



Autoridad de  
Energía Eléctrica

# 2022 Certified Fiscal Plan for the Puerto Rico Electric Power Authority

As certified by the Financial Oversight and Management  
Board for Puerto Rico on June 28, 2022



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- The longer-term economic ramifications of behavioral changes caused by COVID-19 (i.e., reduced travel, increased work from home, reduced activity in large gathering places, etc.);
- The amount of federal government aid provided to U.S. states and territories (including Puerto Rico) the efficacy and speed of disbursement of such aid;
- The need to shift resources to create a more resilient structure to prevent or mitigate future pandemics;
- Any future actions taken or not taken by the United States government related to Medicaid;
- The amount and timing of receipt of any distributions from the Federal Emergency Management Agency (FEMA), U.S. Department of Housing and Urban Development (HUD)’s Community Development Block Grant-Disaster Recovery (CDBG-DR) Program and private insurance companies to repair damage caused by Hurricanes Irma and Maria and the major earthquakes that occurred in January 2020;
- The amount and timing of receipt of any additional amounts appropriated by the United States government to address the funding gap described herein;
- The timeline for completion of the work being done by PREPA to repair PREPA’s electric system and infrastructure and the impact of any future developments or issues related to the reconstruction and modernization of PREPA’s T&D electric system and infrastructure by LUMA and the legacy generation O&M procurement process on Puerto Rico’s economic growth;
- The impact of outmigration and declining population; and
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The PREPA Certified Fiscal Plan incorporates the macroeconomic and demographic projections developed for and presented in the 2022 Certified Fiscal Plan for Puerto Rico as certified by the Financial Oversight and Management Board for Puerto Rico on January 27, 2022, in order to comply with Section 201 of PROMESA, incorporating such projections does not imply a representation by PREPA of the validity or reasonableness of the underlying assumptions or results.

# List of Acronyms and Key Terms

AAFAF	Puerto Rico Fiscal Agency and Financial Advisory Authority
ACD	Automated Call Distribution
Act No. 83	PREPA's Enabling Act
Act 120-2018	Puerto Rico Electric Power System Transformation Act
Act 17-2019	Puerto Rico Energy Public Policy Act
Act 211-2018	Act for Implementation of the Puerto Rico Public Service Regulatory Board Reorganization
Act 57-2014	Puerto Rico Energy Transformation and RELIEF Act
ADC	Actuarially Determined Contribution
ADMS	Advanced Distribution Management System
AES	AES Puerto Rico, parent company AES Corporation., an Independent Power Producer
AICPA	American Institute of Certified Public Accountants
AMI	Advanced Metering Infrastructure
AP	Accounts Payable
AR	Accounts Receivable
A&E	Architectural & Engineering
A/C	Air conditioning
BBA	Bipartisan Budget Act of 2018
CAA	Clean Air Act
CAIDI	Customer Average Interruption Duration Index
CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grant Disaster Recovery
CEMIN	Customers Experiencing Multiple Interruptions
CHP	Combined Heat and Power
CILT	Contribution in Lieu of Taxes
COR3	Central Office of Recovery, Reconstruction, and Resiliency
COVID-19	Coronavirus Disease 2019
DART	Days Away Restricted or Transferred
DER	Distributed Energy Resource
DG	Distributed Generation
DHS	Department of Homeland Security
DNER	Department of Natural and Environmental Resources of Puerto Rico
DOE	Department of Energy
DR	Demand Response
DSO	Days Sales Outstanding
EE	Energy Efficiency
EHP	Environmental and Historical Preservation
EMS	Energy Management System
EOC	Emergency Operation Centers
EPA	Environmental Protection Agency
EPM	Enterprise Project Management
ETR	Estimated Time of Restoration
EV	Electric Vehicles
FAASt	FEMA Advanced Award Strategy Initiative
FEMA	Federal Emergency Management Agency
FEMA PA 404	FEMA Hazard Mitigation Program
FEMA PA 428	FEMA Public Assistance Program
FERC	Federal Energy Regulatory Commission
FCR	First Call Resolution

FFS	Findings of Failure to Submit
FOMB	Financial Oversight and Management Board for Puerto Rico
Front-End Transition	Period of time from and including the Effective Date of T&D OMA to and excluding Service Commencement Date
FY	Fiscal Year
GASB	Governmental Accounting Standards Board
GDB	Government Development Bank for Puerto Rico
GenCo	Comprises existing PREPA-owned generation resources; to be operated and maintained by one or more private operators
GGHOA	GridCo-GenCo-HydroCo Operating Agreement
GNP	Gross National Product
GridCo	Comprises transmission and distribution, customer service, and administrative functions of PREPA; will be operated by LUMA
GW	Gigawatts
GWh	Gigawatt-hour
HMGP	Hazard Mitigation Grant Program
HoldCo	PREPA successor to be responsible for entity that will be responsible for certain non-operational functions
HydroCo	Hydropower Assets to be contributed by PREPA to HydroCo pursuant to a capital contribution agreement
HR	Human Resources
HUD	Department of Housing and Urban Development
IEEE	Institute of Electrical and Electronics Engineers
IoT	Internet of Things
IPP	Independent Power Producer
IRP	Integrated Resource Plan
IT	Information Technology
kV	Kilovolts
kWh	kilowatt-hour
LED	Light-Emitting Diode
LNG	Liquified Natural Gas
LOI	Letter of Intent
LUMA	LUMA Energy, LLC & LUMA Energy ServCo, LLC
MAIFI	Momentary Average Interruption Frequency Index
MATS	Mercury & Air Toxics Standards
MMBTU	Million British Thermal Units
MW	Megawatts
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standard
NME	Necessary Maintenance Expenses
NTE	Not to Exceed
NYSE	New York Stock Exchange
O&M	Operations and Maintenance
OIG	Office of Inspector General (Department of Homeland Security)
OIPC	Oficina Independiente de Protección al Consumidor
OMS	Outage Management System
OPEB	Other Post-Employee Benefits
OSHA	Occupational Safety and Health Administration
OT	Operational Technology
Oversight Board	Financial Oversight and Management Board for Puerto Rico
PA	Public Assistance, FEMA program
P3	Public-Private Partnership
P3A	Puerto Rico Public-Private Partnerships Authority

PMO	Project Management Office
PPA	Power Purchase Agreement
PPE	Personal Protective Equipment
PPOA	Power Purchase and Operating Agreement
PRDOH	Puerto Rico Department of Housing
PREB	Puerto Rico Energy Bureau
PREB IC	Puerto Rico Energy Bureau Independent Coordinator
PREPA	Puerto Rico Electric Power Authority
PREPA ERS	Puerto Rico Electric Power Authority Employees' Retirement System
PRM	Planning Reserve Margin
PSRB	Public Service Regulatory Board
PROMESA	Puerto Rico Oversight, Management, and Economic Stability Act (2016)
PropertyCo	Comprises existing PREPA-owned assets that are not directly related to generation, T&D, or irrigation operations
PW	Project Worksheet
PV	Photovoltaics
RFP	Request for Proposal
RFQ	Request for Quotation
RFR	Request for Reimbursement
RPS	Renewable Portfolio Standard
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCADA	Supervisory Control and Data Acquisition
SOQs	Statements of Qualifications
SOW	Scope of Work
SRP	LUMA System Remediation Plan
T&D	Transmission and Distribution
T&D OMA	Transmission and Distribution Operations and Maintenance Agreement
TRC	Total Resource Cost
TWh	Terawatt-hour
UAAL	Unfunded Actuarial Accrued Liability
USD	United State Dollar
USGS	United States Geological Survey
UTIER	Puerto Rico Electrical Industry and Irrigation Workers Union [by its Spanish acronym]
VTP	Voluntary Transition Program
WTI	West Texas Intermediate
YTD	Year-To-Date

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# Chapter 1. Executive Summary

**The 2022 Certified Fiscal Plan lays out a path towards the completion of the operational and financial reorganization of the Puerto Rico Electric Power Authority (PREPA) and the successful completion of the transformation of Puerto Rico's energy sector.**

**Puerto Rico's economic recovery depends on a comprehensive and overdue transformation of its energy sector to deliver the safe, reliable, and affordable service that Puerto Rico's residents and businesses deserve.** Like prior Certified Fiscal Plans, the 2022 Certified Fiscal Plan lays out a set of continued actions to further advance and accelerate progress on this transformation, including improving and modernizing the transmission and distribution (T&D) system, as well as PREPA's generation fleet, leveraging private-sector expertise and experience to enhance T&D and generation system operations, diversifying the Island's energy resources, including the deployment of renewable energy resources and restructuring legacy obligations. When fully implemented, these transformational initiatives will set Puerto Rico on a trajectory to achieve a safe, reliable, affordable, resilient, modern electric grid, improving the quality of life for its residents and supporting long-term economic growth of the island activity, through private sector expertise independent from political interference.

During FY2022, PREPA and the Government made progress on several initiatives:

- Completed a competitive procurement process to obtain the best available market prices for major fuel supply contracts (Diesel and Bunker C) leading to savings in fuel costs compared to prior contracts.
- Supported the procurement process for the Legacy Generation Public-Private Partnership (P3) by developing materials for and supporting the administration of the Request for Proposal (RFP) and bidder due diligence process for the Legacy Generation P3.
- Completed the procurement of 18 solar PPOAs totaling approximately 845MW of installed capacity from Tranche 1 of the Renewable RFP.
- Submitted over \$200 million in generation projects to FEMA.

As T&D System operator, LUMA made progress on the following areas:

- Reduced customer call-wait times by over 95% to less than one minute and increasing customer accessibility to e-billing platforms with over a million customers registering on electronic portal or downloading the LUMA app.
- Reduced OSHA DART Rate and OSHA Injury Severity Rate by over 80%.
- Addressed inherited backlog of DG project interconnection requests, approving over 130 MW of new rooftop solar and other DG systems.
- Gained regulatory approval for 190 initial scopes of work representing \$7.8 billion in federal funding

**Despite these efforts and progress to-date, much work remains to be done.** These responsibilities are now shared with the T&D operator, LUMA. Completing the comprehensive transformation of Puerto Rico's energy system, which includes the separation of the transmission and distribution ownership from the generation ownership, reaching public policy renewable energy targets, reducing outage frequency and duration, enabling rate affordability, improving service reliability and customer satisfaction, and ensuring system resiliency and preparedness against unforeseen events requires diligent implementation and coordination between LUMA and PREPA, along with the support and cooperation of the P3A and PREB, of multiple key initiatives, most importantly:

- **Improving T&D and Generation operations:** Improving program management to ensure timely and on budget completion of key operational initiatives, including proactive maintenance programs.
- **Modernizing and Reconstructing the Transmission and Distribution System:** Developing and timely executing a capital investment plan to modernize and strengthen the electrical grid.
- **Contracting new generation to meet RPS targets:** Implementing the PREB-approved IRP Modified Action Plan to modernize power generation resources and increase renewable energy generation.
- **Effectively and efficiently deploying federal funding:** Optimizing the available federal funding and other associated obligated funding to enable the transformation of the generation portfolio and the T&D Systems.
- **Improving workforce and public safety:** Continue health, safety and technical training for employees to develop a safe and competent workforce and continue to improve customer and public awareness of electrical hazards.
- **P3A's completion of the competitive procurement process for one or more operators for the PREPA legacy generation assets:** Completion of the remaining procurement efforts to implement the transfer of operation and maintenance of PREPA's legacy generation assets to professional and independent private operators.
- **Restructuring legacy debt obligations:** Supporting ongoing efforts by FOMB and AAFAF to restructure PREPA's existing, unsustainable debt load and regain access to capital markets, without unduly affecting electricity rates and the burden on customers and the economy of Puerto Rico.
- **Pension Reform:** Balancing the objectives of rate affordability with PREPA's pension obligations to employees and retirees, PREPA must support FOMB and AAFAF in addressing the pensions in a plan of adjustment that ensures a sustainable reform.

**Delays in the implementation of renewable energy projects and energy efficiency measures pose a serious risk to Puerto Rico's ability to meet its renewable energy and energy efficiency aspirations.** These delays also highlight the need for the Government, PREB, PREPA and LUMA to take urgent actions to enable and support the transition and transformation of the energy system. PREB and LUMA must also work towards updating the existing Integrated Resource Plan to reflect the current pace of deployment, as well as updated



macroeconomic conditions, to ensure it serves as an appropriate roadmap for the actions and decisions that must be taken in the short- and medium-term. A failure to address the root causes of these delays, and to take the remedial actions needed to ensure a reliable energy service may set Puerto Rico on a path to erasing the progress made over the last years, leaving the Island's residents and businesses permanently at the mercy of an unreliable, expensive, and inefficient energy system.

**Puerto Rico's energy infrastructure lags national standards due to decades of operational and financial mismanagement.** Delayed capital projects have kept the system vulnerable to disruption and increased rates. A historical lack of long-term planning has resulted in PREPA's system being technologically outdated, operationally inefficient, and heavily reliant on an unreliable, high-cost, and highly polluting oil-fired generation fleet. The dependence on outdated generation and low operational efficiency across the organization has resulted in high electricity rates and low service reliability. Puerto Rico's ratepayers spend a higher share of income on electricity service than most US ratepayers for service with reliability that falls at the bottom of the fourth quartile of peer utilities. While LUMA has brought professional and experienced services to the operation of PREPA's transformation and distribution system and mitigated the impact of decades of politicized decision-making regarding grid maintenance and operations, these issues with PREPA's system are a result of long-term failures to invest in and maintain its grid.

**PREPA's prior operational shortcomings and inability to implement modest rate adjustments to cover its rising costs led persistent operational deficits and the accumulation of significant legacy debt and pension obligations.** As of May 2017, PREPA held approximately \$9 billion in financial debt obligations, the equivalent of \$6,000 per customer, while PREPA's pension liability exceeded \$4.3 billion, of which \$3.6 billion was unfunded, the equivalent of \$2,400 per customer.<sup>1</sup> In other words, for every \$1.00 owed to existing and future retirees, PREPA's pension plan had less than \$.20 available to pay pensioners. These liabilities led PREPA to seek a restructuring of its legacy obligations through a voluntary petition under Title III of the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) in 2017.

**PREPA and the people of Puerto Rico have also faced compounding negative effects from external factors.** In September 2017, Hurricanes Irma and Maria devastated the electric grid. In January 2020 key PREPA generation assets were damaged by a 6.4 magnitude earthquake. Shortly following that disaster, the ongoing Coronavirus Disease 2019 ("COVID-19") pandemic begun which further delayed much needed system maintenance and improvements. More recently, fuel global oil prices have increased significantly due to, among other things, the Russian invasion of Ukraine in February 2022, which has driven rates above ~28 cents per kWh even though PREPA's current rates do not provide for payment of debt services or pensions. This level of costs for fuel and electricity poses serious financial challenges to PREPA, its customers and the overall island economy.

**Over the next 30 years, the overall load in Puerto Rico's electricity system is forecasted to decline because of declining population and diminishing inflation-adjusted economic activity.** The rate of decline is further accelerated as customers leverage energy efficiency (EE) and distributed generation (DG) to reduce their reliance on the grid. In this

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<sup>1</sup> Based on independent actuarial study conducted performed by Aon Hewitt, valuation results as of June 30, 2020

context of forecasted declining load, implementing efficiencies will be required to limit the need for rate increases to cover fixed costs of the system.

**To successfully execute on the Certified Fiscal Plan and ensure continued progress towards transformed energy sector, PREPA – together with LUMA– must effectively manage several contingencies and risks.** The ongoing effects of the COVID-19 pandemic are expected to taper during the coming fiscal year. LUMA is expected to begin executing on large capital projects funded by FEMA and other federal agencies. PREPA must also complete transitioning matters to LUMA so that LUMA can maintain and prepare the system to withstand potential future hurricanes and other weather events. Other contingencies include successfully completing debt restructuring and working to ensure timely deployment and reimbursement of federal funding for emergency reconstruction vendors and mitigation. PREPA will continue to collaborate with key government counterparties including the Oversight Board, the P3A, AAFAF, PREB, and Central Office of Recovery, Reconstruction, and Resiliency (COR3) to collectively ensure successful transformation.

If successfully implemented, the 2022 Certified Fiscal Plan for PREPA will accelerate the transformation of the Island’s energy sector into a safe, resilient, and modern electric grid, providing reliable service to customers at predictable and affordable rates, enabling long-term economic and job growth. Over the next five years, this transformation will result in access to safe, reliable, clean and efficient energy system the people of Puerto Rico deserve.

## Chapter 2. Historical Context and Current Challenges

### 2.1 Key Facts about PREPA

PREPA, formerly known as the Puerto Rico Water Resources Authority until 1979, was created through Act No. 83 on May 2, 1941 (PREPA's Enabling Act). Throughout its history, PREPA has served as the sole franchise utility electricity provider in Puerto Rico. Until 2014, PREPA was self-regulated and operated without an independent regulatory body to ensure accountability on long-term planning and rate setting. As of the end of FY 2021, PREPA served approximately 1.5 million customers and generated approximately \$3.2 billion in revenues from 16 terawatt-hours (TWh) of electricity sales.<sup>2</sup>

### PREPA Compared to Similar Public Utilities

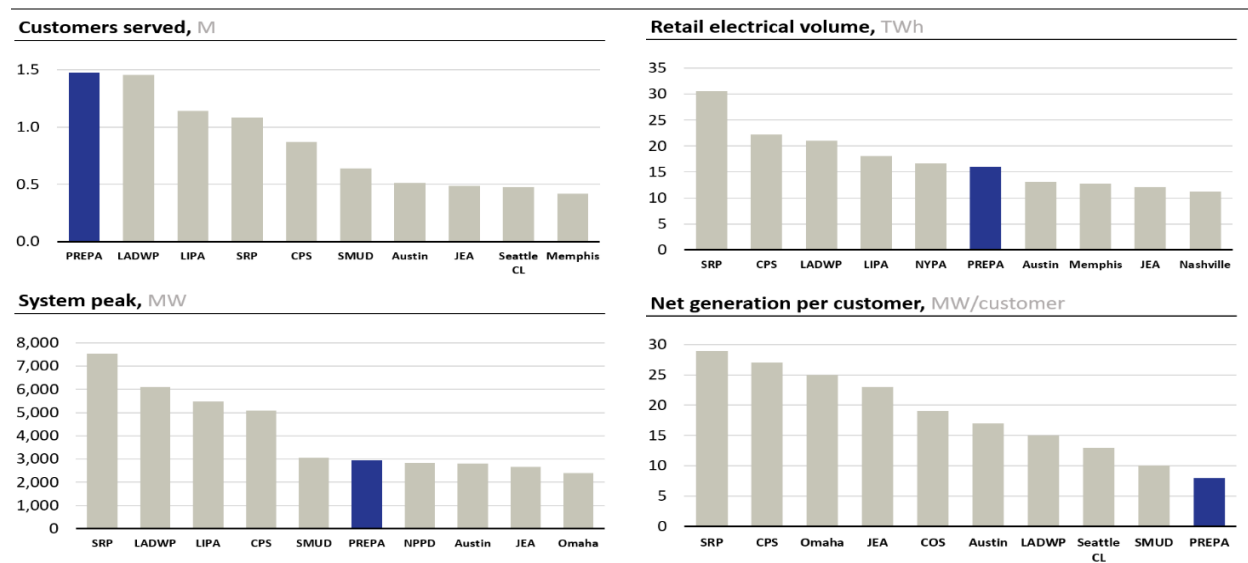
PREPA is the largest public power utility in the U.S. by number of customers served but has relatively low generation output and energy sales on a per customer basis (Exhibit 1). PREPA currently produces an annual net generation of roughly 12 megawatt-hours (MWh) of energy per customer, meaning that PREPA delivers less than half as much power per customer than comparable mainland utilities. PREPA's annual peak hourly load is also substantially lower than comparable mainland utilities, as Puerto Rico customers do not command sizeable increases in load during winter months.<sup>3</sup>

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<sup>2</sup> Monthly Report to PREPA's Governing Board, June 2021 (interim unaudited financial results).

<sup>3</sup> Annual peak demand in Puerto Rico typically occurs within the August – October period.

EXHIBIT 1: KEY PREPA FY 2020 STATISTICS COMPARED TO PEERS<sup>4</sup>



In terms of service reliability, the people of Puerto Rico have historically experienced lower quality service than what is available and required in other jurisdictions. The average PREPA customer loses power at least once every 5 to 6 weeks, compared to 1 to 2 times per year for mainland customers. This adverse impact on quality of life and economic activity for Puerto Rico’s residents and businesses is routinely a cause for concern in economic surveys and poses an underlying risk to essential services for residents.

According to industry benchmarks and LUMA’s assessment during the front-end transition period, in 2020 PREPA’s customers experienced nearly 8 times more service interruptions than customers of the median US utility within IEEE benchmarks. Similarly, in 2020, the average duration of power outages was nearly 10 times longer for PREPA’s customers than for mainland customers (see Exhibit 2). Although PREPA had shown modest improvement since 2017, metrics assessed for 2020 placed PREPA in the bottom quartile of peer utilities; Puerto Rico residents

<sup>4</sup> Based on publicly available data sourced from either EIA 412 or annual reports and the EIA 861 filings for FY 2020. Utilities surveyed include Los Angeles Department of Water and Power; Long Island Power Authority; Salt River Project; City Public Service of San Antonio, Sacramento Municipal Utility District; Austin Energy; Jacksonville Electric Authority; Seattle City Light; Memphis Light, Gas and Water; Omaha Public Power District, New York Power Authority, Nashville Electric Service, Nebraska Public Power District, Colorado Springs Utilities. Net Generation includes energy purchases as well as generated energy on a net basis.

and businesses experienced far more outages for far longer periods of time. PREPA’s reliability metrics using industry standard methods are illustrated in Exhibit 2.<sup>5</sup>

EXHIBIT 2: RELIABILITY METRICS COMPARED TO PEER GROUP MEDIAN<sup>6</sup>

Metric	PREPA CY 2019	PREPA CY 2020	IEEE median, 2020
System Average Interruption Duration Index (SAIDI) Minutes per year	1,097	1,257	127
System Average Interruption Frequency Index (SAIFI) Number of interruptions per year	9.8	8.3	1.06

## 2.2 Historical Challenges Leading to the Transformation Mandate

PREPA is the sole electric power utility in Puerto Rico operating an exceptionally complex energy system. Operating an electrical network on a mountainous, isolated, tropical island with dense vegetation is challenging as it requires significant maintenance of often remote transmission and distribution lines. Furthermore, the system cannot rely on access to a larger, regional, and interconnected power grid for power generation like most parts of the U.S. mainland. The complexity of operating the Puerto Rico energy system has been compounded by decades of operational, maintenance, and financial challenges resulting in the system lagging far behind national standards. Financially, PREPA’s operational shortcomings and historical failure to adjust rates to cover rising costs over time, led to the accumulation of significant legacy debt and pension obligations, as well as under-maintained and outdated infrastructure.

Several long-standing structural issues have led to PREPA’s current financial and operational position:

- **Political influence and lack of continuity in decision making:** Historically, management decisions have been subject to political influence and changes, leading to high management turnover, discontinuity in capital investment plans, and electric customer rates that were insufficient to cover operating and maintenance costs and, debt service. Politicized decision making ultimately led PREPA to issue more debt to cover current debt service rather than to set rates sufficient to do so. As a result, customers have been faced with increasingly poor reliability due to aging infrastructure, sub-optimal management and financial performance and rate volatility because of a historical overdependence on oil-fired generation with its fluctuating market prices, among others.

