent with good industry practices, LUMA then applies this Engineering Judgement to the specifics of each circuit / segment / and asset class affected by specific project, to estimate the expected reliability benefit. In LUMA's case, however, the quality of their data and systems is insufficient to support detailed assessments of likely benefits to be captured in each specific location (i.e., impacts of local factors for each asset, such as condition of the assets, number of downstream customers affected, access to the site for implementation of the solution, local regulations. probability of benefit achieved, etc.). They therefore use analytical methods such as Harmonic Averages for weighting annual outage data over time and apply simplifying assumptions such as ~80% of historical outages can be mitigated through asset replacement, system reconfiguration, re-establishing standard clearances, etc.

They know that this "engineering judgment" is an *interim* substitute for data-based modeling, not validation of it, and while it's not ideal, it's the only viable short-term approach pending data improvement. They are building stronger capability to estimate local impacts on benefits to be captured (i.e., filling this data and software capability gap) over time, while applying a reasonable level of conservatism in the interim. But as one would expect, this will take time and funding, and it is still too early in the journey for LUMA. Nevertheless, LUMA is required to

make estimates of benefits to be captured to use for capital investment prioritization, thus it is relying on a reasonable statistical approach to distribute the resulting expected benefits[6].

The model cited in LUMA's Response to RFI: NPFGC-of-LUMA-CAPEX-9, when applied to each type of Reliability Improvement Program, allows them to spread the reliability benefit of each Program across the circuits and assets it is being applied to.[7] Without knowing the specifics of each location, the formula allows the organization to estimate and spread those benefits in a way that reflects the facts that reliability benefits:

- Increase rapidly at low investment levels (*because they are targeted at the greatest opportunities first*), and
- Approach a maximum (asymptote) as investments grow, capturing diminishing returns on reliability improvements

That is why they would likely find it hard to specify exactly how many CI's and CMI's would be saved on an individual circuit, or by an individual project, but have been able to define the aggregate level of reliability benefits across the system from each type of *reliability intervention* (i.e., "*Improvement Program*".)

Q.21 Please provide some context for the statistical approach used by LUMA.

A. LUMA's rational function model for estimating reliability benefits follows a mathematical form used in system reliability optimization:

$$R(x) = \frac{a + bx + cx^2}{d + ex + fx^2}$$

[6] *This formula is described more fully in my testimony below.*

[7] *Responses for Information on Permanent Rates,* Case No. NEPR-AP-2023-0003, Response: NPFGC-of-LUMA-CAPEX-9.

where *R(x)* represents the expected reduction in CI's or CMI's, or even number of outage events, as a function of cumulative investment *x*.

The modeling choice (a bounded, concave/asymptotic investment-to-benefit relationship) aligns with standard practice in reliability literature and regulatory methods. Peer-reviewed and technical sources (DOE/OSTI; LBNL; RAP) treat reliability benefits as diminishing with additional spending; utility/regulatory materials (e.g., Ofgem/National Grid NOMs) recognize time lags between capital outlays and realized reliability outcomes; historical industry reporting shows SAIDI stabilization, consistent with saturation effects."[8]

Restating the above point, this structure allows the function (e.g., reliability) to:

- Increase rapidly at low investment levels.
- Approach a maximum (asymptote) as investments grow, capturing diminishing returns on reliability improvements.

Q.22 Please explain the meaning of the parameters in this model.

Parameter	**Represents**	**Explanation**
a, b, c	Numerator coefficients (benefit function)	Determine the *potential maximum reliability improvement* and the *rate* at which improvements occur as spending increases.

[8] Sandia National Laboratories (U.S. Department of Energy / OSTI), *Investment Optimization to Improve Power Distribution System Reliability,* 2003; Lawrence Berkeley National Laboratory (LBNL), *Benefit-Cost Analysis for Utility-Facing Grid Modernization Investments,* 2021; Regulatory Assistance Project (RAP), *Using Benefit-Cost Analysis to Improve Distribution System Investment Decisions,* 2022 (posted 2023); National Grid / Office of Gas and Electricity Markets (Ofgem), *NOMs Methodology – Common Issue 18 (Review):* "there would be a time lag before any under-investment … would impact the primary outputs (reliability…),"; and Hydro-Québec, *Automation Program Justification* (IEEE Distribution Automation Working Group presentation), 2006 — showing SAIDI stabilization at approximately 2 hours per customer-year since 1999.

Parameter	Represents	Explanation
d, e, f	Denominator coefficients (scaling and asymptotic behavior)	Control how quickly the improvement curve flattens and what maximum value (asymptote) it approaches as $x \rightarrow \infty$.

When combined, the resulting fractions deliver the two key factors needed to allocate and distribute reliability improvements across a relevant and well targeted set of improvement projects:

- a/d → The *ultimate achievable improvement limit* (the asymptotic reliability gain as investment becomes very large).
- b, c, e, f → Shape and curvature parameters fitted from historical data to best match observed improvement patterns for similar projects.

The coefficients are estimated from available historical investment-versus-reliability data across circuits or programs, and are refined as experience and / or more accurate data becomes available.

Q.23 Why would this approach produce reasonable reliability expectations?

A. There are four primary reasons this approach would deliver reasonable projections and expectations:

First, it *captures diminishing returns:*[9]

- In real utility systems, initial investments (targeting dominant failure causes) yield the largest reductions in outages.

[9] U.S. Department of Energy / Office of Scientific and Technical Information (DOE/OSTI), *Investment Optimization to Improve Power Distribution System Reliability* (technical report; optimization framework for minimizing SAIDI / SAIFI), 2003.

- Further spending addresses rarer or more complex failure modes, providing smaller incremental improvements.
- The rational function's asymptotic property naturally models this saturation behavior.

Second, it uses an *empirical fit to historical data*:

- Coefficients are derived through optimization (e.g., least-squares fitting) using past reliability outcomes versus investment.
- This ensures projections reflect *actual system response* rather than arbitrary assumptions.

Third, it provides *physical and economic realism*:

- Reliability indices (SAIDI, SAIFI) cannot improve indefinitely.
- The denominator's quadratic term enforces convergence, preventing overestimation of benefits from excessive spending.

Fourth, it models *smooth and continuous behavior*:

- Provides a stable, differentiable function ideal for optimization routines (e.g., comparing marginal benefit per dollar invested).

Finally, it leverages *asymptotic behavior*, which fits well the underlying phenomenon of how investment outcomes work, with declining benefit / cost ratios, until beyond a certain point, further spending no longer produces measurable benefit.

As $\mathbf{x} \to \infty$,

$$R(x) \approx \frac{a}{d}$$

So, the estimated reliability improvement approaches a finite maximum value, **a/d**, corresponding to the *long-term achievable improvement limit*. This outcome can be seen in EXHIBIT 75.7 - Illustrative Application of the Reliability Benefits Calculator, wherein the projected reliability benefits of two programs are demonstrated – the Distribution Line Rebuild

Program and the Distribution Pole Replacement Program. The projected benefits of the two programs are clearly very different, based on the relative leverage of the solution involved and the Engineering Judgement of LUMA's reliability experts applied to each. This avoids the pitfall of engineers applying the unrealistic but simpler approach of just adding all the component parts and arriving at a sum of reliability benefits, when the real world is often more complicated by overlapping and redundant effects of an action that reduce the net impact of the action (or the project in the case of reliability improvement capital investments.)

This mathematical property mirrors physical system constraints — once major causes are mitigated; remaining failures arise from random or uncontrollable events.

Q.24 So, why do you believe this statistical model is an effective work-around for the data challenges faced by LUMA?

A.

Concept	**Modeled Feature**	**Real-world Analogy**
Rapid early improvement	Large gains from addressing dominant causes	Upgrading worst-performing feeders
Slowing improvement	Diminishing returns	Investing in already reliable components
Asymptotic ceiling	Practical maximum reliability	Physical and economic limits of network

In summary, the coefficients **a–f** encode both empirical and structural characteristics of how reliability improves with capital investment. The rational function is favored because it ensures **bounded, monotonic improvement** and captures the **saturating nature of reliability benefits**, aligning mathematical behavior with engineering and economic judgement. In other words, as investment climbs, targeting the best cost benefit for each next project, the incremental reliability improvement impact of each new initiative shrinks, creating an asymptotic benefits / cost curve shape approaching a maximum achievable reliability level.

Q.25 Are there specific data gaps that limit LUMA's precision in reliability estimation?

A. Yes. LUMA's current data challenges are characteristic of many utilities with legacy data systems and include:

- Incomplete customer connectivity model, impeding CI/CMI determination by event, and allocation by cause code.
- Absence of fully integrated ADMS/OMS for real-time outage detection.
- Sparse failure-rate and cause data by asset class.
- Limited AMI penetration preventing accurate outage duration measurement.

Utilities without mature AMI-to-OMS integration rely heavily on customer calls and limited SCADA coverage, which leads to missed or delayed outage detection; DOE 'Voices of Experience' and EPRI AMI-OMS guidance documents are clear that AMI greatly improves event detection/verification and restoration workflows.[10]

Q.26 Is it possible that some of LUMA's targeted investments within the rate case period may not produce as much reliability as other potential unfunded projects?

A. Yes, it is possible, but unlikely that the differential benefits will be substantial. Achieving the desired level of system reliability for Puerto Rico is likely to be an extended journey of a decade or more, a fact reflected by LUMA's 10-year LTIP Capital Investment Plan. During the early years of this plan, virtually all the investments made by LUMA will be those with significant impact on resilience (system stability) with reliability benefits produced as a by-product of this focus. LUMA will not get to those projects with declining impact per dollar

[10] U.S. Department of Energy (DOE), *Voices of Experience: Leveraging AMI Networks and Data,* Jan. 2019 (hosted 2024); U.S. Department of Energy (DOE), *Voices of Experience Fact Sheet — AMI Beyond Meter Reading;* Electric Power Research Institute (EPRI), *Advanced Metering Infrastructure-to-Outage Management System Use Case,* 2025; and Western Energy Institute, *"An Intelligent Way to Integrate AMI with ADMS for Outage Management"* (EPCOR case).

invested until relatively late in the Plan. Moving projects forward or backward within the early group is unlikely to affect the aggregate benefit of the body of work accomplished each year.

Q.27 Will LUMA ever overcome these difficulties in estimating reliability impacts?

A. Yes. LUMA's longer term plans to add AMI and an ADMS over the next 3 years will eventually close these data gaps, but in the interim, LUMA must accept a degree of inaccuracy and uncertainty in their reliability data and the reliability benefits calculated from projected capital investments for asset replacements and system upgrades.

Q.28 What additional analytical safeguards could be integrated into the project selection process over time?

A. LUMA's model could evolve to include:

- *Bayesian reliability updating*, where each project's post-completion performance refines the prior probability distribution for similar future projects.
- *Monte Carlo simulations* for sensitivity testing of reliability benefit curves, to estimate confidence bounds given data uncertainty.
- *Machine learning regression models* once sufficient AMI/ADMS data becomes available, to quantify the relative impact of asset type, location, and environmental exposure on outage frequency.

Such enhancements will further strengthen the current engineering judgment approach, but they depend fundamentally on data improvements currently in progress through LUMA's grid modernization initiatives. Until the infrastructure is in place to capture these incremental benefits, investments for this would not be a prudent use of funds.

Q.29 Is there empirical evidence that LUMA's approach is beginning to produce benefits in system reliability?

A. Yes. Early performance data show some observable improvements in a number of key reliability metrics. For example, over the past 4 years, since LUMA took over T&D operations, Distribution average outage duration has declined by ~18%, from 422 to 344 minutes per outage. Human error caused CMI's have declined significantly and the average length of Vegetation caused Distribution outages has fallen by 16% from 428 minutes (i.e.~7 hours) to 358. These and other emerging results of LUMA's efforts to improve reliability look promising, although still modest overall, due to the limited amount of capital that has been available.

While LUMA's system-wide reliability metrics, such as SAIDI and SAIFI have been frustratingly slow to show improvement since LUMA stepped into the Grid Operator role in late 2021, industry experience over the last 25 years has demonstrated over and over that turning around core T&D reliability results following a long period of neglect and capital starvation requires major capital investments and takes many years to accomplish. In LUMA's case, Capital Investment for reliability improvement has continued to be constrained since LUMA took over operations, which has limited the scope of improvement work LUMA could complete. Nevertheless, where LUMA has been able to make investments, there has been reliability improvement. For example, as attested to by Pedro Meléndez-Meléndez in his surrebuttal testimony, LUMA started their reliability improvement investments where most utilities do, with Distribution Automation (DA) and increasing the number of sectionalizers or reclosers on the system. This strategy usually offers the greatest speed for results and the highest yield on reliability investments (i.e., the most benefit per dollar invested). As Mr. Meléndez states, LMA has already installed more than 900 reclosers (i.e., 317 three phase units and over 600 single phase units) across their Distribution network.

Again, according to Mr. Meléndez, on the 144 circuits where LUMA installed Distribution Automation and a single 3 phase recloser, (only a portion of the overall 1,128 distribution circuits i.e., 12.7%), it has produced an average improvement in SAIDI on that circuit of about 21%.

The results produced by these early efforts are in line with what I would expect from such investments based on insights from numerous reliability enhancement projects I have delivered to more than 50 utilities over the past 25 years. And while data gaps still constrain LUMA from being more precise in their estimates of reliability improvement that should be expected from each investment, the Model they use appears to be effective at prioritizing the right Reliability Improvement strategies or programs. And the fact that the first of these strategies, Distribution Automation, is delivering value and concrete reliability benefits, is encouraging evidence that the strategies LUMA has developed, and the improvement programs that LUMA has built the LTIP around, will work in Puerto Rico in much the same way they work in utility distribution systems the world over.

Q.30 What are the implications of prematurely replacing LUMA's current methodology?

A. Mandating a premature shift to a data-intensive optimization model would introduce:

- *False precision* – unreliable projections from incomplete datasets.
- *Analytical discontinuity* – loss of year-over-year comparability in performance tracking.
- *Resource diversion* – focus shifted from operational reliability improvements to model recalibration.

In transitional utility environments, methodological consistency and conservative empirical calibration are more valuable than theoretical model sophistication.

Q.31 What long-term evolution path should LUMA follow?

A. Over time, but not during the timeframe covered by this rate case, as LUMA's *Advanced Metering Infrastructure (AMI)* and *Advanced Distribution Management System (ADMS)* come online, the company will be able to:

1. Integrate near-real-time outage data to calibrate benefit curves dynamically.
2. Transition from circuit-level to asset-level reliability modeling.
3. Employ probabilistic risk-based capital planning methods such as Reliability-Based Asset Management (RBAM).
4. Incorporate customer-value-of-service metrics (VOLL-based) into benefit-cost prioritization.

This trajectory parallels modernization pathways observed in utilities such as those in Southeast Asia, where reliability-improvement investments have been optimized using concave or asymptotic benefit functions[11].

Q.32 In summary, how should PREB interpret Mr. Hurley's critique?

A. PREB should recognize that:

A. Mr. Hurley's analysis overlooks the transitional data environment in which LUMA operates.

B. His recommended "ideal model" assumes data and system maturity that do not yet exist in Puerto Rico.

[11] U.S. Department of Energy / Office of Scientific and Technical Information (DOE/OSTI), *Investment Optimization to Improve Power Distribution System Reliability,* 2003, [online] Available at: https://www.osti.gov/servlets/purl/1512044 (accessed Oct. 2025); *Applied Soft Computing* (Elsevier), *"Optimization and Estimation of Reliability Indices and Cost of Power Distribution Systems,"* 2021, [online] Available at: https://www.sciencedirect.com/science/article/pii/S1568494621000016 (accessed Oct. 2025); and Chiang Mai University, *Power System Analysis – Distribution Reliability and Investment Trade-offs,* 2015, [online] Available at: https://archive.lib.cmu.ac.th/full/T/2015/enel61215skn_ch3.pdf (accessed Oct. 2025).

C. LUMA's use of rational-function reliability modeling, anchored in engineering judgment, reflects best-available practices under data constraints and supports sound prioritization of capital investments.

As such, rather than replacing LUMA's model, PREB should encourage a **phased refinement approach**—maintaining the current methodology while systematically enhancing it as data quality and system telemetry improve.

V. REBUTTAL OF MR. HURLEY'S ASSERTIONS REGARDING LUMA'S CAPITAL INVESTMENT PLANNING

A. Purpose, Organization Structure, and Summary Overview of Capital Investment Planning Rebuttal

Q.33 What is the purpose of your rebuttal testimony in response to Mr. Hurley's assertions regarding industry-standard capital investment planning practices and LUMA's current methodology?

A. The purpose of my rebuttal testimony is to address and clarify several of Mr. Hurley's assertions regarding what constitutes "standard industry practice" in evaluating and prioritizing utility capital investments. Specifically, I will:

- Explain the globally recognized ISO 55000 framework for Asset Management, which provides the foundational international standard adopted by leading utilities and regulators around the world for making value-based, transparent, and balanced investment decisions;
- Describe how the Asset Investment Planning (AIP) process within the ISO 55000 family of standards (ISO 55000, 55001, and 55002) defines the accepted model for

aligning strategic objectives, risk management, and asset performance with capital spending decisions;

- Introduce the concept of a Strategic Business Value Framework (SBVF), the mechanism used by utilities to translate their organizational mission, purpose, and strategic goals into a balanced set of decision criteria and weightings that drive capital portfolio selection; and
- Demonstrate that LUMA's Recovery and Transformation Framework (RTF) serves this same purpose in structure and function, aligning directly with the ISO 55000 standards and with best practices observed globally among high-performing utility companies.

Q.34 How is this section of your testimony organized, and how does it relate to LUMA's current investment planning and prioritization activities?

A. My testimony is organized to demonstrate that LUMA's investment planning and prioritization methodology is fully consistent with globally accepted standards for asset management, specifically the ISO 55000 family of standards, and that these practices are directly embedded in LUMA's day-to-day operational management of the electric system.

- I begin with an overview of the international ISO 55000 standard and its relevance to capital investment decision-making within regulated utilities. ISO 55000 defines the principles by which an organization aligns its strategy, objectives, and asset-management activities to deliver sustained value for customers, regulators, and stakeholders.[12] This framework (referred to in the standard as the Strategic Business

[12] International Organization for Standardization (ISO), *ISO 55000: 2014 Asset Management — Overview, Principles and Terminology,* Annex B, Figure B.1, p. 17; and *ISO 55000: 2024 Asset Management — Overview, Principles and Terminology,* Figure 1, p. 11 (Geneva: ISO), [online] Available for purchase and download at: https://www.iso.org/standard/83053.html (accessed Oct. 2025).

Value Framework-SBVF and akin to LUMA's Recovery and Transformation Framework – RTF) underpins the Asset Investment Planning (AIP) process described in my testimony, which illustrates the systematic link between organizational goals, asset strategies, and funded investment programs. In the context of LUMA's operations, this process governs how LUMA translates Puerto Rico's system restoration and modernization objectives into specific, prioritized investment actions, balancing reliability, safety, cost, and resilience.

- I also draw on the practices of leading investor-owned utilities (IOUs), including PG&E, Hydro One, BC Hydro, Duke Energy, and National Grid, all of which employ ISO 55000-aligned frameworks for investment prioritization /optimization, all practices currently in use at LUMA.[13]
- Next, I discuss our firm's experience assisting utilities globally in the development of comparable frameworks, including the facilitation of executive-level workshops to define investment value and risk scoring domains, metrics, and weightings, and the application of decision-support software such as ISL Analytics' (formerly UMS

[13] Pacific Gas & Electric Company, *Electric Strategic Asset Management Plan (TD-8100), Rev. 2*, April 4 2024, pp. 3–4, available at https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/td-8100-strategic-asset-management-plan.pdf; Hydro One Limited, *Risk-Based Asset Investment Planning and Optimization at Hydro One (Copperleaf Case Study)*, Feb. 2017, available at https://go.copperleaf.com/rs/727-PJA-841/images/Copperleaf_CaseStudy_HydroOne_0217.pdf; BC Hydro, *"BC Hydro Generation Selects Copperleaf,"* Copperleaf News Release, Oct. 4 2013, available at https://www.copperleaf.com/news/bc-hydro-generation-selects-copperleaf/; *Duke Energy, What's Next for Duke Energy's North Carolina Grid Modernization Plan?*, ScottMadden Insight, Mar. 2019, available at https://www.scottmadden.com/insight/whats-next-duke-energys-north-carolinas-grid-modernization-plan/; National Grid (UK), *"Copperleaf Selected to Deliver National Grid's 'FutureNow',"* Copperleaf Blog Post, May 18 2022, available at https://www.copperleaf.com/blog/case-study-copperleaf-selected-to-deliver-national-grids-futurenow/; and IFS Copperleaf, *"National Grid Expands the Copperleaf Decision Analytics Solution to Its U.S. Electricity Distribution Business,"* Copperleaf News Release, Dec. 13 2021, available at https://www.copperleaf.com/news/national-grid-expands-the-copperleaf-decision-analytics-solution-to-its-us-electricity-distribution-business/; *"National Grid Electricity Transmission's business plan 2021–26".* December 2019, available at www.nationalgrid.com/electricity-transmission/about-us/planning-together/our-riio2-business-plan-2021-2026; ISO, *ISO 55001:2024 Asset Management — Management Systems — Requirements*, Clauses 4.1–4.4, 6.1–6.2, pp. 1–5 (Geneva: ISO); ISO, *ISO 55002:2014 Asset Management — Guidelines for the Application of ISO 55001*, Clauses 4.1 and 4.2, pp. 1–5 (Geneva: ISO).

Group's) Spend Optimization Suite (SOS), reinforcing the notion that utilities that operationalize ISO 55000 through structured value and risk frameworks consistently achieve superior transparency, cross-functional coordination, and long-term reliability outcomes. It is precisely these types of outcomes that LUMA is now demonstrating as it transitions from emergency recovery to long-term system resilience.[14]

- I then describe my interviews and discussions with LUMA's management team, including those responsible for investment planning, asset management, and capital prioritization, and emphasize areas where LUMA has effectively applied industry leading practices in these areas.
- Finally, I address Mr. Hurley's criticisms of LUMA's project sequencing and prioritization approach, explaining why his assumptions mischaracterize both LUMA's methodology and internationally recognized standards for asset-management decision-making. ISO 55001 (Clauses 4.5 and 6.2) requires a documented framework that defines value, criteria, and proportional methods for decision-making; LUMA's RTF fully meets these criteria.[15] Mr. Hurley's focus on an exclusively condition-based model overlooks the evolution of asset management toward integrated, value-driven frameworks and fails to recognize the disciplined, transparent process that LUMA currently applies to guide its operational and capital-investment decisions.

Q.35 What are the bases for your opinions?

[14] ISL Analytics (formerly UMS Group), *Internal Project Records,* 2005–2025.

[15] Anthony Hurley, *Bondholders Submission of Answering Testimony of Anthony Hurley*, Sept. 8 2025, p. 8; ISO, *ISO 55001:2024 Asset Management — Management Systems — Requirements*, Clauses 4.5 and 6.2, pp. 9-11 (Geneva: ISO).

A. My conclusions are based on four principal sources of information:

1. The ISO 55000 series of standards, including the 2014 and 2024 editions, which establish the globally accepted framework for asset management systems and capital investment decision-making;
2. External research sources supporting the widespread use of Strategic Business Value Frameworks and Strategic Asset Investment Planning software applications, such as IFS Copperleaf's AIP (formerly C55) application and ISL Analytics' Spend Optimization Suite (SOS) application, for capital investment planning amongst leading IOUs.
3. Interviews and documentation provided by LUMA's executive and planning teams, including representatives from Planning, Finance, and Asset Management, who described how LUMA's RTF is used to guide capital investment prioritization and long-term investment planning; and
4. Over four decades of consulting experience and 25 years of implementation work with ISL Analytics' Spend Optimization Suite (SOS) software application, assisting utility leadership teams worldwide in defining and operationalizing Strategic Business Value Frameworks or equivalent investment planning decision frameworks, establishing strategy domains, objectives, performance measures, and weighting / scoring systems used to evaluate and select capital projects.

B. Background and Purpose of the ISO 55000 Standard

Q.36 Would you briefly describe ISO 55000 and its purpose?

A. ISO 55000, together with its companion standards ISO 55001 and ISO 55002, provides the globally recognized framework for establishing, implementing, maintaining, and improving an asset management system. Its primary purpose is to ensure that organizations realize value

from assets and investments in a manner consistent with their objectives and the needs of stakeholders.[16] This standard applies across all asset-intensive industries, including utilities, and defines asset management as the coordinated activity through which an organization realizes value from its assets.

ISO 55000 has been adopted worldwide by electric, gas, and water utilities, transportation agencies, and regulators seeking transparent, criteria-based asset-investment governance. In this respect, the ISO 55000 framework is fully consistent with the public-interest objectives of regulated utilities such as LUMA.

C. Asset Investment Planning Under ISO 55000

Q.37 How does ISO 55000 define the Asset Investment Planning process?

A. Asset Investment Planning (AIP) is the systematic process through which an organization translates its mission and objectives into specific, prioritized asset investments. ISO 55000:2014 Annex B (Figure B.1) illustrates this process as a continuous loop linking organizational plans and objectives → the Strategic Asset Management Plan (SAMP) → asset management objectives → asset management plans → implementation, performance evaluation, and improvement. (see EXHIBIT 75.8).[17] This process map shows that AIP is integral to the asset-management system rather than a separate financial exercise.

ISO 55001 Clauses 6.2.1 and 6.2.2 require organizations to establish asset-management objectives and plans that are consistent with the asset-management policy and strategy, and to define the methods and criteria for decision-making and prioritization of activities and

[16] ISO 55000:2014, *Introduction*, p. V, International Organization for Standardization, Geneva.

[17] ISO 55000:2014, *Asset management — Overview, principles and terminology*, Annex B, Figure B.1, p. 17, International Organization for Standardization, Geneva.

resources.[18] ISO 55002 further explains that organizations should adopt decision-making criteria appropriate to the significance of each decision and use these criteria to compare investment options.[19]

The 2024 edition retains this structure, depicting in Figure 1 (p. 17) the relationship among organizational management, asset management, the asset-management system, and the asset portfolio, affirming that AIP constitutes the decision-making engine within the system.[20]

D. The Strategic Business Value Framework (SBVF)

Q.38 What is a Strategic Business Value Framework, and how does it relate to ISO 55000?

A. As previously stated, the Strategic Business Value Framework (SBVF) is a structured, documented expression of an organization's value and risk-based decision criteria. It ensures that capital investment decisions are directly aligned with the organization's mission, commitments, strategic objectives, and stakeholder expectations.

Under ISO 55001 Clause 4.5 (2024 edition), organizations are required to "establish and maintain a framework for asset-management decision-making," including the definition of value, the criteria by which decisions are made, and the methods and tools used to make those decisions.[21]

[18] ISO 55001:2024, *Asset management — Management systems — Requirements*, Clauses 6.2.1–6.2.2, pp. 9–10, International Organization for Standardization, Geneva.

[19] ISO 55002:2014, *Asset management — Management systems — Guidelines for the application of ISO 55001*, Clause 4.1.1.2, p. 2, International Organization for Standardization, Geneva.

[20] ISO 55000:2024, *Asset management — Overview, principles and terminology*, Figure 1, p. 11, International Organization for Standardization, Geneva.

[21] ISO 55001:2024, *Asset management — Management systems — Requirements*, Clause 4.5, pp. 5–6, International Organization for Standardization, Geneva.

Q.39 Why should a company such as LUMA be concerned with establishing and operationalizing a Strategic Business Value Framework (SBVF)?

A. For a company like LUMA, responsible for operating, maintaining, restoring and modernizing Puerto Rico's electric system under complex regulatory and stakeholder conditions, an operationalized Strategic Business Value Framework (SBVF) is essential to ensure that investment decisions are transparent, defensible, and strategically aligned. The SBVF provides the structured linkage between LUMA's commitments to PREPA and the PREB, its asset-management policies, and the day-to-day prioritization of capital projects. It ensures that its limited financial and human resources are allocated to the projects that deliver the highest collective value across multiple objectives, such as reliability, safety, sustainability, customer service, and regulatory compliance.[22]

A well-defined SBVF enables LUMA to evaluate and balance these initiatives objectively, using a common framework and consistent decision criteria. In practice, this approach allows LUMA to demonstrate to regulators and other stakeholders that each investment proposal has been assessed in accordance with ISO 55000's principle of value realization and risk avoidance,[23]

LUMA has implemented this intent through its Recovery and Transformation Framework (RTF), which operationalizes the SBVF concept by assessing projects across multiple value domains. The RTF supports rigorous corporate and regulatory governance by providing a

[22] ISO, *ISO 55001: 2024 Asset Management — Management Systems — Requirements*, Clauses 4.1 and 4.5, pp. 5–6 (Geneva: ISO, 2024).

[23] ISO, *ISO 55000: 2024 Asset Management — Overview, Principles and Terminology*, § 3.3.28–3.3.30, p. 8 (Geneva: ISO, 2024).

repeatable, auditable process for ranking and approving capital projects.[24] This level of structure is critical in a post-disaster, high-investment environment such as Puerto Rico, where accountability, transparency, and long-term system resilience are of paramount importance.

Without such a framework, utilities often revert to reactive or siloed investment decision-making, favoring single-criterion measures such as asset condition or short-term reliability improvements. For LUMA, operationalizing an SBVF through the RTF ensures that its investment portfolio reflects a balanced, enterprise-wide perspective: one that simultaneously supports reliability restoration, modern grid transformation, customer experience and stakeholder confidence in the prudence of its decisions.[25]

Q.40 How does LUMA's use of a balanced "SBVF" type investment framework strengthen stakeholder confidence and support effective regulatory oversight?

A. LUMA's use of the Recovery and Transformation Framework (RTF), provides transparency and consistency in how capital projects are evaluated, ranked, and approved. The RTF applies standardized criteria and scoring across key domains such as safety, reliability and resiliency, operational excellence, customer satisfaction, and sustainability, ensuring that investment decisions clearly reflect the company's mission and regulatory obligations.[26]

This approach aligns with the ISO 55000 principle of assurance, which requires that organizations demonstrate, through objective evidence, that investment decisions are aligned

[24] LUMA Energy LLC, *Recovery and Transformation Framework (RTF)*, internal governance documentation, 2025; author interviews with LUMA Investment Planning personnel (Oct. 2025).

[25] ISL Analytics Utility Benchmark Database (2024); L. C. Markel *et al.*, *A Valuation Framework for Informing Grid Modernization Decisions: Guidelines*, available at https://pubs.naruc.org/pub/E5D88DC3-B521-3FBF-F489-6D8E89C8C16F (accessed Oct. 2025), Oak Ridge National Laboratory, ORNL/SPR-2019/1105, 2019, pp. 12-13.

[26] LUMA Energy LLC, *Recovery and Transformation Framework (RTF)*, internal governance documentation, 2025; author interviews with LUMA Investment Planning personnel (Oct. 2025).

with strategic objectives and stakeholder expectations.[27] By linking each capital project to defined value domains and documented scoring, LUMA provides a clear, auditable rationale for its prioritization decisions, allowing regulators and stakeholders to see both the logic and balance behind its capital allocations.[28]

In Puerto Rico's complex recovery environment, this traceability is essential. The RTF allows LUMA to coordinate multiple programs and funding sources under a unified, ISO 55000–aligned framework, one that supports public confidence and regulatory assurance that investments are being made prudently, transparently, and in the public interest.[29]

E. ISL Analytics Experience and Industry Best Practice in Investment Planning

Q.41 Please describe your firm's experience with the development and implementation of strategic value-based investment planning frameworks.

A. For more than twenty-five years, ISL Analytics (previously operating as the Digital Solutions Division of UMS Group Inc., under my leadership as CEO) has been a pioneer in advancing asset-investment planning practices across the global utility sector. Through the implementation of our Spend Optimization Suite (SOS) strategic investment planning software and accompanying methodology, we have facilitated and refined structured investment-scoring and assessment frameworks for utilities throughout North America, Europe, and Australia. These implementations have allowed utilities to evolve their asset management processes from subjective, engineer-driven justification processes toward transparent, data-driven, and strategy-

[27] International Organization for Standardization (ISO), *ISO 55000:2024 Asset Management — Overview, Principles and Terminology*, Foreword and § 3.3.28–3.3.30, pp. IV and 8 (Geneva: ISO).

[28] ISO, *ISO 55001:2024 Asset Management — Management Systems — Requirements*, Clause 4.5, pp. 5–6 (Geneva: ISO).

[29] ISO, *ISO 55001:2014*, Clauses 6.1–6.2 (Planning) and 9.1 (Performance Evaluation), pp. 3–4, 9–10 (Geneva: ISO).

aligned decision frameworks that withstand regulatory and stakeholder scrutiny (see EXHIBIT 75.12: Asset Management: Evolving Views).

Over this period, our firm has worked directly with more than 45 major utilities to design and operationalize value-based decision-making models that balance risk, cost, and performance in accordance with internationally recognized asset-management principles, including alignment with ISO 55000 and its predecessor standard, PAS 55 (see EXHIBIT 75.13). Through these engagements we have helped companies align with what is now broadly recognized as industry best practice – the systematic translation of corporate and regulatory strategy into measurable investment priorities through structured, evidence-based frameworks.

F. Evidence That Major IOUs Use a Strategic Business Value Framework

Q.42 Do many large investor-owned utilities employ a strategic business value framework (SBVF) or equivalent value-based investment prioritization/optimization system?

A. Yes. In my professional opinion, based on personal experience, public filings, vendor documentation, ISL Analytics' software sales of its Spend Optimization Suite (SOS) strategic investment planning application for utilities, and industry guidance, the following propositions hold:

a. Most major electric IOUs now use some form of SBVF, or a value framework / risk-based portfolio prioritization/optimization system, which enables explicit linking of investment choices to strategic objectives, regulatory imperatives, and stakeholder value.[30]

[30] See Copperleaf®, *"A Best Practice of ISO 55000: Value-Based Decision Making,"* Copperleaf White Paper, [online] Available at: https://www.copperleaf.com/knowledge-hub/value-based-decision-making-a-best-practice-of-iso-55000/ (accessed Oct. 2025).

b. The software solution marketed under IFS Copperleaf Asset Investment Planning software suite (formerly C55) is a market-leading example widely adopted at many leading investor-owned utilities. Its design explicitly embodies core SBVF principles aligned with the ISO 55000 standard: multiple value measures, a common economic scale for comparison of dissimilar investments, portfolio optimization under constraints, and governance of investment decision-making.[31]

c. It is both desirable and consistent with industry norms for LUMA to utilize an SBVF or scorecard type architecture that provides traceability from strategic goals through project selection, performance metrics, and stakeholder oversight.

I reviewed recent public utility and commission filings (including general rate cases, asset management plans, risk reports), relevant vendor documentation (Copperleaf Asset Investment Planning (formerly C55) / Decision Analytics materials), and third-party academic and industry guidance (e.g., National Association of Regulatory Utility Commissioners (NARUC), Electric Power Research Institute (EPRI)). I selected the illustrative examples below that (i) manifest SBVF or balanced-scorecard constructs; (ii) are from large, regulated IOUs; and (iii) have publicly available documentation with sufficient detail to support my opinion. There are many other such examples available.

EXAMPLE 1: PG&E & Strategic Asset Management - Pacific Gas & Electric Company ("PG&E") publishes an Electric Strategic Assessment Management Plan (SAMP) (Document TD-8100) that states it "bridges the gap between high-level corporate objectives… with the

[31] *Ibid.; see also* Copperleaf® / IFS, *"Copperleaf C55 – Investment Decision Optimization,"* IFS / Copperleaf Factsheet PDF, 2023, p. 1.

realities of the assets (capabilities, risks, life-cycles, etc.)."[32] That SAMP is structured to align enterprise objectives (People, Planet, Prosperity, Performance) with downstream asset planning and prioritization. It explicitly cites the standards PAS 55 and ISO 55000 as reference frameworks for converting organizational strategy into asset management objectives.[33] PG&E's risk and asset-failure programs (for example its Enterprise & Operational Risk Management (EORM) program, and the Strategic Asset Failure Evaluation [SAFE] process for transmission/substation assets) show integration of risk assessment, root cause analysis of failures, and mitigation planning into asset investment decision-making.[34] Together, these documents illustrate a structured alignment: enterprise strategic objectives → risk/asset performance trade-offs → project prioritization, which aligns with SBVF architecture.

EXAMPLE 2: Copperleaf AIP Solution / Value Framework Architecture & Practice

The vendor materials for Copperleaf state that its AIP Decision Analytics solution helps "align investment decisions to your evolving strategic objectives… create a framework encompassing the complete spectrum of value generated by investments"[35] and that it is "a proven solution aligned with best practice… aligned with ISO 5500x standards (including ISO 55000)".[36]

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[32] Pacific Gas and Electric Company (PG&E), *Electric Strategic Asset Management Plan (SAMP) TD-8100,* Publication Date Apr. 4 2024, p. 7, [online] Available at: https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/td-8100-strategic-asset-management-plan.pdf (accessed Oct. 2025).

[33] *Ibid.,* p. 5 (*SAMP* citing *PAS 55* and *ISO 55000* as frameworks).

[34] Pacific Gas and Electric Company (PG&E), *"Electric Strategic Risk Management Plan" / "Enterprise & Operational Risk Management (EORM) Program,"* various internal documents, e.g., *SAFE Procedure TD-1050P-01* for transmission / substation assets, pp. 4–8, unpublished (internal).

[35] Copperleaf®, *"Value Framework" (brochure),* Copperleaf Value product page, [online] Available at: https://www.copperleaf.com/solutions/copperleaf-value/ (accessed Oct. 2025).

[36] Copperleaf®, *"Asset Investment Planning & Management (AIPM): A Best Practice of ISO 55000,"* blog post / white paper, Copperleaf, published 2022–2023, [online] Available at: https://www.copperleaf.com/blog/asset-investment-planning-management-a-best-practice-of-iso-55000/ (accessed Oct. 2025).

In its "Value Framework" description, Copperleaf emphasizes organization-defined value measures (risk, KPI improvement, financial and non-financial benefits, ESG) and conversion of dissimilar investments to a common economic scale to enable comparison.[37] For example, one case study at Manitoba Hydro (Canada) describes how the utility used the Copperleaf Value Framework across all business units, defining value measures tied to corporate objectives (safety, financial, system reliability, environmental, corporate citizenship) and aligning investment decisions accordingly, while expressly targeting alignment with ISO 55000.[38]

EXAMPLE 3: Hydro One (Ontario) documents adopting the Copperleaf Value Framework "to enable consistent risk assessment and investment decision-making aligned to its corporate strategic objectives" and to optimize its long-term investment plan across cost, risk, customers, and assets.[39] These vendor/utility cases confirm that SBVFs of the type described exist in practice in regulated utility contexts.

Additional IOU / Jurisdictional Examples & Frameworks:

The regulatory environment also reinforces this trend. For instance, the California Public Utilities Commission's Risk-Based Decision Framework (RDF) (Rulemaking R.20-07-013) requires large utilities to adopt risk-based decision-making that discloses and prioritizes across

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[37] *Ibid.; see also* Copperleaf®, *"About Copperleaf,"* [online] Available at: https://www.copperleaf.com/about-copperleaf/ (accessed Oct. 2025) (note: "built on proven ISO 55000 standards").

[38] Copperleaf Technologies Inc., *"Enterprise-Wide Decision Making at Manitoba Hydro" (Case Study),* [online] Available at: https://www.armsreliability.com/page/resources/case-studies/enterprise-wide-decision-making-at-manitoba-hydro (accessed Oct. 2025); and *BC Technology News, "Manitoba Hydro Expands Copperleaf C55 Across All Business Units,"* Sept. 22 2016, [online] Available at: https://www.bctechnology.com/news/2016/9/22/Manitoba-Hydro-Expands-Copperleaf-C55-Across-All-Business-Units.cfm (accessed Oct. 2025).

[39] *"Hydro One Case Study – Copperleaf Value Framework Adoption,"* Copperleaf Case Study, 2023, [online] Available at: https://go.copperleaf.com/rs/727-PJA-841/images/Copperleaf_CaseStudy_HydroOne_0217.pdf (accessed Oct. 2025).

portfolios, a regulatory manifestation of value/risk alignment in capital planning.[40] In the U.K., many utilities operate under performance-scorecards that tie strategic outcomes to investment (e.g., United Utilities uses a Value Framework via Copperleaf linking every investment to strategic corporate and Regulatory objectives).[41] Industry-guidance such as NARUC's Valuation Framework for Grid Modernization recommends multi-criteria methods similar to SBVF.[42]

Q.43 What does this utility industry/peer level evidence suggest for LUMA?