<sup>5</sup> LUMA’s filings with PREB related to performance metrics and System Remediation Plan. <https://energia.pr.gov/wp-content/uploads/sites/7/2021/03/Request-for-Leave-to-File-Amended-Exhibit-2-NEPR-MI-2019-0007.pdf>

<sup>6</sup> IEEE Benchmark: <https://cmt.ee.org/pes-drwg/wp-content/uploads/sites/61/2021-IEEE-DRWG-Benchmarking-Results.pdf>

- **Lack of rate adjustments to cover costs:** PREPA has operated under a fiscal deficit since the early 2000s due to, among other things, its inability to implement modest base-rate adjustments for non-fuel operations and maintenance (O&M) expenses.<sup>7</sup>
- **Macro-economic challenges.** PREPA has been impacted by macroeconomic challenges in recent years. Puerto Rico’s economy began to deteriorate, experiencing a 20% decline in real gross national product (GNP) since 2007, while growing out-migration led to population decline of over 15% since 2004, shrinking PREPA’s revenue base. Consequently, by 2021, energy sales fell by 21% from its peak in 2007 and operating revenues declined by 31% over the same period. With fewer customers and a lower revenue base, existing customers have had to pay higher rates to cover fixed system costs.
- **Overreliance on fossil fuels with fluctuating prices for power generation.** Although PREPA has reduced its reliance on oil-based power generation by converting certain key power units to natural gas-based power generation, PREPA customers are still subject to a generation mix highly dependent on antiquated oil-fired units and a rate structure that passes through fluctuating fuel costs, resulting in historically volatile rates. This in turn challenges customers’ ability to pay and creates affordability pressure for all customer classes. Between 2009 and 2014, PREPA’s fuel-adjustment rider increased by around 45% when the oil price doubled from \$60 to \$120 per barrel.<sup>8</sup> The combined impact of lower sales and higher fuel prices contributed to high and also volatile average customer rates ranging from 20 to 30 c/kWh. In FY 2021, approximately 43% of generation was fueled by natural gas, 37% was oil-fired, 17% was coal fired, and 3% was from renewable sources. For comparison, the US national average for oil fired generation is currently less than 1% of total generation. Without further investment in lower cost renewable power sources and battery storage, Puerto Rico residents and businesses will remain vulnerable to changes in oil and gas prices.<sup>9</sup>
- **Unsustainable debt and pension obligations:** PREPA accumulated approximately \$9 billion in debt and over \$4 billion in pension liabilities. Rates were not adjusted to cover these growing liabilities. Without debt restructuring, electric rate increases of between 6 to 8 c/kWh in real dollars to pay legacy debt would cause rates as of the date of the certification of this fiscal plan to increase above 35 c/kWh and would significantly elevate them on a long-term basis. Additionally, to fully fund pension benefits after plan assets are depleted, which is estimated to occur during FY2024, PREPA will be required to contribute over \$250 million per year on average. This would represent an increase in the monthly electricity rate of 1.5 to 2.1 c/kWh over the next two decades. For instance, in 2020 rates went down to approximately 21 c/kWh and then increased exponentially in 2022 to ~26 c/kWh, due to supply chain constraints and the Russian invasion of Ukraine.
- **Underinvestment in grid maintenance and modernization:** Given insufficient revenues and an inability to implement rate adjustments to cover the substantial liabilities mentioned above, PREPA’s management historically reduced, or eliminated altogether,

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<sup>7</sup> PREPA has adjusted rates related to fuel and purchased power on a monthly or quarterly basis to reconcile actual costs but did not adjust its base rate for non-fuel O&M costs for over 25 years, prior to the 2016 rate filing and rate adjustment.

<sup>8</sup> PREPA, FY2009 Monthly Report (interim, unaudited financial results); PREPA, FY2014 Monthly Report (interim, unaudited financial results).

<sup>9</sup> Siemens Industry, Puerto Rico Integrated Resource Plan 2018-2019, RPT-015-19, rev. 2 (Schenectady, June 7, 2019), 7-3, <http://energia.pr.gov/wp-content/uploads/2019/02/PREPA-Ex.-1.0-IRP-2019-PREPA-IRP-Report.pdf>; U.S. Energy Information Administration, Puerto Rico: Profile Overview, last modified November 21, 2019, <https://www.eia.gov/state/?sid=RQ>.

prudent and needed investments in long-term maintenance and capital improvement programs. In recent years, capital investments in the T&D System were limited to the most urgent projects to avoid imminent system failure or respond to equipment breakdowns, rather than proactively improving the grid. Historic underspending on vegetation management and other maintenance resulted in a T&D System highly susceptible to damage from hurricanes, earthquakes, and other unforeseen events.

- **Aging and inefficient generation fleet:** Failed efforts to diversify and maintain generation resources have resulted in an aged and inefficient generation fleet. PREPA owns installed capacity of approximately 4,500 MW with another 1,000 MW contracted under PPOAs from AES and EcoEléctrica. The PREPA plants have an approximate average age of over 40 years, compared to a national average of 18 years.<sup>10</sup> Aging assets lead to operational challenges, including lower operational flexibility because of slower ramp-up capacity, a higher likelihood of outages, increased costs per megawatt-hour generated, as well as non-compliance with environmental and health regulations. Further, PREPA-owned generation plants have high unavailability due to ongoing deratings, as well as forced and planned outages that result in less than 50% of PREPA-owned generation available for service on average over the past 12 months when considering the full 8,760 hours in the period.

Considering these long-standing operational and financial challenges, the 2022 Certified Fiscal Plan for the Commonwealth of Puerto Rico, which the Oversight Board certified on January 27, 2022, confirms and updates the continued path towards the full transformation of Puerto Rico’s energy sector, as required by Puerto Rico public policy<sup>11</sup> and laid out in prior fiscal plans. The Puerto Rico electricity system requires a comprehensive transformation to deliver the safe, reliable, clean, and affordable service that Puerto Rico’s residents and businesses desperately need and deserve. This transformation process is described further in Chapter 3.

## 2.3 Governance Structure

PREPA’s Enabling Act established PREPA as a public corporation having legal existence separate and independent from that of the Government of Puerto Rico. The PREPA Governing Board is charged with the power to appoint the Executive Director or Chief Executive Officer, as well as all other executive officers.

PREPA’s Governing Board is composed of seven members (Exhibit 3).

1. Three members are appointed by the Governor of Puerto Rico, with the advice and consent of the Senate; these members are selected from a list of candidates prepared by a professional recruitment firm.
2. Three members are appointed by the Governor at his or her sole discretion, one of which must be independent and not an employee of any government entity.
3. One member is elected by PREPA’s customers to represent customer interests.

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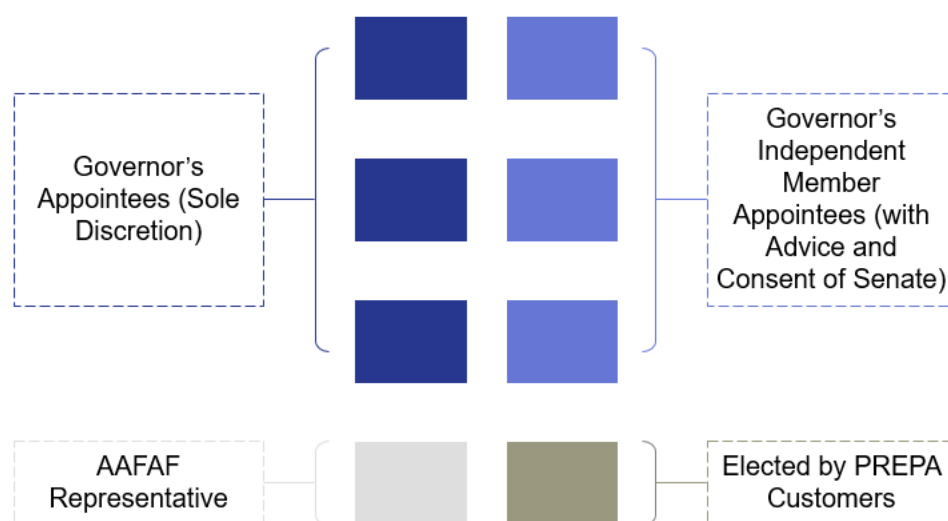
<sup>11</sup> US Congress, Exploring Energy Challenges and Opportunities. Excludes IPP installed capacity of 961 MW: all renewable energy plants are independently owned and contracted through PPAs.

<sup>12</sup> Defined within, but not limited to, Act 17-2019, Act 120-2018 and Act 57-2014.

Additionally, Article 16 of Puerto Rico’s Fiscal Agency and Financial Advisory Authority (AAFAF) Enabling Act provides that AAFAF’s Executive Director is a member of the Board of Directors of any instrumentality of the Government of Puerto Rico that is designated as a covered territorial instrumentality under PROMESA while such designation is in effect. Given PREPA’s designation as a covered territorial instrumentality, AAFAF’s Executive Director, or his designee, is also a member of PREPA’s Governing Board.<sup>12</sup>

Governing Board members appointed by the Governor with the advice and consent of the Puerto Rico Senate serve staggered terms, while the members appointed at the Governor’s sole discretion are considered at-will directors – except for the independent member, who serves a term of five years. The customer interest representative also serves a term of five years.<sup>13</sup>

EXHIBIT 3: PREPA GOVERNING BOARD COMPOSITION



PREPA and its Governing Board are regulated by the Puerto Rico Electric Bureau (PREB). PREPA’s Governing Board is also subject to the oversight of the Oversight Board since the enactment of the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) in 2016. Further details on regulatory structure, including the role of the PREB can be found in Chapter 4 – Legal and Regulatory Structure.

As required by Act-17-2019<sup>14</sup>, PREPA has ceased operating as a vertically integrated monopoly and has transferred operational responsibilities for T&D O&M Services to LUMA, as set forth in

<sup>12</sup> Act 2-2017, as amended (3 L.P.R.A. § 9376).

<sup>13</sup> Section 4 of the PREPA Enabling Act (22 L.P.R.A. § 194).

<sup>14</sup> The Puerto Rico Energy Public Policy Act, Act No. 17 of April 11, 2019



the Transmission & Distribution Operations and Maintenance Agreement (T&D OMA) with LUMA. PREPA continues to retain ownership of the electric system assets.

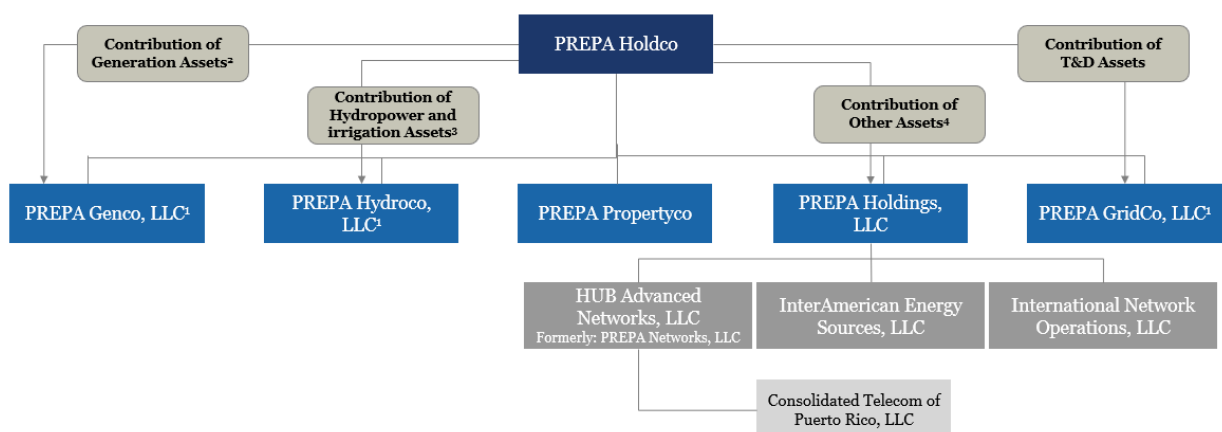
The continuing focus and priority of the PREPA Governing Board is to support and implement the various transformational measures outlined in PREPA's and the Commonwealth's 2022 Certified Fiscal Plans, including:

1. Complying with PREPA's obligations under the T&D OMA;
2. Supporting P3A in the completion of the existing P3A competitive procurement process for the selection of one or more operator(s) for legacy PREPA generation and the eventual transfer of O&M responsibilities;
3. Supporting LUMA, as necessary, to efficiently deploy and manage the maximum amount of federal funding allocated by various federal agencies for the repair, reconstruction and strengthening of Puerto Rico's energy infrastructure and related assets, in a manner consistent with the T&D OMA and, to the extent applicable, any agreement resulting from the legacy PREPA generation procurement process;
4. Continuing to implement short-term operational and managerial reforms that enhance financial stability, service quality (of power generation while in control of PREPA), improve operational efficiency and environmental compliance, enhance transparency and accountability, and reduce political intervention; and
5. Supporting efforts to restructure PREPA's legacy debt and pension obligations.

### **Corporate Reorganization**

PREPA has worked and coordinated with the P3A to refine and implement a reorganization of PREPA that is consistent with the public policy set forth in Act 17-2019 and meets all additional legal and regulatory requirements, including tax, FEMA, PREB, and relevant requirements under the T&D OMA. Chapter 3 of this Certified Fiscal Plan outlines PREPA's future organizational structure, after completion of the relevant transformation initiatives.

EXHIBIT 4: ILLUSTRATIVE REORGANIZED PREPA CORPORATE STRUCTURE



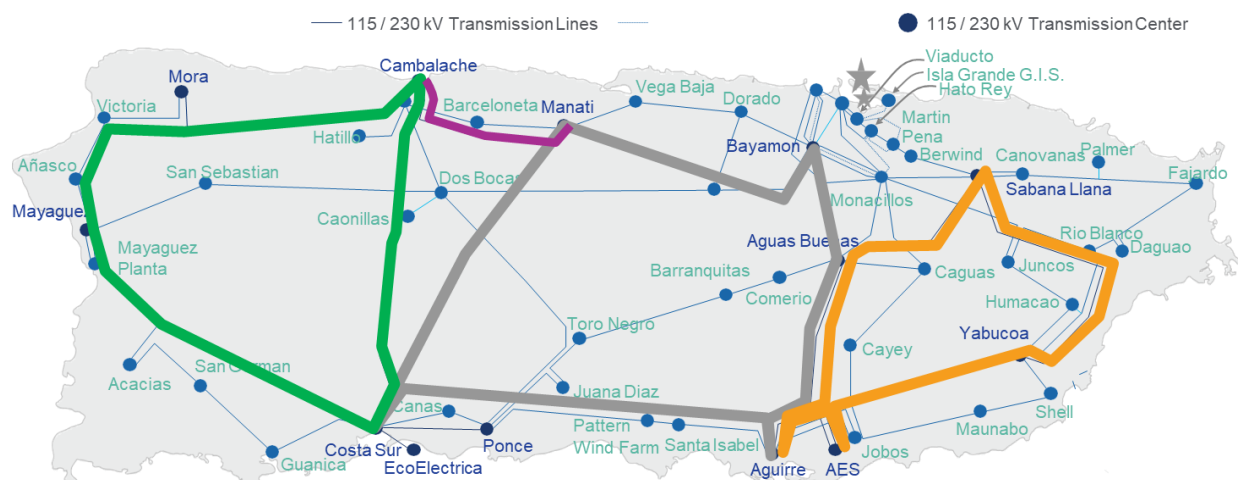
- |  |  |
|--|--|
| <p>1. New entity to be created as a Puerto Rico limited liability company.</p> <p>2. Generation plants and related assets to be contributed by PREPA Holdco to Genco pursuant to a capital contribution agreement, which will include an exhibit describing such assets.</p> | <p>3. Hydropower and irrigation plants and related assets to be contributed by PREPA Holdco to Genco pursuant to a capital contribution agreement, which will include an exhibit describing such assets.</p> <p>4. Any other asset not related to energy generation, hydropower or irrigation, or PREPA's transmission and distribution assets to be transferred to one of PREPA Holdco's existing subsidiaries pursuant to one or more capital contribution agreements, which will include exhibits describing such assets.</p> |
|--|--|

## 2.4 Current State of T&D

Puerto Rico's T&D System is comprised of three major transmission loops that move electric generation from power plants concentrated along the southern coast to load centers concentrated in the northeast. The system's dependence on north-south transmission creates operational inefficiencies and grid vulnerabilities. The impact of Hurricane Maria was particularly devastating for these north-south lines, which cut through dense, forested terrain.

The system's original transmission loop is the Central Loop, connecting Costa Sur, EcoEléctrica, and Aguirre power plants in the south with the San Juan power plant in the north via transmission centers at Aguas Buenas, Manatí, and Bayamón. The Western Loop, which entered service in 2002, connects Costa Sur and EcoEléctrica power plants in the south with PREPA's Mayaguez plant in the west and the Cambalache plant in the north. The Eastern Loop, which entered service in 2006, connects Aguirre and AES power plants in the south through transmission centers at Yabucoa in the east and Aguas Buenas and Sabana Llana in the north.

## EXHIBIT 5: PREPA TRANSMISSION LOOPS



### Transmission System Overview

LUMA operates 178 transmission centers operating at 230 kV, 115 kV, and 38 kV. These centers link over 1,100 miles of transmission lines (230/115 kV) and over 1,500 miles of sub-transmission lines (38 kV). Of these lines, 96% are overhead and the remaining 4% are underground. LUMA also operates approximately 44,000 transmission structures, divided across the three 230 kV loops in the west, east, and central parts of the island. The 115 kV lines serve all the major load centers, while the 38 kV sub-transmission system serves more remote interior regions, as well as most industrial and commercial customers.

### Distribution System Overview

Puerto Rico's distribution system serves approximately 1.5 million customers utilizing roughly 1,200 circuits. There is just under 32,000 miles of distribution lines, including nearly 17,000 miles of primary voltage lines and approximately 15,000 miles of secondary lines and service drops. The system connects approximately 60 115 kV substations, about 280 38 kV substations, and nearly 825 privately owned substations. There are approximately 298,000 distribution poles and approximately 213,000 service transformers. Most of the distribution system is comprised of overhead lines, with approximately 20% of underground lines located primarily in urban centers. Distribution poles are galvanized steel, concrete, and wood.

### Challenges to the Transmission and Distribution System

The T&D system faces notable geographic challenges given that its primary load center is in the north (San Juan Metro Area and Humacao Industrial District, approximately 70% of total load) while most of the more economical and efficient generation resources are in the south (approximately 70% of online generation capacity). The three 230 kV transmission loops that link generation from the south to demand in the north traverse mountainous and densely forested terrain, creating access limitations for repairs or reconstruction.

In the aftermath of hurricanes Irma and Maria in 2017, recovery efforts were delayed by limited accessibility to these transmission lines. The extent of the hurricane damage was exacerbated by a failure to manage vegetation and execute routine maintenance – a report by the Government Accountability Office assessing the impact of the hurricanes on the electrical grid found that

“[PREPA] canceled its vegetation management program” prior to the hurricanes, thus “[contributing] to the destruction of the grid.”<sup>15</sup> PREPA’s T&D maintenance and management practices had fallen short of industry standards, leading to higher costs and lower reliability for customers.

To address these challenges and improve operational performance and customer service, support rigorous capital project execution, and ensure ongoing fiscal balance and control, the P3A, in collaboration with PREPA and the Oversight Board, selected LUMA Energy (LUMA) to take on the responsibilities to operate and maintain PREPA’s T&D System. In addition, the improvement programs & portfolios for grid modernization outlined in the LUMA Initial Budgets and System Remediation Plan (SRP), along with the initiatives that have already begun, will be instrumental to strengthening Puerto Rico’s electrical grid. Further details are provided in Chapter 6 and Chapter 7.

### **LUMA’s T&D Assessment Findings**

As part of LUMA’s Front-End Transition work prior to June 1, 2021, and as required by the T&D Operation and Maintenance Agreement (T&D OMA)<sup>16</sup>, LUMA performed an initial assessment of PREPA, its organization, and assets. LUMA’s preliminary assessment at the time indicated an organizational systems and processes that required significant improvement, and physical assets that were in poor condition from storm damage, age and deferred maintenance. Both categories of deficiencies have corresponding negative effects on customer service, system performance, resiliency, and reliability. Further information on the assessment methodology and results can be found in Chapter 7 – LUMA Improvement Portfolios. LUMA, as the selected operator for the T&D System, began operating and maintain the T&D System in earnest as of June 1, 2021.

## **2.5 Current State of Generation**

Electricity is supplied by PREPA-owned generation plants and procured from independent power producers (IPPs) under power purchase and operating agreements (PPOAs). PREPA-owned power plants have 4,961 MW of installed generation capacity. However, PREPA-owned generation experiences above industry average forced outage rates, primarily due to the average unit age of more than 40 years; between 30% and approximately 40% of this capacity is typically out of service, including units that are indefinitely out of service and in need of significant overhaul. As a result, on average, only around 60% to 70% (3,000 to 3,500 MW) of PREPA-owned generation capacity is available for dispatch. In addition to PREPA-owned generation assets, electricity supply from IPPs consists of 984 MW from two conventional power plants and 254 MW from various renewable energy providers. Given PREPA’s frequent outages, it is often necessary to dispatch generation units with higher cost fuel. For example, the April 2019 maintenance-related transformer explosion and resulting loss of Aguirre Unit 2 for approximately 12 months

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<sup>15</sup>“2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico,” U.S. Government Accountability Office. April 2019. <https://www.gao.gov/assets/700/698626.pdf>.

<sup>16</sup> O&M references are to the Operation and Maintenance Agreement (T&D OMA) dated as of June 22, 2020 by and among PREPA, LUMA Energy, LLC, LUMA Energy Servco, LLC and the P3A. All language and statements under this chapter are meant to be illustrative only and shall be interpreted in accordance with, and subject to, the T&D OMA including the terms, as defined thereunder.

(with average fuel cost of ~\$130/MWh) was compensated by increasing generation from low efficiency diesel peaking units (with average fuel cost of ~\$200/MWh).<sup>17</sup>

Generation units in Puerto Rico are powered primarily by fossil fuels: In FY 2021, almost 40% of the Puerto Rico's electricity was generated by petroleum-fired power plants, and more than 97% of total electricity was generated from non-renewable resources.

As part of the efforts to diversify and modernize the Island's generation fleet and reduce reliance on oil-fired generation resources, PREPA has renegotiated or completed the procurement of up to 1000 MW of new renewable generation capacity. However, as of the close of the first quarter of 2022, none of these projects have commenced construction, resulting in significant delays compared PREB-established procurement and development timelines (See Exhibit 21). Due to initial delays in the procurement process for these resources, PREB has determined that the procurement for the second tranche for renewable energy generation and storage resources RFP will be managed by the PREB and a third-party procurement contractor, in order to advance the integration of renewable energy into the grid in compliance with the PREB approved IRP and Modified Action Plan.

Under the T&D OMA, PREPA's generation resource planning is now performed by LUMA and includes resource adequacy studies and integrated resource planning. Every three years, LUMA, as agent of PREPA, is required to prepare and submit to PREB an Integrated Resource Plan (IRP) for a 20-year planning period. Act 57-2014 defines the IRP as a resource plan that shall consider all reasonable resources, including both energy supply (e.g. utility-scale generation) and energy demand (e.g. energy efficiency, demand response, and distributed generation), to satisfy the current and projected future needs of Puerto Rico's energy system and of its customers at the lowest reasonable cost.<sup>18</sup> Furthermore, Act 57-2014 mandates that the IRP shall also include the environmental impact of the energy system.<sup>19</sup> On August 24, 2020, PREB approved in part and rejected in part PREPA's most recent proposed IRP and ordered the adoption and implementation of a Modified Action Plan and Modified Preferred Resource Plan.

LUMA, PREPA and the future operator of PREPA's generation assets will use the Modified Action Plan and Modified Preferred Resource Plan as a roadmap for repairs, upgrades, and replacements of existing generation resources as well as which new generation resources should be procured and developed.<sup>20</sup> The approved IRP and Modified Action Plan envision a transformation of the energy sector of Puerto Rico by increasing the share of renewable generation and storage, retiring all existing coal and heavy fuel oil generation, enhancing grid resilience through T&D System hardening, and enabling customer choice by supporting the incorporation of distributed generation (DG) and implementation of demand response (DR) and energy efficiency (EE) programs. Further information on the IRP and the Modified Action Plan can be found in Chapter 5.

## **Resource Adequacy**

As indicated in Section 2.2 of Chapter 2, energy consumption and peak system demand have been in decline for 16 years. Despite increases in recent months, declines in energy consumption and

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17 PREPA FY21 Q2 Budget to Actual Report submitted to the Oversight Board.