A. It is clear that the utilization of a Strategic Business Value Framework (again, akin to LUMA's RTF), structured to link strategic and regulatory objectives, value criteria, risk and investment decision-making, is not only best practice but is increasingly an industry standard among regulated utilities. It demonstrates transparent, auditable, multi-domain prioritization/optimization of capital expenditures consistent with ISO 55000. Accordingly, LUMA's current approach to investment planning and prioritization is more advanced and consistent with the needs of Puerto Rico than the relatively narrow, engineering oriented framework proposed by Mr. Hurley, in which he would have LUMA focus its investments exclusively on investments that improve reliability and resilience of the grid, without regard to other strategic priorities.

[40] California Public Utilities Commission (CPUC), *Risk-Based Decision Framework (RDF), Rulemaking R.20-07-013: "Risk-Based Decision Making and the Cost of Capital,"* CPUC webpage, [online] Available at: https://www.cpuc.ca.gov/about-cpuc/divisions/safety-policy-division/risk-assessment-and-safety-analytics/r-20-07-013 (accessed Oct. 2025).

[41] Copperleaf Technologies Inc., *"Case Study: How United Utilities Optimises Asset Investment Planning,"* 2024, [online] Available at: https://www.copperleaf.com/blog/case-study-how-united-utilities-optimises-asset-investment-planning/ (accessed Oct. 2025)

[42] L. C. Markel *et al.*, *A Valuation Framework for Informing Grid Modernization Decisions: Guidelines*, available at https://pubs.naruc.org/pub/E5D88DC3-B521-3FBF-F489-6D8E89C8C16F (accessed Oct. 2025), Oak Ridge National Laboratory, ORNL/SPR-2019/1105, 2019, pp. 12-13.

G. LUMA's Recovery and Transformation Framework (RTF) Deep Dive

Q.44 Please describe your interview interactions and key takeaways with respect to LUMA's investment planning and scoring assessment process?

A. In connection with this proceeding, I conducted interviews with key members of LUMA's management team responsible for investment planning and prioritization, including representatives from Planning, Finance, and Asset Management, to understand their methods, tools, and governance structure for long-term capital decision-making.

Q.45 How would you describe LUMA's Recovery and Transformation Framework and alignment with best practice?

A. LUMA's Recovery and Transformation Framework (RTF), included as EXHIBIT 75.9, is a comprehensive and integrated framework that guides the prioritization and management of its capital investment portfolio.

The RTF encompasses five domains: Safety, Customer Satisfaction, System Rebuild and Resiliency, Operational Excellence, and Sustainable Energy Transformation. Together, these domains capture the full spectrum of LUMA's transformation goals – from restoring system integrity, improving reliability, and advancing sustainability to enhancing customer experience and ensuring safety. This structure ensures a governance model that balances near-term recovery needs with long-term sustainability, reliability, and customer value across Puerto Rico's electric system.

The RTF functions as LUMA's SBVF, providing a structured, transparent, and defensible means of determining how each proposed investment advances LUMA's strategic objectives.

I reviewed LUMA's Program Prioritization document, which includes the Portfolio of Improvement Programs for FY2026[43] and the associated scoring / assessment results completed under the RTF. This document demonstrates how each proposed program was evaluated across consistent sub-objectives within each of the five top-level strategic domains established in the RTF, where the sub-objectives are shown in EXHIBIT 75.10.[44]

The document confirms that LUMA's scoring process is fully aligned with the RTF as a strategic business value framework. This structure reflects recognized industry best practice, wherein projects and programs are evaluated at the sub-objective level of more specific criteria within each strategic domain. As evidenced by my firm's experience implementing this structure of Strategic Business Value Frameworks and associated scoring and assessment methodologies at more than 45 utilities over the past 25 years (see EXHIBIT 75.13), this hierarchical evaluation approach ensures that investment evaluations are conducted in a structured and purpose-driven manner. It also demonstrates that LUMA's prioritization approach is similar to the same rigorous, transparent methods used by utilities worldwide for capital portfolio governance.

I. Comparative Weighting of Strategic Domains

Q.46 What are common strategic objective / domain weightings in the industry?

A. Please refer to Exhibit 14, which provides a detailed explanation of the methods used to establish and apply strategic-domain weightings within a Strategic Business Value Framework (SBVF), illustrating how such frameworks guide investment evaluation and prioritization in both industry practice and LUMA's applied approach. Electric-utility industry benchmarking demonstrates that mature utilities – both investor-owned and municipal – tend to converge

[43] LUMA Energy LLC, *Program Prioritization_FY2026_Updated (1).xlsx*, Tab "FY26 Prioritization – PB's", LUMA Exhibit 77.02.

[44] *Ibid.*

around broadly similar distributions of strategic-domain weightings. Among North American utilities, Reliability typically accounts for 20–30 percent of total weighting (average ~ 25%), while Financial Performance averages about 17%, and Infrastructure Resiliency/Sustainability around 15%. Operational Excellence and Work Environment and Customer/Company Image each average approximately 12%, followed by Safety at 10%, Regulatory at 7%, and Environmental Stewardship at approximately 6%.[45]

These figures confirm that balanced weighting across multiple domains is characteristic of mature organizations, with relative emphasis varying according to system maturity, regulatory environment, and strategic priorities (see EXHIBIT 75.11: Comparative Utility Benchmarking of Strategic Domain Weightings).[46]

Q.47 How does LUMA's Reliability weighting compare with industry norms?

A. Our analysis of LUMA's Recovery and Transformation Framework (RTF) and proposed program NFC spending indicates that the factors most directly impacting system reliability and sustainability together account for roughly 60% of total strategic weighting / spending. Specifically, System Rebuild & Resilience represents 40.7%, and Sustainable Energy represents

[45] ISL Analytics, *"Comparative Utility Benchmarking of Strategic Domain Weightings,"* Benchmark Study of SOS Clients, 2010–2025.

[46] *Ibid.*

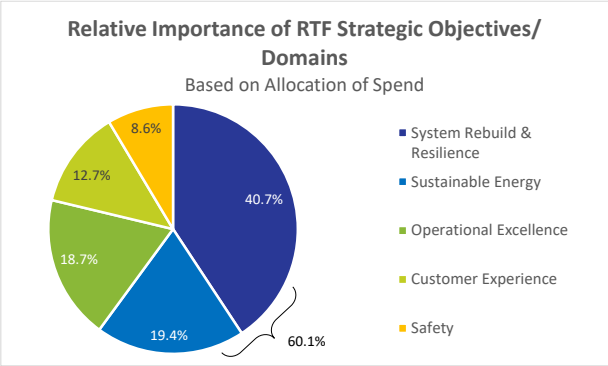
19.4% of overall weighting.[47] In comparison, industry benchmarking in EXHIBIT 75.11 shows that mature North American utilities typically assign an average of 25% to Reliability and approximately 15% to Infrastructure Resiliency/Sustainability combined – less than two-thirds of LUMA's aggregate emphasis in these domains. LUMA's elevated concentration of spending priorities reflects a deliberate and appropriate focus on addressing the extraordinarily weak condition of Puerto Rico's electric grid when LUMA assumed operational responsibility. After years of underinvestment, deferred maintenance, and repeated storm damage, the system's reliability performance lagged far behind mainland norms.

My determination of these weightings utilized cost data from LUMA's Unconstrained Budget Summary[48], although the percentage distribution of spend derived from the Constrained Budget Summary[49] is nearly identical, differing by less than one percent across all categories.

Q.48 What does LUMA's elevated Reliability and Sustainability weighting indicate about its strategic priorities, and how does the RTF ensure a balanced approach?

A. LUMA's concentration of spend in the reliability related domains (Rebuild & Resiliency and Sustainability) demonstrates a strong commitment to improving reliability through an

[47] *Chart based on figures in sources noted in footnotes 46, 49, and 50*



[48] LUMA Energy LLC, *LUMA Ex. 2.03 (7.03.25) Unconstrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4.1 Imp Prog Summary"

[49] LUMA Energy LLC, *LUMA Ex. 2.04 (7.03.25) Constrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4 Imp Prog Summary"

investment portfolio designed to produce the most immediate and transformational improvement in system performance and long-term resilience. At the same time, the balanced prioritization framework ensures appropriate attention is paid to other objectives such as Safety, Customer Satisfaction, and Operational Excellence. Although Reliability receives proportionally greater emphasis due to Puerto Rico's current system condition, the RTF remains a holistic and balanced framework. Each investment is evaluated for its contribution across domains, consistent with recognized industry best practice while providing assurance that the overall investment portfolio will deliver the greatest stakeholder value over time. Consequently, the elevated Reliability-related weighting is both deliberate and appropriate, making sure that near-term recovery efforts also directly support long-term modernization and transformation goals.

J. Response to Mr. Hurley's Criticisms of LUMA's Investment Prioritization Methodology

Q.49 Have you reviewed Mr. Hurley's testimony regarding LUMA's methodology for assessing and prioritizing capital investments?

A. Yes. I have carefully reviewed Mr. Hurley's Answering Testimony dated September 8, 2025. In several sections, including his discussion under "Overview of Capital Spending Prioritization", he criticizes LUMA's approach as being overly "top-down", asserting that it "relies on statistical modeling of reliability improvements" and "fails to apply standard engineering-based sequencing."[50] He contrasts this with his experience at FirstEnergy, where he claims that project ranking was driven primarily by equipment-condition data and direct reliability benefits.[51]

Q.50 What is the essence of Mr. Hurley's critique?

[50] Anthony Hurley, *Bondholders Submission of Answering Testimony of Anthony Hurley*, Sept. 8 2025, pp. 9–10.

[51] *Ibid.*

A. In summary, Mr. Hurley presents three principal criticisms:

1. That LUMA's prioritization process is a "top-down mathematical model" lacking adequate engineering validation;[52]
2. That LUMA's sequencing of projects, particularly between transmission and distribution tiers, is inconsistent with prudent industry practice;[53] and
3. That LUMA's methodology diverges from what he describes as "standard industry practice," which he characterizes as bottom-up condition-based prioritization.[54]

Each of these assertions is inaccurate and inconsistent with both the ISO 55000 international standard and the asset-management practices now employed by virtually every leading investor-owned utility (IOU).

Q.51 How do you respond to Mr. Hurley's claim that LUMA's process is an inappropriate "top-down" model?

A. Mr. Hurley's characterization of LUMA's methodology as a "top-down model" misrepresents what is now recognized globally as the accepted best-practice approach to investment evaluation under the ISO 55000 asset-management framework. As previously stated, in modern practice, a Strategic Business Value Framework (SBVF) (i.e., LUMA's RTF), a structured, top-down framework that links corporate objectives to measurable investment criteria, is the primary mechanism through which utilities assess, rank, and optimize proposed capital investments. This approach enables transparent alignment between capital allocation and organizational purpose, stakeholder expectations, and regulatory commitments. It is the model

[52] *Ibid.,* p. 13.

[53] *Ibid.,* pp. 8–9.

[54] *Ibid.,* p. 9.

prescribed in ISO 55001 (Clauses 4.1 and 4.5) and ISO 55002 (Guidance § 5.3), which together require utilities to establish "a framework for decision-making that defines value, criteria, and methods for prioritization of activities and resources."[55]

By contrast, the asset-condition/engineering–based model that Mr. Hurley advocates, describes the predominant approach in the 1990s, when utilities focused narrowly on technical degradation and failure risk to justify replacements within an asset class. In my experience, I have observed that such condition-driven systems, while technically rigorous, often resulted in portfolios that over-invested in certain asset types and under-invested in safety, customer, or strategic transformation initiatives.[56] This imbalance frequently left utilities unable to demonstrate that their capital plans reflected stakeholder value or regulatory expectations. Today, condition-based analytics remain an important secondary tool, but their role is more focused and complementary. They are typically applied either (1) before SBVF scoring, to inform the creation of programmatic investment proposals (for example, a "Pole Replacement Program" or "Substation Refurbishment Initiative") that are then fed into the organization's strategic value framework for comparative prioritization, or (2) after SBVF approval to determine sequencing or replacement order within an already-funded program. Used in this way, condition models strengthen the engineering foundation of investment execution while ensuring

[55] International Organization for Standardization (ISO), *ISO 55001: 2024 Asset Management — Management Systems — Requirements*, Clauses 4.1 and 4.5, pp. 5–6 (Geneva: ISO, 2024); and *ISO 55002: 2014 Asset Management — Guidelines for the Application of ISO 55001*, § 5.3 (pp. 7–8) (Geneva: ISO, 2014).

[56] Shearman, J. M., Personal consulting experience (UMS Group, 1990–2023) cited in *LUMA Surrebuttal Testimony of John M. Shearman* (Nov 3, 2025), Section I, pp. 4–6, and EXHIBIT 75.1.

that funding decisions remain anchored in strategy and stakeholder value under the overarching company strategic framework.[57]

Accordingly, it is neither correct nor current to claim that a top-down strategic framework is inferior to a bottom-up condition model. In fact, the top-down SBVF approach represents the international "gold standard" under ISO 55000, employed by nearly every major investor-owned utility, including PG&E, Hydro One, Duke Energy, National Grid, and others to ensure that capital portfolios are balanced across safety, reliability, sustainability, financial, and customer needs.[58] Mr. Hurley's insistence on a reliability/condition-only approach disregards three decades of industry evolution and the explicit guidance of the ISO 55000 family of standards, which emphasize that decisions must be driven by value realization, not by equipment condition or reliability improvement alone.[59]

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[57] Electric Power Research Institute (EPRI), *Asset Management Guidelines Development: 2019 Update*, available at https://restservice.epri.com/publicdownload/000000003002015518/0/Product (accessed Oct. 2025), Palo Alto, CA, USA: EPRI, Report 3002015518, 2019, pp. 3-9, 6-9 to 6-12; Electric Power Research Institute (EPRI), *A Framework for Using Risk Insights in Integrated Risk-Informed Decision-Making*, available at https://restservice.epri.com/publicdownload/000000003002014783/0/Product (accessed Oct. 2025), Palo Alto, CA, USA: EPRI, Report 3002014783, 2019, pp. 3-3 ; L. C. Markel *et al.*, *A Valuation Framework for Informing Grid Modernization Decisions: Guidelines*, available at https://pubs.naruc.org/pub/E5D88DC3-B521-3FBF-F489-6D8E89C8C16F (accessed Oct. 2025), Oak Ridge National Laboratory, ORNL/SPR-2019/1105, 2019, pp. iii-iv, 5-13.

[58] *Pacific Gas & Electric Company, Electric Strategic Asset Management Plan (TD-8100)*, Rev. 2, April 4 2024, pp. 5–7, available at https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/td-8100-strategic-asset-management-plan.pdf; *Hydro One Limited, Risk-Based Asset Investment Planning and Optimization at Hydro One* (Copperleaf Case Study), Feb. 2017, available at https://go.copperleaf.com/rs/727-PJA-841/images/Copperleaf_CaseStudy_HydroOne_0217.pdf; *Duke Energy, What's Next for Duke Energy's North Carolina Grid Modernization Plan?*, ScottMadden Insight, Mar. 2019, available at https://www.scottmadden.com/insight/whats-next-duke-energys-north-carolinas-grid-modernization-plan/; National Grid (UK), *"Copperleaf Selected to Deliver National Grid's 'FutureNow',"* Copperleaf Blog Post, May 18 2022, available at https://www.copperleaf.com/blog/case-study-copperleaf-selected-to-deliver-national-grids-futurenow/; and IFS Copperleaf, *"National Grid Expands the Copperleaf Decision Analytics Solution to Its U.S. Electricity Distribution Business,"* Copperleaf News Release, Dec. 13 2021, available at https://www.copperleaf.com/news/national-grid-expands-the-copperleaf-decision-analytics-solution-to-its-us-electricity-distribution-business/; *"National Grid Electricity Transmission's business plan 2021–26".* December 2019, available at www.nationalgrid.com/electricity-transmission/about-us/planning-together/our-riio2-business-plan-2021-2026

[59] ISO, *ISO 55000: 2024 Asset Management — Overview, Principles and Terminology*, § 3.3.28–3.3.30 (p. 8) (Geneva: ISO, 2024).

Q.52 Do best practice utilities rely solely on data-driven metrics when evaluating investments, or do they use more comprehensive, multi-dimensional scoring approaches?

A. Mature asset management focused utilities generally employ a hybrid approach that integrates both data-driven metrics and structured expert-based scoring assessments within a Strategic Business Value Framework (SBVF) or equivalent construct. Emerging asset management focused utilities, like LUMA, generally utilize SBVF investment scoring frameworks that lean into expert-guided evaluations and algorithms. Above all, these frameworks recognize that not all strategic objectives, such as safety, resiliency, environmental stewardship, and customer impact, can be fully represented through data-driven metric-based assessments.[60]

Accordingly, utilities such as Southern California Edison (SCE), Dominion Energy, and PSE&G New Jersey use multi-dimensional scoring systems that combine measurable performance indicators (e.g., SAIDI, SAIFI, or cost-benefit metrics) with expert assessments captured through standardized scoring scales or algorithms.[61] Subject-matter experts evaluate expected impacts against defined criteria, and those inputs are converted into numerical scores, ensuring that both empirical data and informed professional judgment are reflected in investment prioritization.

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[60] ISL Analytics (formerly UMS Group), *Internal Project Records,* 2005–2025.

[61] Copperleaf Technologies Inc., "*Southern California Edison Goes Live with Copperleaf for Long-Term Planning and Project Portfolio Management*," client news release, July 9 2019, available at https://www.copperleaf.com/news/southern-california-edison-goes-live-with-copperleaf-for-long-term-planning-and-project-portfolio-management (accessed Oct. 2025); ISL Analytics Inc., *Internal Project Records: Dominion Energy SOS Implementation*, 2004–2025. Information based on ISL Analytics' direct professional engagement with Dominion Energy regarding deployment and ongoing use of the Spend Optimization Suite (SOS) platform. Verified by company records and project documentation (on file with ISL Analytics, accessed Oct. 2025); ISL Analytics Inc., *Internal Project Records: Public Service Electric & Gas (PSE&G) NJ*, 2004–2025. Information based on ISL Analytics' direct professional engagement with Public Service Electric & Gas (PSE&G) NJ regarding deployment and use of the Spend Optimization Suite (SOS) platform. Verified by company records and project documentation (on file with ISL Analytics, accessed Oct. 2025).

These integrated frameworks, often implemented through IFS Copperleaf's Asset Investment Planning (AIP) platform or ISL Analytics' Spend Optimization Suite (SOS), embody the ISO 55000 (2024) principle that sound asset management decisions must balance risk, cost, and performance to deliver optimal stakeholder value. [62]

Q.53 How do you respond to Mr. Hurley's assertion in his answer to question 10 that LUMA's investment sequencing is flawed?

A. Mr. Hurley contends that LUMA *failed to prioritize and properly coordinate projects consistent with prudent industry practice. This implies that* downstream distribution investments should be deferred until upstream transmission reliability issues are resolved.[63] This is a simplistic view that ignores the integrated nature of modern grid systems and the flexibility required in large-scale recovery programs. LUMA's RTF accounts for interdependencies explicitly through its Rebuild & Resiliency and Sustainable Energy Transformation criteria, which captures both the criticality and sequencing effects of projects within the network. Projects addressing upstream bottlenecks or high-risk nodes receive proportionally higher scores in that domain.

Hurley ignores the fact that approximately 75% of customer minutes of non-major storm outages (CMI's) per year are unrelated to transmission, generation or substation problems, and failing to address them in the short term would leave customers frustrated and disappointed in LUMA's progress towards improving reliability. In addition, many of the potential improvements within the Distribution system are easier to implement and less costly to capture than most of those at the higher levels of Mr. Hurley's hierarchy. Within the reliability

[62] ISO, *ISO 55000:2024 Asset Management — Overview, Principles and Terminology*, § 3.2.1, 3.3.28–3.3.30, pp. 2, 8 (Geneva: ISO, 2024).

[63] Anthony Hurley, *Bondholders Submission of Answering Testimony of Anthony Hurley*, Sept. 8 2025, p. 11.

improvement domain of LUMA's RTF, a balanced approach that targets the best value (reduction in CMI's) per dollar invested, should be pursued by LUMA across all levels of the system, including Distribution.

Moreover, ISO 55001 (2024) Clauses 6.1 and 6.2 require that investment planning incorporate both performance objectives and risk management considerations, ensuring that sequencing decisions reflect overall system value rather than a rigid hierarchy.[64] LUMA's approach satisfies this requirement: it prioritizes investments that maximize collective reliability, resiliency, and safety improvements rather than those confined to any single network layer.

Q.54 Is Mr. Hurley correct in suggesting that LUMA's methodology diverges from "standard industry practice"?

A. No. Mr. Hurley's characterization of "standard practice" as purely bottom-up and reliability and condition-driven is outdated. Modern asset management, as codified in ISO 55000 and adopted by virtually every major IOU, emphasizes strategic alignment, that is, ensuring each dollar of investment advances the organization's mission and stakeholder objectives. This requires weighting and scoring projects across multiple strategic dimensions, not simply ranking based on equipment age or failure probability.

LUMA's RTF embodies this model. It uses structured qualitative scoring criteria across its five domains, aggregated into a composite project score. The resulting capital plan is both balanced and traceable. As previously stated, approximately 60 percent of LUMA's proposed capital investment is directed toward Reliability and Sustainability projects, a weighting

[64] ISO, *ISO 55001:2024*, Clauses 6.1–6.2, pp. 3–5 (Geneva: ISO, 2024).

substantially higher than the 30–40 percent typically observed across North American IOUs.[65] Thus, even while employing a balanced framework, LUMA has deliberately emphasized reliability and resiliency in recognition of Puerto Rico's system condition, demonstrating alignment with both strategic and public-interest imperatives.

Q.55 What is your overall conclusion regarding Mr. Hurley's critique?

A. In my opinion, Mr. Hurley's critique is misguided. He evaluates LUMA's approach through the lens of legacy asset-management practices that pre-date the ISO 55000 standard. LUMA's RTF adheres to modern, internationally accepted methodology: a transparent, qualitative, multi-dimensional scoring process that translates strategic objectives into investment priorities. LUMA's approach is consistent with the frameworks used by leading utilities worldwide and demonstrably weighted toward the domains, Reliability and Sustainability, that are most critical to Puerto Rico's recovery and transformation.

Q.56 Please briefly summarize your rebuttal testimony for this section with respect to Mr. Hurley's assertions on LUMA's investment prioritization approach.

A. Mr. Hurley's testimony describes a "bottom-up" asset condition–based prioritization model and suggests that LUMA's approach diverges from what he considers prudent industry practice. He argues that LUMA's methodology is overly "top-down," relies on statistical modeling rather than engineering assessment, and fails to properly sequence investments in reliability improvement.

[65] ISL Analytics *"Comparative Utility Benchmarking of Strategic Domain Weightings"*, Benchmark Study of SOS Clients from 2010-2025; LUMA Energy LLC, *Recovery and Transformation Framework (RTF)*, internal governance documentation, 2025; author interviews with LUMA Investment Planning personnel (Oct. 2025); LUMA Energy LLC, *Program Prioritization_FY2026_Updated (1).xlsx*, Tab "FY26 Prioritization – PB's", LUMA Exhibit 77.02.

My testimony counters these claims by clarifying that modern utility asset management practice, as codified in ISO 55000, has evolved beyond single-dimensional reliability or engineering condition scoring. The ISO framework requires organizations to balance multiple, stakeholder-driven objectives, reliability among them, but also safety, environmental impact, financial performance, sustainability/resiliency, customer service, operational excellence, and regulatory compliance, as potential strategic objectives.

Under ISO 55000 and 55001, utilities are expected to maintain a strategic, value-based framework that defines and weights these objectives in proportion to their relevance to the organization's mission and the external context in which it operates. This approach is precisely what LUMA has implemented through its RTF. It ensures that investments are evaluated holistically, not only for reliability outcomes but for their contribution to the broader transformation and long-term resilience of Puerto Rico's energy system.

The PREB should therefore reject Mr. Hurley's flawed logic, outdated standards and misguided recommendations regarding LUMA's approach to prioritizing NFC capital investments.

VI. REBUTTAL OF MR. HOGAN'S ASSERTIONS REGARDING THE EXECUTABILITY OF LUMA'S OPTIMUM AND CONSTRAINED NFC BUDGET FOR THE RATE CASE PERIOD

Q.57 Have you reviewed Mr. Hogan's testimony regarding the executability of LUMA's Optimum and Constrained NFC Budget for the rate case period?

A. Yes. I have carefully reviewed Mr. Hogan's Answering Testimony dated September 8, 2025. He argues that LUMA's proposed NFC expenditure budgets are unlikely to be executed within the required timeframe and therefore are overestimated. He claims that LUMA has a

documented record of significant under-execution on its capital projects and notes the unprecedented increase in requested funding by LUMA marks a sharp departure from historical spending levels, and then states that in his experience, "utility companies have been overly optimistic about their ability to execute these types of increases."

Finally, he claims that independent research corroborates widespread labor shortages, materials scarcity, and other factors that impede infrastructure delivery on the island even at budget levels much lower than LUMA proposes. Scaling the budget higher can only exacerbate issues like materials scarcity and labor shortages.

Q.58 What are your findings in connection with Mr. Hogan's views and recommendations regarding LUMA's Ability to Scale Their NFC T&D Capital Investment Program?

A. Mr. Hogan's analysis and recommendations regarding the executability of LUMA's NFC Capital Budget contain several serious errors and omissions which together form a false premise that LUMA's Planned NFC portfolio is unrealistic and unachievable. Specifically, Mr. Hogan claims that LUMA has failed to spend approved monies over the past 4 years, and argues it is therefore reasonable to assume they will not be able to execute the projects they have requested funding for in the current rate case. His logic on this point is seriously flawed, as using history as the only predictor of future outcomes ignores the significant steps LUMA has been taking to address the root cause of shortfalls. And his analysis is misleading, as the only project delays or underspending he cites are not within the NFC portion of these capital plans. He also suggests, but provides no evidence, that the ramp rate in NFC spend levels that LUMA plans in its Rate Case submission are unachievable. But this ungrounded contention is refuted by review of both: 1) industry Capital spending benchmarks and 2) industry best practices in comparison to the extensive preparation already made by LUMA over the past several years. Overall, Hogan's

testimony adds little to guide PREB on the subject of executability of LUMA's NFC project portfolio and should be ignored in determination of the rate case funding to be approved.

Q.59 What errors did you discover in Mr. Hogan's analysis?

A. *His analysis is misleading*: The combining of Federally-funded and NFC projects in Hogan's capital spend data was inappropriate and produced serious errors in his analysis and conclusions. When these errors are corrected, LUMA's budget performance for NFC projects is shown to be close to complete, with no shortfalls, and in fact a small overspend vs the budget in 2 of the 4 years in question.

Q.60 Why was it erroneous for Mr. Hogan to include Federally funded projects in his analysis of the executability of LUMA's NFC Optimal and Constrained budgets?

A. Besides the fact that the rate case is centered on NFC spending, delays and underspending of the federally funded programs were largely driven by factors beyond LUMA's control, primarily the slower than anticipated FEMA project approvals (obligation process), which has been factored into the planning for the next three years. Aggregating the significantly larger federally funded budget amounts with the much smaller NFC amounts dramatically skewed his analyses and distorted the results.

Q.61 What conclusion would he have reached if he had focused his analysis only on NFC program execution?

A. Mr. Hogan suggests that historical underspending will continue, and since LUMA is likely to underspend the requested capital budget, PREB should reduce the requested NFC funding in the rate case. But since there was no underspending of NFC over the past 4 years, applying this logic, his conclusion would then have to be that LUMA can be expected to deliver on the approved NFC budget going forward.

Q.62 Is Hogan's suggestion that LUMA might divert unspent budget amounts on lower value activities valid?

A. Hogan implies that LUMA might redirect any underspent monies to things that did not benefit customers. To the contrary, LUMA has a rigorous planning and program management function that always has fall back plans, with other high value and essential project or program work ready to be implemented in case delays or constraints are encountered on projects in the original plan. If some portion of planned projects are not able to be completed, the next highest priority projects will be brought forward from later in the project queue, and will deliver the benefits they were selected for.

It is considered a best practice among utilities to have more projects identified and scoped than can be executed within the current budget and year (or 3-year period in the case of a rate case). Projects are typically prioritized so that the highest priority projects will be done soonest, and if a project is unexpectedly constrained and must be deferred, the next highest projects can be moved forward to take their place. The original constrained projects are often then re-slotted into the portfolio once the constraint has been resolved. These other project and program activities are typically high value projects and programs that were planned to be done in another budget period. Such substitutions, when constraints affect the original planned work, are common practice at all utilities and are considered standard industry practice for program management and investment planning.

Shifts in timing on planned capital investments can also be due to the sequencing for cross project dependencies, slightly higher value delivered or risk reduced, causing a project to move up in priority among other projects, and leading to it being planned for the current year

rather than next. Continual reprioritization among projects within a large and complex capital plan and portfolio of projects / programs is the norm across the industry.

Q.63 Is there enough high value work to be done by LUMA to assure the approved budget will deliver the value committed to the PREB?

A. As referenced in the direct testimonies of both Pedro Meléndez and Kevin Burgemester, the Energy Bureau attributed the T&D System's deterioration to "years of underspending, having left it unreliable and in disrepair".[66] As a result, LUMA has far more high-value, necessary capital work to accomplish than could be done in 3 years, with an LTIP (Long Term Investment Plan) of more than $12.001 billion over the next 10 years. If any projects scheduled to be completed in the next 3 years are constrained (e.g., by lack of materials / equipment, or licensing / permitting, or environmental approvals, or available labor resources, etc.), then other high value necessary work (i.e., LTIP projects that have scored highly in the RTF, due to their positive expected impact on system reliability, resilience, sustainability and delivery of other customer benefits, but are not scheduled to be performed during the rate case period) will be moved forward in the queue and be accomplished slightly earlier than it was scheduled in the LTIP.

Even if Mr. Hogan was correct in his assertion of historic capital underspending by LUMA of NFC monies, (*which I have demonstrated he was not*), his suggestion that PREB should reduce the capital funding allowed in the rate case is ill-advised and would produce significant delays in LUMA's ability to restore reliability and resilience to Puerto Rico and, therefore, would substantially harm LUMA's customers.

[66] Puerto Rico Energy Bureau (PREB), *Statement by the Energy Bureau in the 2017 Rate Order,* issued in the PREPA Rate Review proceeding, Case No. CEPR-AP-2015-0001.

Q.64 Is Mr. Hogan's claim that the ramp rate of capital spending proposed in LUMA's rate case NFC budget levels is unachievable reasonable?

A. No, this claim is also flawed. Mr. Hogan does not cite any data for this assertion, but simply states that *in his experience*, utility companies and their operators are frequently overly optimistic about how much work can be accomplished when budgeting for a significant ramp-up in capital projects from one year to the next.

Q.65 Is he correct in his contention that utilities often find it difficult to scale their T&D Capital investment levels by the magnitude planned by LUMA?

A. Yes, it can be difficult for electric utilities to increase their transmission and distribution (T&D) capital investment programs by a factor of three to four in a short period. There are several systemic and operational constraints that typically make a rapid scale-up of T&D investment challenging. Among others, the following are most often encountered:

Equipment Supply Chain Bottlenecks - Critical components—especially distribution and power transformers—face extreme lead-time extensions. What once took 3–6 months now often requires 12–30 months, and large power transformers can take 80–210 weeks to procure. The global shortage of grain-oriented electrical steel has become a key pinch-point.[67]

Skilled Labor Gaps and Turnover - Utilities are simultaneously managing high retirement rates and the highest workforce turnover since the Center for Energy Workforce Development

[67] U.S. Department of Energy, *The Supply Chain Crisis Facing the Nation's Electric Grid*, Washington, D.C., USA: DOE, Dec. 12, 2022. [Online]. Available: https://www.energy.gov/sites/default/files/2022-12/The%20Supply%20Chain%20Crisis%20Facing%20the%20Nations%20Electric%20Grid_12.12.22.pdf (accessed Oct. 2025)

began tracking in 2006. Roughly 76% of energy employers report skills gaps, and it can take several years to fully qualify new journeymen line workers.[68]

Outage Windows and Constructability Limits - Utilities operate under strict outage constraints and must balance hot work, switching schedules, and customer reliability. In urban networks, these operational limits often restrict how many projects can be executed concurrently.[69]

Regulatory Cost Recovery and Bill Impact Risk - Major capital increases require regulatory approval for rate mechanisms and customer protections. Without alignment between utilities, commissions, and consumer advocates, cost recovery can fragment across proceedings or be delayed.[70]

Community Acceptance and Environmental Justice - Public opposition to new corridors, substation siting, and undergrounding costs can significantly slow execution. Environmental justice reviews and wildfire-risk mitigation can also add further layers of engagement effort required and additional design modifications.[71]

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[68] Center for Energy Workforce Development, *2023 Energy Workforce Survey Results: Executive Summary* and *Energy Workforce Fast Facts*, Washington, D.C., USA: CEWD, Dec. 2023, pp. 2, 4, 7. [Online]. Available: https://cewd.org/wp-content/uploads/2023/01/CEWD-2023-Workforce-Report-Executive-Summary_2023-FINAL-1.pdf (accessed Oct. 2025)

[69] U.S. Department of Energy, *Evaluating the Reliability and Security of the United States Electric Grid*, Washington, D.C., USA: DOE, July 2025, pp. 9–10. [Online]. Available: https://www.energy.gov/sites/default/files/2025-07/DOE%20Final%20EO%20Report%20(FINAL%20JULY%207).pdf (accessed Oct. 2025)

[70] New Jersey Board of Public Utilities, *In the Matter of the Verified Petition of Jersey Central Power & Light Company for Approval of an Infrastructure Investment Program II ("EnergizeNJ") and Associated Cost Recovery Mechanism*, BPU Docket No. EO23110793, Trenton, NJ: NJBPU, Dec. 20 2023, p. 2. [Online]. Available: https://www.nj.gov/bpu/pdf/boardorders/2023/20231220/2A%20ORDER%20JCP%26L%20EnergizeNJ%20Designation%20of%20Commissioner.pdf (accessed Oct. 2025)

[71] U.S. Department of Energy, *Energy Justice at DOE*, Washington, D.C., USA: DOE, Feb. 2024, pp. 12–13. [Online]. Available: https://www.energy.gov/sites/default/files/2024-02/Energy%20Justice%20at%20DOE_untagged.pdf (accessed Oct. 2025)

Q.66 In your experience, what distinguishes utilities that have successfully scaled their T&D capital programs despite these challenges?

A. Successful utilities share a set of strategic and operational characteristics that allow them to overcome traditional bottlenecks:

Programmatic, Multi-Year Regulatory Frameworks - Utilities that secure pre-authorized multi-year portfolios, trackers, or performance incentive mechanisms (PIMs) from their regulator can sustain high capital throughput with regulatory certainty.[72]

Alliance or EPC Contracting and Standardized Designs - Alliance models and standardized engineering packages (for poles, feeders, protection systems, etc.) enable simultaneous execution across hundreds of work sites. Entergy Louisiana's multi-year resilience program is a leading example.[73]

Long-Lead Procurement and Strategic Sourcing - Utilities that implement long-term frame agreements, inventory pooling, and early reservations of critical materials (e.g., GOES steel) avoid schedule disruptions from supply shortages.[74]

[72] New Jersey Board of Public Utilities, *In the Matter of the Petition of South Jersey Gas Company for Approval of a Rate Adjustment Pursuant to the Infrastructure Investment Program (IIP), Docket No. GR24040282*, Trenton, NJ: NJBPU, Sept. 25 2024, pp. 1-2. [Online]. Available: https://www.nj.gov/bpu/pdf/boardorders/2024/20240925/2G%20ORDER%20SJG%20IIP.pdf (accessed Oct. 2025)

[73] Entergy Louisiana, LLC, *Phase I Resilience Plan: Quarterly Report*, May 12 2025, pp. 10–11. [Online]. Available: https://www.entergylouisiana.com/wp-content/uploads/ELL-Quarterly-Monitoring_May2025.pdf (accessed Oct. 2025)

[74] U.S. Department of Energy, *Electric Grid Supply Chain Deep Dive Assessment — Large Power Transformers and HVDC Systems*, Washington, D.C., USA: DOE, Feb. 24 2022, pp. viii–ix, 51–52. [Online]. Available: https://www.energy.gov/sites/default/files/2022-02/Electric%20Grid%20Supply%20Chain%20Report%20-%20Final.pdf (accessed Oct. 2025)

Digital Planning and Portfolio Governance - Advanced analytics - including feeder-level risk scoring, wildfire and vegetation risk modeling, hosting capacity analysis, and outage trend analytics—help target the next set of projects for highest system impact.[75]

Workforce Pipeline Development - Proactive partnerships with community colleges, union apprenticeship programs, and local training centers ensure a sustainable supply of skilled lineworkers and technicians aligned with long-term capital plans.[76]

Capital Efficiency Measures - Use of non-wires alternatives (NWAs), targeted undergrounding, and reconductoring before full rebuilds can reduce both cost and schedule pressure.[77]

Integration of External Funding - Leveraging federal programs such as the Infrastructure Investment and Jobs Act (IIJA), Inflation Reduction Act (IRA), and Grid Resilience and Innovation Partnerships (GRIP) helps utilities offset costs and expand program scale without excessive customer bill impacts.[78]

[75] Pacific Northwest National Laboratory, *Grid Analytics*, Richland, WA: PNNL, 2025, [Online]. Available: https://www.pnnl.gov/grid-analytics

[76] WorkingNation, *"Modernizing the grid and an aging workforce drive the need for a new generation of electrical linemen"*, Oct. 2023. [Online]. Available: https://www.workingnation.com/modernizing-the-grid-and-an-aging-workforce-drive-the-need-for-a-new-generation-of-electrical-linemen/ (accessed Oct. 2025)

[77] New York State Department of Public Service, *Non-Wires Alternative 2023 Quarterly Report (Fourth Quarter)*, pp. 1-3. [Online]. Available at https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1008D78D-0000-C964-90EA-507B2B5F8126} (accessed Oct. 2025)

[78] U.S. Department of Energy, *Grid Resilience and Innovation Partnerships (GRIP) Program*, Washington, D.C., USA: DOE, 2023, [Online]. Available: https://www.energy.gov/gdo/grid-resilience-and-innovation-partnerships-grip-program (accessed Oct. 2025)

Q.67 Are there utility successes you can cite where best practices for scaling capital spend are evident?

A. Yes, the table below provides several U.S. Utility examples of what has worked & how for various leading utilities.

Utility (type/size)	Challenge & Scale-up	What they did (success factors)	Outcomes to date
Florida Power & Light (IOU, ~5.8M acc'ts)[79]	Hurricane resilience required multi-year distribution hardening and **scaled undergrounding** (thousands of neighborhood laterals).	Created the **Storm Secure Underground Program (SSUP)** as a repeatable portfolio; standardized designs; intelligent devices (~227k) for faster restoration; dedicated customer process for conversions.	>3,000 SSUP neighborhood projects since 2019; continued top-quartile reliability improvements in 2024.
PG&E (IOU, very large)[80]	Wildfire risk drove an unprecedented distribution hardening & **undergrounding** scale-up (goal: 10,000 miles).	Multi-year wildfire mitigation plan; targeted undergrounding integrated with system hardening; ramping to hundreds of miles/year; expanded VM and standards.	Reported **~348 circuit miles undergrounded in 2024** under the 10k program; continuing scale-up.

[79] Florida Power & Light Company (FPL), *"FPL's Continued Grid Investments Lead to Best Overall Service Reliability in 2024,"* FPL Newsroom, Mar. 24 2025, [online] Available at: https://newsroom.fpl.com/FPLs-continued-grid-investments-lead-to-best-overall-service-reliability-in-2024 (accessed Oct. 2025).

[80] Pacific Gas and Electric Company (PG&E), *"PG&E Undergrounding Program Overview,"* Wildfire Safety Program Update, 2024, [online] Available at: https://www.pge.com/en_US/safety/emergency-preparedness/natural-disaster/wildfires/wildfire-safety.page (accessed Oct. 2025); and PG&E, *Wildfire Mitigation Plan 2024,* submitted to California Public Utilities Commission (CPUC), Feb. 2024.