18 Act 17-2019, Puerto Rico Energy Public Policy Act, approved April 11, 2019, Section 5.2(II).

19 Act 57-2014, Puerto Rico Energy Transformation and RELIEF Act, approved May 27, 2014, Section 6C(h)

20 PREB Docket NEPR-MI-2020-0012 on IRP compliance and Modified Action Plan - <https://energia.pr.gov/expedientes/?docket=nepr-mi-2020-0012>

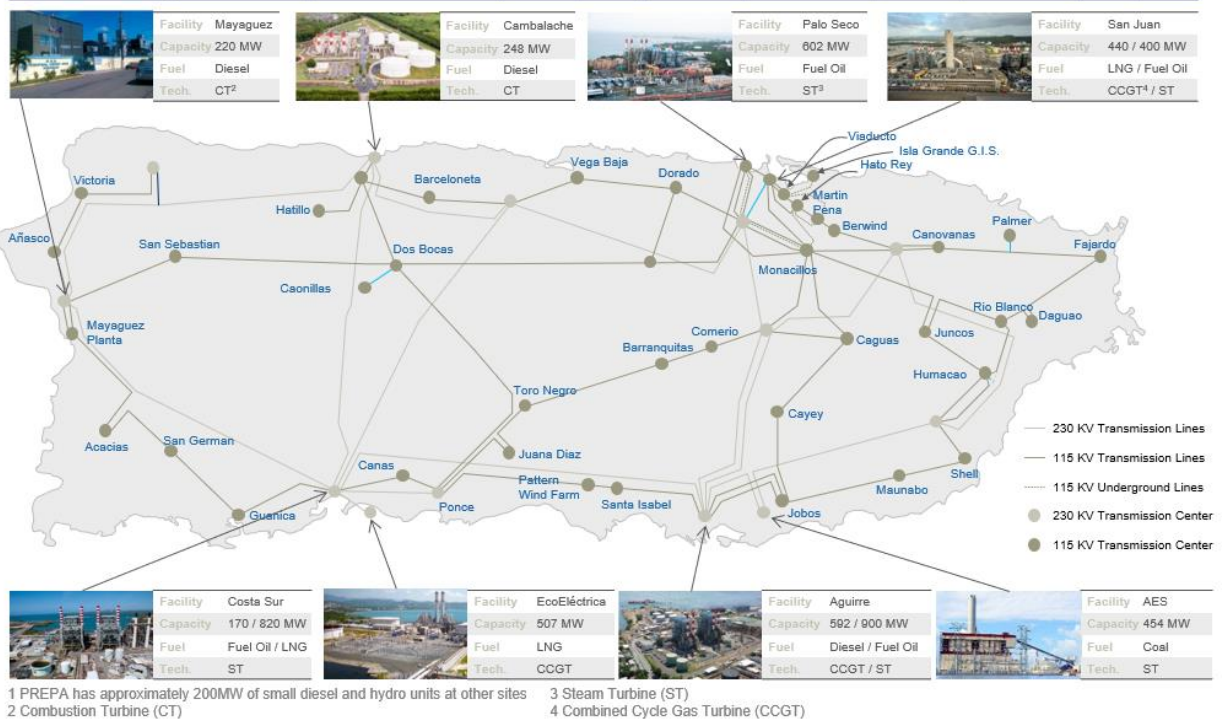
peak demand are expected to continue over the next years and decades, primarily due to (1) declining population and weaker macroeconomic forecasts, (2) increased energy efficiency measures, and (3) greater adoption of distributed generation where customers generate their own power, use less power from the grid and inject power back into the grid.

However, the increasing age and condition of the PREPA generating units is expected to continue to be susceptible to forced outage events that necessitate load shedding, further constraining LUMA’s ability to service its customers. The challenges associated with an unreliable generation fleet are expected to continue until an appropriate, proactive maintenance program is in place and old, inefficient units are replaced in newer resources. LUMA is currently developing its Resource Adequacy Study, which will provide a review of the resources in Puerto Rico, in preparation for filing with PREB in June 2022.

**EXHIBIT 6: PREPA GENERATION ASSETS**

**Overview of Generation Assets and Power System**

The majority of PREPA’s generation is located at 6 sites, with 4 major facilities each containing more than 500MW of generating capacity<sup>1</sup>. Two other conventional generation sites (AES and EcoEléctrica) and all operating renewable power facilities (~250 MW) are owned by third-parties.



**Challenges to the Generation System**

As an island system, Puerto Rico’s power grid is geographically isolated, and thus unable to import additional power to serve the customers of Puerto Rico. In addition, PREPA’s baseload generation units are relatively large as a percentage of system peak load, such that a single unit outage can cascade into an Island-wide outage, as experienced in 2016 2018 and 2022. To protect against this, generating units are required to spend significant operating hours at partial load to maintain reliability, reducing generation efficiency and increasing overall costs.

Most of PREPA’s current generation fleet runs on old and outdated steam generation technology with long ramp times. This means that older plants (such as steam turbines) take longer to reach peak load and have limited operational flexibility to change load because they have less responsive control systems and require more time to heat up. While these older steam plants are generally more economic than other PREPA-owned units due to lower-cost fuel, they are operationally limited by applicable federal mercury and air toxic standards (MATS) and the U.S. Environmental Protection Agency (EPA) Consent Decree. Many of PREPA’s older steam plants that use lower cost fuel have been designated “limited use” by EPA to have an annual heat input capacity factor of less than 8 percent over a 24-month period. The MATS rule imposes stringent emission limitations for both particulate matter and acid gasses, as well as requires work practice standards applicable during start-up and shutdown of power plants and regular burner and combustion control tune-ups.<sup>21</sup> To-date, PREPA has paid relatively minor amounts in stipulated penalties for 528 opacity deviations under the air portion of the Consent Decree, which occur during start-up and shutdown processes, but much more substantial penalties could be assessed under EPA’s jurisdictional authority.

Puerto Rico’s few renewable energy facilities represent the system’s cleanest generation resources and are designated “must run”.<sup>22</sup> During FY 2021 PPOA’s for existing and operational renewable energy projects were negotiated to reduce pricing by over 10%, to an average cost of 17 c/kWh. Despite the recent fuel price volatility and sharp increases in fuel oil and LNG costs during FY 2022, these facilities are still some of the most expensive generation sources for Puerto Rico<sup>23</sup>, since, at the time of procurement, renewable generation capacity was priced much higher than the market price available today.

PREPA’s aged legacy generation assets began experiencing frequent forced outage events during the months of July, August, and September of 2021. These outage events were due to various factors, including a combination of high peak demand and energy use, with unanticipated generator forced outages that resulted in very tight reserve margins, and at times, generation shortfalls that resulted in brown-out conditions as well as long load shedding events.

The condition and performance of PREPA’s aging plants has continued to deteriorate availability of the system’s generating units dropped by 17% from 2015 to 2020 and has consistently performed below peers. Forced outages of generating units have also seen an increase of 15% over the same period and underperformed peer units, exemplifying the unreliability of PREPA’s legacy generating fleet. The net heat rate of generating units has also seen an increase of 377 Btu/kWh from 2016 to 2020. These trends point to growing inefficiencies and unreliability as these units continue to age. The underlying root cause for outages in PREPA’s legacy generation plants is related to their age and the need for a well-developed and effectively executed (preventive and pro-active) maintenance program.

PREPA’s aging, inefficient, and unreliable generation fleet must be replaced and modernized. The roadmap for this modernization is defined in the IRP approved by PREB, which outlines the

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<sup>21</sup> “White Paper on Environmental Compliance Issues at Puerto Rico Electric Power Authority Generation Facilities,” Hogan Lovells US LLP, March 25, 2021.

<sup>22</sup> “Must run” facilities require PREPA to pay for energy produced up to the contracted capacity even if not needed to meet system demand.

<sup>23</sup> Average cost of generation for FY2022 through March was approximately \$170 for renewable PPOAs compared with \$110 for LNG, \$160 for Residual, and \$210 for Diesel. For FY 2020 and FY 2021, PREPA thermal generation costs were \$100 to \$130 per MWh on average.

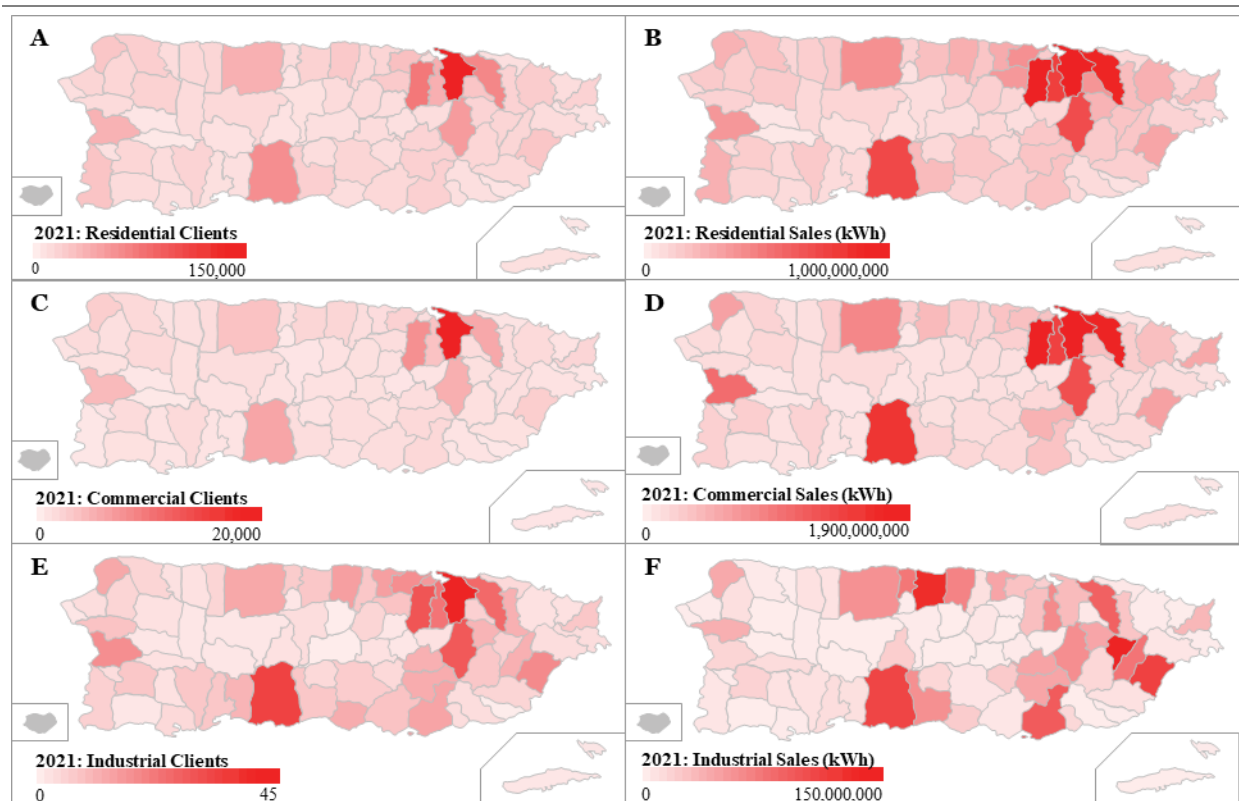


actions and investment in new generation that must be taken to reduce generation costs and achieve greater reliability and resiliency. Further detail is provided in Chapter 3.

## 2.6 Customer Demographics and Affordability

PREPA currently serves approximately 1.5 million customers, of which 91% are residential, 8% are commercial, and less than 1% are industrial. Almost half of PREPA’s load is driven by commercial customers, which represented 44% of FY 2021’s total consumption of 16 TWh. This is followed by residential customers, which account for 42% of electricity demand, and industrial customers, at 12%.<sup>24</sup> The majority of PREPA’s residential and commercial customers are located in the San Juan metropolitan area (Exhibit 7A and Exhibit 7C). Industrial customers, on the other hand, are spread across the island, located primarily within the San Juan metropolitan area, the Humacao district (southeast of San Juan), the north-central coast (Arecibo, Manatí and Vega Baja) and the municipality of Ponce (southern coast) (Exhibit 7E and Exhibit 7F).

EXHIBIT 7: FY 2021 PREPA CUSTOMER COUNT AND CONSUMPTION BY MUNICIPALITY



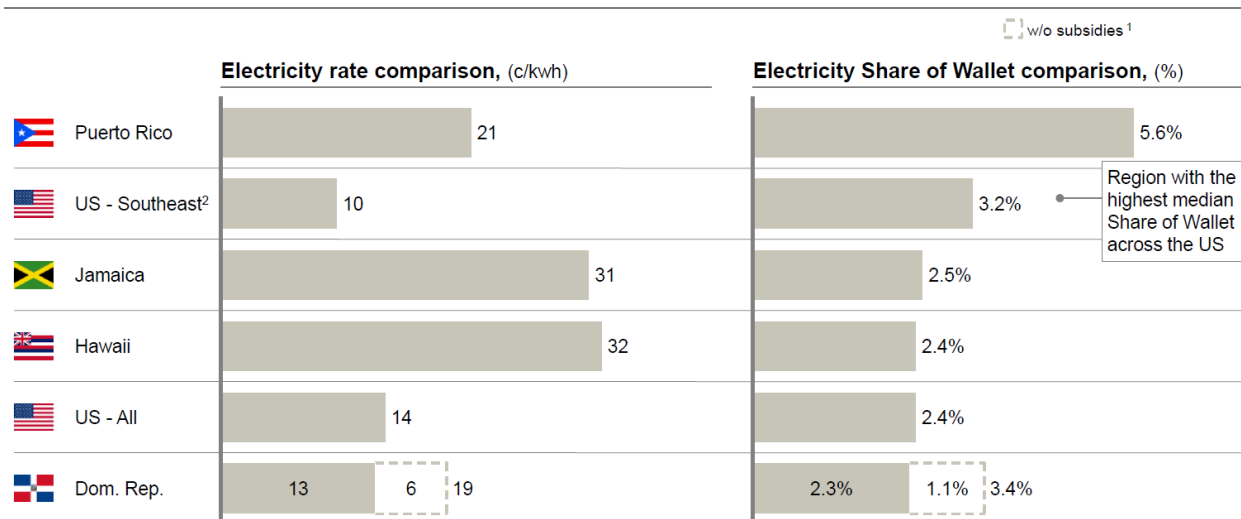
On average, Puerto Rico’s consumers pay more for electricity relative to their income than consumers in any U.S. state. Based on the 2021 Certified Fiscal Plan rates of 21 c/kWh, for households earning the median Puerto Rico income, the yearly electricity bill amounted to 5.6%

<sup>24</sup> Additional load is attributed to public lighting and agriculture.



share of wallet<sup>25</sup>, subsidies notwithstanding. As rates increased since the 2021 Certified Fiscal Plan, this burden has only gotten worse. Median share of wallet in Puerto Rico is significantly higher compared to U.S. mainland states, where household with median income pay is 2.4% of their yearly income for electricity (Exhibit 8). Low-income households are disproportionately affected by the current rate structure.

EXHIBIT 8: PUERTO RICO ELECTRICAL SHARE OF WALLET COMPARED TO PEER REGIONS<sup>26</sup>



1. Estimated by distributing government expected subsidies of \$747M to total load of ~12 TWH. Link to subsidy source: <https://dominican.today.com/dr/economy/2021/09/23/electricity-subsidy-to-reach-us900-0m/>  
 2. Southeast includes AL, DE, DC, FL, GA, KY, MD, MS, NC, SC, TN, VA, & WV.

Various ongoing policy goals and performance improvement initiatives will impact affordability in Puerto Rico. Puerto Rico’s legislative mandate calling for drastically increased renewable generation should improve rate stability, and customer rates if the combined costs of solar energy plus necessary battery storage is less than PREPA’s current and long-term average cost of generation. If appropriately administered, the competitive procurement of utility scale renewable generation and storage resources provides a unique opportunity to address and mitigate rate stability and affordability concerns.

The impact of programmatic energy efficiency will likely also have a positive impact on customer affordability by reducing electricity consumption for the average customer, thus lowering their electricity bill. From an overall system perspective, the impact on rates may vary. Aggregate system costs—and therefore rates—may decrease due to lower customer consumption and peak

<sup>25</sup> Share of wallet is defined as the percentage of per household electric utility service expenditures relative to median per household income.

<sup>26</sup> Based on most recent data available, detailed below:  
 SOURCES: Population: World Bank (CY20)  
 Average rate for residential customers: LUMA report available at [indicadores.pr](http://indicadores.pr) (CY21) for Puerto Rico; EIA (CY19) for Hawaii, US Southeast states and US; Jamaica Public Service Company annual report (CY20) for Jamaica; NREL (CY20) for Dominican Republic  
 Household consumption: Census (CY19) American Community Survey for number of households for Puerto Rico, Hawaii, US Southeast states and US; Statistic Institute of Jamaica (CY11) for household size for Jamaica; Encuesta Nacional de Gastos e Ingresos de los Hogares (CY18) for number of households for Dominican Republic; LUMA report available at [indicadores.pr](http://indicadores.pr) (CY21) for residential demand for Puerto Rico; EIA (CY19) for residential demand for Hawaii, US Southeast states and US; NREL report (CY20) for energy demand for Jamaica and Dominican Republic  
 Median income: Census (CY19) American Community Survey for Puerto Rico, Hawaii, US Southeast median and US median; World Bank (CY18) GNI per capita as proxy for income for Jamaica; Encuesta Nacional de Gastos e Ingresos de los Hogares (CY18) for Dominican Republic.

demand reducing the amount of investment required in generation and peaking resources. At the same time, rates may increase as system costs are spread over fewer kWh generated and sold per year. The IRP Modified Action Plan recognizes the benefit of energy efficiency as a “least cost resource” and contemplates further studies and implementation of programs to achieve greater energy efficiency through programmatic initiatives. If, however, efficiency measures are delayed or not achieved, there will be a more gradual decline in electricity demand that would also affect rates and overall affordability.

Another policy that may impact customer affordability is the net metering framework currently in place pursuant to Act 17-2019, which pursues a distributed generation system to provide for resiliency and further reduction on reliance on imported fuels. Under Act 17-2019 customers that use distributed generation (i.e. rooftop solar) under certain circumstances are entitled to offset the energy they purchase from PREPA with the energy they export to the grid on a one-to-one basis, at the prevailing retail rate. This policy will increase total residential renewable generation in the Puerto Rico system, but as more net metering systems are installed under full retail rate credit, net metering customers will be able to bypass charges that cover items like grid services. This policy is set to remain in place for at least five (5) years from the enactment of Act 17-2019, after which PREB is mandated to conduct a study to determine net metering policy on a go forward basis.

Additionally, LUMA’s capital investments (federally funded) into the system (e.g., T&D line hardening to reduce outages and associated cost) as well as the operational improvement initiatives that LUMA has planned (e.g., mitigate vegetation risk immediately in the most critical areas to reduce outages) should lead to improved resilience and services and increased productivity which in turn will lower costs for PREPA’s customers. Similarly, transformation of PREPA’s generation fleet with a diversified fuel mix and reduced fuel costs will have a positive impact on costs, reduced volatility, and rates and in turn make electricity more affordable for PREPA’s customers.

## **2.7 Overview of Historical Financial Performance<sup>27</sup>**

PREPA’s persistent financial deficits are a result of, among other things, decades-long fiscal and operational mismanagement, and a historical inability to adjust energy rates to a level that would ensure PREPA could cover its costs and the capital investments required to modernize its energy system. PREPA has been operating under a structural financial deficit since 2004, which has worsened over time. To cut costs, PREPA historically reduced or stopped investing in system upgrades, leading to an energy system that is vulnerable and prone to frequent and extended outages and voltage fluctuations. Additionally, PREPA has failed to fully fund its pension plan and, since 2014, has not paid its debt service other than through the issuance of additional bonds.

Over the past decade, revenues have decreased due to out-migration and economic decline, as well as increased adoption of distributed generation and energy efficiency measures. As the revenue base contracted, higher rates and associated volatility led to an increase in outstanding collections and bad debt, causing customers to further invest in energy efficiency and reduce their

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<sup>27</sup> All reference years are fiscal years (i.e., July 1 to June 30); Figures presented are unconsolidated, showing PREPA only and excluding the irrigation division; fuel, tourism (hotel), and public lighting subsidies are shown as revenue reductions rather than expenses.

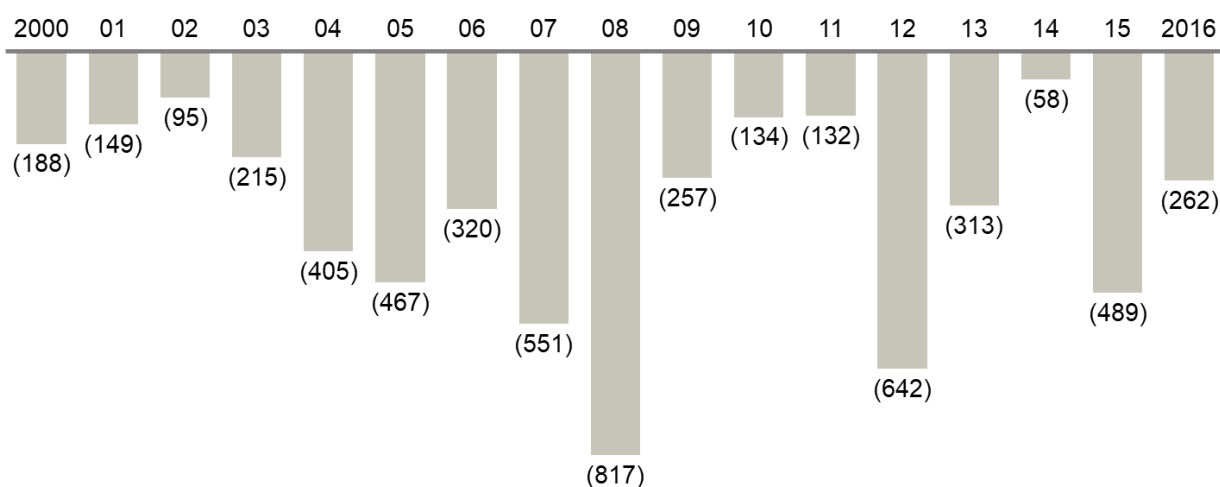
reliance on the grid, all with an adverse impact on PREPA's revenues. In response to these liquidity challenges, PREPA financed its fuel procurement through credit lines, which further contributed to PREPA's unsustainable debt.

PREPA's rates have also been insufficient to cover operating costs, pension costs, and debt obligations. PREPA's operating cash flow fell from a deficit of \$188 million in FY2000 to its worst point, with a deficit in excess of \$800 million during FY2008, leading PREPA to rely on financing to make up for revenue shortfalls (Exhibit 9). By FY2014, PREPA's financial condition had deteriorated to the point where it had to enter into forbearance agreements with creditors, it having become apparent that there were insufficient funds to pay debt service. On July 2, 2017, the Oversight Board filed a petition on PREPA's behalf for bankruptcy relief under Title III of PROMESA before the U.S. District Court for the District of Puerto Rico.

EXHIBIT 9: PREPA OPERATIONAL DEFICITS FROM FY2000 TO FY2016

**Annual Cash Flow Before Financing Activities**

Cash Flow from Operating Activities Less Capital Expenditures (Fiscal Years, \$ Million)



From FY2014 to FY 2017, PREPA's annual operating results and one-time accounting adjustments depict an increasingly distressed financial situation. Between FY2014 and FY2015, the operating deficit increased from \$58 million to \$489 million, with the recognition of PREPA's substantial net pension liability due to changes in Governmental Accounting Standards Board (GASB) accounting rules for pensions. Additionally, because of changes in pension accounting assumptions and liability valuation, PREPA faced an additional \$1.6 billion in unfunded pension liability in FY2015. The ongoing recognition of net pension liability and accrued interest has ballooned PREPA's negative net position to over 70% of balance sheet assets. Although operating expenses have declined in recent years, revenues have declined at a faster pace, resulting in a growing deficit.