Utility (type/size)	Challenge & Scale-up	What they did (success factors)	Outcomes to date
Entergy Louisiana (IOU, Gulf Coast)[81]	Storm damage frequency/severity required **5-year Phase I** resilience program as part of a **10-year plan**.	Secured **LPSC approval** for Phase I (≈2,100 projects); alliance partners; pole class upgrades, selective undergrounding, and transmission structure hardening; quarterly public reporting.	Rolling delivery: **~4,800 poles** upgraded and multiple district projects completed by late 2024; continued expansions in 2025.
LADWP (largest muni)[82]	Aging urban network required a **billion-plus/year** program to replace poles, cable, vaults, transformers, and add capacity.	**Power System Reliability Program (PSRP)** with a dedicated reliability surcharge; programmatic rebuild + proactive maintenance; transparent KPIs.	FY 2023-24 PSRP budget **~$1.44B**; ongoing cable/pole replacement at scale; multi-year plan to continue >$1B/yr.

Q.68 What has LUMA done to prepare for this scaling of their NFC capital project portfolio, and how does that compare to these industry best practices?

A. My interviews with various LUMA managers, directors and officers and my review of their plans and methods in various areas key to execution of the NFC portfolio suggest that LUMA is prepared for scaling this portfolio and compares well to industry best practices, as shown in the table below.

[81] Entergy Louisiana LLC, *"Entergy Louisiana Proposes $1.9 Billion Resilience Investment Plan,"* Entergy Newsroom, Mar. 1 2023, [online] Available at: https://www.entergynewsroom.com/news/entergy-louisiana-proposes-1-9-billion-resilience-investment-plan/ (accessed Oct. 2025); and Louisiana Public Service Commission (LPSC), *Order Approving Phase I Resilience Plan,* Docket No. R-36254, July 2023.

[82] Los Angeles Department of Water and Power (LADWP), *Power System Reliability Program (PSRP),* FY 2023–24 Budget Summary, [online] Available at: https://prp.ladwp.com/ (accessed Oct. 2025); and LADWP, *Power System Reliability Program Fact Sheet,* 2024.

Best Practices from Other Utilities Who Have Scaled:	What LUMA Has Done to Prepare for Scaling NFC:
Get the runway first: package a 3–5-year **program** (not piecemeal projects) with pre-authorized scopes, trackers, and reporting—**PSE&G's Energy Strong II** is a good template for storm-hardening portfolios and accelerated recovery.[83]	LUMA has taken great care to prepare a comprehensive program, beginning with a detailed transition plan, a System Rehabilitation Plan (SRP), a detailed Long Term Investment Plan (10 year LTIP), and has identified, prioritized and bundled Projects into Programs, with specific assets targeted, benefits and success measures identified, and effective reporting frameworks in place to ensure transparency and accountability, etc.
Stand up an "industrialized" delivery system: alliance contracting, standard BOMs, prefabrication, and sequenced outages—This is what enabled **FPL** and **LADWP** to run thousands of near-identical jobs in parallel.[84]	LUMA has put in place an extensive network of Master Services Agreements (MSA's) with 13 AEC firms, using standardized contracts, authorized maximum funding, targeted work scopes, etc. This has allowed preliminary engineering to move ahead on FEMA projects in advance of Obligation, avoiding delays. And to the extent unplanned delays occur, LUMA has a list of "shovel-ready" projects to substitute, such that customers are receiving value commensurate to their rates.

[83] Public Service Electric & Gas Company (PSE&G), *"In the Matter of the Petition of Public Service Electric and Gas Company for Approval of Electric Rate Adjustments Pursuant to the Energy Strong II Program,"* Order dated Sept. 11 2019, BPU Docket Nos. EO18060629 / GO18060630, New Jersey Board of Public Utilities (NJBPU), Trenton (NJ), [online] Available at: https://www.nj.gov/bpu/pdf/boardorders/2023/20231025/2C%20ORDER%20PSE%26G%20Energy%20Strong%20II.pdf (accessed Oct. 2025).

[84] Florida Power & Light Company (FPL), *"FPL's Continued Grid Investments Lead to Best Overall Service Reliability in 2024,"* FPL Newsroom, Mar. 24 2025, [online] Available at: https://newsroom.fpl.com/FPLs-continued-grid-investments-lead-to-best-overall-service-reliability-in-2024 (accessed Oct. 2025); and Los Angeles Department of Water and Power (LADWP), *Power System Reliability Program (PSRP),* FY 2023–24 Budget Summary, [online] Available at: https://prp.ladwp.com (accessed Oct. 2025).

Best Practices from Other Utilities Who Have Scaled:	What LUMA Has Done to Prepare for Scaling NFC:
Lock in long-lead gear early: multi-year transformer/conductor agreements and pooled spares—because you can't 3–4× build rates when lead times run **12–30 months**.[85]	LUMA has identified and placed orders for most long lead T&D items (e.g., Power transformers, Breakers, larger classes of Poles, etc.). Most of these items are now either on island or contracted with clear date commitments. (e.g., 82 transformers, 534 transmission breakers, and over 18,500 poles are either on-hand or under contract.)
Target the right miles: use wildfire/vegetation risk, feeder outage heat-maps, and customer impact scoring to choose underground vs. overhead hardening (see **PG&E**; DOE guides for undergrounding/VM).[86]	LUMA actions – Rigorous reliability analysis has been conducted and each reliability or resilience improvement Program has been targeted at the right Dx circuits, T Lines, substations, etc. to produce the maximum benefit per investment dollar.

[85] U.S. Department of Energy (DOE), *"DOE and Industry Team Up to Keep the Lights On for America: The Importance of Transformer Innovation and Transformer Supply Chains to Ensure Grid Reliability,"* Office of Electricity, Feb. 22 2024, [online] Available at: https://www.energy.gov/oe/articles/doe-and-industry-team-keep-lights-america (accessed Oct. 2025).

[86] Pacific Gas and Electric Company (PG&E), *"PG&E 2024 Wildfire Mitigation Plan,"* submitted to the California Office of Energy Infrastructure Safety, Feb. 2024, [online] Available at: https://efiling.energysafety.ca.gov (accessed Oct. 2025); and U.S. Department of Energy (DOE), *"Undergrounding Electric Distribution Lines to Improve Reliability and Resilience,"* DOE Grid Modernization Initiative Report, 2023, [online] Available at: https://www.energy.gov/ (accessed Oct. 2025).

Best Practices from Other Utilities Who Have Scaled:	What LUMA Has Done to Prepare for Scaling NFC:
Grow the bench: commit cohorts with local colleges (line worker programs), plus contractor upskilling; assume a 24–36-month ramp to steady-state craft capacity.[87]	LUMA actions – LUMA has made significant commitments to grow the pool of available specialized skilled labor on PR. They have partnered with a 3rd party affiliate called LUMA College of Technical Training that provides electric utility-related skills training for key positions (e.g., linemen, substation techs, relay techs and underground techs, etc.). Current enrollment is 287 students. In addition, LUMA plans to[88]: · Continue to leverage their upskilling and apprenticeship structure to ensure that employees have the necessary skills and qualifications to support operations, emergency preparedness, service restoration, maintenance and repair, and replacement of critical infrastructure. · Execute the contracts that are in place to bring in sufficient resources, with the proper skills to augment our capabilities and support execution of the projects planned over the next 3 years, · And, as a last contingency, mobilize seconded staff from our parent companies, Quanta Services and ATCO Electric.
Braid external dollars: structure portfolios to be **GRIP/IIJA-eligible** (segmented circuits, critical facilities), like **CPS Energy** and **KCEC**, to mute rate shock while scaling.[89]	To reduce dependence on ratepayer funding and utility rate impact, LUMA has made Federal funding its top priority for the vast majority of capital improvements across the grid. FEMA funding of more than $9B, plus DOE funds and (other sources?) are expected to represent more than xx% of capital improvements made by LUMA over the next 10 years.

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[87] WorkingNation, *"Powering the Future: How Lineworker Training Is Fueling America's Clean Energy Transition,"* WorkingNation Feature Article, 2023, [online] Available at: https://workingnation.com (accessed Oct. 2025).

[88] *Surrebuttal Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003

[89] Sessionboard / U.S. Department of Energy Grid Resilience and Innovation Partnership (GRIP) Summit, *"Funding and Partnership Models for Resilient Infrastructure Investments" (Session Record),* 2023, [online] Available at: https://sessionboard.com (accessed Oct. 2025); and U.S. Department of Energy (DOE), *"Grid Resilience and Innovation Partnership (GRIP) Program Overview,"* Office of Clean Energy Demonstrations, 2023, [online] Available at: https://www.energy.gov/oced (accessed Oct. 2025).

Q.69 In your opinion, is LUMA qualified and ready to execute the portfolio of NFC projects included in the Optimum and Constrained Budgets?

A. Yes, in my professional opinion, LUMA's approach to capital program and portfolio management is consistent with best industry practices and I have high confidence in their ability to support the significant ramp rate in planned annual NFC spending over the next 3 years. My recent interviews with members of the LUMA executive group suggest that they have a highly motivated and skilled team with excellent experience in delivering this kind of diverse portfolio of capital projects. And review of their Capital project management organization, processes and tools demonstrates they have in place all the requisite enablers to support this team in delivering its mission.

Over the past 3 years, LUMA has made significant progress in standing up and refining an effective, purpose-built Capital Project Management organization, process and team to reliably deliver the planned portfolio of improvement projects and programs over the next decade and beyond.

LUMA's Project Delivery Lifecycle Framework (DLF) Playbook is a robust, PMI-aligned document that establishes a comprehensive, standardized framework for managing a large and diverse portfolio of capital projects. It exemplifies PMI (Project Management Institute) best practices in a real-world, utility-sector context[90] and operationalizes *predictive project management* principles and *portfolio governance* into a practical framework that:

- Reduces risk and variance across large capital programs,
- Creates transparency and accountability through defined metrics and governance,

[90] Project Management Institute (PMI), *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition,* Newtown Square, PA: Project Management Institute, Inc., 2021.

- Aligns resource, financial, and schedule management with organizational strategy, and
- Institutionalizes continuous improvement through quality management and lessons learned.

In my view, this Playbook is a model PMI-aligned foundational document—an enterprise-grade framework that makes reliable, efficient, and compliant delivery of capital projects achievable at scale. Its structured lifecycle and stage-gate control defines *five discrete phases* with *clearly defined objectives, exit criteria, and deliverables*. *Stage-Gate reviews* ensure each project meets readiness criteria before advancing—minimizing uncontrolled scope or cost creep. Its governance model defines three levels of oversight to ensure *traceable, data-driven decisions* and formal accountability for budget, scope, and benefits. Its *Change Control Process* establishes a clear, documented path for evaluating and approving any deviations from baseline, thereby enforcing *impact analysis* and *tiered approval thresholds*, ensuring governance proportional to the magnitude of change. Its Performance Measurement and Health Monitoring structure creates real-time visibility and enables *predictive portfolio management*, supporting on-time, on-budget delivery. And its "system-of-systems" approach (i.e., *Project Online, Oracle Aconex, Oracle EBS,* and *GIS systems*) supports traceability and accurate reporting—key for managing large, multi-project portfolios.

More than 360 LUMA executives, managers and professionals have been trained in the DLF process over the past 2 years, effectively embedding its core principles and process into the culture and functioning of the organization.

And finally, LUMA has recently added strong new leadership to their Capital Projects organization. Pedro A. Melendez-Melendez, LUMA's Chief Capital Programs & Grid Transformation Officer, has had extensive experience across several US mainland utilities,

where he successfully led accelerated capital investment programs like the one facing LUMA.[91] As he has testified, at ITC (International Transmission Corporation) in Michigan, he managed a ramp up of capital investment from $80 million to $800 million, with most of the growth occurring over a four-year period, And more recently, at JEA (Jacksonville Electric Authority) in Florida, Mr. Melendez laid the foundation for a 10-year plan calling for $10+ billion in capital improvements. During the initial 18 months of the plan, they increased their capital spending from $400 million to $800 million (i.e., doubled), and then doubled it again over the ensuing 18 months.

In summary, I believe that LUMA's structure, skilled leadership team, processes and tools compare well to industry best practices for managing large scale programs like the NFC plan proposed in both the constrained and Optimum budgets.

Q.70 What does industry benchmark data reveal about ability for utilities to ramp their T&D capital spending when the need arises?

A. US utilities have been steadily increasing their T&D Capital spend over the past 15 years or more. Even when adjusted for inflation and normalized for size (i.e., $ spent per customer), industry average spend levels have grown by 150% since 2010. This is an average real compound rise of 6.7% per Anum. Drivers of this spending growth include storm hardening, Grid Modernization, renewables integration, capacity additions and electrification. Regulators generally prefer utilities to have predictable capital investment levels over time, in order to help deliver steady rates for customers. This can be seen in utility industry data, where the trend in average utility T&D capital spending levels, as well as industry quartile spending

[91] *Surrebuttal Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003, Q.68, LUMA Exhibit 74.

have been climbing steadily, but at a similar growth rate over time (see EXHIBIT 75.16: Trends in Average Utility T&D Capital Spending Levels). Even the top quartile threshold has been steady at 6.5% per annum over this period. Within the detailed data, instances of dramatic increases in Capital spend from year to year by individual utilities are unusual.

But when utilities ***must*** increase their spend levels, typically due to changes in Government policy, major new regulatory requirements, significant changes in corporate strategy, and / or when required to bring a T&D system up to industry standard in an accelerated manner, the evidence shows that many are able to do so. Numerous utilities have ramped their transmission and / or distribution capital spending levels by similar amounts to LUMA's NFC rate case plan over similar timeframes. Benchmark analysis of capital spending by other electric utilities over the past 15 years identified more than a dozen utilities, that have successfully ramped their capital spending by 300 to 400% when they were required to do so. LUMA's intended ramp rate (i.e., Constrained NFC budget (270%) and Optimal NFC budgets (440%) is therefore not unachievable as Mr. Hogan claims. (See EXHIBIT 75.17: LUMA Proposed NFC Capital Spending / Customer vs Peers.)

Q. 71 Are there factors that make it easier or more difficult for utilities to accomplish such a ramp?

A. Yes. In my strategic advisory practice over the past 35 years, I have found that rapidly ramping capital spend is more difficult for utilities to achieve when the base spending level is higher, that is when they were already spending more than their industry peers, normalized for their size (i.e., $ of spend per customer served). When their base spend is lower, they are less likely to encounter internal or external capacity constraints (e.g., regulatory approvals, procurement, engineering, licensing / permitting, available labor, etc.).

Q.72 And how would this apply to LUMA?

A. LUMA (and PREPA before it) have had relatively low capital spend levels for a long time. This observation aligns with the Energy Bureau's characterization of PREPA's T&D system suffering from years of underspending[92]. For the past 4 years LUMA has averaged only $67.50 per customer of NFC spend, only about 11% of industry average spending, which has been approximately $ 783 per customer over the past 5 years. (See EXHIBIT 75.17) and less than 50% of the spend rate per customer of other utilities with ramp rates similar to LUMA's proposed increase, who averaged $158 / customer before their ramp started.

Q.73 Is there anything else about Mr. Hogan's testimony on the subject of executability that you find troublesome?

A. He claims that the construction delays experienced by LUMA (which were almost entirely FEMA Project related) over the past 3 years were due to constraints in resource availability, permitting and supply chain deliveries. This claim ignored the primary driver of those delays – the process to achieve obligation for construction. LUMA experienced dramatically slower project obligations than initially expected, a reality that has been factored into their current plans.

Q.74 And has LUMA been successful in reducing delays in obtaining FEMA approvals?

A. Yes. LUMA has significantly reduced the timeline for FEMA approvals, and now better understands the evolving requirements of FEMA which were designed to make the process faster, but required all parties to learn a new process for FEMA approvals. (FEMA reportedly

[92] *Direct Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003, LUMA Exhibit 5.9, Q&A No. 20.

has also experienced its own learning curve in this process)[93]. Improvements LUMA has accomplished with respect to FEMA approvals include:

Negotiated standards have now been agreed between LUMA and FEMA for eligibility, baselines, obligation process, and the % of certain types of work that qualify for various types of federal monies, which will significantly shorted timelines for obligations.

Modifications to project sequencing / timing – LUMA is now focusing on those projects with shorter timelines for FEMA obligation (i.e., deferring projects with long lead environmental reviews until later in budget cycle) to reduce FEMA obligation uncertainty and delays.

Architectural and Engineering (A&E) Firms (PW 9510) - As attested in his surrebuttal testimony, Pedro Melendez-Melendez, Luma's Chief Capital Programs & Grid Transformation Officer, disclosed that over the past 4 years since Luma Energy started, they have executed a little over $1B in A&E contracts. Over that period, they have utilized approximately 30% of the overall contract values, leaving approximately $700M in un-assigned engineering work. Currently they have 10 active A&E MSA contracts, (Master Services Agreements) where most will expire in 2027. However, each of the contracts has two (2) one-year extensions, allowing for contract extension up to 2029 if needed. This has resulted in ample contracts and resources for engineering services, and is expected to be sufficient for all NFC and Federally funded capital project work over the next 3 years.

Long Lead Equipment (PW 10710) – The impact of / project delays caused by long lead items such as power transformers, transmission circuit breakers, large classes of poles and certain sizes of cable and conductor grew substantially throughout the covid years, in some cases

[93] *Surrebuttal Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003, Q&A 43.

expanding by a factor of 3 or more. This has been a high priority for LUMA for the past 4 years and great progress has been made.

As attested in his surrebuttal testimony, Pedro Melendez-Melendez, Luma's Chief Capital Programs & Grid Transformation Officer, confirmed that for long lead T&D equipment like transformers, breakers, and switchgear, LUMA has various contracts to handle the need for the next 3 to 5 years. Each class of equipment may have multiple contracts to be utilized in various projects. For transformers, breakers, and switchgear, they have approximately $400M in MSA contracts to meet program and project needs. All equipment is in various phases of availability, from initial purchase orders, to under construction in factories, in factory acceptance stages, out for deliveries, or in site. As for poles, approximately have 21,000 are in stock at the moment and LUMA is currently finalizing 3 additional contracts worth almost $200M. All contracts are also set for 3 years with two (2) one-year extensions.

Specific needs of each project in the LTIP have been identified, priority lists created for each category and orders placed and delivery contract dates negotiated. LUMA purchase orders and shipments for the majority of these long lead items are either 1) now ready, or (2) factored into future projections, so delays experienced in this category over the past few years are not expected to be repeated.

Q.75 Are there other claims by Mr. Hogan regarding Executability that should be clarified and / or refuted?

A. Yes, he suggested that the larger FEMA portfolio would compete for resources with the NFC portfolio. Although this has little to do with LUMA's capacity to complete requested levels of NFC projects, recent reductions of FEMA budget availability for LUMA and a significantly reduced list of Priority projects will reduce the level of FEMA support that LUMA can rely upon

over the long term, and may even reduce the number of projects that will be performed in parallel with the Rate Case NFC projects, thus reducing competition from FEMA projects for required resources.

Finally, as Mr. Meléndez has testified in his surrebuttal testimony[94], LUMA has credible strategies in place for boosting labor availability, although the company still faces some challenges associated with PR governmental approvals.

Q.76 In summary, how should PREB interpret Mr. Hogan's critique of LUMA's NFC Portfolio executability?

A. PREB should recognize that:

Mr. Hogan's analysis inappropriately comingles FEMA project budget performance with NFC budgets in concluding that LUMA underspent capital dollars over the past 4 years, when in fact, LUMA hit or exceeded their NFC capital budgets each year over that period.

A. His ungrounded assertion (based only on his "experience that utilities are overly optimistic") that LUMA's ramp rate in planned NFC spend is unachievable, is directly contradicted by industry benchmarking analysis and case studies of numerous utilities who have successfully scaled their capital spend by similar amounts in short periods of time.

B. My assessment of the capabilities of LUMA's project management and controls organization and embedded processes and tools is that they are ready to scale the NFC Capital Investment program to the levels proposed in the Optimum and Constrained Budgets. My assessment here is based on interviews with responsible managers, review

[94] *Surrebuttal Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003, Q&A Nos. 77 and 80.

of the DLF Playbook and Training materials, and examination of program and project reports. I believe that the organization has learned a great deal over the past 3 years, has created a purpose-built PM organization capable of reliably delivering a large and diverse capital portfolio in Puerto Rico, and is now ready to scale its delivery of NFC program to the spend levels of either the Optimum or Constrained budgets.

C. In addition, LUMA has recently added a strong new leader to their Capital Projects organization. Pedro A. Meléndez-Meléndez has had extensive experience across several US mainland utilities, where he successfully led and ramped capital investment programs like the one facing LUMA. He has testified that in his experience, there are five keys to successful growth of Capital Investment Programs[95]:

A. A well-conceived plan - aligned with the mission and objectives of the organization, and a strong focus on needs of customers and requirements of key external stakeholders,

B. Professional staff with mastery of the technical competencies required to execute the plan, ranging from practical knowledge of Power Systems to core project management fundamentals,

C. Contract mechanisms to manage the inevitable ebb and flow of work without disrupting the core function of the utility,

D. Use of well-targeted industry experts on an as-needed basis, and

E. Access to capital to support the overall long-range schedule.

[95] *Surrebuttal Testimony of Pedro A. Meléndez-Meléndez, Puerto Rico Electric Power Authority Rate Review,* Case No. NEPR-AP-2023-0003, Q&A No. 69.

These keys are generally well aligned with the best practices I specified above in my answer to Question 70.

D. And finally, Hogan's suggestion that if projects which are included in the proposed Rate case portfolio are delayed, LUMA will simply look for other potentially low value places to spend those monies, is unsupported, illogical, and ignores both LUMA's well-structured and extensive 10-year LTIP (Long Term Investment Plan) and the Island's dire need for capital improvements to restore the integrity and performance of the electricity Grid.

As such, PREB should reject Mr. Hogan's flawed logic and recommendations regarding LUMA's NFC proposed budgets. And rather than denying or reducing LUMA's requested NFC funding levels, PREB should rely upon established reporting guidelines and more than 584 existing contractual performance metrics on safety, budget control, operations, and customer service, to ensure LUMA's processes for efficient and effective project and program management and to provide appropriate governance / regulatory oversight of the Capital Investment Program.

Q.77 Please Recap Your Overall Findings & Conclusions in Connection with the Critiques of LUMA Made by Bondholder Witnesses Hurley and Hogan

A. Mr. Hurley's critique of LUMA's method of calculating reliability benefits fails to account for the unique constraints of Puerto Rico's electric system. His recommendation that PREB require LUMA to "adopt a new approach" is neither feasible nor grounded in the current operational and data context. LUMA's existing methodology—rooted in structured engineering judgment informed by historical outage patterns—is not only reasonable but is consistent with accepted practices in emerging or data-limited power systems.

Mr. Hurley's assertions that LUMA's Capital Planning effectiveness and project prioritization are inadequately focused on Reliability Improvement, is inconsistent with Utility Industry Best Practices for Investment Planning. LUMA's approach to Capital Planning, Portfolio Design and Project Prioritization is consistent with industry best practices and has been appropriately tailored to reflect the significantly degraded condition of the T&D system inherited by LUMA and the urgency of improving electric safety and reliability and system resilience across Puerto Rico.

And Mr. Hogan's assertions regarding the Executability of LUMA's Optimum and Constrained NFC Budget for the Rate Case Period were based on faulty analysis which inappropriately comingled FEMA and NFC project budgets and work accomplished. Contrary to his claims, LUMA's budget spending performance across its NFC project portfolio has been near-complete over the past 4 years, with virtually no underspend. His characterization of LUMA's planned NFC capital spend rate as "unprecedented" fails to acknowledge both that PREPA's historical baseline T&D Capital spending has been among the lowest in the industry, and that LUMA is relatively new to Puerto Rico and each of its parent companies (ATCO and Quanta) routinely manage annual capital spending programs many times as large as the planned NFC budgets over the next 3 years.

Further, his claim that the NFC spending ramp rate proposed by LUMA is unachievable and therefore the PREB should reject the requested budget increase is ungrounded based on industry benchmark data that shows LUMA's planned rate of capital spend increase has been successfully achieved by numerous utilities over the past 15 years, including by two utilities (ITC and JEA) where LUMA's new Chief Capital Programs & Grid Transformation Officer, Pedro A. Meléndez-Meléndez played a major role in achieving that ramp rate.

1440 And finally, Mr. Hogan's testimony also fails to give appropriate consideration to
1441 LUMA's extensive preparation and strengthening of their project and portfolio management
1442 processes over the past several years in anticipation of these increased NFC spending levels.

1443 **Q.78 Does this complete your surrebuttal testimony?**

1444 **A.** Yes, it does.

APPENDIX A: John M (Jack) Shearman Sponsored Exhibits:

EXHIBIT 75.1: Curriculum Vitae of John M. Shearman

John M. Shearman

Summary and Background

Mr. Shearman was the founder of UMS Group, a global utility management consultancy with hundreds of clients across the globe. His special focus is on Regulation, Reliability and Performance Improvement, and the Management of Change. He is an experienced expert witness and also has extensive expertise in strategic planning, organizational effectiveness and performance analysis. He is a frequent speaker at industry conferences and is well known for his perspectives on industry strategic directions.

Prior to founding UMS, Mr. Shearman was a senior member of Booz•Allen & Hamilton's utility practice. Mr. Shearman holds a professional engineer's license and an M.B.A. in finance from New York University.

Highlights of Experience:

- ***Early Career:*** Mr. Shearman graduated as an Electrical Engineer / Power major and started his career as a relay engineer for Con Edison in NY and subsequently served for 11 years in escalating electric operations leadership capacities at PSE&G in NJ.
- Over 30+ years, UMS Group designed, developed and managed multi-client benchmarking and best practices consortia for utilities around the world. The Company, and Mr. Shearman in particular, developed a reputation for in-depth knowledge of the utility business, insights into the challenges faced by utilities, and practical and proven innovations for driving improvement in reliability and other business performance indicators.

- In addition to detailed insights harvested from reliability best practice industry consortia (e.g., within Transmission, Distribution and Substations), Mr. Shearman conducted or led scores of detailed reliability assessments for electric utilities across the US. These assessments often involved deep dive analysis into multi-year reliability performance data (i.e., outages, causes, durations, impacts on system and customer metrics, trends, drivers, and segmentation to find the areas with greatest opportunity for improvement. Synthesis of the optimum reliability and investment strategies then emerged in strategic reports to senior management and / or regulatory staff if the driver of the project was a rate case or other regulatory concern.
- Mr. Shearman conducted numerous organizational restructuring projects at utilities over the past 20 years. He led UMS Group's Organization Restructuring practice and was responsible for much of the firm's work in client business and competitive strategy development. His work in this area included strategic analysis and organization design to implement horizontal unbundling and business streaming of utility companies. Most of these projects included in-depth assessment of profitability, competitiveness and growth potential of individual business streams and key business processes.
- Mr. Shearman led many engagements around the world which were responsible for fundamental redirection of utility clients' business strategy. He has worked with many CEOs and Boards to help frame a more robust understanding of industry drivers and directions, and to clarify how shareholders view value in the business. These assignments have been structured around a more deliberate and informed approach to Strategic Choice and have often produced dramatic shifts in the strategic options considered and value of the enterprise.

- Mr. Shearman has provided counsel to utilities around the world in the development and execution of regulatory strategy. Many of these engagements have built innovative proposals to create sustainable value for customers, while providing effective incentives for management to drive continual improvement in the financial performance of the business. These strategies are typically founded on a more robust understanding of system cost and performance drivers or customer value perceptions, and have often led companies to greater performance management effectiveness. In parallel, the ease of access and quality of information available to regulators has often improved dramatically.
- Under his leadership, the firm grew its analytic and regulatory support business, serving a growing number of US utilities in the areas of Smart Grid, Grid Hardening, Energy Efficiency, and Utility of the Future. These engagements ranged from detailed technical analysis and implementation plan development, to program justification and investment recovery, to analysis and testimony development regarding spending identification and benefits capture from Grid Modernization. We were often been tasked by our clients on such projects with liaising with the Regulator's staff on education regarding the key factors driving or constraining potential value of such programs, and have produced excellent results in terms of staff recommendations to their commissions.
- Mr. Shearman led a team that supported a North American Transmission Company in a capital improvement regulatory case. This project almost doubled the allowed CAPEX on the client's Transmission system and captured rate coverage of an added $190 Million of annual CAPEX.

Initially the team helped the client determine the appropriate level of spend required for their system needs, and then helped define the most likely success path to regulatory approval of this

dramatic increase in CAPEX spend. Our role in the very successful rate case included detailed analysis, strategy support, and filed testimony.

- Under Mr. Shearman's leadership the firm also provided expert witness testimony and analytic support in a wide range of regulatory and governmental proceedings across many US and overseas jurisdictions. These assignments typically have included testimony focused on:
    - Utility industry evolution, competition and performance improvement, reasonableness of affiliate costs, regulatory incentives, best practices and effective use of cost and reliability information to conduct performance benchmarking. Countries / jurisdictions involved in this work include the United Kingdom, New Zealand, Australia, South Africa, and Ireland, among others.
    - Storm Response Performance and Emergency Preparedness. These projects have been founded on detailed analysis of the relative severity of the event, comparative results produced vs. other utilities affected by the same event, and relative effectiveness of pre-planning, logistics management and communications associated with the event. The results produced in these engagements have been successful in mitigating regulatory perceptions of poor storm response, and are believed by our clients to have reduced penalties and deferred onerous new regulatory requirements for reporting, tree trimming, and system inspections and maintenance.
- Mr. Shearman has prepared, filed and delivered expert witness testimony for many utility clients in the US and abroad on the subjects of industry direction, reliability target setting and improvement, Transmission & Distribution capital investment strategies and spending justification, regulatory incentives, affiliate cost justification and appropriate use by

regulators of performance benchmarking information. These assignments varied widely based on the specific issues of the client proceeding but most included some element of client performance assessment and establishment of appropriate standards for regulators to apply in determining appropriateness of utility cost, investments and services levels. Some highlights include:

- For Entergy in a Texas affiliate cost case, Mr. Shearman led a team that conducted a broad-based industry benchmarking effort to secure and supply performance assessment information to internal teams and Company expert witnesses charged with supporting specific affiliate classes of costs. He then developed and filed an overall piece of testimony that integrated the Company's approach to benchmarking and proposed appropriate standards for regulators to use in applying benchmarking in making rate determinations.
- For Central Maine, Mr. Shearman was asked to develop rebuttal testimony in a Performance Based Rate Making proceeding in which Commission staff had retained an Economic / Modeling expert to develop a multiple regression factor model to predict what the utility's cost should be over the succeeding 5 year period. Our team evaluated and discredited the model, demonstrating several "fatal flaws" in the underlying statistical rigor, and provided vital behind-the-scenes support to client counsel in cross examination of the model's developer. As a result, the model was effectively withdrawn by opposing counsel. Our rebuttal testimony also went further, demonstrating CMP's relatively high performance compared to other utilities and advocating a longer rate stability period. The client's rate case objectives were fully achieved, with a substantially lower "X" factor than feared and a 7 year cycle rather than the 3 year period advocated by commission staff.

- For Puget Sound Energy, Mr. Shearman was retained to provide testimony on PSE's relative efficiency to support three objectives: 1) to demonstrate their superior reliability and safety performance and reasonableness of costs, 2) to support the targets proposed for the company's new performance incentive program, and 3) to provide an independent assessment of the Company's performance against synergy savings commitments made at the time of a merger with a local gas distribution company 5 years earlier. Mr. Shearman led a joint team providing analytic support to outside counsel, integrating findings and conclusions across various Company witnesses, and framing arguments and supporting analysis required to underpin the three objectives.
- For Entergy, in another Texas affiliate cost case in which more than $60M of affiliate costs had been disallowed due to inadequate evidence of reasonableness provided in the original case, Mr. Shearman was asked to help provide substantive proof of efficiency and effectiveness across the range of affiliate costs. Some benchmarking information had been submitted in the original case but had been disallowed when confidentiality restrictions were ruled to render the comparisons as not credible, because intervener witnesses were unable to validate it. At the time we were retained, insufficient time remained to approach the industry for new information without confidentiality restrictions. UMS Group pioneered a novel "double blind" approach in which we secured "average" and "top quartile" data extracts from several well respected benchmarking service providers and then applied those standards in comparisons which we conducted across the affiliate classes of costs.
- For FP&L, Mr. Shearman led a combination internal / external team charged with analyzing FPL's cost and reliability performance over the 10 year period since their last rate case. The goal of the team was to demonstrate that the substantial performance improvement FPL

achieved during that period was significantly better that overall industry trends and that their performance at the time was approaching industry best practice.

- The company, under Mr. Shearman's leadership, also provided expert witness testimony and analytic support in a wide range of regulatory and governmental proceedings across many overseas jurisdictions. These assignments typically have included testimony focused on utility industry evolution, competition and performance improvement, reasonableness of affiliate costs, regulatory incentives, best practices and effective use of cost and reliability information to conduct performance benchmarking. Countries / jurisdictions involved in this work include the United Kingdom, New Zealand, Australia, South Africa, and Ireland, among others.
- Over a 10 year period, he served as the engagement manager for a number client performance and best practices collaboratives. These projects were conducted for industry trade groups, such as EEI (Edison Electric Institute), NEI (Nuclear Energy Institute), IWO (Institute of Water Officers in the UK), and ESAA (Electricity Supply Association of Australia), and for independent consortia assembled by one or more utilities for the purpose of industry benchmarking. Some of these, like ITOMS (International Transmission Operations and Maintenance Study), have become long running multi-year programs in which the participants have significant ownership and commitment to, and which have evolved and grown well beyond the original intent.
- For a number of electric and several combination utilities around the world, Mr. Shearman led consulting projects to capture merger synergies from consolidation. These projects have often resulted in staff reductions on the order of 30% and cost reductions of up to 40%. Many of these projects have faced unusually difficult circumstances, with severe political

issues and resistance by labor unions and/or municipal government stakeholders associated with one or the other company

- He worked with senior management of a major US east-coast combination utility to help them restructure their delivery business into an Asset Management architecture. The project involved their full senior team (about 30 senior managers) in an intensive 1 week series of all-day working sessions. The project team facilitated their discussions and deliberations of organizational options, pros and cons, informed their thinking with benchmarking and best practice information, and helped document their decision-making process as they built out the organization from the top down through three levels of management and decided on staffing and skills requirements for all key functions and processes. As a result of this intervention, the client saved a net of more than $30 million annually, achieved an unprecedented level of clarity and alignment around the new roles and structure, and put in place a completely new organization in a small fraction of the time required by other approaches.
- Mr. Shearman has conducted a number of very successful efficiency rationalization projects for Government owners of electric and other utilities. In one case, for a Middle East government, Mr. Shearman led the project to rationalize 60 smaller distribution companies into two large government owned entities prior to privatization. The project was a large success, with over $60 million in annual savings achieved and staff reductions greater than 50% realized. Many unique regulatory, asset ownership and technical integration issues were also addressed in this project.
- For a number of major electric and multi-utility companies around the globe, Mr. Shearman has led large-scale asset management organization transformation projects. These efforts

have typically followed significant shifts in strategy and been designed to implement rapid simultaneous change in organizational structure, culture and capabilities to align with the new strategy. Such transformation projects have usually involved redefinition and redesign of core processes, adoption of new business models, redirection and new priorities for I/T, and establishment of new leadership practices and a more commercial and competitive organizational culture.

- A particular area of focus in Mr. Shearman's engagement portfolio has been performance management and target setting. He has worked for many companies in the US, UK and Australia in designing and developing performance management and reporting systems. In one case, for a leading U.S. electric utility he designed and helped implement a comprehensive top management performance measurement and reporting system. For the utility's chief executive, he led executive workshops to define key objectives and measures of success and then spearheaded an analytic effort to determine relative importance and value, and appropriate time frame for each measure. These measures were then rolled down through three levels of the organization and linked into the management incentive compensation program.

EXHIBIT 75.2: List of Speeches and Publications by John M. Shearman

SPEECHES & ARTICLES

ANZ Utility Chief Executive Conference
Sanctuary Cove, Queensland, Australia
Keynote Address – "Industry Direction and Strategic Options

Association of Edison Illuminating Companies (AEIC) Annual Conference –Committee on Power Delivery
Southampton, Bermuda
Keynote Address - Industry Directions and Emerging Strategies For Wires Companies

NARUC Winter Committee Meetings - Committee On Gas
Washington, DC
Address – Strategies For Creating Regulatory Value

US Marine Corps – Executive Workshop – Performance Management
Penn State University, PA
Address – Managing Performance: *Strategic Business Goals to Work Execution Measures*

Electric Utility Consultants Conference
Denver, Colorado
Address – "How To Make Money In The Wires Business"

Annual PACE Executive Conference
Charleston, South Carolina
Keynote Address – "Industry Directions, Opportunities And Implications For Leaders"

ITOMS Electric Transmission Consortium Executive Conference
Memphis, Tennessee
Keynote Address – "Industry Direction and Strategic Implications"

ANZ Utility Chief Executive Conference
Sydney, New South Wales, Australia
Keynote Address - "Strategic Directions for the Industry"

ITOMS Electric Transmission Consortium Executive Conference
Brisbane, Australia
Keynote Address – "Strategic Context"

"Creating Advantage During Industry Reform" – Utility Executive Conference
Monterey, California
Keynote Address – " Finding Advantage in the Issues Keeping You Awake at Night"

ANZ Utility Chief Executive Conference – "Taking Control of Your Destiny"

Yepoon, Queensland Australia
Keynote Address – "Outpacing Change – Global Trends in Utilities"

Energy Buyer's Conference
Baltimore, Maryland
"Positioning for Competitive Success – Deregulation Lessons from Overseas"

"Actions for Success in a World of Change & Uncertainty" (Suffolk University)
Boston, Massachusetts
"Sustainable Large Scale Change in Business Enterprises"

ANZ Utility Chief Executive Conference – "Building Business Value"
Melbourne, Australia
Keynote Address – "Global Competitive Environment"

"Strategic Transformation Executive Conference"
San Francisco, California
Keynote Address - "Emerging Industry Structure and the Case for Change"

UNIPEDE Congress
Montreux, France
Keynote Address – "Societal Impact of Changes in the Electric Utility Industry"

ANZ Utility Chief Executive Conference – "Managing Risk for a Competitive Edge"
Sanctuary Cove, Queensland, Australia
Keynote Address – "Global Industry Directions"

DA/DSM DistribuTECH
San Diego, California
"Emerging Retail & Distribution Businesses – Positioning for Competitive Success"

Industry Transformation Executive Conference
Ponte Verde Beach, Florida – Sawgrass Resort
Keynote Address – "Strategic Context"
Also: "Change Management Strategies for Success"

ANZ Utility Chief Executive Conference
Bondi Beach, Sydney, Australia
Keynote - "Strategic Directions for the Industry"

Performance and Competitive Excellence Executive Conference
Scottsdale, Arizona
Keynote Address – "Strategic Context"

Northwest Electric Light & Power Association Best Practices Conference
Whitefish, Montana

"Defining Best Practices"

ANZ Electric Distribution Chief Executive Conference
Sydney, Australia
Keynote Address

Human Resources Executive Conference
Orlando, Florida
Keynote Address - "Industry Directions and the Implications for HR"

Performance and Competitive Excellence Executive Conference
Denver, Colorado
Keynote Address

Information Systems Executive Conference
Chicago, Illinois
Keynote Address

Electric Council of New England
Bar Harbor, Maine
"Effective Benchmarking Approaches"

Partners in Performance Management Executive Conference
Hilton Head, South Carolina
Keynote Address

Electric Utilities Consultants Annual Conference
Denver, Colorado
"Benchmarking and Corporate Culture Change"

Administrative and General Services Benchmarking for Utilities Executive Conference
Austin, Texas
Keynote Address – "Today's Mandate"

Public Utilities Fortnightly
"Competitive Benchmarking"

Competitive Performance Benchmarking for Utilities Executive Conference
Colorado, Springs Colorado
Keynote Address

New York Power Authority – "Public Power Roundtable Workshop"
White Plains, New York
"Effective Performance Benchmarking for Utilities"

Southeastern Electric Exchange – "Corporate Performance/Corporate Planning Annual Meeting"
Asheville, North Carolina
"Capturing the Power of Benchmarking"

Pacific Coast Electric Association – "Performance Measures Task Force"
San Francisco, California
"Capturing the Power of Benchmarking"