TABLE 1: PREPA FY2014 TO FY 2021 STATEMENT OF NET POSITION

(USD million)	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	Unaudited, subject to material change	
							FY2020	FY2021
<b>Operating revenues</b>	4,469	3,865	2,995	3,265	2,552	3,612	3,325	3,058
<b>Operating expenses:</b>								
Fuel expense	(2,345)	(1,887)	(1,215)	(1,218)	(1,052)	(1,408)	(1,470)	(1,253)
Purchased power	(808)	(790)	(687)	(729)	(586)	(682)	(734)	(778)
O&M expense	(752)	(1,129)	(1,241)	(1,394)	(2,564)	(1,271)	(738)	(1,059)
Depreciation	(342)	(382)	(517)	(519)	(343)	(367)	(381)	(374)
<b>Total operating expenses</b>	<b>(4,246)</b>	<b>(4,189)</b>	<b>(3,661)</b>	<b>(3,860)</b>	<b>(4,544)</b>	<b>(3,728)</b>	<b>(3,323)</b>	<b>(3,463)</b>
<b>Operating income / (loss)</b>	<b>223</b>	<b>(323)</b>	<b>(666)</b>	<b>(595)</b>	<b>(1,992)</b>	<b>(116)</b>	<b>2</b>	<b>(405)</b>
Interest expense, net	(410)	(424)	(425)	(447)	(484)	(463)	(438)	(414)
Impairment loss on GDB deposits		(145)						
<b>(Loss) / Gain before CILT and other</b>	<b>(187)</b>	<b>(892)</b>	<b>(1,091)</b>	<b>(1,043)</b>	<b>(2,476)</b>	<b>(579)</b>	<b>(436)</b>	<b>(820)</b>
CILT and other subsidies	(278)	(273)	(172)	(178)	(192)	(169)	(115)	(67)
Contributed capital	45	21	8	7	35	73	(2)	(750)
<b>Change in net position</b>	<b>(420)</b>	<b>(1,144)</b>	<b>(1,255)</b>	<b>(1,213)</b>	<b>(2,633)</b>	<b>(676)</b>	<b>(552)</b>	<b>(1,637)</b>
Net position at beginning of year	(847)	(1,267)	(3,578)	(4,838)	(6,174)	(8,008)	(8,609)	(9,161)
Change in pension accounting cost and corrections		(1,644)		(124)	799	74		
Net Effect of the 2015 Restatement		477						
<b>Net position at end of year</b>	<b>(1,267)</b>	<b>(3,578)</b>	<b>(4,833)</b>	<b>(6,175)</b>	<b>(8,008)</b>	<b>(8,609)</b>	<b>(9,161)</b>	<b>(10,799)</b>

Since filing for bankruptcy relief under Title III of PROMESA in July 2017, PREPA has improved its cash flow and liquidity monitoring, reporting, controls, and communications. These improvements have been instrumental in preserving PREPA's financial stability through the significant disruptions caused by hurricanes Irma and Maria, the earthquake in January 2020, the COVID-19 pandemic and the current geopolitical situation impacting fuel supply and prices. As of April 30, 2022, PREPA's total operating cash position was approximately \$1.1 billion. Of the \$1.1 billion, \$760 million was in various operating accounts required by the T&D OMA and \$337 million was in other PREPA unrestricted cash accounts.<sup>28</sup> While the measures implemented by PREPA have been effective in maintaining financial stability, there are several significant factors that will impact PREPA's future liquidity including among other things, the — funding for the transformation of PREPA's legacy generation assets, operational working capital requirements, the restructuring of legacy debt obligations, underfunded pension obligations, capital and maintenance requirements (including funding for federally-funded permanent work projects), and the costs to exit Title III.

### **Collections and debt settlement between public corporations and government agencies**

Government accounts and public corporations are a key driver of overall electricity sales revenue for PREPA. However, they are also a historically underperforming client base with regards to collections and pending receipts. Issues with municipality receipts and CILT reform notwithstanding (see CILT reform subsection in Chapter 10), Commonwealth agencies and public corporations hold accounts payable to PREPA in excess of \$200 million for past due energy services. Following the Service Commencement Date on June 1, 2021, LUMA's Customer Experience Directorate took over the responsibility of collections, including with respect to

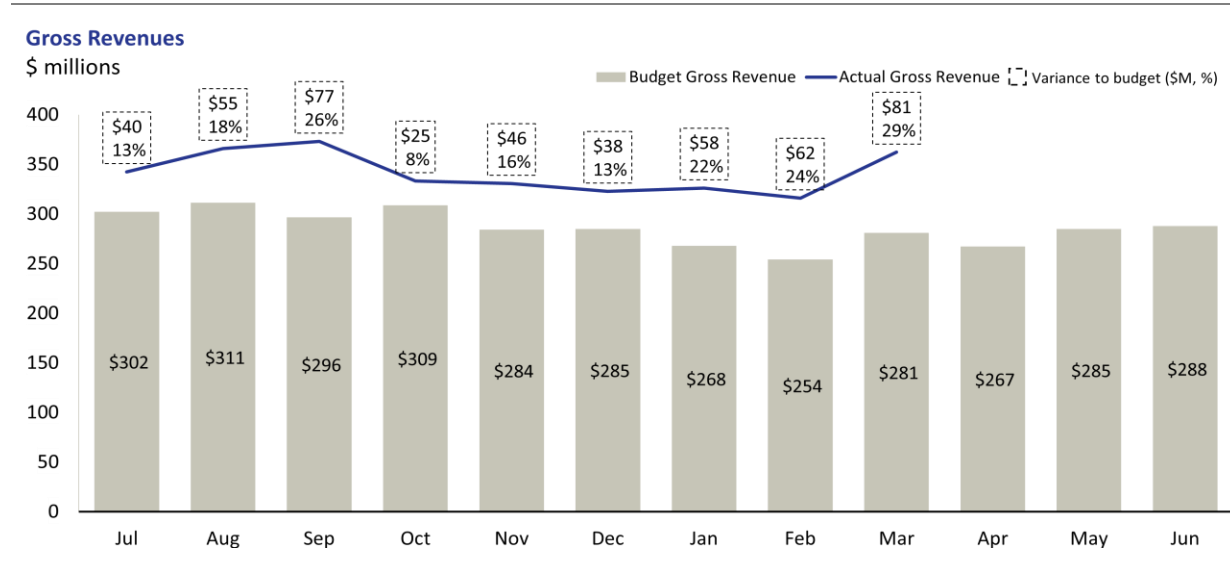
<sup>28</sup> The \$1.1 billion total operating cash position excludes approximately \$134 million of cash in various other restricted cash accounts.

government and public corporation accounts. PREPA will be working with LUMA during the new FY 2023 in a process of reconciling aged accounts with debtors in the upcoming years.

### Overview of FY 2022 Revenue Budget to Actual<sup>29</sup>

During the first nine months of FY 2022, PREPA’s monthly gross revenues were approximately 20% above projections, driven primarily by an increase in the price for fuel, leading to higher rates. The base rate revenues were approximately 2% below projections for the first nine months of FY 2022, largely due to actual electricity demand being 3% lower than projected.

EXHIBIT 10: FY 2022 GROSS REVENUES PER MONTH (USD MILLION)



<sup>29</sup> Gross revenues include revenues collected from customers for consumption, whereas consolidated revenues include revenues collected from customers for consumption, revenue for other income sources, and other adjustments (bad debt expense, CILT and subsidies, etc.)

EXHIBIT 11: FY 2022 BASE RATE REVENUES PER MONTH (USD MILLION)

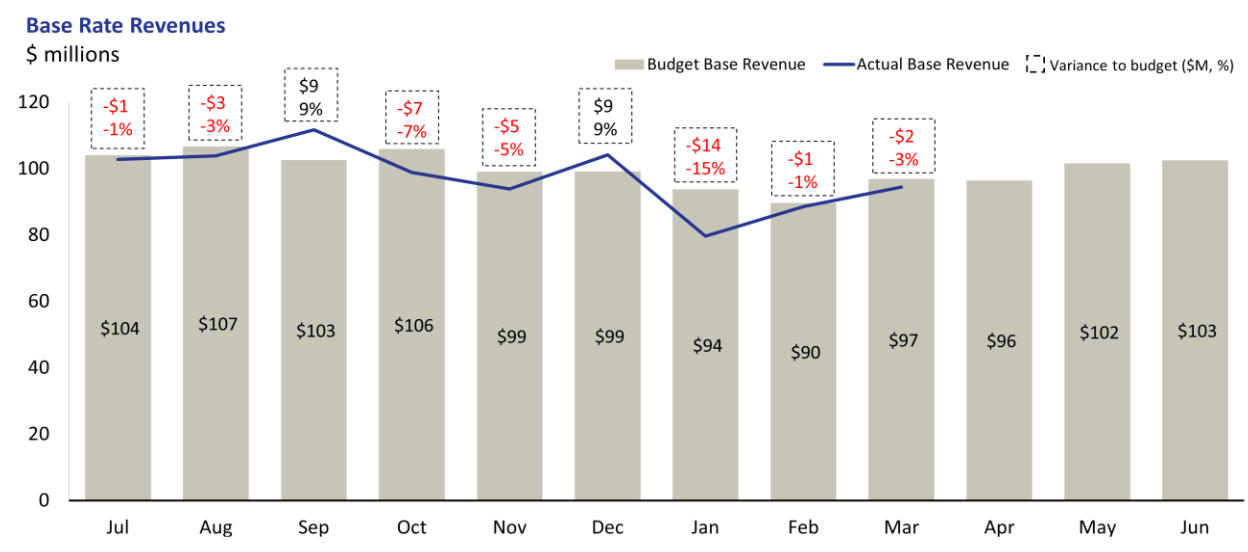
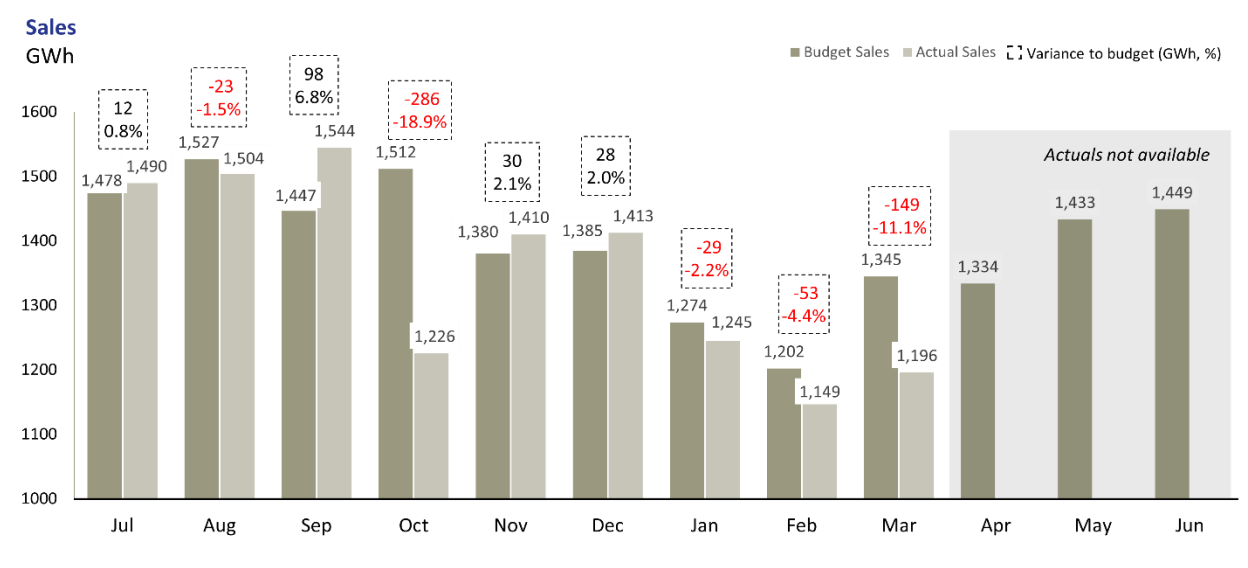


EXHIBIT 12: FY 2022 BILLED SALES PER MONTH (GWH)



Key variances in PREPA’s consolidated year-to-date budget to actual through Q3 FY 2022 (which includes LUMA’s T&D/ Customer Experience, Energy System Dispatch and Shared Services budget to actual data) include: (1) higher than budgeted fuel costs due to higher-than-expected generation, fuel prices, and diesel dispatch; and (2) higher than budgeted expenses by GridCo (LUMA) which are to align with budgeted amounts by the end of FY 2022.

### Fuel Costs

The most significant negative variance in PREPA’s year-to-date performance against budget through Q3 is due to fuel costs. Compounding the higher than projected fuel prices, PREPA’s more cost-efficient Costa Sur and San Juan units only had limited operational capacity for the first half

of the fiscal year. Due to marked increases in global oil prices, Q4 fuel costs are expected to be higher than in prior periods.

#### GenCo and HoldCo

PREPA observed minor positive variances in labor line items due to ongoing retirements and limited replacement hiring. Underspending on generation related maintenance to date reflects a combination of project execution delays that PREPA is addressing and plans on having resolved by the final quarter of FY 2022. On the other side, as reflected in Exhibit 13, as of March 2022, HoldCo has substantially overspent its budget by ~120%.

EXHIBIT 13: FY 2022 BUDGETED AND ACTUAL INCOME AND EXPENDITURE, FORECAST OF RECURRING OPERATIONS

(\$ Millions)	Preliminary and subject to material change			
	Q3-YTD Budget	Q3-YTD Actual	Variance-\$	Variance-%
<b>Revenue</b>				
Total Gross Revenue	\$ 2,614	\$ 3,131	\$ 517	20%
Bad Debt Expense	(48)	(48)	-	
CILT & Subsidies	(198)	(190)	8	-4%
<b>Total Consolidated Revenue</b>	<b>\$ 2,368</b>	<b>\$ 2,893</b>	<b>\$ 525</b>	<b>22%</b>
<b>Expenses</b>				
<b>A. Fuel &amp; Purchased Power</b>	\$ 1,495	\$ 2,064	\$ 569	38%
<b>B. Genco:</b>				
GenCo Labor Operating	\$ 58	\$ 51	\$ (7)	-12%
GenCo Non-Labor/Other Operating	39	40	0	1%
Shared Services Agreement Impact	42	10	(32)	-76%
Total GenCo Maintenance Projects	80	59	(21)	-26%
<b>Total Genco Operating &amp; Maintenance</b>	<b>\$ 219</b>	<b>\$ 159</b>	<b>\$ (59)</b>	<b>-27%</b>
<b>C. HoldCo:</b>				
HoldCo Labor Operating	\$ 13	\$ 10	\$ (3)	-24%
HoldCo Non-Labor / Other Operating	65	85	20	31%
<b>Total HoldCo Operating</b>	<b>\$ 78</b>	<b>\$ 95</b>	<b>\$ 17</b>	<b>22%</b>
<b>D. GridCo:</b>				
GridCo Labor Operating	\$ 158	\$ 210	\$ 53	34%
GridCo Non-Labor / Other Operating	265	263	(2)	-1%
Operator Service Fees	86	88	1	2%
2% Reserve for Excess Expenditures	8	-	(8)	-100%
Maintenance Projects	69	65	(4)	-6%
Shared Services Agreement Impact	(41)	(44)	(3)	7%
<b>Total GridCo Operating &amp; Maintenance</b>	<b>\$ 544</b>	<b>\$ 582</b>	<b>\$ 38</b>	<b>7%</b>
<b>Total Expenses</b>	<b>\$ 2,336</b>	<b>\$ 2,900</b>	<b>\$ 564</b>	<b>24%</b>
<b>Surplus / (Deficit)</b>	<b>\$ 33</b>	<b>\$ (7)</b>	<b>\$ (39)</b>	<b>-120%</b>

## 2.8 Adverse Effects of FY 2020 Major Catastrophic Events

Aside from PREPA's historic operational and financial challenges, the company's operational and fiscal condition was further affected by a series of catastrophic events. In September 2017, hurricanes Irma and María caused substantial damages to the T&D System across the entire island. Moreover, in January 2020, a magnitude 6.4 earthquake near Puerto Rico's southwestern coast caused significant damage to PREPA's Costa Sur power plant and left most of Puerto Rico without electric service for hours. The effects of the earthquake were quickly followed by the onslaught of the historic global COVID-19 pandemic. The enforcement of strict health protection and economic directives and measures in Puerto Rico had a negative effect on commercial activity



on the island and would have severely impacted PREPA's liquidity position if residential consumption had not registered a comparable and offsetting increase during the lockdown periods.

The following sections summarize the effects of the earthquakes and COVID-19 on PREPA's financial and operational health.

### *2.8.1 Impact of 2019-2020 Earthquakes*

From December 28, 2019, to January 15, 2020, Puerto Rico experienced over 300 magnitude 3 or higher earthquakes, 10 of which reached or exceeded magnitude 5.<sup>30</sup> The strongest earthquake took place on January 7, 2020, reaching a peak magnitude of 6.4. This earthquake inflicted significant damage on the Costa Sur power plant, an 820 MW natural gas-fired facility. At the island-wide level, PREPA required several hours to reestablish service, underscoring the system's lack of quick restart capabilities and vulnerability to sudden loss of generation units.

Repairs of Costa Sur's Units 5 and 6 were successfully completed by mid-August 2020 and January 2021, respectively, with a total estimated repair cost of \$39 million. As a result, however, during the outage period PREPA had to rely on fuel oil and diesel generation capacity to compensate for the lost natural gas-fired generation at Costa Sur. The costs associated with such oil and diesel generation are expected to be reimbursed by FEMA and PREPA's insurance.

### *2.8.2 Impact of COVID-19*

Starting March 16, 2020, Puerto Rico began enacting economic, health and social distancing measures under Executive Order 2020-023 to cope with the spread of COVID-19. The public health and economic impact of COVID-19 have had a ripple effect on the power sector. Social and lockdown measures required PREPA to halt all non-essential work, including vegetation management and maintenance projects, and led to a decline in generation levels and customer sales. By late March 2020, average daily collections had dropped by 50%, forcing PREPA to implement strict financial controls to preserve liquidity.<sup>31</sup> By the end of June 2020, average daily collections had returned to normal levels relative to forecast and expected collections.

The first quarter of FY 2022 shows higher than expected quarterly sales driven largely by an increase in residential customer consumption. Both commercial and industrial customer class sales in the second quarter were lower than expected, leading to an unfavorable variance. All three customers classes exhibited unfavorable variances in the third quarter of FY 2022. (Exhibit 14 and Exhibit 15).

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<sup>30</sup> "As Aftershocks Continue in Puerto Rico, USGS Supports Quake Recovery," U.S. Geological Survey, January 17, 2020, <https://www.usgs.gov/news/aftershocks-continue-puerto-rico-usgs-supports-quake-recovery>.

<sup>31</sup> Several factors influenced the decision by customers to not pay the utility bills, chief among them, the enactment of Act 39-2020, which, among others, prohibited the disconnection of electricity services due to non-payment.

EXHIBIT 14: FY 2022 QUARTERLY SALES VARIANCE (GWh)

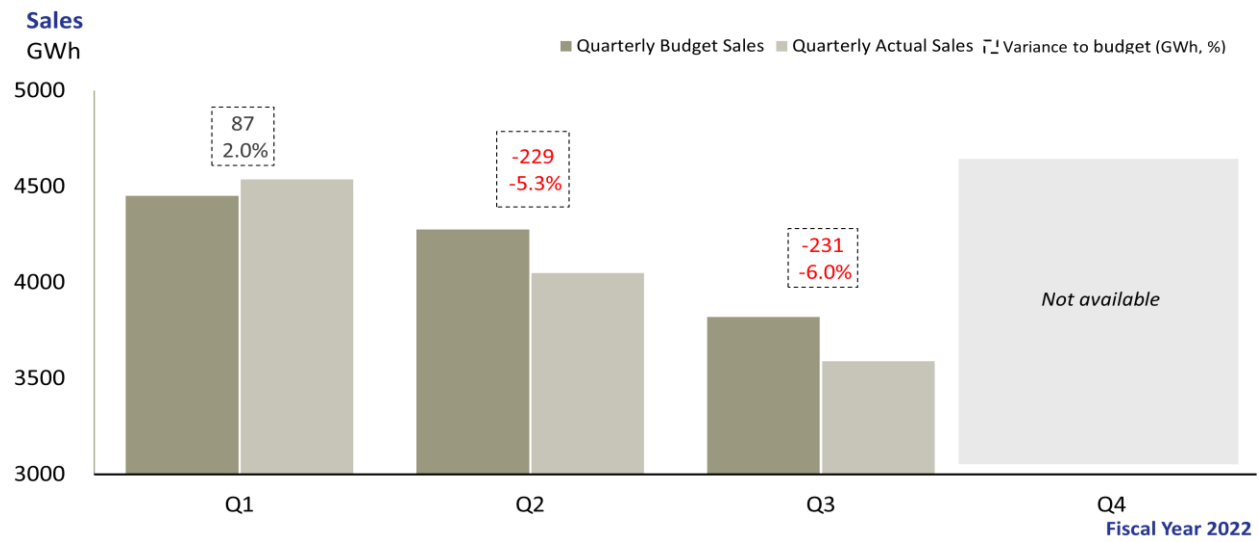
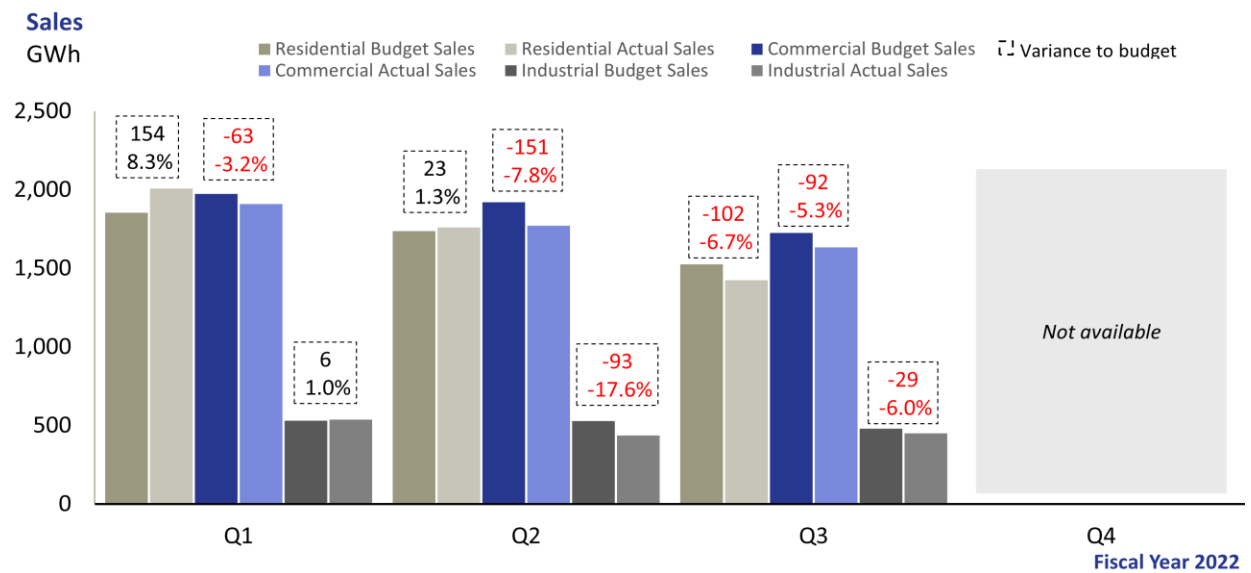


EXHIBIT 15: FY 2022 QUARTERLY SALES VARIANCE BY CUSTOMER CLASS<sup>32</sup> (GWh)



As the COVID-19 pandemic evolves, ongoing evaluation will be critical to PREPA and LUMA management’s ability to be prepared for unexpected changes in forecasts. An assessment of PREPA’s and LUMA’s response to the COVID-19 pandemic will inform PREPA’s and LUMA’s

<sup>32</sup> Excludes public lighting, agricultural, and other customer classes and as such will not add up to the totals seen in Exhibit 14.

emergency and contingency plans to respond to future unforeseen events better and more effectively.

## Chapter 3. Transformation

The Government, together with PREPA and the P3A, in fulfillment of Commonwealth public policy and as required in the Certified Fiscal Plan, is in the midst of completing the transformation of Puerto Rico's energy sector into a modern, efficient, reliable, and sustainable system. The transformed energy sector will improve the everyday lives of Puerto Rico's residents, allow businesses to create jobs and thrive sustainably, and help attract and maintain investment in Puerto Rico. This chapter provides an introduction and context to the transformation of the energy sector (Section 3.1) followed by the vision, objectives, and framework for the transformation (Section 3.2), including the appropriate regulatory reforms (Section 3.2.1) and the ongoing transition to private operators (Section 3.3). Section 3.2.2.3 provides an overview of the completed transition of operations and maintenance (O&M) of the Transmission and Distribution (T&D) System to LUMA. This overview includes a discussion of LUMA's obligations related to the T&D System under the O&M Agreement (OMA) as well as LUMA's compensation structure, which is comprised of a fixed fee and a variable fee tied to performance improvements determined by objective, transparent, and quantitative metrics being developed by the PREB. This chapter also provides an update on the ongoing process to transition PREPA's legacy generation assets to a private operator (Section 3.2.2.4). The chapter concludes with the status of each milestone in the implementation of Puerto Rico's energy sector transformation (Section 3.4).