EXHIBIT 75.3: Representative List of Utility Clients

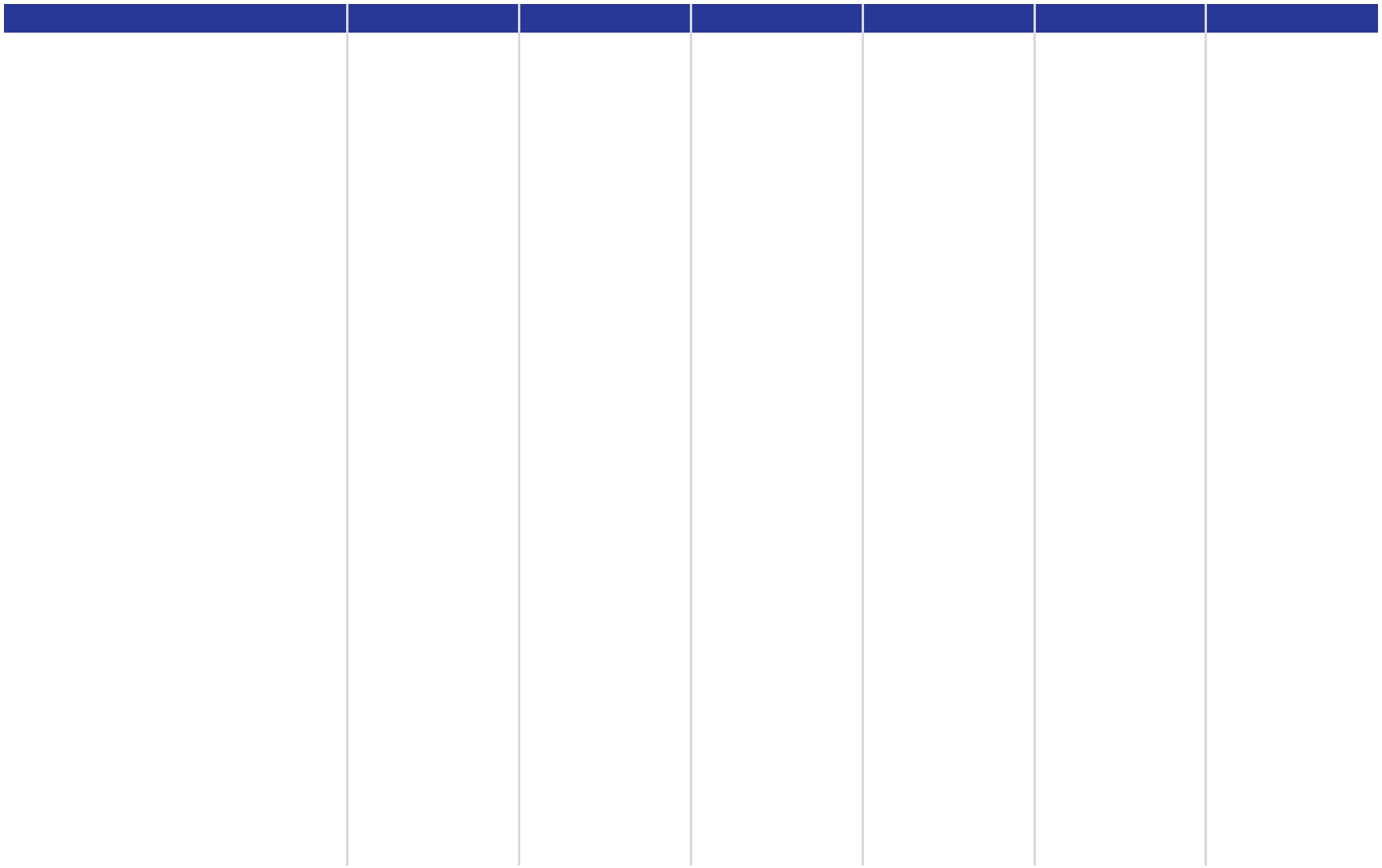


EXHIBIT 75.4: List of LUMA Interviews Conducted

Humberto Campan Colon - Director Reliability and Automation

Patrick Arns, Vice President, Quality and System Standards

Pedro Meléndez, Chief, Capital Programs and Grid Transformation

Richard Wong, Manager of Asset Strategy and Analytics

Robin Kostek - Manager, Tariffs

Dan Haughton, Director of Planning and Renewable Integration

Michael Morvant, Manager Distribution Asset Management

Toni Petteplace, Vice President Large Projects

Thor Hjartarson, Director of Engineering Asset Management

Cristina Cottin - Section Manager, Investment Strategy

Barbie Elsasser - Director, Projects

Shirley Lau - Director, Finance Business Partner

Ben Clark - Director, Projects

Rinly Moolakatt - Senior Director, Projects

Raphael Gignac - Vice President, System Operations

Ian Kreher - Vice President, Transmission and Substation Operations

Amanda Walters - Director, Budgets and System Remediation Plan

Mayda Hernandez Robles - Vice President, Capital Program Management and PMO

Nelson Santiago Lopez - Director, Project Controls

Farid A Saker Rolon - Supervisor, Reliability Analysis

Jeremis N Morales Morales - EIT (Reliability Specialist)

EXHIBIT 75.5: List of Relevant Documents Reviewed

During the course of my engagement with DLA Piper and in preparation for developing Expert Witness testimony, I secured copies of and conducted a high-level review of each of the following documents:

- **Regulatory Filings and Rulings**
    - LUMA's Submittal and Request for Approval of System Remediation Plan (February 2021)
    - Expert Report of Guímel Cortés, (PC Exhibit 65.0) On the Matter of Federal Funding (October 10, 2025)
    - Energy Bureau Order Establishing Scope and Procedures for Rate Case (Feb 12, 2025)
- **Legal / Governmental Policy Documents**
    - Puerto Rico Energy Public Policy Act - English Version
    - Puerto Rico Energy Transformation and RELIEF Act
    - PREPA Transaction Partnership Committee Report, dated May 15, 2020 (1)
- **3rd Party Studies**
    - Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico (December, 2017) -
    - Seargent & Lundy Independent Engineering Report – PREPA Transmission and Distribution System (2019)
    - The Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (OMA) -June 2022 -

- Island Wide Benefit Cost Analysis (IWBCA) Standard Operating Procedures (SOP) V1.0
- The SRP (System Remediation Plan) –
- LUMA's LTIP (Long Term Investment Plan) –
- The RTF (Recovery and Transformation Framework) –
- February 2025 Fiscal Plan for the Puerto Rico Electric Power Authority

- **LUMA Reports and Other Documents:**
  - 5106.1 Project Delivery Lifecycle Framework Playbook, Rev. 0
  - DLF Training Log
  - *LUMA's Annual Report and Report on Efficiencies for FY 2022, 2023, 2024, and Q4 2025*
  - LUMA Energy LLC, *LUMA Ex. 2.03 (7.03.25) Unconstrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4.1 Imp Prog Summary"
  - LUMA Energy LLC, *LUMA Ex. 2.04 (7.03.25) Constrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4 Imp Prog Summary"*)*

EXHIBIT 75.6: List of Testimonies, Exhibits and ROI Responses Reviewed

- **Direct Testimonies from LUMA**
    - Pedro Meléndez – Chief Capital Programs & Grid Transformation Officer, LUMA Exhibit 5.0
    - Kevin Burgermeister – SrVP Operations (Acting), LUMA Exhibit 6.0
    - Alejandro Figueroa- Chief Regulatory Officer, LUMA Exhibit 1.0
    - Ed Balbis – Partner Guidehouse Consulting and Former Utility Regulator, LUMA Exhibit 3.0

RATE CASE EXHIBITS

- **LUMA Capital Program Summaries**
    - LUMA Ex. 5.01 (7.03.25) Compliance & Studies (PBUY1) (FY2026)
    - LUMA Ex. 5.02 (7.03.25) Compliance & Studies (PBUT1) (FY2026)
    - LUMA Ex. 5.03 (7.03.25) OT Telecom Systems and Networks Program Brief (PBIT1) (FY2026)_Redacted
    - LUMA Ex. 5.04 (7.03.25) Transmission Priority Pole Replacements (PBUT13) (FY2026)
    - LUMA Ex. 5.05 (7.03.25) Transmission Line Rebuild (PBUT33) (FY2026)
    - LUMA Ex. 5.06 (7.03.25) Substation Reliability (PBUT7) (FY2026)
    - LUMA Ex. 5.07 (7.03.25) Substation Rebuilds (PBUT8) (FY2026)
    - LUMA Ex. 5.08 (7.03.25) Distribution Pole & Conductor Repair (PBUT30) (FY2026)
    - LUMA Ex. 5.09 (7.03.25) Grid Automation Program Brief (PBUT4) (FY2026)
    - LUMA Ex. 5.10 (7.03.25) Distribution Line Rebuild (PBUT6) (FY2026)

- LUMA Ex. 5.11 (7.03.25) New Business Connections (PBUT38) (FY2026)
- LUMA Ex. 5.12 (7.03.25) Distribution Streetlighting (PBUT5) (FY2026)
- LUMA Ex. 5.13 (7.03.25) Distribution Grid Reliability (PBUT39) (FY2026)
- LUMA Ex. 5.14 (7.03.25) Asset Data Integrity (PBUT27) (FY2026)

- **RFI Responses Related to Executability**
  - PC-of-LUMA-DST-16.1
  - PC-of-LUMA-TRS-7
  - PC-of-LUMA-TRS-10
  - ROI-LUMA-AP-2023-0003-20250709-PREB-PROV-009
  - ROI-LUMA-AP-2023-0003-20250709-PREB-PROV-010
  - ROI-LUMA-AP-2023-0003-20250709-PREB-PROV-011
- **RFI Responses Related to Reliability Benefits Estimation / Calculation**
  - NPFGC-of-LUMA-CAPEX-8
  - NPFGC-of-LUMA-CAPEX-9
  - NPFGC-of-LUMA-CAPEX-10.1
  - NPFGC-of-LUMA-CAPEX-10
  - NPFGC-of-LUMA-CAPEX-12
  - NPFGC-of-LUMA-CAPEX-13.1
  - NPFGC-of-LUMA-CAPEX-13
  - NPFGC-of-LUMA-CAPEX-14
  - PC-of-LUMA-DST-36.1
  - SESA-of-LUMA-COST ALL-5
  - SESA-of-LUMA-DST-7

- SESA-of-LUMA-DST-8
- SESA-of-LUMA-DST-9
- SESA-of-LUMA-DST-10
- SESA-of-LUMA-DST-11
- SESA-of-LUMA-DST-36
- SESA-of-LUMA-DST-41

- **RFI Responses Related to Planning and Portfolio Development**
  - NPFGC-of-LUMA-CAPEX-11
  - NPFGC-of-LUMA-CAPEX-15
  - NPFGC-of-LUMA-CAPEX-16
  - NPFGC-of-LUMA-CAPEX-17
  - NPFGC-of-LUMA-CAPEX-23
  - NPFGC-of-LUMA-CAPEX-24
  - NPFGC-of-LUMA-OTH-OPEX-52
  - NPFGC-of-LUMA-OTH-OPEX-53
  - PC-of-LUMA-DST-16.1
  - PC-of-LUMA-DST-34
  - PC-of-LUMA-DST-35
  - PC-of-LUMA-DST-37
  - PC-of-LUMA-DST-38
  - PC-of-LUMA-DST-39
  - PC-of-LUMA-DST-41
  - PC-of-LUMA-DST-63

- PC-of-LUMA-DST-65
- PC-of-LUMA-DST-68
- PC-of-LUMA-TRS-1
- PC-of-LUMA-TRS-4
- PC-of-LUMA-TRS-5
- PC-of-LUMA-TRS-8

- **Surrebuttal Testimonies from LUMA**
  - Pedro Meléndez – Chief Capital Programs & Grid Transformation Officer, LUMA Exhibit 74.0
  - Ed Balbis – Partner Guidehouse Consulting and Former Utility Regulator, LUMA Exhibit 76.
- **Answering Testimonies**
  - Anthony Hurley – September 8, 2025, NPFGC Exhibit 51
  - Patrick Hogan - September 8, 2025 NPFGC Exhibit 52

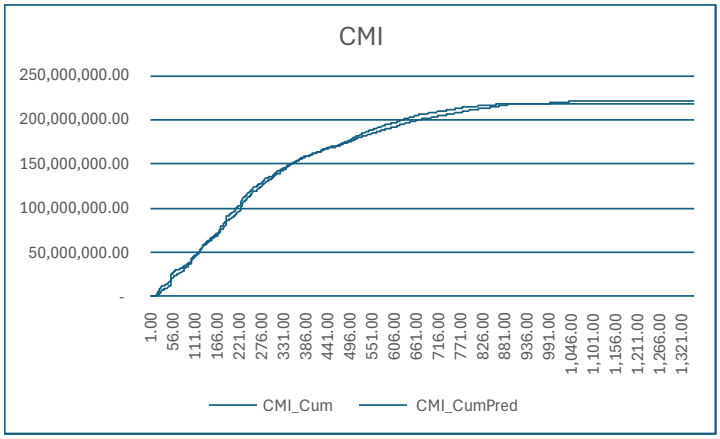
EXHIBIT 75.7: Illustrative Application of the Reliability Benefits Calculator

Application of LUMA's Reliability Benefits Calculator to each Program produces different slopes and end points, resulting in distinctive yield rates in CMI reduction/$ Investment. The source of information that allows calculation of "yield" rates (i.e., benefits delivered per dollar invested) for each program are Engineering judgement, Outage history, and average historical capture rates of available benefits by each program type.

Reliability Benefits Calculator:

$R(x) = \frac{ax^2+bx+c}{dx^2+ex+f}$, where R is reliability benefit.

Illustrative Analysis for Program "X" – Expected Yield Rate:



Illustrative Analysis for Program "Y" – Expected Yield Rate:

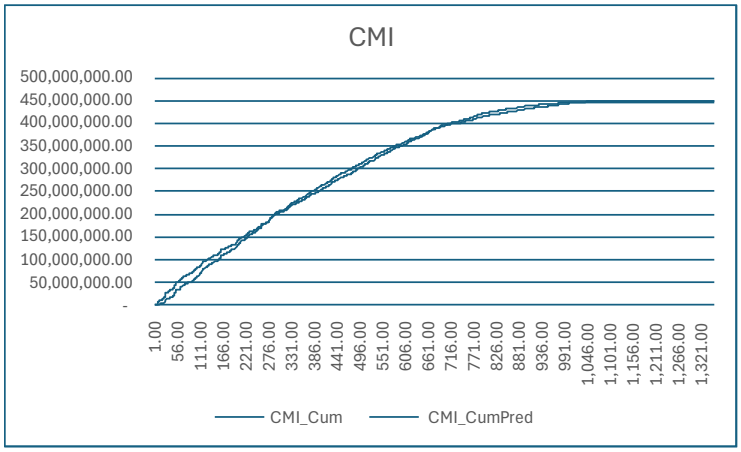
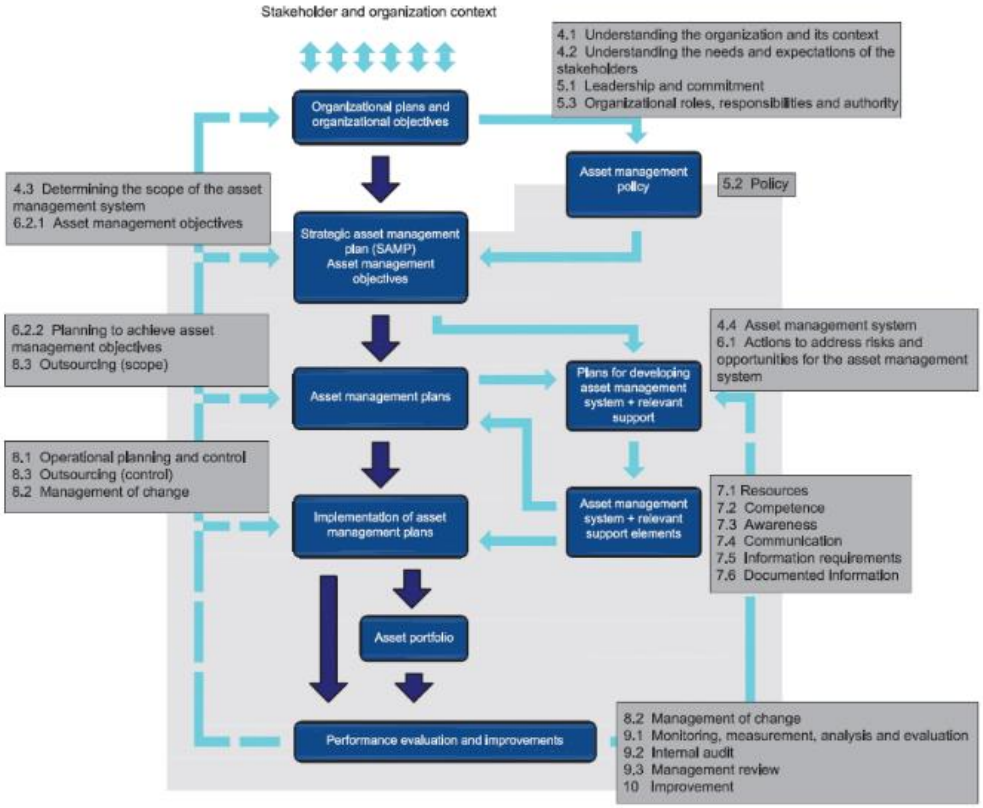


EXHIBIT 75.8: Organizational Strategy and Plans Drive Asset Management

Annex B
(informative)

Relationship between key elements of an asset management system

Figure B.1 shows the relationship between the key elements of an asset management system, together with the related clauses in ISO 55001.



NOTE 1 Only the primary connections are shown to avoid over complexity.

NOTE 2 This does not aim to repeat the distinction between asset management and an asset management system: it is a connections view showing directions of influence.

NOTE 3 The grey highlighted box designates the boundary of the asset management system.

Figure B.1 — Relationship between key elements of an asset management system

ISO 55001 Clauses 6.2.1 and 6.2.2 require organizations to establish asset-management

EXHIBIT 75. 9: LUMA Recovery and Transformation Framework (RTF)

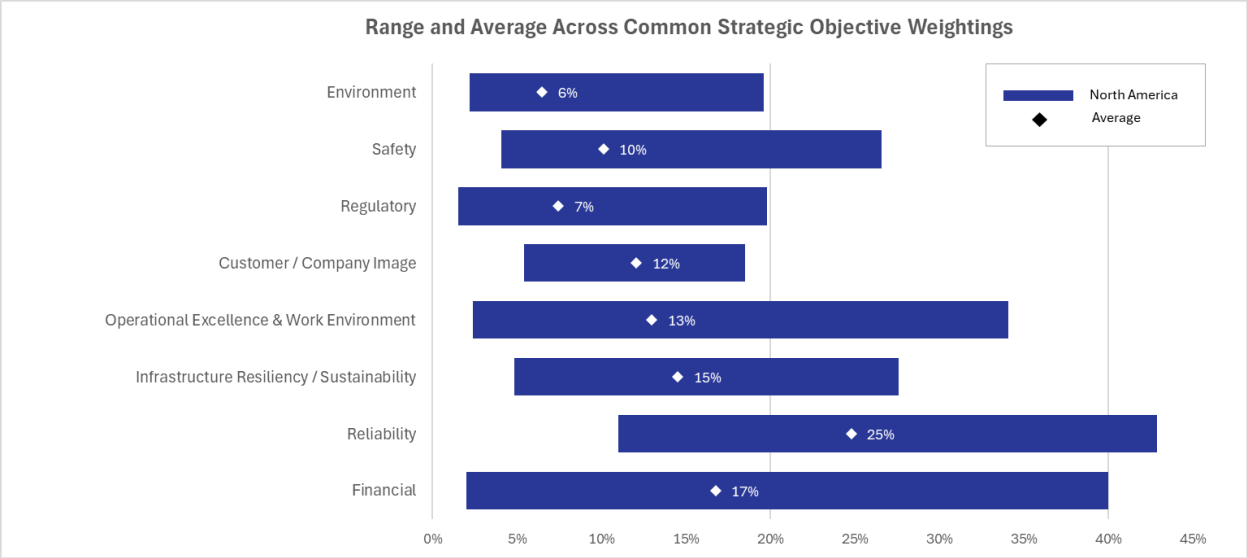
MISSION:	Recover and transform the utility to deliver customer-centric reliable, resilient, safe, sustainable, electricity at reasonable prices.			
KEY GOALS:				
Prioritize Safety	**Improve Customer Satisfaction**	**System Rebuild and Resiliency**	**Operational Excellence**	**Sustainable Energy Transformation**
Reform utility activities to support a strong safety culture focused on employee safety and safety of the people of Puerto Rico.	Transform operations to deliver a positive customer experience and deliver safe, reliable electricity at reasonable prices.	Effectively deploy federal funding to restore the grid and improve resilience of vulnerable infrastructure.	Enable employees to pursue operational excellence through new systems, processes, training and a safe workplace.	Modernize the grid and the utility to enable the sustainable energy transformation.