### **3.1 Introduction and context of Puerto Rico's Energy Sector Transformation**

On January 22, 2018, in the aftermath of Hurricane Maria, the Government of Puerto Rico, in coordination with the Oversight Board, outlined a public policy vision for the transformation of the energy sector. The vision states the need for a customer-centric, safe, reliable, resilient, sustainable, and cost-efficient electric power service that meets environmental, regulatory, and statutory requirements. This development will be enabled by competent and experienced third-party operators for the generation and T&D System along with improved independent regulatory oversight and insulation from political interference.

Previous PREPA and Commonwealth Certified Fiscal Plans have outlined a comprehensive transformation of Puerto Rico's energy sector to address PREPA's financial and operational challenges. Over the last three years, PREPA has taken numerous steps to address these challenges, including supporting the selection of LUMA as T&D Operator and the transfer of T&D System operations to LUMA on June 1, 2021. PREPA continues to support the ongoing competitive procurement efforts of the P3A to select one or more operators to maintain and operate PREPA's existing legacy generation assets. Additionally, PREPA concluded and selected 18 renewable energy projects (equivalent to ~850MW of renewable energy) as part of the Tranche 1 RFP process.

Tranche 2 is pending PREB action through an appointed Independent Coordinator for procurement, to add an additional 500MW of renewable generation and 250MW of battery storage capacity.

### 3.2 Energy Sector Transformation: Vision, Objective, and Framework

The Government of Puerto Rico’s vision to transform the energy sector has the following objectives:

TABLE 2: TRANSFORMATION OBJECTIVES

Transformation objectives <sup>33</sup>	
<b>Customer-centricity</b>	<ul style="list-style-type: none"> <li>▪ Focus on customer service and customer experience in planning and operations of the energy system</li> <li>▪ Increase customer engagement as stakeholders and options for customers to meet individual needs</li> </ul>
<b>Affordability</b>	<ul style="list-style-type: none"> <li>▪ Ensure the delivery of electricity service in a cost-effective manner consistent with PREB oversight and orders</li> <li>▪ Improve operational efficiency</li> </ul>
<b>Reliability</b>	<ul style="list-style-type: none"> <li>▪ Establish an adequate and reasonable level of service reliability and quality to improve customer satisfaction and economic development</li> </ul>
<b>Resilience</b>	<ul style="list-style-type: none"> <li>▪ Expand and develop structurally hardened infrastructure to allow for adequately rapid overall system recovery after the impacts of catastrophic natural disasters (hurricanes, earthquakes, etc.) and other adverse events</li> <li>▪ Continuous monitoring and testing of emergency preparedness capabilities</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>▪ Diversify energy resources by prioritizing clean renewable energy deployment, and reduce the carbon intensity of the power sector</li> <li>▪ Incentivize customers to use energy wisely and efficiently</li> </ul>

To achieve the vision and objectives outlined above, the Government took the following steps to establish a legal framework that mandates PREPA separate its T&D and generation functions and transfer operation and maintenance responsibilities to third-party, professional operators, leveraging private sector management, experience, and expertise to effectively deliver reliable electricity to Puerto Rico’s residents:

- **June 20, 2018** – Enactment of the Puerto Rico Electric System Transformation Act (Act 120-2018) to provide the legal authority (under Puerto Rico law) and mechanisms for the sale, transfer or private operation and maintenance of PREPA’s T&D and generation assets, services, and functions through public-private partnerships.
- **April 11, 2019** – Enactment of the Puerto Rico Energy Policy Act (Act 17-2019), which establishes a regulatory framework to attract private investment and ensure independent, professional oversight of energy market participants. Moreover, Act 17-2019 specifically prohibits PREPA from continuing to operate as a vertical monopoly, mandating the unbundling of the T&D System and generation operations into separate and distinct entities.

<sup>33</sup> See, “2020 Certified Fiscal Plan for the Puerto Rico Electric Power Authority,” as certified by the Financial Oversight and Management Board of Puerto Rico on June 29, 2020.

- **June 22, 2020** – PREPA and P3A executed the T&D OMA with LUMA as the private operator for PREPA’s T&D System operations.<sup>34</sup>
- **November 10, 2020** – The P3A launched the RFP to identify and select one or more private operators for PREPA’s existing generation assets.
- **June 1, 2021** – LUMA began Interim Service Commencement under the Supplemental Agreement to the T&D OMA, providing for LUMA to assume T&D operations while PREPA remains in Title III.
- **December 22, 2021** – P3A received proposals from various proponents to operate and maintain PREPA’s existing generation assets.

PREPA and/or the relevant Government entities will continue to promote and support the transformation and modernization of the energy system, particularly regarding the implementation of the following key elements:

1. **Reorganization of PREPA:** One of the key tenets and requirements of previous Certified Fiscal Plans and Commonwealth energy policy for transformation is the unbundling of the electric system from a vertically integrated monopoly structure into one in which roles and responsibilities are reallocated across multiple entities and are operated by different parties. To that end, the T&D OMA among PREPA, P3A and LUMA was executed on June 22, 2020. On June 1, 2021, LUMA took over operations. In December 2021, the PREPA Governing Board approved the legal creation of PREPA's planned subsidiaries. The focus in the coming months will be to; (i) create the approved subsidiaries (PREPA GenCo, PREPA GridCo, PREPA HydroCo, and PREPA PropertyCo); and (ii) assign separate PREPA's assets, roles, and responsibilities into each of the subsidiaries.
2. **Implementing regulatory reform:** A strong and independent energy sector regulator is essential for injecting certainty and stability into the energy market, promoting much needed investment, and enforcing compliance with the energy sector’s transformation objectives. The framework of regulatory reform was approved by the government and Act 57-2014 established an independent regulator, the Puerto Rico Energy Bureau (PREB). The focus in coming years will be continuing to support the independence of the regulator and enabling the regulator to execute its mandate. This process will be accomplished by supporting the development of a strengthened regulatory framework, including efficient, clear, transparent, fair, and accountable proceedings.
3. **Transitioning the operation and management of PREPA’s legacy generation and T&D assets to private operators, while supporting the responsible transition of the island’s energy generation to a reliable system based on 100% renewables:** Bringing on a private operator to manage and operate PREPA’s legacy generation assets will improve affordability, efficiency, operational resilience, and performance, while new modern generation capacity is developed. As to the T&D System,

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<sup>34</sup> O&M references are to that certain Operation and Maintenance Agreement (T&D OMA) dated as of June 22, 2020, by and among PREPA, LUMA Energy, LLC, LUMA Energy Servco, LLC and the P3A. All language and statements under this chapter are meant to be illustrative only and shall be interpreted in accordance with, and subject to, the T&D OMA including the terms, as defined thereunder.

PREPA has successfully transitioned operation and maintenance functions to LUMA on June 1, 2021, along with customer service and energy operation center responsibilities. This effort should yield improved customer experience, support rigorous capital project execution to modernize the T&D system, strengthen grid resilience, ensure political independence, enable the integration of renewable generation capacity, and ensure ongoing fiscal balance and control. PREPA, as owner of the assets, will continue to support LUMA as necessary, pursuant to the T&D OMA. The P3A serves as the sole administrator of the T&D OMA with respect to LUMA's performance. Similarly, for the private operator(s) of its legacy generation assets, PREPA has been supporting the RFP process led by P3A, which will also be the sole administrator of the generation OMA and will work towards ensuring a timely and successful transition once the P3A completes the selection process.<sup>35</sup>

4. **Restructuring legacy debt obligations:** One of the objectives of PREPA's transformation and restructuring under PROMESA is ensuring that it regains access to capital markets at reasonable prices. Given PREPA's significant legacy debt obligations, a sustainable restructuring plan is necessary for PREPA to exit Title III and regain access to traditional credit markets. Without restructuring, customers will ultimately experience higher rates, resulting from, among other things, repayment of a higher legacy obligation and risk premiums associated with the Title III case. Ultimately, successful restructuring of outstanding bonds and debt obligations will reduce PREPA's legacy debt, helping to support more affordable rates than what would otherwise be required, and enabling access to capital markets for future capital needs, consistent with standard utility practices. This will enable PREPA, through the selected private operators for the T&D System and legacy generation assets, to achieve and sustain its transformation goals, to modernize Puerto Rico's power grid and to pass on subsequent efficiencies to end users. Restructuring of legacy debt obligations are further discussed in this chapter in Section **Error! Reference source not found.** and in Chapter 14.

PREPA's Certified Fiscal Plan and the energy public policy and legal framework established by the Government<sup>36</sup> provide the roadmap to complete the island's energy system transformation. If successfully implemented, a reformed energy system will lead to a modern and reliable energy services across Puerto Rico: a diversified fuel mix and more stable fuel and purchased power costs, anchored on low-cost renewable energy generation resources; increased operational efficiencies; and a well-funded, financially sustainable utility. These outcomes will benefit the customers and businesses of Puerto Rico through more reliable, clean, and safe electricity service.

### 3.2.1 Energy Sector Regulatory Reform & Oversight

Completing Puerto Rico's energy system transformation, advancing ongoing changes in PREPA's historical roles and responsibilities, and assigning such responsibilities to selected qualified private operators is imperative. The first step in this restructuring process was taken with the enactment of Act 57-2014, which established Puerto Rico's energy regulator, PREB. Act 57-2014 eliminated PREPA's prior authority to self-regulate and transferred such authorities and

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<sup>35</sup> The Department of Energy (DOE) and various national labs are working on initiatives included in the PR100 Study - The Puerto Rico Grid Resiliency and Transition to 100% Renewable Energy Study – which was coordinated with the Governor of Puerto Rico.

<sup>36</sup> Puerto Rico Energy System Transformation, Act No. 120-2018; Puerto Rico Energy Policy Act, Act No. 17-2019

responsibilities to PREB. In Puerto Rico’s transformed energy system, those regulatory roles and responsibilities remain at PREB. PREB has the responsibility to “regulate, monitor, and enforce the energy public policy of the Commonwealth of Puerto Rico.” As Puerto Rico’s energy sector continues its transformation into a vibrant, modern system, PREB will continue to be responsible for the development of, and adherence to, a robust regulatory framework that promotes prudent investments by regulated utilities, increases quality of service to customers, and ensures that industry trends and technological advancements are appropriately and sustainably incorporated into Puerto Rico’s energy system. To that end, PREB’s regulatory oversight of all regulated energy stakeholders will directly impact the transformed energy sector and have significant influence on Puerto Rico’s energy services.

Chapter 10 (Power Sector Reform) of the Commonwealth Certified Fiscal Plan describes the necessary steps to ensure that PREB becomes a best-in-class regulator, provides a description of what PREB’s roles and responsibilities will be in the near-term and long term, and delineates responsibilities between PREB and the Oversight Board.

### **3.3 Transition to Private Operators**

As required by Act 17-2019 and as outlined in PREPA’s 2020 and 2021 Certified Fiscal Plans, PREPA is required to separate its vertically-integrated operations into Generation and T&D System functions – GenCo and GridCo, respectively. GridCo comprises transmission and distribution system and associated operations, customer experience, system operations and planning and administrative functions, now operated by LUMA.<sup>37</sup> GenCo comprises existing PREPA-owned generation resources that are to be operated and maintained by one or more private operators until their retirement, as laid out in the PREB-approved IRP.<sup>38</sup> GenCo’s responsibilities will also include environmental compliance, safety and plant retirement and decommissioning. Additionally, GenCo and LUMA will be responsible for working closely to ensure appropriate short-, mid- and long-term system planning and timely and efficient execution of system-wide capital improvements.

In addition to GridCo and GenCo, PREPA will create two additional subsidiaries: (1) HydroCo, which will own and operate PREPA’s hydroelectric generating and irrigation assets; (2) HoldCo, which will be responsible for certain non-operational functions; and (3) PropertyCo, which will own the remaining PREPA assets that are not directly related to generation, T&D, or irrigation operations.<sup>39</sup>

Finally, PREPA’s existing day-to-day roles and responsibilities will be limited to those strictly necessary to ensure compliance with federally funded capital investment requirements, short- and long-term financing, financial disclosure and auditing requirements, recordkeeping and other obligations established by federal and Commonwealth laws.

#### **3.3.1 Objectives of the Transition to Private Operators**

Private operation of PREPA’s T&D and generation assets forms a critical part of the transformation and the implementation of system modernization, generation upgrades,

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<sup>37</sup> T&D OMA at Sec. 5.

<sup>38</sup> See Section 1.8 of the Puerto Rico Energy Public Policy Act; Act 17-2019.

<sup>39</sup> Initiatives addressing restructuring needs in the near term are further described in Chapter 9: Operational Measures.



reliability, efficiency, federal funding, and capital delivery initiatives. The overall objective of the various private operators is to address and correct many of the operational and infrastructure deficiencies that have plagued PREPA's T&D and generation services over the last decades, improve service quality, and deliver safe, reliable service at affordable rates, as determined by PREB within its rate-setting authority. As such, the private operators must deliver financial and operational performance improvements across the following six dimensions:<sup>40</sup>

- **Improve operational performance through systematic improvements and introducing and leveraging experienced personnel.** LUMA and the GenCo operator hereinafter selected by the P3A should focus on reducing PREPA's historic dependency on outsourced contracts by insourcing activities, empowering, and training the local labor force, and achieving economies of scale. Specifically relating to T&D, through the T&D OMA, LUMA is incentivized to improve the performance of the T&D System over time based on Performance Metrics reviewed and approved by PREB.
- **Upgrade technology to increase reliability and improve system resilience and efficiency.** While PREPA had limited experience with industry-standard technology, LUMA and the GenCo operator(s) should be capable, qualified, and focused on implementing modern technologies, digital capabilities, and infrastructure to enhance operational efficiencies and reliability, contributing to system performance improvements.
- **Improve processes and procedures.** Drawing on their operational expertise, LUMA and the GenCo operator(s) will further focus on streamlining and standardizing management processes and improve operational efficiencies. These efficiencies will also translate into improved operations and customer experience.
- **Make decisions with limited political interference.** LUMA and any other private operators are subject to independent regulatory oversight by PREB, with contractual oversight from the P3A with respect to its performance under the T&D OMA, thus creating an environment that allows for decisions to be made free of the kind of political interference that has led to the myriad problems with the operation of the utility as described above. This leads to the adoption of standard industry practice where experienced utility operators make operational decisions with oversight from an independent regulator and free of substantive control by PREPA itself, whose governing board is politically appointed as described above. This will in turn depoliticize system management, improve operational performance, competitive procurement utilization, management and maintenance of the T&D System, and the generation facilities, leading to tangible improvements in overall quality of service and affordability. The operations of the T&D System by LUMA and, eventually, the generation assets by a generation operator, must remain free of control by PREPA, subject only to contractual oversight by the P3A and regulatory oversight by PREB.
- **Implement effective and efficient capital project delivery.** LUMA and the GenCo operator(s) are incentivized to establish the mechanisms and processes critical to effectively delivering capital infrastructure programs essential for the effective and timely transformation of the energy system and to ensuring federal funding required for grid modernization and generation asset improvements are well spent, which in turn will increase grid resilience, reliability, sustainability, and efficiency, and recover and mitigate high risk

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<sup>40</sup> Commonwealth Certified Fiscal Plan, Chapter 10 "Power Sector Reform"

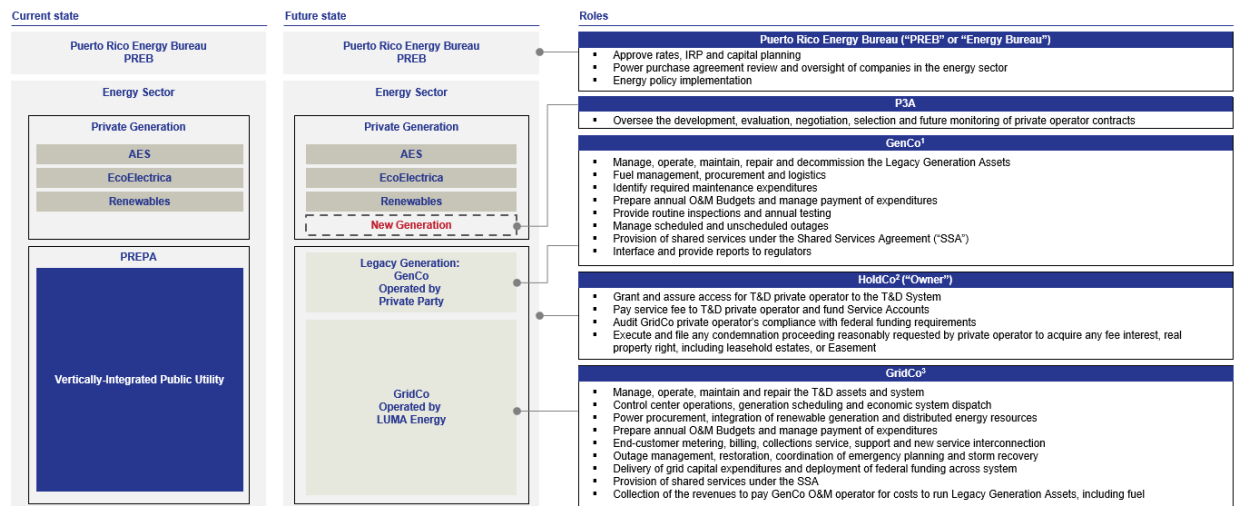
gaps. For instance, the T&D grid mitigation and remediation activities<sup>41</sup> included in the System Remediation Plan, as required under the T&D OMA, will improve service quality and bring the Puerto Rico energy system up to par with peer utilities on reliability and safety.<sup>42</sup>

- **Enable renewable energy generation and transmission.** LUMA, as the T&D System operator, is assisting with renewable grid and dispatch integration, enabling the transition to a clean, reliable, and sustainable energy sector. This includes renewable energy program management, T&D System modernization, and renewable generation scheduling and dispatch. These efforts are required to meet the goals set up by Act 17-2019, which mandates that Puerto Rico obtain 40% of its electricity from renewable resources by 2025, 60% by 2040, and 100% by 2050.

### 3.3.2 Future Structure of the Energy System and PREPA, as well as roles and responsibilities

Act 17-2019 calls for “transitioning from the current, vertically integrated monopoly comprising PREPA, to an energy system with multiple players as well as changes to the roles and responsibilities that have historically been concentrated within PREPA, and their reallocation across multiple entities.” Consistent with such energy key practices outlined in the T&D OMA, PREPA has transferred day-to-day roles and responsibilities over the operation of the T&D system and anticipates transferring the operation and maintenance of its generation systems, including: deployment of federally and non-federally funded capital investments and short-, medium-, and long-term system planning. Exhibit 16 provides an overview of the current and future state of the Puerto Rico Energy Sector.

EXHIBIT 16: ENERGY SECTOR TRANSFORMATION CURRENT AND FUTURE STATE



<sup>1</sup> GenCo refers to the wholly-owned subsidiary of PREPA who would obtain ownership of the Legacy Generation Assets after a potential reorganization of PREPA.  
<sup>2</sup> HoldCo refers to PREPA as a public corporation and governmental instrumentality of the Commonwealth of Puerto Rico, created by Act No. 83 of the Legislative Assembly of Puerto Rico.  
<sup>3</sup> GridCo refers to PREPA, in its capacity as owner of the T&D assets.

<sup>41</sup> PREPA grid infrastructure reconstruction will also be informed and guided by the 10-year Infrastructure Plan submitted by PREPA to FEMA in December of 2020 and subsequently updated as of March 2021, as part of the global settlement with FEMA for the reconstruction of the island's energy infrastructure. Reconstruction will also be guided by the March 2022 Update to the PREPA-LUMA 90-Day Plan, Docket ID: NEPR-MI-2021-0002

<sup>42</sup> SRP filing on Fri Apr 16, 2021, Docket ID: NEPR-MI-2020-0019, RFI-LUMA-MI-20-0019-210406-PREB-004

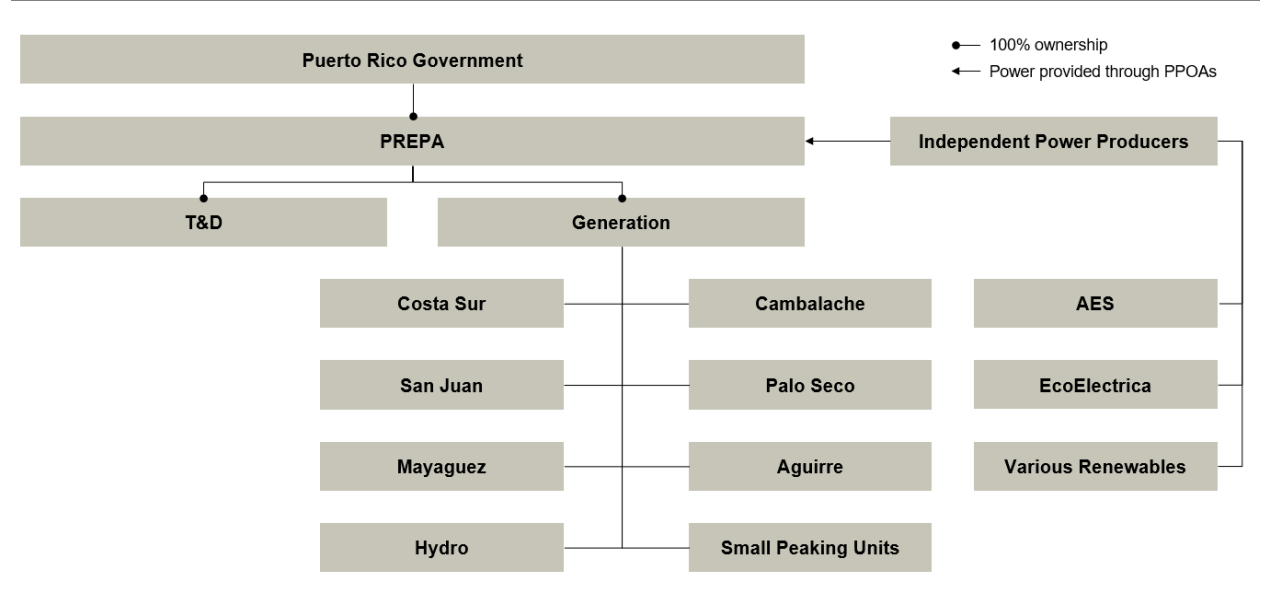
PREPA has worked and coordinated with the P3A to develop a reorganization plan that is compliant with the energy policies of the Government of Puerto Rico and to meet its obligations under the T&D OMA. PREPA is currently developing the plan for its required reorganization and will be submitting it to the PREB for approval.

The T&D OMA establishes or otherwise confirms certain rights and responsibilities of PREPA as owner and the P3A as administrator, including requiring that PREPA or its successor: (1) comply with applicable laws; (2) cooperate with LUMA in its efforts to obtain and effectuate approval of any governmental body; (3) execute and file condemnation proceedings; (4) manage PREPA’s legal matters; and (5) in coordination with the P3A, and when doing so does not result in duplicative efforts, audit LUMA’s compliance with federal funding requirements.

Additionally, the T&D OMA requires that “[f]rom and after the Service Commencement Date, and at all times during the Term [of the T&D OMA], [PREPA or its successor] and the [P3A], including any of their Subcontracts, maintain staffing in connection with the [T&D] O&M Services only at those levels strictly necessary for [PREPA] and [the P3A] to timely and efficiently perform their obligations under [the] [T&D OMA]”.<sup>43</sup> Based on the above, PREPA has developed and is implementing a reorganization of PREPA’s organizational structure, consistent with the T&D OMA and Act 17-2019.

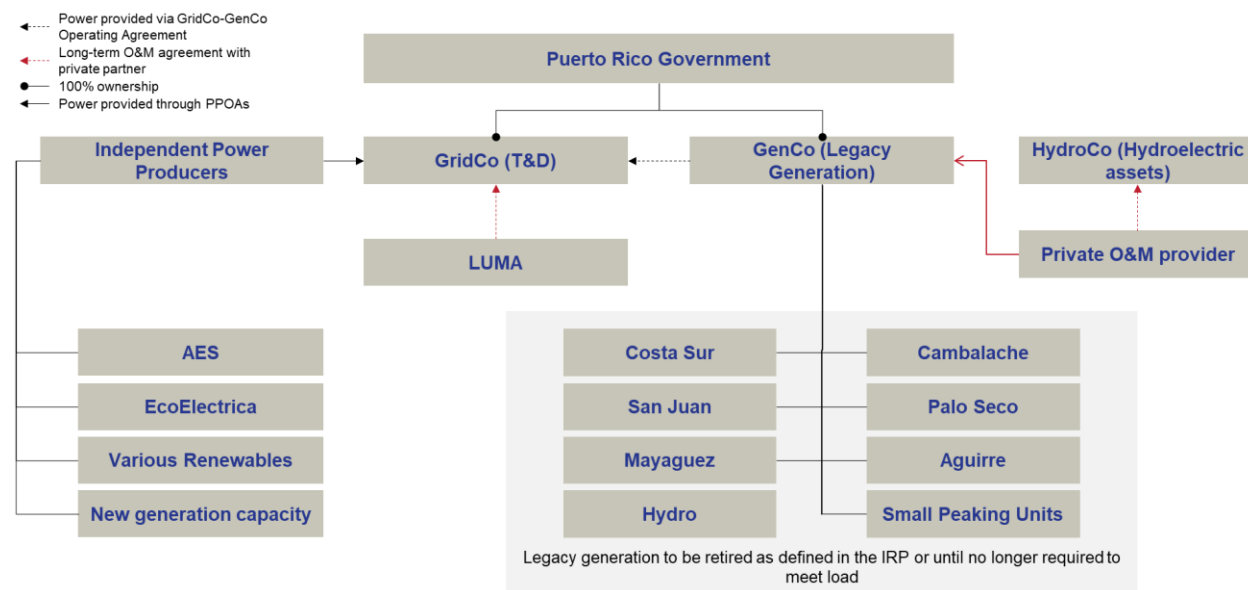
Exhibit 17 and Exhibit 18 provide an overview PREPA’s structure before and after the reorganization, respectively. Exhibit 18 reflects the interim structure before the creation of GridCo and HoldCo as distinct separate entities, as well as the creation of HydroCo and PropertyCo. Overtime, PREPA must establish a GridCo entity that encompasses only those T&D System functions and responsibilities transferred to LUMA. Any other remaining PREPA operations are to be encompassed within HoldCo, or within the other remaining subsidiaries.

**EXHIBIT 17: CURRENT PREPA STRUCTURE**



<sup>43</sup> T&D OMA at Sec. 6.4.

EXHIBIT 18: FUTURE PREPA STRUCTURE



3.3.3 Transitioning T&D assets to a private operator

On June 22, 2020, LUMA executed the T&D OMA and began transition to become the private operator for PREPA’s T&D System assets. This agreement was the result of a competitive process run by the P3A. Following the selection, LUMA and PREPA embarked on the front-end transition process required under the T&D OMA, to ensure the transition of responsibilities. The completion of this process occurred on May 31, 2021, and LUMA’s initial service commencement began providing services on June 1, 2021.

The following sections provide an overview of the T&D System transition to LUMA.

3.3.3.1. Transformation Process

The P3A conducted the T&D RFP process to select a qualified O&M service provider for the T&D System. The process followed an objective and transparent set of bidding and evaluation procedures. Evaluation of eligible bids was performed in accordance with legal requirements under the P3 statute, Act 29-2009, as amended, by the P3A Partnership Committee, established by the P3A pursuant to Section 5 of the Puerto Rico Electric System Transformation Act, Act No. 120-2018, as amended.

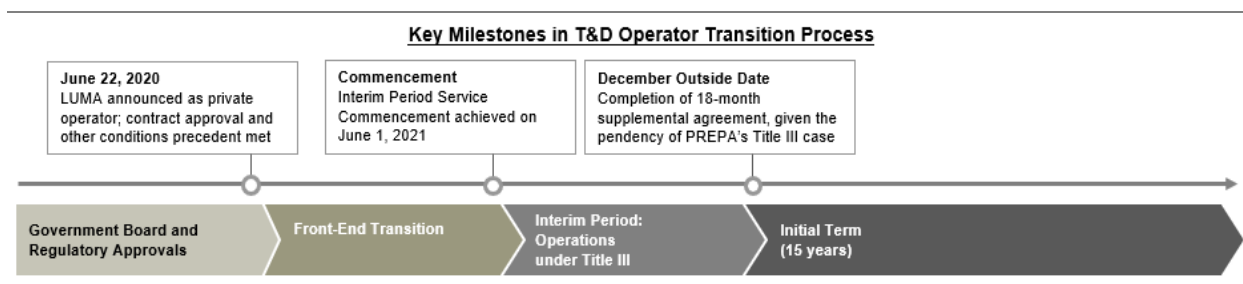
On May 15, 2020, the Partnership Committee recommended to the Board of Directors of the P3A that the contract for the management, operation, maintenance, repair, restoration, and replacement of the Puerto Rico electric T&D System be awarded to LUMA<sup>44</sup>.

LUMA was announced as the selected T&D O&M services provider on June 22, 2020, after approval of the selection was issued by the P3A Board, the Oversight Board, PREPA’s Governing Board, PREB, and the Governor. Thereafter, PREPA, the P3A and LUMA signed the T&D OMA

<sup>44</sup> LUMA is an entity formed by ATCO Ltd. and Quanta Services Inc. <https://www.atco.com/en-ca/about-us/news/2020/122897-atco-and-quanta-form-luma-to-transform-puerto-rico-s-electricity.html>.

which the Oversight Board approved, enabling the commencement of the front-end transition period called for under the agreement (Exhibit 19).

**EXHIBIT 19: KEY MILESTONES IN T&D OPERATOR TRANSITION PROCESS**



Pursuant to the T&D OMA, contract oversight and compliance responsibilities are, and to maintain LUMA's independence must remain, the ongoing responsibility of PREB and the P3A, each within their respective areas of authority and responsibility under applicable law and contract provisions. The Oversight Board will continue its oversight role for PREPA as long as it remains a covered territorial instrumentality under PROMESA. This role includes the certification of PREPA's Certified Fiscal Plans and Budgets, and the adjustment of PREPA's debts and liabilities in its Title III case. Further discussion of Puerto Rico's energy system regulatory landscape can be found in Chapter 10 (Legal and Regulatory Structure).

**3.3.3.2. Overview of the LUMA T&D OMA**

The T&D OMA was executed by and among LUMA, PREPA, and the P3A. Under the T&D OMA, LUMA will provide O&M services pertaining to the T&D System for a minimum term of 15 years. An O&M structure was preferred over a sale or concession of the T&D assets because such assets remain property of PREPA and thus allows PREPA and the Government to maintain access to and eligibility for federal funds for the reconstruction and modernization of the electric grid after Hurricanes Irma and María – and any future natural disasters that may cause damage to such infrastructure.

The T&D OMA outlines requirements, responsibilities, costs, and milestones for the transition of operation of the T&D System by LUMA. These various items are established for purposes of the front-end transition period, the Interim Period, the O&M Services and the back-end transition period. The following section provides an overview of the key elements outlined in the T&D OMA:

**a. Front-End Transition**

The purpose of the front-end transition plan was to ensure the orderly transition of the responsibility for the management, operation, maintenance, repairs, restoration, and replacement of the T&D System to LUMA in compliance with the target established for Service Commencement Date. The front-end transition period began on June 22, 2020, and concluded on May 31, 2021, at which time LUMA assumed responsibility over the operation and maintenance of the T&D System under an "interim period" while PREPA contemplates its Title III case, upon which the full 15-year term of the T&D OMA will commence.

During the front-end transition LUMA, PREPA and the P3A worked together on activities designed to ensure an orderly transition to LUMA. Such activities included, among others:

- Development and implementation of operational takeover plans
- Development and approval of system remediation plans
- Evaluation of customer service facilities, assets, policies, and procedures
- Development of IT/OT communication plans, gap analysis, cyber security, and business continuity plans
- Formalizing changes to control processes, establishing financial accounting system, and account structure, preparing initial budgets and forecasts
- Setting up a governance framework, and policies and procedures related to federal funding, and
- Development of back-end transition plans

During the front-end transition period, and pursuant to the terms of the T&D OMA, PREPA paid LUMA a front-end transition service fee and reimbursable expenses as shown in Exhibit 20.

#### **b. Supplemental Agreement and Interim Period**

The T&D OMA established as a condition precedent to LUMA taking over operation and maintenance responsibilities over the T&D System that PREPA complete its debt restructuring process and exists Title III of PROMESA. Given the view that PREPA would not be able to exit Title III by the expected the June 1, 2021, Service Commencement date proposed by LUMA, the Oversight Board required LUMA, PREPA and the P3A engage in negotiations with the purpose of enabling LUMA to begin providing O&M services prior to PREPA's exit from Title III. As a result, PREPA, LUMA and the P3A negotiated and executes a Supplemental Agreement to the T&D OMA, which provided for an 18-month Interim Service Period under which LUMA would be able to commence providing T&D services while PREPA's Title III case remained pending. The Interim Service Period is separate from the 15-year service term outlined in the T&D OMA, which would begin on the date in which PREPA's exit from Title III is achieved.

#### **c. T&D O&M Services**

After having achieved contractual milestones for transition of T&D operations, the responsibilities for aspects of the operation and maintenance of PREPA's T&D System, including billing and other customer service functions, was transferred to LUMA for the Interim Period set forth in the Supplemental Agreement to the T&D OMA. These services and responsibilities include day to day operations and maintenance of the T&D System, long-term systems and resource planning, generation dispatch, asset management, operation and maintenance, community and media relations, reporting and record keeping, finance and accounting, and oversight and implementation of federally funded projects, among others specified in the OMA Scope of Services. Emergency response and customer service responsibilities, including billing, outage reporting, and connections, are also part of LUMA's responsibilities as T&D System operator.

Therefore, under the T&D OMA, LUMA's scope of services is the following<sup>45</sup>:

1. **T&D System Operation Services:** responsible for all electric transmission, distribution, load serving and related activities for the safe and reliable operation and maintenance of the T&D System. These include system operator activities, engineering activities, maintenance of technical documentation, energy efficiency activities, planning, environmental and

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<sup>45</sup> T&D OMA Annex I

regulatory, legal services, insurance and claims, collection of bills from PREPA's customers, and other activities.

2. **Asset Management and Maintenance Services:** responsible for managing and maintaining all assets of the T&D System including machinery, equipment, structures, improvements, and condition assessments of the electrical system components. These include inventory control, fleet management and refueling, necessary equipment and systems, information technology, public lighting, and generator interconnection.
3. **Continuous Improvement Services:** development and administration of research and development to increase operational efficiency and effectiveness, establishing and conducting a continuous improvement program designed to enhance LUMA's performance, monitoring industry advancement and technological changes.
4. **Government, Community and Media Relations:** communications with customers and government officials, responsible for coordinating and conducting communications with local, state, and federal representatives and organizations, community and media relations, and customer contact.
5. **Testing, Reports and Records:** preparing monthly operations report, producing and delivering information to P3A as requested, and developing and maintaining comprehensive document management program.
6. **Regulatory, Finance, and Accounting Services:** responsible for regulatory proceedings, finance, accounting, budgeting, long-term financial forecasting, and treasury operations related to the T&D System.
7. **Health, Safety, Environment, and Quality:** responsible for ensuring system wide compliance with standardized safety programs to prevent and reduce risk of occupational injuries through hazard identification and reduction activities.
8. **Emergency Response:** curtailments and shutdowns, implementation of the emergency response plan that addresses disaster recovery and emergency response and restoration, and all necessary business continuity, reporting and communication functions relating to the T&D System.
9. **Maintenance:** performing all ordinary maintenance of all property constituting T&D System, including machinery, structures, improvements, and electrical system components, to keep the T&D System in operational condition.
10. **Customer Service:** maintaining staff dedicated to assisting customers, toll-free customer service hotlines, establish and maintain website for customer inquiries and complaints, public outreach and education campaign, customer satisfaction, and meter-related services including repair and replacement of meters.
11. **Federal Funding:** responsible for (together with PREPA and P3A) developing a federal funding procurement manual<sup>46</sup> (subject to approval by COR3, FEMA, and DHS OIG)<sup>47</sup>, ensuring compliance with Federal Funding requirements for contracts that involve Federal Funding, and ensuring compliance with applicable law, regulation, and policy for any federally funded work<sup>48</sup>, acting as agent (after prior written consent by PREPA and P3A) of PREPA in connection with any federal funding requests related to the T&D System<sup>49</sup>.

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<sup>46</sup> Submitted on January 21, 2022. Motion in Compliance with Resolution and Order of January 21, 2022 and Submitting Responses to Requests on the LUMA Procurement Manual, Case No. NEPR-MI-2021-0004, February 25, 2022.

<sup>47</sup> T&D OMA, Section 4.5 j

<sup>48</sup> T&D OMA, Section 5.9 c

<sup>49</sup> T&D OMA, Section 5.9 e

#### d. Service fees

Pursuant to the T&D OMA, PREPA paid compensation to LUMA during the front-end transition. Furthermore, PREPA currently pays LUMA for the T&D O&M services based on the fee structure shown in Exhibit 20 during the Interim Period. Aside from the fixed fee component, LUMA will be eligible to receive the T&D O&M services Incentive Fee if LUMA is able to achieve or exceed the performance metrics outlined in the T&D OMA<sup>50</sup>, as approved by PREB once the regulator emits a final order on metrics to judge performance. Certified Fiscal Plan

EXHIBIT 20: T&D OMA FEES BY CONTRACTUAL PERIODS<sup>51</sup>

Compensation structure	Front-End Transition (FET)	Interim Period Operations under Title III Annual Fees	Initial Term (15 years) Annual Fees	Back-End Transition (BET) <sup>1</sup>
<b>Fixed Fee</b> Payable in monthly installments of 1/12 <sup>th</sup> of total fee	\$60 million <i>One-time fee</i>	\$115 million	\$70 million (Year 1) \$90 million (Year 2) \$100 million (Year 3) \$105 million (Year 4+)	None
<b>Incentive Fee</b> Annual cap with eligibility based on ability to achieve or exceed performance metrics	None		\$13 million (Year 1) \$17 million (Year 2) \$19 million (Year 3) \$20 million (Year 4+)	None
<b>Cost reimbursement</b> Invoiced monthly based on labor hours and reasonable and documented expenses	Costs associated with providing FET services: <ul style="list-style-type: none"> <li>Fully allocated labor costs and hours</li> <li>Reasonable and documented expenses incurred</li> </ul>	None	None	Costs associated with providing BET services: <ul style="list-style-type: none"> <li>Fully allocated labor costs and hours plus a 10% adder on total labor costs</li> <li>Reasonable and documented expenses incurred</li> </ul>

<sup>1</sup> Transition services required to complete the handover of O&M services back to Owner or other successor operator upon expiration or early termination of the Term

#### e. Shared Services Agreement

The T&D OMA contemplated the likelihood that GenCo – before PREPA transfers GenCo and associated operating, administrative, and/or maintenance – functions to one or more private operators – would need certain administrative and other services that historically were provided by PREPA. As such, the T&D OMA provides that to ensure the continuity of GenCo operations LUMA will – as agent of PREPA – provide certain services (the “Shared Services”) to PREPA. To that end, PREPA and LUMA signed a Shared Services Agreement that sets forth the services that LUMA shall provide during the time prior to a transfer of GenCo to one or more private operators, and for a term not to exceed three years from its effective date unless otherwise mutually extended by the parties. The negotiated Shared Services Agreement includes Finance & Accounting, IT, and operational services. Per the T&D OMA, shared services provided by LUMA are to be provided at cost. In other words, LUMA does not earn a mark-up or profit. The exact scope and amount of the

<sup>50</sup> Official Performance Metrics are subject to approval by the PREB

<sup>51</sup> All fees are based on 2020 dollars that will be adjusted by inflation for each year.



shared services provided, as well as the compensation for these services, are detailed in the Shared Services Agreement that was executed by PREPA and LUMA on June 1, 2021.<sup>52</sup>

#### **f. Back-End Transition**

To ensure an orderly and structured transition of the T&D services back to the Government or to a successor operator in the future, the T&D OMA requires, and LUMA prepared and submitted to the PREB and the P3A, a detailed back-end transition plan, to be updated on an annual basis. This plan includes reasonable arrangements for the hiring of LUMA employees by the Government of Puerto Rico or a successor operator, treatment of severance costs associated with LUMA employees not hired by a successor operator, and the transition and handover of T&D O&M Services back to the Government of Puerto Rico or to a successor operator.

#### **g. Transformation Impact on Current PREPA Employees**

There are legal requirements governing the treatment of former PREPA employees to protect and ensure job security during the transformation. These protections are included in Act 120-2018, as amended by Act-17-2019, and provide safeguards for ongoing employment and certain applicable retirement benefits and vested rights for PREPA employees. Act 120-2018 provides that regular PREPA employees will have employment either by joining LUMA (or any other operator selected through a P3A process), at PREPA, to the extent such positions exist and are necessary for PREPA to meet its obligations, or within the Government of Puerto Rico, as determined by the Puerto Rico Human Resource Administration and Transformation Office (OATRH).

Pursuant to Act 120-2018, OATRH and the Puerto Rico Office of Management and Budget (OMB) identified open positions across Puerto Rico's central government to ensure that jobs would be available for every PREPA employee that wanted to stay employed with the Government. To that end in April 2021, PREPA and OATRH sent more than 4,000 transfer notices to PREPA employees. Through the transfer notices, PREPA employees were notified, in accordance with Act 8-2017 and Act 120-2018, the substitute employer agency or instrumentality of the Government of Puerto Rico for employment by June 1, 2021 (unless they accept positions with LUMA). Following the June 1, 2021, deadline, it is estimated that approximately 2,900 PREPA employees took positions within the Government of Puerto Rico.

In addition to having the opportunity to continue working with the Government of Puerto Rico, employees had the option to exit public service and participate in a voluntary transition program ("VTP"). The Oversight Board approved the Government's proposal to issue a VTP for non-generation PREPA employees, amended PREPA's FY 2021.

#### **3.3.3.3. LUMA Objectives and Performance Management**

As contemplated within the LUMA Initial Budgets, LUMA completed the transition for, and implementation of, management and operation of the T&D System while maintaining maximum business continuity. LUMA as T&D System operator will implement new policies, procedures, and plans (including the Emergency Response Plan, Vegetation Management Plan, and Security Plan, among others) which will improve the state and effective operation of the T&D System, its

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52 Shared Service Agreement, dated as of June 1, 2021 by and among The Puerto Rico Power Authority as Owner, The Puerto Rico Public-Private Partnerships Authority as Administrator and LUMA Energy, LLC as ManagementCo and LUMA Energy SERVCO, LLC

reliability and service to PREPA's customers. Key activities in the next three years of LUMA operations include the following:

- **Operations**
  - Continue to develop and roll-out new work methods and communicate to crews on engineering standards, new methodologies and industry practices, provide required ongoing safe and reliable services to customers, and
  - Further improve line and substations work and vegetation, fleet, and materials management.
- **Customer Service**
  - Continue to provide professional, courteous, and responsive communication when addressing customer needs,
  - Continue to unwind system customizations and improve customer care and billing system (including installation of effective meter systems that facilitate billing for actual vs estimated consumption), and
  - Develop robust real-time and historical reporting to inform data-driven decisions.
- **Utility Transformation:** Provide the technical and programmatic framework required to deliver safe and reliable service to customers, including:
  - Finalize plans for PREB related to Energy Efficiency, Demand Response and Electric Vehicles,
  - Collaborate with US DOE and national labs, together with PREPA and the government of Puerto Rico on the Puerto Rico Grid Resilience and Transitions to 100% Renewable Energy Study (PR100),
  - Continue to evaluate and implement key initiatives including establishing enhanced T&D standards, preparing planning studies, field and desktop assessments and deployment of distribution automation, and
  - Continue to implement project management system for capital programs.
- **Support Services:** Improve functions that are required for the management and support of the T&D System assets, including continuing to build a safety-first culture, continuing to develop and implement an overall IT OT framework and improving systems procedures and processes for functions including Finance, Regulatory and Human Resources.

In accordance with its obligations under the T&D OMA and with PREB's directives (specifically those stated in the Resolution and Order dated November 20, 2020, in case by PREB NEPR-MI-2020-0008), LUMA began execution of the FEMA-funded T&D work, including the planning and critical engineering work on major initial projects.

Through the activities and priorities outlined in this chapter as well as Chapter 7 and Chapter 8, LUMA must pursue the following objectives, which are explained in more detail and linked to specific performance metrics<sup>53</sup> in Table 3 below:

- Prioritize safety
- Improve Customer Satisfaction
- Achieve System Rebuild and Resiliency
- Pursue Operational Excellence, and
- Prioritize Sustainable Energy Transformation

TABLE 3: DETAILED GOALS AND OBJECTIVES<sup>54</sup>

Goal	Objective	Performance Metric
Prioritize Safety	<ul style="list-style-type: none"> <li>▪ Promote a safe workplace. Implement procedures, controls, training programs, increase PPE, and awareness</li> <li>▪ Implement effective public safety practices. Reduce public exposure to safety risks</li> </ul>	<ul style="list-style-type: none"> <li>▪ OSHA Recordable Incident Rate</li> <li>▪ OSHA Fatalities</li> <li>▪ OSHA Severity Rate</li> <li>▪ OSHA DART Rate</li> </ul>
Improve Customer Satisfaction	<ul style="list-style-type: none"> <li>▪ Deliver a positive customer experience. Improve customer service quality, accessibility, and reliability.</li> <li>▪ Increase Service Reliability. Reduce the frequency and duration of interruptions to customers' electricity service</li> <li>▪ Deliver electricity at reasonable prices. Reduce operating costs, technical and non-technical line losses, and reduce days sales outstanding and write-offs</li> </ul>	<ul style="list-style-type: none"> <li>▪ J.D. Power Customer Satisfaction Survey - Residential Customers</li> <li>▪ J.D. Power Customer Satisfaction Survey - Business Customers</li> <li>▪ Average Speed of Answer</li> <li>▪ Customer Complaint Rate</li> <li>▪ Abandonment Rate</li> <li>▪ SAIFI</li> <li>▪ SAIDI</li> </ul>
System Rebuild and Resiliency	<ul style="list-style-type: none"> <li>▪ Effectively deploy federal funding. Ensure efficient management of funding, in compliance with FEMA guidelines for reimbursement</li> <li>▪ Restore / reconstruct damaged grid infrastructure. Focus first on critical loads, severely damaged infrastructure, and vulnerable community lifelines</li> <li>▪ Improve resiliency of vulnerable infrastructure. Identify and assess infrastructure and systems for vulnerability and health, to focus near-term investment</li> </ul>	<ul style="list-style-type: none"> <li>▪ Capital Budget – Federally Funded</li> <li>▪ Distribution Line Inspections &amp; Targeted Corrections</li> <li>▪ Transmission Line Inspections &amp; Targeted Corrections</li> <li>▪ T&amp;D Substation Inspections &amp; Targeted Corrections</li> </ul>
Operational Excellence	<ul style="list-style-type: none"> <li>▪ Enable systematic management of the business. Improve information systems and processes to</li> </ul>	<ul style="list-style-type: none"> <li>▪ Operating Budget</li> <li>▪ Capital Budget – Non-Federally Funded</li> </ul>

<sup>53</sup> Performance Metrics are subject to approval by PREB.

<sup>54</sup> LUMA Initial Budget, February 2021 Update, p.510 Appendix E

	<p>enable systematic, data-driven, and efficient management</p> <ul style="list-style-type: none"> <li>▪ Pursue project delivery excellence. Improve execution of capital projects (on time, budget, scope), carefully manage risk</li> <li>▪ Enable employees to execute business operations systematically. Increase employee effectiveness (engagement, productivity) and learning (quickness to adjust, performance improvement)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Overtime</li> <li>▪ Days Sales Outstanding - General Customers</li> <li>▪ Days Sales Outstanding - Government Customers</li> </ul>
Sustainable Energy Transformation	<ul style="list-style-type: none"> <li>▪ Modernize the grid. Incorporate smart grid technologies into rebuilding efforts, increase hosting capacity, reduce load-shedding events, increase deployment of AMI and new DER (Distributed Energy Resource) interconnections</li> <li>▪ Enable the digital transformation Upgrade IT OT capabilities, enhance cybersecurity capabilities, replace all end of use devices, upgrade software to manage the T&amp;D System as well as economic dispatch</li> <li>▪ Enable the sustainable energy transformation. Ensure system infrastructure is rebuilt to accommodate higher penetration of intermittent distributed resources, increase penetration of renewable resources and battery storage, reduce consumption through energy efficiency and DR programs</li> </ul>	

LUMA translated its priorities and activities into a set of tangible improvement portfolios, which are outlined in more detail in Chapter 7 (LUMA Improvement Portfolios). As a result of its improvement programs, LUMA must work to achieve the projected improvements in Performance Metrics<sup>55</sup> shown in Table 4.