EXHIBIT 75.10: RTF Sub-Objectives

Safety	Obj 1: Promote a safe workplace
	Obj 2: Implement effective public safety practices
Customer Experience	Obj 1: Deliver a positive customer experience
	Obj 2: Increase service reliability
	Obj 3: Deliver electricity at reasonable prices
Operational Excellence	Obj 1: Enable systematic management of the business
	Obj 2: Pursue project delivery excellence
	Obj 3: Enable employees to execute operations systematically
System Rebuild & Resilience	Obj 1: Effectively deploy federal funding
	Obj 2: Restore damaged grid infrastructure
	Obj 3: Improve resilience of vulnerable infrastructure
Sustainable Energy	Obj 1: Modernizing the grid
	Obj 2: Enable the digital transformation
	Obj 3: Enable the sustainable energy transformation

The table above represents an illustrative rendition of LUMAs Prioritization Document showing the sub objectives with each domain of LUMA's RTF. Management evaluates each Capital investment project and program in terms of its support for delivering each of these sub objectives. The total evaluation of each program or project is then used to define the strategic value of that investment. And that Strategic Value is reflected in the relative priority of that program vs. others in defining importance and relative priority.

EXHIBIT 75.11: Comparative Utility Benchmarking of Strategic Domain Weightings



This benchmarking analysis spans ISL Analytics' (previously operating as UMS Group) implementation and ongoing support of its Spend Optimization Suite methodology / application from 2010 to present, encompassing twelve North American investor-owned and municipal distribution and/or transmission utilities (predominantly IOUs). Although our experience goes back much longer, with implementation of Strategic Business Value Frameworks (SBVFs) since 1999, this dataset reflects ISL Analytics' experience with these more recent clients implementing the Spend Optimization Suite software and/or the supporting SBVF and related investment evaluation processes. Utilities with data predating 2010 were excluded to ensure the results reflect contemporary strategic priorities.

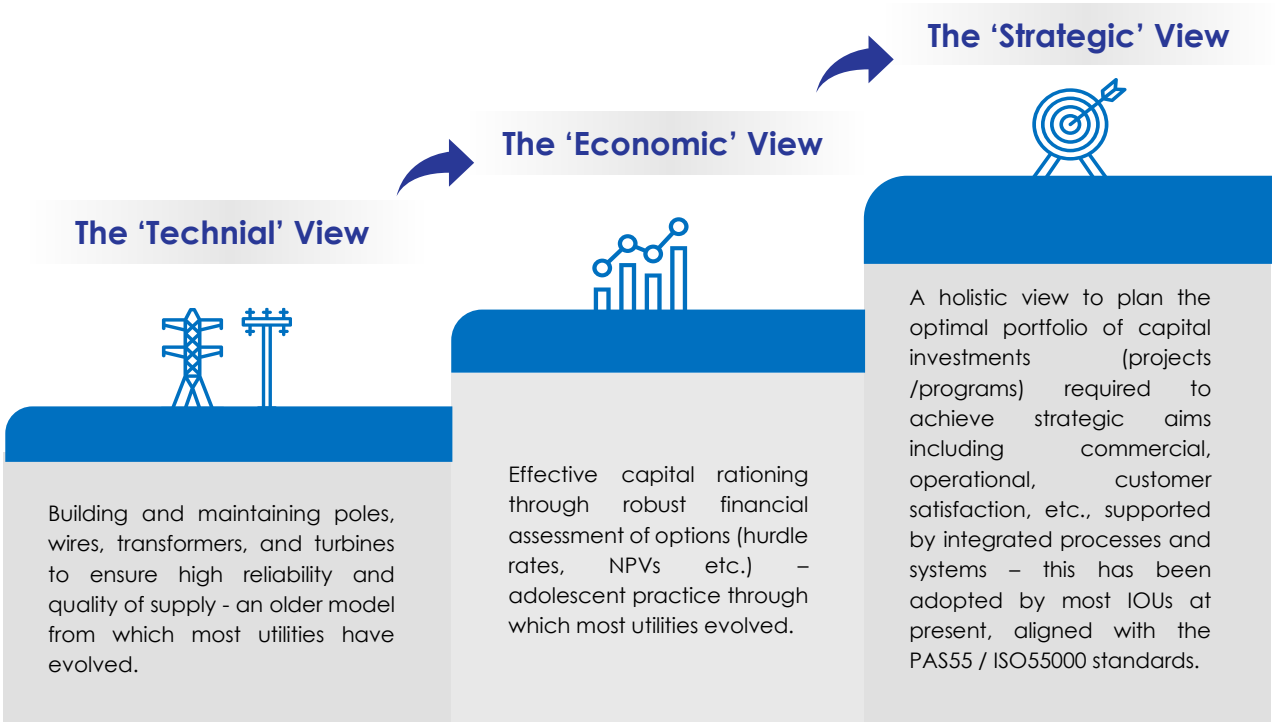
Where post-implementation weighting adjustments have occurred, ISL Analytics may not retain full visibility into subsequent refinements; therefore, this benchmark represents the most recently available weighting distributions for each organization, normalized across a common set of strategic objectives. While some slight variation likely exists as utilities update priorities over time, these data are broadly representative of prevailing industry practices. A notable exception

is in the most recent years, a discernible shift has emerged across the sector, driven by the rapid expansion of electric vehicles, data centers, and distributed energy resources. As a result, utilities have increasingly emphasized grid resilience and sustainability, redirecting some focus and investment weighting from *pure reliability* toward the broader goal of building a stronger, more adaptable grid.

The "typical range" values shown in the accompanying discussion (e.g., 20–30% for Reliability in North America) represent the central tendency observed across utilities, not the full minimum and maximum. While the underlying dataset reflects a broad observed range for Reliability, approximately 11–43% across North American utilities, the extremes capture atypical conditions. As an example, in the case of the top end of North American Reliability weighting, companies with a more narrowly focused set of investments, e.g., primarily reliability and load investments. To better represent normal industry practice, ISL Analytics identified the common clustering of values where most mature utilities operate under steady-state conditions. Thus, the cited "typical range" conveys the standard operating band for mature utilities, while the full range illustrates the outer limits of observed variation.

EXHIBIT 75.12: Asset Management: Evolving Views

Asset Management is not just about creating, operating and maintaining assets, it's about maximizing stakeholder value of the portfolio of assets under control.



Over the past several decades, the utility industry's view of asset management and investment planning has evolved significantly – from a technical focus on building and maintaining physical infrastructure, to an economic focus on financial efficiency, and ultimately to a strategic focus on maximizing total organizational value. In the early years, utilities emphasized maintaining poles, wires, and substations to ensure reliability and service quality.

By the early 2000s, this approach had matured into more financially driven decision-making centered on cost-benefit analysis and capital rationing. Today, industry best practice has advanced to a holistic, strategic view, in which investments are evaluated based on their contribution to achieving corporate objectives across multiple dimensions. This strategic view

integrates operational, financial, and stakeholder priorities into a unified framework, enabling transparent, balanced, and defensible investment decisions.

Without this view, organizations risk suboptimal outcomes, such as fragmented spending, inconsistent prioritization, and a lack of visibility into how individual projects collectively advance enterprise goals. The Strategic Business Value Framework (SBVF) approach represents this mature stage of evolution, ensuring that every investment aligns with and drives measurable progress toward the organization's strategic aims.

EXHIBIT 75.13: ISL Analytics (formerly UMS Group Digital Solutions Division) – Client Experience in Strategic Business Value Frameworks and the Spend Optimization Suite (SOS), 1999–2025

1

This exhibit summarizes ISL Analytics' (formerly the Digital Solutions Division of UMS Group) extensive experience from 1999 through 2025 in the development and implementation of the Spend Optimization Suite (SOS) methodology and application at over 45 clients. Over this period, the firm has applied Strategic Business Value Frameworks (SBVFs) and advanced decision-support analytics to optimize utility capital and O&M investments, integrate strategy with asset management, and deliver data-driven investment portfolio scoring assessment and optimization across a wide range of electric, gas, and water utilities.

EXHIBIT 75.14: Strategic Business Value Framework (SBVF) Investment Evaluation and Relative Strategic Objective Weightings

All potential capital projects are evaluated for their contribution to supporting the domains within the SBFV, ensuring that investment decisions are directly traceable to strategic objectives and hence, commitments and stakeholder needs. Each project or program is assessed using standardized quantitative and qualitative criteria that measure expected value contribution and risk mitigation. Scoring methodologies are typically developed and validated through collaborative workshops with subject-matter experts and documented within the framework. Applying consistent scoring logic across all project types allows the utility to compare a range of investments on a common value scale, supporting transparent portfolio prioritization / optimization.

A hallmark of best practice is the application of relative importance weightings to balance investment priorities across the strategic domains (or strategic objectives). Importantly, these weights are not based on intrinsic importance, for example, safety remains a non-negotiable foundational value, but rather on performance gaps relative to desired targets. This gap-based weighting approach directs incremental investment toward the domains where additional funding will yield the greatest improvement or risk reduction. By focusing on where gaps exist rather than on what matters most in principle, utilities ensure that priorities remain dynamic and responsive to changing system conditions and strategic goals. Based on our review of LUMA's Program Prioritization document and the associated sub-objective scoring within the RTF, we have observed LUMA currently applies an approach that leans toward equal weighting across domains, relying primarily on point scoring to assign relative importance. This is a reasonable and transparent structure at this stage of framework implementation. We also observed that a substantial portion of scoring activity and resulting value contribution is concentrated within the Reliability and Sustainable Energy domains, reflecting both their current strategic importance and a corresponding concentration of funding in these areas (described in more detail in subsequent sections). As LUMA's asset management processes continue to mature, it would be expected, consistent with the progression seen at most utilities, that the framework will be refined over time, incorporating more nuanced weightings to better reflect evolving performance gaps and strategic priorities.

EXHIBIT 75.15: LUMA Budget vs Actual Performance for FEMA vs NFC Budgets Over Past 5 Years

NFC ($ Millions)	2022	2023	2024	2025	2026	2027	2028
Actual Spend ($M)	$ 97.8	$ 81	$ 127.9	$ 125.3			
Budgets ($M)	$ 77.3	$ 77.2	$ 127.9	$ 125.6			
NFC Actual vs Budget	126.5%	104.9%	100.0%	99.8%			
Optimal Budget ($M)					$ 325.3	$ 546.9	$ 679.5
Spend Increase (Ramp)					260%	436%	542%
Constrained Budget ($M)					$ 217.2	$ 369.2	$ 462.8
Spend Increase (Ramp)					173%	295%	369%

Source:

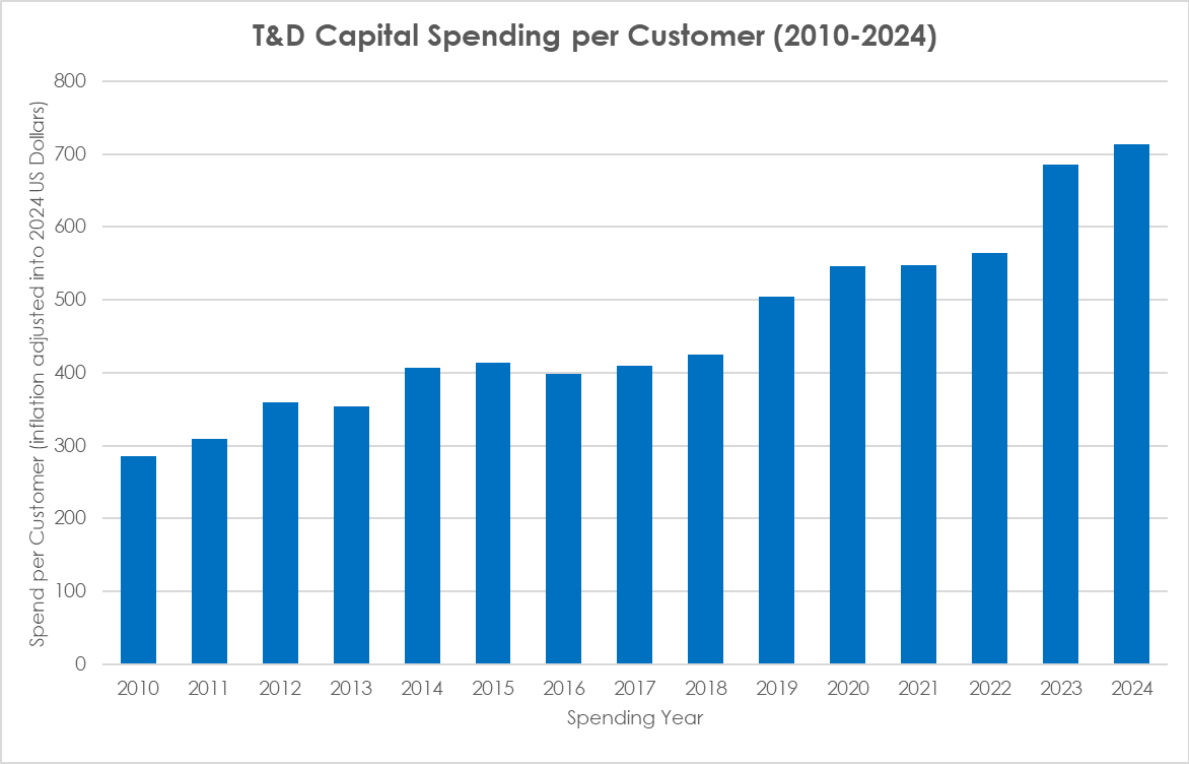
- *LUMA's Annual Report and Report on Efficiencies for FY 2022, 2023, 2024, and Q4 2025*
- LUMA Energy LLC, *LUMA Ex. 2.03 (7.03.25) Unconstrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4.1 Imp Prog Summary"
- LUMA Energy LLC, *LUMA Ex. 2.04 (7.03.25) Constrained Budgets Summary - Regulatory Schedules - 6.23.25.xlsx*, internal documentation, 2025, Tab "5.4 Imp Prog Summary"

As can be seen above, LUMA's NFC spend over the period FY 2022 through 2025 was close to Budgeted amounts each year, with virtually no underspend.

The Constrained Budget request for the next 3 years represents an increase of 173% in 2026, 295% increase in 2027 and 369% increase in 2028.

The Optimal Budget request for the next 3 years represents a 45 to 50% higher increase than the Constrained Budget.

EXHIBIT 75.16: Industry Trends in Average Utility T&D Capital Spending Levels



Industry T&D capital spending has grown strongly for more than a decade, but data shows steady growth, even at the quartiles, rather than volatile swings from year to year. Rapid changes in spending are unusual.

EXHIBIT 75.17: LUMA Proposed NFC Capital Spending / Customer vs Peers

LUMA (and PREPA before it) have for a number of years, had relatively low capital spend levels per customer, (i.e., $78 in 2024, which is 85% below the lowest quartile in the industry.)

Even at the 2028 Optimum Capital Budget proposed, LUMA would be 25% below Q1 spend.

Through this lens, proposed NFC Ramp rate should be far less challenging than Hogan asserts.

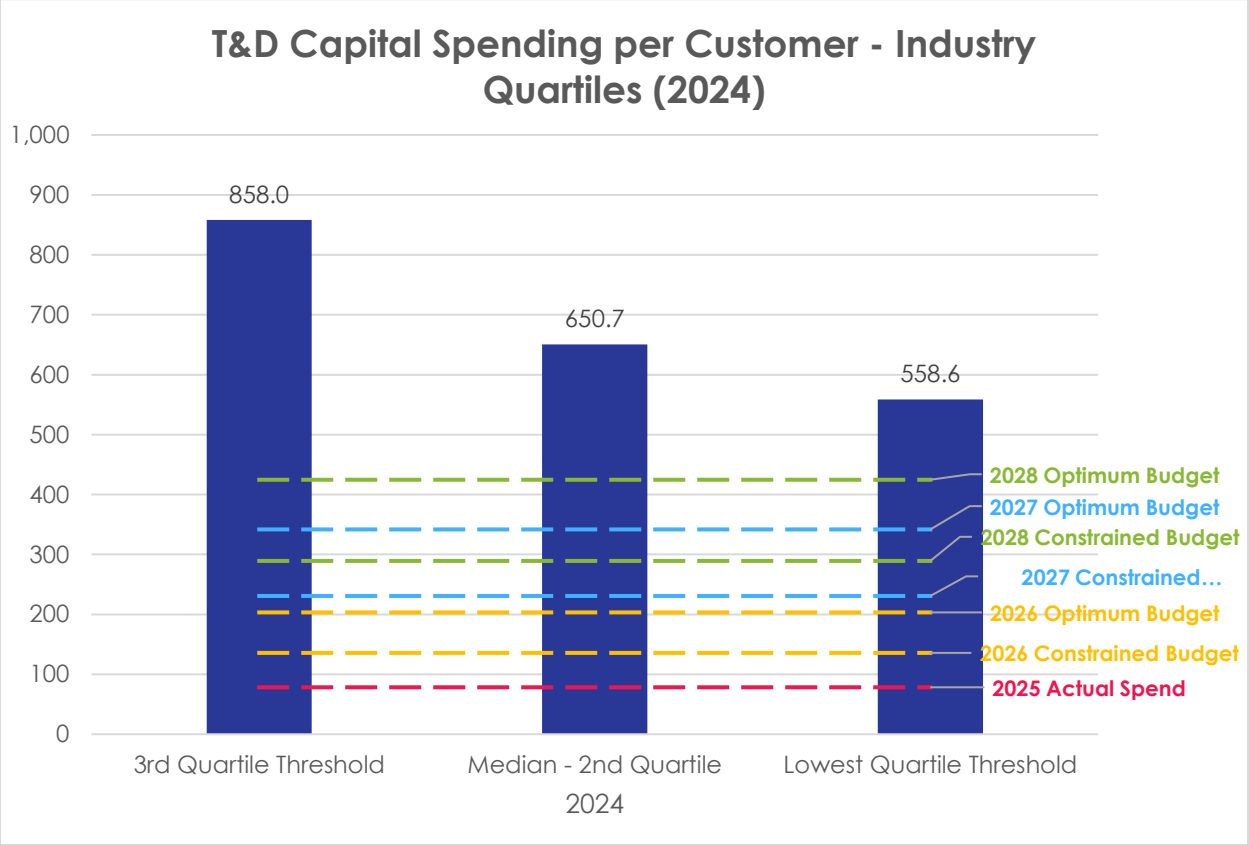


EXHIBIT 75.18: Benchmark Tables / Utilities T&D Capital Spending Ramp Rates

Electric Transmission

Organization Name	State	Ramp Factor	Ramp Year Period
Ameren Illinois Company	MO	4.93	2010 – 2013
Public Service Electric and Gas Company	NJ	4.92	2011 – 2014
Public Service Company of New Mexico	NM	4.50	2012 – 2015
Southern California Edison Company	CA	4.74	2011 – 2013
Delmarva Power & Light Company	DE	4.23	2021 – 2024
Tampa Electric Company	FL	4.85	2014 – 2016
International Transmission Company	MI	4.86	2011 – 2013
Entergy Arkansas, LLC	AR	3.69	2021 – 2024
Baltimore Gas and Electric Company	MD	3.40	2013 – 2016

Electric Transmission and Distribution

Organization Name	State	Ramp Factor	Ramp Year Period
New York State Electric & Gas Corporation	NY	4.82	2016 – 2019
Central Maine Power Company	ME	4.73	2010 – 2013
PacifiCorp	OR	4.24	2022 – 2024
The United Illuminating Company	CT	3.97	2021 – 2024
Northern Indiana Public Service Company LLC	IN	3.84	2015 – 2018
Entergy Texas, Inc.	TX	3.69	2018 – 2020
San Diego Gas & Electric	CA	3.28	2010 – 2012

Note: the above ramp rates are increases, not ratios. A 3.00 ramp factor reflects a 300% increase.

We looked at a comparable peer group to LUMA and found more than a dozen utilities that had been able to scale their T&D Capital investment levels by as much as LUMA is proposing.