TABLE 4: CUMULATIVE IMPROVEMENTS<sup>56</sup> IN PERFORMANCE METRICS PROJECTED BY LUMA

Performance Metric <sup>57</sup>	Fiscal Year 2022	Fiscal Year 2023	Fiscal Year 2024
<b>Customer Service</b>	11%	26%	31%
<b>Safety</b>	22%	36%	48%
<b>System Average interruption Frequency Index (SAIFI)</b>	7%	20%	30%
<b>System Average interruption Duration Index (SAIDI)</b>	10%	25%	40%

<sup>55</sup> System Remediation Plan, Docket ID: NERPPREB NEPR-MI-2020-0019; RFI-LUMA-MI-20-0019-210406-PREB-006, filed April 16, 2021

<sup>56</sup> Cumulative improvements shown

<sup>57</sup> Subject to PREB regulatory process and approval.

Based on the historical state and efficiency of PREPA's grid operations, LUMA is aware of the challenges ahead, and is focusing efforts on key success factors to mitigate them, including

1. Safety first;
2. Data driven decision making;
3. Leading with solutions; and
4. Implement a transparent and collaborative approach to decision making.

The risks to the T&D transformation are discussed in detail in LUMA regulatory filings with PREB. Specifically, the Program Briefs filed by LUMA regarding the Initial Budgets and the SRP outline risks of not proceeding within SRP Section 2.6 Program Risks.

### *3.3.4 Transitioning Legacy Generation Assets to a Private Operator*

Like the T&D System, the electricity supply system of Puerto Rico is in the midst of a transition from being publicly operated and maintained entity to a multi-party, privately owned and operated generation system. This transition will play an integral role in boosting generation efficiency and productivity, and environmental compliance, which is projected to have the following impacts:

1. Improved reliability of services
2. Improved quality of the supply of electricity
3. Adherence to environmental and sustainability standards

To that end, the operation and maintenance of PREPA's existing legacy generation assets will be transferred to one or more qualified private third parties, while those generation assets are duly decommissioned and retired, in accordance with the IRP and Act 17-2019. To improve the flexibility, reliability, resiliency, efficiency, and sustainability of Puerto Rico's energy supply, the generation fleet transformation will include:

1. **Transition of the operation and maintenance of PREPA's legacy generation assets to one or more private operators:** Private operator(s) will be responsible for the optimal operation and maintenance of PREPA's assets through a GenCo Operation and Maintenance Agreement contract structure, similar to the T&D OMA transaction, until the legacy generation units are retired and replaced by new, more efficient and compliant, generation. PREPA-owned generation assets are expected to deliver enhanced reliability and efficiency for the remainder of their operating period under the stewardship of private operators, which is currently being procured by the P3A through a competitive process.
2. **Replacement and modernization of the legacy generation fleet:** Puerto Rico's aging, inefficient, and unreliable generation fleet must be urgently replaced and modernized to reduce outages and generation costs as well as comply with environmental regulations. The roadmap for this modernization is the PREB-approved IRP, which outlines the actions and investment in new generation that must be procured to reduce generation costs and achieve greater reliability and resiliency. These investments include increasing the share of renewable generation through a competitive procurement process for new compliant generation capacity to be obtained via power purchase agreements. This process will reduce reliance on fossil fuels along with their associated price volatility and set Puerto Rico on a path to compliance with the RPS target outlined in Act 17-2019. In

addition, increased flexibility and reliability will result from GridCo's deployment and integration of energy storage, distributed generation, and the use of minigrid/microgrid technologies.

#### 3.2.2.4.1. Process for Transitioning Legacy Generation Assets to a Private Operator

To transform the PREPA-owned legacy thermal generation operations, the P3A, in fulfillment of public policy and as required in the Certified Fiscal Plan, is leading a competitive process to identify, qualify, and select one or more private operators to operate PREPA's legacy thermal generation assets and eventually decommission such assets, pursuant to an OMA similar in structure to the LUMA T&D OMA that will provide for independent oversight of the private operator by PREPA and P3A. The competitive process follows a similar phased approach as the T&D transaction, including but not limited to the following:

- Phase I: Transaction preparation (COMPLETED)
- Phase II: Request for quote (RFQ) (COMPLETED)
- Phase III: Request for proposal (RFP) (COMPLETED)
  - Preparation and release of RFP documentation to shortlisted participants
  - Detailed due diligence by participants
  - Release and negotiation of transaction documents
  - RFP proposal submissions by participants
- Phase IV: Selection of selected proponent by P3A Partnership Committee (IN PROGRESS)
- Phase V: Closing

#### 3.2.2.4.2. Modernizing the Legacy Generation Fleet – New Generation Capacity

Future new generation capacity will have to meet modern operational, efficiency, environmental, and renewable public policy requirements. To this end, PREB issued a Final Resolution and Order on PREPA's IRP in August 2020. This Final Resolution and Order led to PREPA's development of a detailed Procurement Plan (with PREB's guidance and approval) for renewable resources and battery energy storage to achieve compliance with the renewable portfolio standard (RPS) as articulated in Act 82-2010, the Puerto Rico Energy Diversification Policy through Sustainable and Alternative Renewable Energy Act. In addition to the Procurement Plan, all agreements to supply new generation capacity must be transparently negotiated with an eye towards maximum flexibility and efficiency to improve the Island's generation capacity, in a process that is free of political interference and focus on particular constituencies, but rather focused on what is necessary to improve the Island's generation capacity.

Additionally, after months of delays, in February 2021, PREPA issued the first tranche (Tranche 1) of a series of RFPs for provision of renewable energy in support of Act 17's RPS goals, and for battery energy storage in support of capacity requirements needed to meet PREPA's peak load requirements and in support of integration requirements for renewable energy generation. The guidance for renewable energy and energy storage RFP tranches, as well as the projected installation timeline, is contained in **Error! Reference source not found.**<sup>58</sup> and Exhibit 21.

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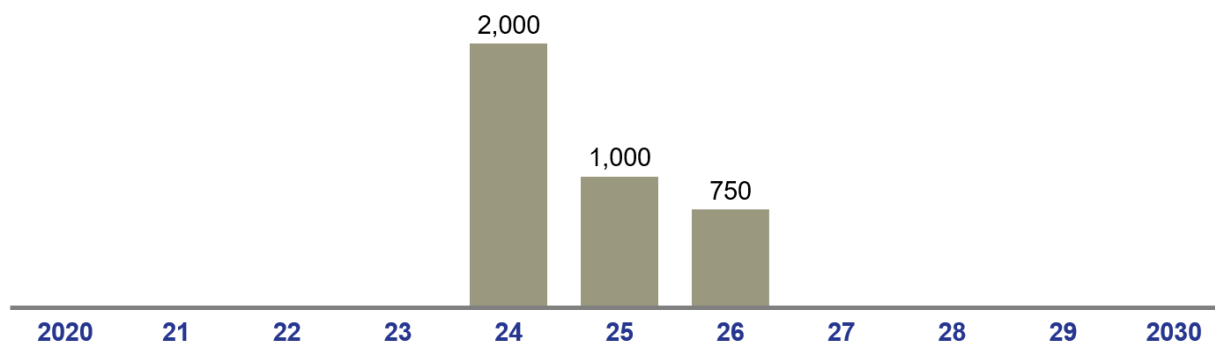
<sup>58</sup> The quantities outlined in the RFP tranches may be adjusted to accommodate for installations of distributed generation (DG) that contribute to meeting overall quantities and for other resources that PREPA may identify.

On February 2, 2022, PREB approved 18 of the solar PPOAs recommended by the Evaluation Committee for Tranche 1.

As it relates to additional tranches of renewable energy RFP's, PREB, not PREPA, sets the timeline for issuance of these tranches and will hold the primary responsibility of executing on the procurement process for the new renewable generation capacity. PREPA submitted a complete set of Tranche 2 RFP documents to PREB on October 29, 2021, per PREB order. PREB issued a resolution and order on January 27, 2022, establishing an independent coordinator to manage all future renewable energy procurements and described the coordinator's corresponding role and responsibilities. As of May 6, 2022, PREB had not issued any resolution and order establishing PREPA and LUMA's respective roles in any future tranche.

**EXHIBIT 21: PROJECTED INSTALLATION TIMELINE OF THE RENEWABLE GENERATION CAPACITY ORDERED BY PREB**

Projected installation timeline of the renewable generation capacity ordered by PREB, in MW



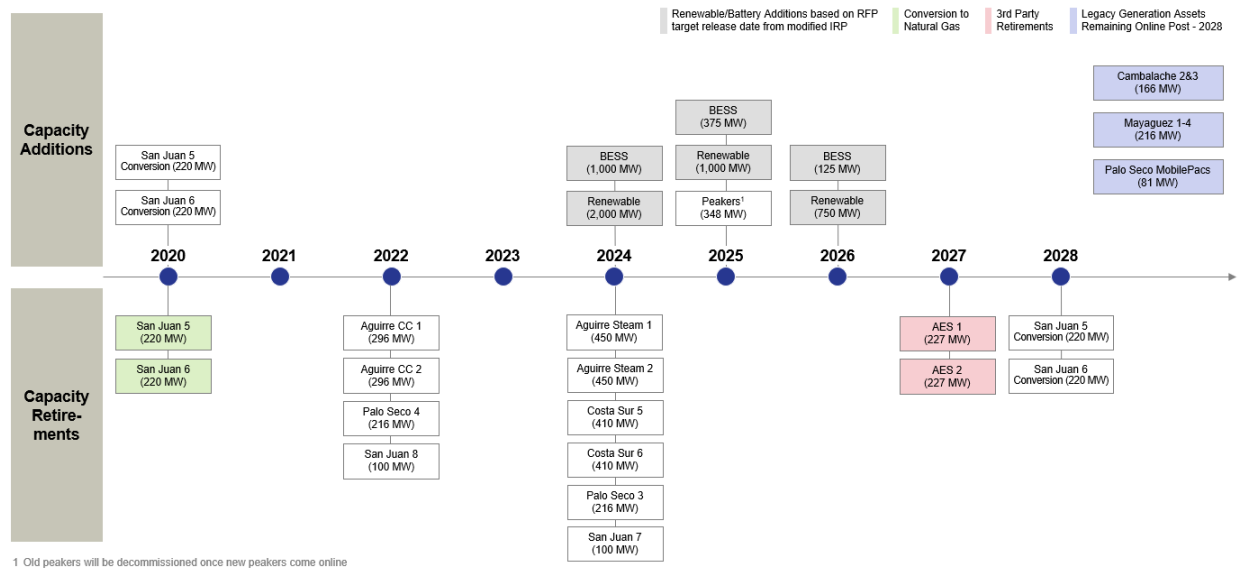
1 Assumes RFP process takes two months, the PPOA finalization process takes one month, construction begins eight months after the PPOA approval, and commercial operations begin 24 months after construction begins

In all, with the addition of the remaining five (5) RFP tranches,<sup>59</sup> Puerto Rico can anticipate the procurement of 3.75 GW of renewable energy and 1.5 GW of battery storage. This procurement is intended to set Puerto Rico on a path to reach its target of 100% renewable energy by 2050. However, Puerto Rico's actual ability to reach Act 17's RPS targets will depend on the pace at which renewable resources are procured, the timeline for permitting and building those resources, the availability of reasonable financing alternatives, the reasonability of proposed pricing terms, and the progress made in upgrading the T&D system in order to enable safe and reliable integration of renewable resources. The future generation mix forecasted by PREPA is expected to reach the RPS goal of 100% renewable generation (i.e., total renewable generation as a proportion of total sales) by FY2050 (Exhibit 23). However, as previously mentioned, the system is currently not on pace to achieve the renewable energy additions necessary to support RPS-compliance and, consequently, is behind schedule in the expected retirement date of existing generation resources. LUMA and PREB must, as soon as practicable, initiate a new IRP process with the aim of developing an up-to-date Action Plan that considers current macroeconomic and

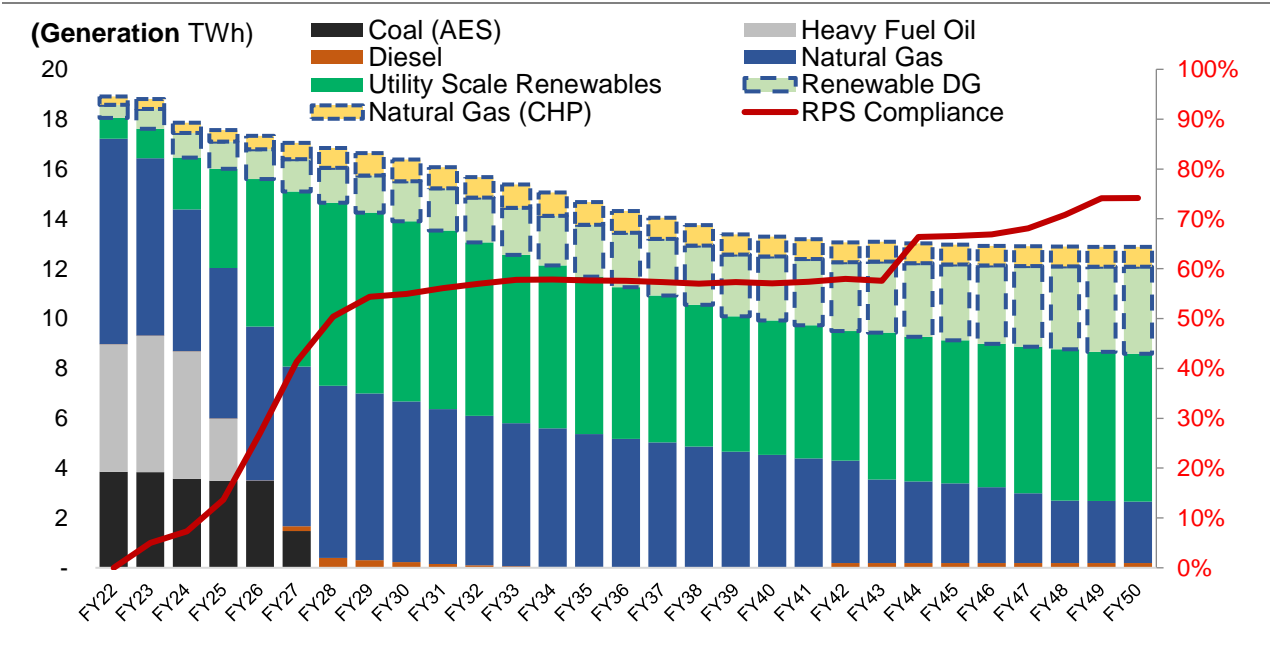
<sup>59</sup> The RFPs are open to all forms of renewable energy, including solar photovoltaic, wind, energy storage, hydro, virtual power plants (VPPs), or any combination of those technologies

industry trends as well as conditions that may constraint compliance with the current Modified Action Plan and provides an updated outlook into the evolution of the Island’s energy sector.

**EXHIBIT 22: IRP PREB MODIFIED ACTION PLAN**



**EXHIBIT 23: PROJECTED GENERATION MIX**





### 3.4 Implementation of Puerto Rico’s Energy Sector Transformation

To achieve this Certified Fiscal Plan’s savings projections, several reforms to the energy sector must be implemented immediately or otherwise continued. Several of the measures recommended in earlier Certified Fiscal Plans have been completed and are listed in Exhibit 24.

Exhibit 25, in turn, describes additional mandatory reforms necessary to ensure the transformation of the electricity sector and compliance with PREPA’s and the Commonwealth’s Certified Fiscal Plans, and to meet this Certified Fiscal Plan’s growth and revenue targets.

#### EXHIBIT 24: COMPLETED MILESTONES FOR POWER SECTOR REFORM

Area of focus	Action item	Responsible party	Completed
Implement regulatory reform	Provide interim feedback on PREPA’s Integrated Resource Plan (IRP)	PREB	Completed
	Remove CW government approval needed for PREB staff appointments	CW government	Completed
	Revise charter legislation to provide dedicated funding for power sector regulation that provides regulator with annual budget of \$20 million in line with benchmark	CW government	Completed <sup>1</sup>
	Appoint the remaining PREB commissioner to serve staggered six-year terms	PREB	Completed
	Increase number of PREB staff in line with appropriate benchmarks	PREB	Completed
	Approve IRP	PREB	Completed
	Conclude and publish a study regarding an optimal CILT structure and submit a recommendation to the Governor and the Legislature	PREB	Completed
Transition to private operators	Perform market sounding to collect feedback on interests and concerns from interested parties for generation asset privatization	P3 Authority /Oversight Board	Completed
	Select a winning proponent to manage and operate PREPA’s T&D system	P3 Authority	Completed
	Prepare for and launch RFQ for the selection of a proponent for PREPA’s generation assets	P3 Authority	Completed
	Prepare for and launch RFP for the selection of a proponent for PREPA’s generation assets	P3 Authority	Completed

<sup>1</sup> Partially completed. Legislation was adopted (Act No. 17), providing \$20 million in funding. However, the funding was not from a dedicated source; PREB will need to confirm completion in the near future.

#### EXHIBIT 25: PENDING MILESTONES FOR POWER SECTOR REFORM

Area of focus	Action item	Responsible party	Deadline
Implement regulatory reform	Create an oversight and monitoring division for LUMA operation and management agreement and other P3A deals, with experienced career civil servants and minimal trust employees	P3 Authority	Completed
	Provide FOMB with staffing plan and organizational chart outlining the monitoring and compliance division created within P3A and required funding sources.	P3 Authority/ AAFAP/ Legislature	Completed
	Amend PREB enabling act (Act 57-2014) to stipulate that PREB’s budget will be funded through rates	Governor/ Legislature	Delayed
	Submit implementation plan for achieving a workforce with no more than 10% trust employees.	PREB	Delayed
	Reduce the percentage of trust employees to 15% of total employees	PREB	Delayed
	Reduce the percentage of trust employees to 10% of total employees	PREB	Delayed
	Develop a CILT process by which municipalities pay for electricity consumption not covered by CILT, and are able to file complaints related to CILT*	PREB	Delayed
Transition to private operators	Select a winning proponent to manage and operate PREPA’s existing generation assets	P3 Authority	Delayed
	Implement approved IRP and grid modernization plan to ensure a modernized, resilient, and reliable grid	PREPA	In progress
Restructure legacy debt obligations	Confirm Title III plan of adjustment	FOMB	To be determined
	Implement PREPA plan of adjustment	PREPA	To be determined

\* Milestones also recommended in June 2019 Fiscal Plan

## Chapter 4. Risks and System Resilience

The electric power system in Puerto Rico has endured significant infrastructure damage in recent years due to severe hurricanes and earthquakes. In the future, the frequency and intensity of atmospheric events is anticipated to increase further as climate change accelerates.<sup>60</sup> These natural risks for Puerto Rico's energy infrastructure have been exacerbated by historic underspending on CapEx, maintenance and vegetation management which compounds the damage and impact from natural disasters while simultaneously making the system vulnerable to commonplace disturbances. To mitigate such risks and to achieve a safe, modern, sustainable, and reliable energy system, resilience measures for both the Transmission and Distribution (T&D) System and generation assets must be prioritized.

To this end, PREPA and LUMA, have developed capital plans to repair, remediate, and modernize the existing system and improve its resiliency against extreme events. Among other funding sources, the capital plans rely on the \$9.6 billion, net of cost share, in funds allocated by FEMA to PREPA to modernize and harden the power system against natural disasters.<sup>61</sup> For the T&D System, LUMA has proposed a budget of nearly \$2.6 billion from FY2023 through FY2025 for infrastructure repair, modernization, and hardening projects. Further information on capital plans can be found in Chapter 6 (Capital Plans and Federal Funding) and Chapter 7 (LUMA Improvement Portfolios) for PREPA and LUMA, respectively. Further information on Federal Funding sources and uses also can be found in Chapter 6.

The following sections address in summary the risks posed to Puerto Rico's electricity system resulting from: (1) climate risk; (2) earthquakes; and (3) economic shocks (e.g., COVID-19). Historical responses and preparedness are also discussed and potential actions to mitigate these risks are considered as well.

### 4.1 Climate Risk

Puerto Rico is at high risk for the wide-ranging effects of climate change. Hurricanes, wildfires, heat stress, and coastal flooding are all risks to Puerto Rico and its electricity system. Climate projections show that Puerto Rico could experience significant climate events in the next 30 years, including: (1) decrease in frequency, but greater intensity, of extreme precipitation events; and (2) a potential rise in sea level of one to two feet, which could lead to risks from coastal flooding and inundation, particularly in the populated areas on the northeastern part of the island (i.e., San Juan).<sup>62,63</sup> Historically, mean wind speeds have remained relatively stable when comparing observational data from 1979-1999 to 2000-2019 while maximum wind speeds have increased in both intensity and frequency over the past several decades.<sup>64</sup> If these trends continue, Puerto Rico could see additional extreme wind events in the future.

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<sup>60</sup> U.S. National Oceanic & Atmospheric Administration National Centers for Environmental Information & Cooperative Institute for Climate & Satellites-North Carolina. Intermediate sea-level rise scenario.

<sup>61</sup> \$10.7 billion figure includes cost-share and insurance payouts.

<sup>62</sup> U.S. National Aeronautics and Space Administration Earth Exchange (NEX) down-scaled climate model data, historical for 1976-2005 and future Representative Concentration Pathways (RCP) 4.5 scenario for 2021-2050.

<sup>63</sup> U.S. National Oceanic & Atmospheric Administration National Centers for Environmental Information & Cooperative Institute for Climate & Satellites-North Carolina. Intermediate sea-level rise scenario.

<sup>64</sup> European Centre for Medium-Range Weather Forecasts, ERA5 Historical Reanalysis Data (1979-2019).

In September 2017, Hurricanes Irma and Maria affected PREPA’s already vulnerable grid, causing an island-wide blackout. The transmission and distribution network suffered the most damage. In the future, devastating severe weather events like hurricane Maria are likely to occur more frequently, with similar scale events of precipitation now nearly five times more likely to form than during the 1950s; this increase is due largely to the long-term effects of climate change.<sup>65</sup>

The operational impact of climate-related events is sizable. In the wake of hurricanes Irma and Maria, over 2,700 transmission poles were damaged, and 92% of inspected substations were affected, with 41% of substations suffering major damage.<sup>66</sup> The distribution system was not adequately maintained and upgraded to be able to withstand hurricanes rated Category 4 or higher and, as a result, 75% of circuits were damaged while certain generating units also suffered significant damage.<sup>67</sup> The cost of responding to climate-related events is substantial. In the aftermath of the 2017 hurricanes, Puerto Rico received \$3.2 billion in emergency federal funding for assistance with electrical restoration on the island.<sup>68</sup>

Although it is difficult to estimate and quantify the size of climate change’s risk on Puerto Rico’s electricity system infrastructure and operations, the increased intensity of individual wind and rain events are projected to result in higher costs of repair and reduced demand due to outages on a per-event basis (Exhibit 26). Additional work remains to improve operational practices—including routine preventative maintenance (T&D and generation)—and strengthen the infrastructure to prevent future adverse weather events from causing a similar or even greater scale of damage.

**EXHIBIT 26: IMPACT OF CLIMATE EFFECTS ON PREPA**

Impact Level	Climate Effects	Description	Impact on PREPA
High	Damage from extreme wind	<ul style="list-style-type: none"> <li>Frequency of extreme wind days have <b>increased 28%</b> since 1980</li> <li>While average intensity has remained stable since 1980, <b>maximum wind speeds have increased</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Loss of revenue</b> due to outages</li> <li><b>Increased costs</b> to repair storm damage</li> <li><b>Increased intensity</b> of individual severe weather events suggest <b>greater repair and lost demand costs</b> on a per-event basis</li> </ul>
	Damage from extreme precipitation	<ul style="list-style-type: none"> <li>Projections suggest a 15% to 25% <b>decrease in extreme precipitation days</b></li> <li>Projected <b>increase in intensity</b> of extreme precipitation days suggest a shift toward <b>less frequent, more severe events</b> (i.e. hurricanes)</li> </ul>	
	Damage from coastal flooding	<ul style="list-style-type: none"> <li>Projected 1 to 2 ft sea level rise by 2050 expected to <b>increase risk of coastal inundation and flooding</b></li> <li><b>Greatest risk</b> posed to <b>Northeast</b> regions (i.e. San Juan)</li> </ul>	
	Wildfire risk	<ul style="list-style-type: none"> <li>Natural <b>forests</b> cover <b>significant share</b> of PR land mass</li> <li>Rising temperatures can <b>increase wildfire potential</b> and subsequent risk of <b>fire hazard</b> and <b>powerline damage</b></li> </ul>	
	Heat stress	<ul style="list-style-type: none"> <li>Higher average temperatures could <b>increase surges in demand for A/C (currently 27% of total energy demand for hot-humid climates)</b></li> <li><b>Heat waves</b> and <b>droughts, however</b> pose risks to <b>infrastructure</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Increased demand</b> for electricity</li> <li><b>Potential increase in revenue</b> due to increased demand</li> </ul>
	Decreased transmission efficiency	<ul style="list-style-type: none"> <li><b>Energy loss</b> in transmission and distribution is <b>positively correlated with temperature</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Increased generation required to meet equivalent demand</b> due to increase energy loss</li> <li><b>Increased costs</b> to increase generated load &amp; generation capacity</li> </ul>

<sup>65</sup> Keellings, D., & Hernández Ayala, J. J. (2019). Extreme rainfall associated with Hurricane Maria over Puerto Rico and its connections to climate variability and change. Geophysical Research Letters.

<sup>66</sup> PREPA Central Office for Recovery, Reconstruction and Resiliency, Energy System Modernization Plan, 3, 6.

<sup>67</sup> Puerto Rico Energy Resiliency Working Group, Build Back Better, A-3, A-6, A-7, 21.

<sup>68</sup> “2017 Hurricane Season: Federal Support for Electricity Grid Restoration in the U.S. Virgin Islands and Puerto Rico.” United States Governmental Accountability Office. April 2019.

LUMA and the GenCo operator(s), are key to properly and sustainably addressing the challenges posed by climate change and accelerate access to and deployment of federal funds.<sup>69</sup> PREPA's capital plan for generation assets as well as LUMA's set of improvement programs for the T&D System outline the portfolio of projects that will most efficiently and effectively improve system resilience and strengthen the energy system against future extreme weather events, which are expected to increase in frequency and magnitude. LUMA has already identified and proposed numerous initiatives that will bolster the electric power system to withstand extreme weather events, including flood mitigation measures for critical grid assets such as control buildings and substations as well as transmission and distribution support structure replacement and hardening. For example, LUMA's Transmission Line Rebuild program will ensure all transmission towers meet the 150-mph wind resistance standard as required in Act 17-2019. As currently envisioned, federally funded capital will be utilized to fund much of this work. LUMA has also proposed the establishment of an integrated and proactive vegetation management program for long-term, sustainable vegetation control and restoration of T&D System right of ways.<sup>70</sup>

LUMA's ongoing vegetation management activities, in accordance with LUMA's Vegetation Management Plan (VMP) include work to abate or mitigate immediate vegetation risk in the most critical locations, along with an ongoing program to clear and re-establish Rights-of-Way (ROWs) to standard widths. This includes immediate response for the highest risk sites, those that pose hazards to public safety or routinely experience tree-caused service interruptions and reclaiming ROW corridors (especially those impacting the T&D System). In addition, LUMA has completed an initial vegetation clearing, first herbicide treatment, and second herbicide treatment at all substation sites.

## **4.2 Earthquakes**

The U.S. Geological Survey forecasts the yearly chance of a magnitude 5+ earthquake in Puerto Rico is currently at over 99%, and it will remain at above 50% for the next three to ten years.<sup>71</sup> Earthquakes have caused serious damage to utility infrastructure, as well as damage to transmission lines because of falling trees. This risk must be properly managed and considered in future improvement plans.

On January 7, 2020, a 6.4 magnitude earthquake struck the southwestern coast of the Island, causing significant damage to the Costa Sur Power Plant and less severe, but notable, damage to EcoEléctrica. In the immediate aftermath of the earthquakes, about two-thirds of the island's population was left without power for several days. The loss of these two natural gas power plants increased the system's reliance on more costly oil-fired power plants. In the near term, PREPA's diesel peaking plants were dispatched to balance the load. As a result of the January 7 earthquake, the share of total monthly generation from natural gas declined by about 70%, from December 2019 to January 2020, while the share of generation from diesel fuel oil increased by almost

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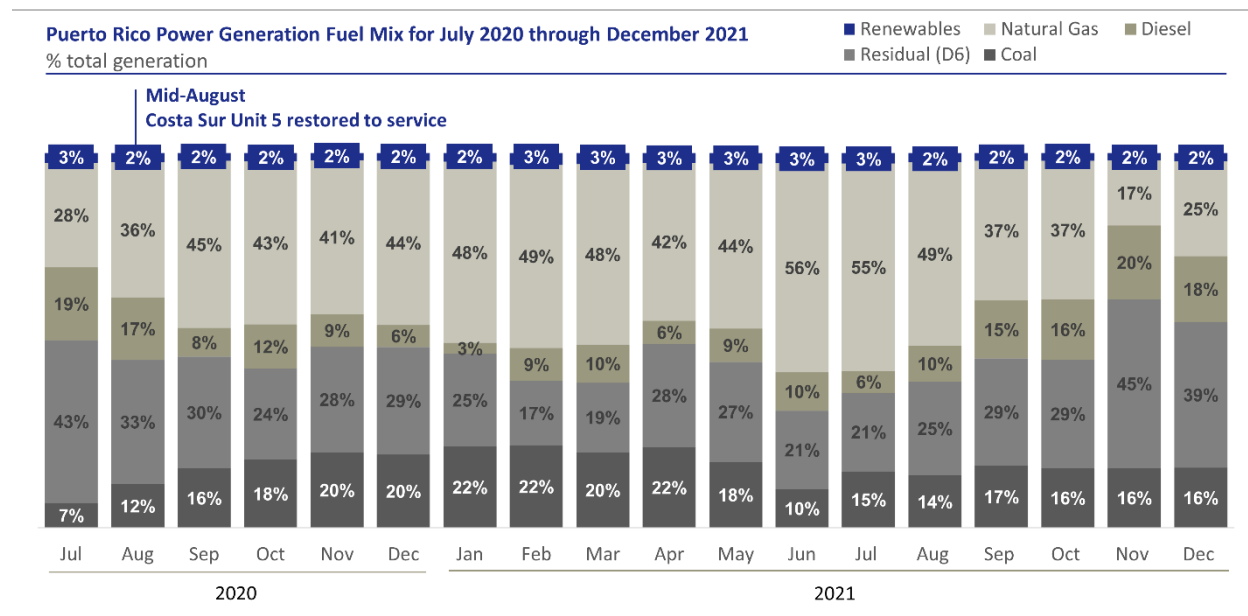
<sup>69</sup> See additional detail on the transformation of Puerto Rico's power sector in Chapter 3.

<sup>70</sup> Further information on capital plans can be found in Chapter 6 (Capital Plans and Federal Funding) and Chapter 7 (LUMA Improvement Portfolios) for PREPA and LUMA, respectively.

<sup>71</sup> van der Elst, N.J., Hardebeck, J.L., and Michael, A.J. "Potential duration of aftershocks of the 2020 southwestern Puerto Rico earthquake". U.S. Geological Survey Open-File Report 2020-1009. <https://doi.org/10.3133/ofr20201009>.

twofold (Exhibit 27). PREPA was able to return Costa Sur Unit 5 to service by August 2020 and Unit 6 by January 2021, respectively, with a total estimated repair cost of \$39 million.

EXHIBIT 27: FUEL MIX DURING FISCAL AND CALENDAR YEAR 2021



The geography of Puerto Rico is susceptible to ongoing and future seismic events, and therefore earthquake resilience measures to strengthen system infrastructure are essential in protecting against service disruptions. For future mitigation, critical generation resources must be diversified and distributed to ensure damage to a few power generation facilities does not cause long-term power shortages as well as hardening and reinforcing of existing facilities. For the T&D System, investments in critical infrastructure modernization must include hardening projects that strengthen the system against future earthquakes, specifically system control centers and other critical support buildings, transmission towers, distribution facilities, and substations. For generation assets, diversifying the available capacity through the development and integration of renewable energy and storage facilities will mitigate the risk associated with losing specific generation sites. Any new facilities must be designed and built to strict, earthquake-compliant codes to mitigate risk from future earthquakes.<sup>72</sup> PREPA and LUMA will continue assessing infrastructure risks and targeting structural enhancements to limit damage from earthquakes as part of future capital planning and project execution.<sup>73</sup>

### 4.3 Economic Shocks (e.g., COVID-19)

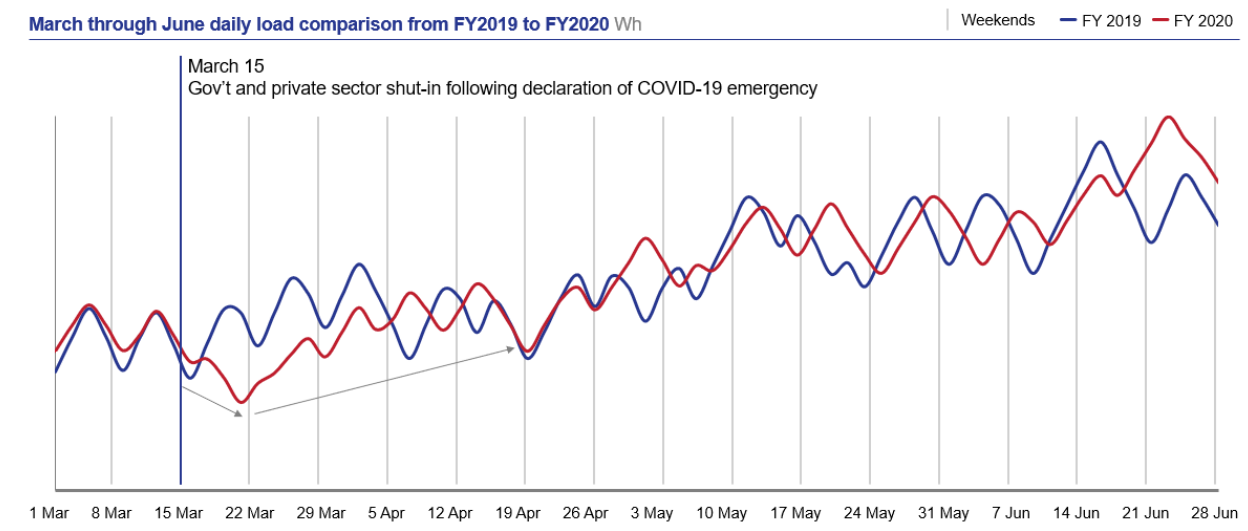
The economic impact of COVID-19 response measures has had a ripple effect on the power sector. On March 15, 2020, Puerto Rico enacted social distancing measures under Executive Order 2020-023 to manage the spread of the COVID-19 virus. After the curfew was implemented, generation

<sup>72</sup> Preston, Benjamin L., et al. "Resilience of the U.S. Electricity System: A Multi-Hazard Perspective." Prepared for the U.S. Department of Energy's Office of Energy Policy and Systems Analysis. August 18, 2016.

<sup>73</sup> Further information on capital plans can be found in Chapter 6 (Capital Plans and Federal Funding) and Chapter 7 (LUMA Improvement Portfolios) for PREPA and LUMA, respectively.

levels declined, alongside customer sales. In the four weeks immediately following the announcement of the curfew, total daily generation declined between 8 to 12% compared to the prior year’s figures.<sup>74</sup> After the initial four weeks, generation levels showed a gradual return to levels consistent with FY 2019 averages.<sup>75</sup> Exhibit 28 shows how daily load for March through June varied from FY 2020 and FY 2021 due to the COVID-19 measures.

EXHIBIT 28: MARCH THROUGH JUNE DAILY LOAD COMPARISON FROM FY 2019 TO FY 2020 (WH)



Following the curfew announcement, PREPA initially experienced a steep drop in collections. At its worst point, average daily rate collections fell to less than half of forecasted planned collections and threatened PREPA’s cash position. However, by June 2020, PREPA’s monthly cash balance had returned to pre-COVID levels. PREPA’s successful weathering of this potential liquidity crisis was a result of liquidity and cash flow management processes implemented since 2017, as well a strategic collection effort. On March 16, 2020, as the initial curfew was announced PREPA held \$416 million in its operating account – from March 2019 through February 2020, PREPA maintained an average operating cash balance of \$350 million despite the disruption and damages caused by the January 2020 earthquakes.

After two years of experience since the government enacted curtailment restrictions addressing COVID-19, PREPA continues to closely monitor cash balances, collections, customer consumption, and accounts payable to maintain a sustainable level of liquidity for ongoing operations. Since June 1, 2021, LUMA has been in charge of Customer Experience (including collections) and must ensure adequate collection effort and results in close coordination with PREPA to hold sufficient liquidity. Management and advisors continue to analyze potential forecast scenarios to understand the various impacts of changes in collections, fuel costs, and other major expenses. LUMA must also continue to work with other government agencies and

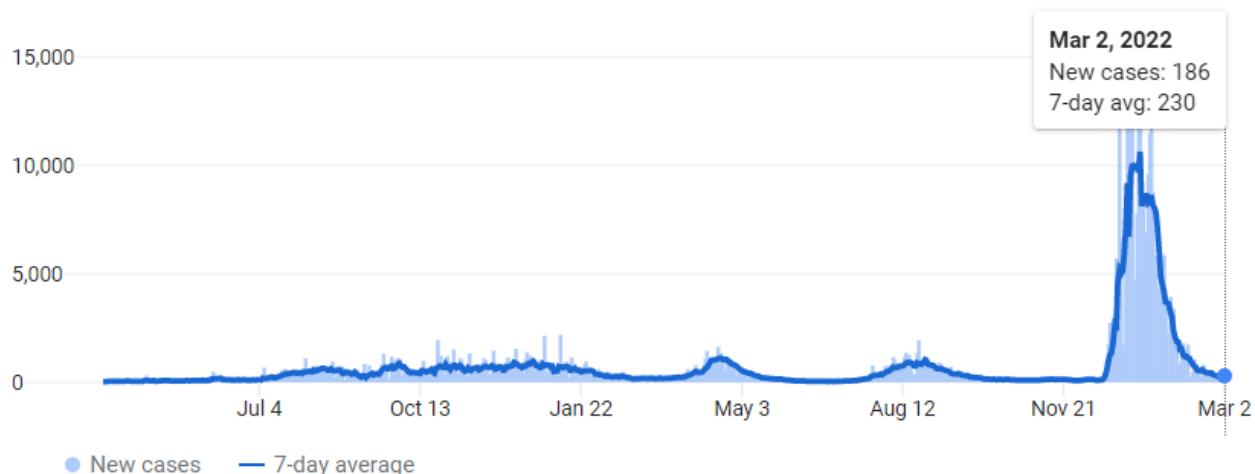
<sup>74</sup> Starting with Sunday March 15, 2020, ending with Saturday April 11, 2020. This figure compares net generation for the same day and week with the prior year, starting with the first full week in January. For example, Sunday, January 5, 2020, was compared with Sunday, January 6, 2019, and Monday, March 16, 2020, compared with Monday, March 18, 2020.

<sup>75</sup> Average system load was within 1% of FY 2019 for the same four-week period, and slightly more than 1% higher than peak for the same period.

large customers to accelerate receivables, engaging PREPA’s support as necessary to collaborate in this important effort.

The Commonwealth of Puerto Rico has progressed significantly since the World Health Organization first declared COVID-19 a global pandemic on March 11, 2020, driven in large part by the administration of 6.9 million cumulative vaccine doses (~80% of population fully vaccinated). While the commonwealth was at higher risk of COVID-19 due to factors such as an older population and higher levels of poverty, COVID-19 deaths suffered in the territory of 1,291 per million inhabitants were less severe as compared to the 2,897 per million inhabitants in the United States, overall.<sup>76</sup> On March 2, 2022, 186 new COVID-19 cases were recorded, down from a peak of 6,617 new cases on January 8, 2022.<sup>77</sup>

EXHIBIT 29: COVID-19 CASES FROM MARCH 2020 TO MARCH 2022



The Puerto Rico power grid and its operators must be prepared for additional future economic shocks and recessions that may be triggered by causes other than a global pandemic, such as banking crises, trade and fuel disruptions, and political crises, among others. To mitigate future disruptions under curfew or adverse economic conditions on the utility sector, operational measures to increase remote control of the grid (e.g., distribution automation technologies, smart meter installation) must be considered in addition to pursuing measures to enhance system reliability and resilience. During an economic shock, declining collections would lead to a lower cash balance, elevating the need for effective liquidity management in the short term. In the longer term, fiscal measures, such as restructuring legacy debt obligations, will help insulate, or minimize the risk to, the Puerto Rico utility sector from future economic shocks.

<sup>76</sup> Johns Hopkins Coronavirus Resource Center. <https://coronavirus.jhu.edu/region/us/puerto-rico>

<sup>77</sup> The New York Times Daily Coronavirus Dashboard. <https://www.nytimes.com/interactive/2021/us/puerto-rico-covid-cases.html>



## Chapter 5. Resource Planning and Resiliency

Act 57-2014 and Act 17-2019 require LUMA, on behalf of PREPA, prepare and submit to PREB an IRP for a 20-year planning period, which shall be revised every three years. Act 17-2019 defines the IRP as a resource plan that shall consider all reasonable resources, including both energy supply (e.g. utility-scale generation) and energy demand (e.g. energy efficiency, demand response, and distributed generation), to reliably satisfy the current and projected future needs of Puerto Rico's energy system and its customers at the lowest reasonable cost.<sup>78</sup> Act 57-2014 also mandates that the IRP include evaluations of the Transmission and Distribution System (e.g. capacity and reliability) and the environmental impact of the energy system.<sup>79</sup>

PREB approved the current IRP on August 2020, requiring PREPA, LUMA and any future generation operator to follow a Modified Action Plan and Modified Preferred Resource Plan until an updated IRP is approved, with the following grid and generation modifications to form the three core elements of the Approved IRP:

- 1. Increasing share of renewable generation and storage** – including the additions of new renewable energy generation, energy storage, retiring or converting all existing coal and heavy fuel oil generation, and system modifications (e.g., synchronous condensers) to enable integration of inverter-based generation;
- 2. Enhancing grid resilience** – including capital investment in the Transmission and Distribution System to support greater resilience and reliability and further optimization proceedings to determine optimal T&D System investments to improve resiliency; and
- 3. Enabling customer choice** – including changes to the system to support the incorporation of DG (e.g., rooftop solar photovoltaic) and recommended EE and DR programs, allowing the customer to play a meaningful role in Puerto Rico's electricity grid.

As of June 1, 2021, LUMA is responsible for the T&D System's operations and is responsible for implementing several aspects of the approved IRP. PREB has issued an order taking over direct responsibility for managing the procurement of new renewable energy resources, commencing with the Tranche 2 RFP process through an independent coordinator, Acción Group, LLC (Acción Group).<sup>80</sup>

LUMA also acts as PREPA's representative before PREB and any other local, state, or federal government agencies, and therefore is responsible for preparing and proposing a new IRP for review and approval by PREB. Given the current state of geopolitics, the supply chain shocks from the Covid-19 pandemic, the Russian invasion of Ukraine, the energy markets and the increased demand for renewable energy sources, LUMA and PREB must consider reviewing and updating the existing IRP as soon as possible, ahead of the currently established schedule.

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<sup>78</sup> Act 17-2019, Puerto Rico Energy Public Policy Act, approved April 11, 2019, Section 5.2(II).

<sup>79</sup> Act 57-2014, Puerto Rico Energy Transformation and RELIEF Act, approved May 27, 2014, Section 6C(h).

<sup>80</sup> See PREB October 29, 2021 Resolution and Order (Case No. NEPR-MI-2020-0012).



## 5.1 Overview of the Approved IRP

### 5.1.1 History of PREB Review and Approval of the IRP

PREPA filed its first IRP in 2015, which was approved by PREB in September 2016.<sup>81</sup> As a result of Hurricanes Irma and Maria in 2017, Puerto Rico not only faced the unprecedented challenge of rebuilding the electric power system, but also had to rethink how to harden and modernize the grid to better equip Puerto Rico against future natural catastrophes, while diversifying fuel sources and increasing the grid's reliance on renewable energy resources.

On February 13, 2019, PREPA filed its initial proposed IRP for PREB's approval (Initial IRP). After reviewing the Initial IRP, PREB issued a motion with findings and requested PREPA to refile the Initial IRP after addressing certain items.<sup>82</sup> On June 7, 2019, PREPA refiled its proposed IRP after making revisions required by PREB (Proposed IRP). PREB issued its Final Resolution and Order on PREPA's Proposed IRP on August 24, 2020.

### 5.1.2 PREB Modified Action Plan and Modified Preferred Resource Plan

PREB's Final Resolution and Order (Final Order) approved in part and rejected in part the Proposed IRP and ordered the adoption and implementation of a Modified Action Plan and Modified Preferred Resource Plan in lieu of PREPA's proposed Action Plan and Preferred Resource Plan (Approved IRP).<sup>83</sup> The following three notable modifications to the grid were approved by PREB, which form the core elements of the Modified Action Plan and Modified Preferred Resource Plan for PREPA:

1. Increasing share of renewable generation and storage while retiring or converting existing coal and heavy fuel oil generation;
2. Enhancing grid resilience through hardening capital projects, including potential minigrids and microgrids; and
3. Enabling customer choice through DG, EE, and DR programs.

Act 17-2019 outlines Puerto Rico's aspiration to generate 100% of its electricity from renewable sources by FY2050. Unfortunately, the timelines for the procurement and deployment of renewable resources originally established in the IRP are unlikely to be achieved given the procurement processes mandated by PREB have fallen significantly behind schedule (three out of six tranches, covering at least 2,000MW of renewable capacity and 1,000 MW of storage capacity, are already delayed by up to 18 months) and the projects selected as a result of Tranche 1 have yet to be finalized and executed. Additionally, cost for the deployment of renewables have increased significantly, and current market-based renewable energy prices are already higher than those projected in the IRP. As a result, the base case projections in this Certified Fiscal Plan for the

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<sup>81</sup> Final Resolution and Order, In Re: Integrated Resource Plan for the Puerto Rico Electric Power Authority, Case No. CEPR-AP-2015-0002, September 23, 2016.

<sup>82</sup> Resolution and Order, In Re: Completeness of Puerto Rico Electric Power Authority Integrated Resource Plan Filing, Confidential Treatment of Portions of the Integrated Resource Plan and Requested Waivers, Case No. CEPR-AP-2018-0001, March 14, 2019.

<sup>83</sup> Final Resolution and Order, In Re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan, Case No. CEPR-AP-2018-0001, August 24, 2020.

share of renewables in FY2025, FY2040, and FY2050 only reach 13%, 53%, and 70%, respectively, compared to targets of 40%, 60%, and 100%.

Act 17-2019 also requires the phase-out of coal-fired power plants by December 31, 2027. As a result, the current coal-burning units at Guayama are scheduled to retire in FY2028, which will significantly reduce base-load generation capacity in Puerto Rico. While the existing coal-fired generation capacity is expected to be replaced with an equivalent proportion of renewable resources, given the delays outlined before, it is unclear if such renewable resources will be available when needed. Should there be no available new renewable resources, and absent a thorough plan to identify the necessary, environmentally compliant and cost-effective resources to ensure a continued provision of reliable generation, there is a significant risk that older, less efficient, more expensive and more polluting, oil-fired generation units would need to be deployed.

Uncertainties over the ability to achieve certain targets and the projections for key load drivers create significant risks that Puerto Rico's energy system may find itself without the necessary generation resources to meet a potentially higher and more variable demand than projected, e.g., because of load increases that require outdated units to run longer, adding to failure and outage risks. Some of uncertainties that, unless appropriately addressed, represent risks to the medium- and long-term reliability of the system include:

- **Energy Efficiency:** Act 17-2019 outlines the target to reach a 30% reduction of net load below the 2019 baseline by 2040 through energy efficiency measures. To date, there is however no implementation or financing plan in place that would be typical for energy efficiency programs with targets of this scale, and it is unclear how energy efficiency measure will be implemented or how much impact on load such measures will have.
- **Distributed Generation:** The current Certified Fiscal Plan has a general growth factor projection for customer adoption of distributed generation solutions but lacks a bottom-up, granular modeling that incorporates assumptions on the future costs and benefits to ratepayers that incentivize adoption. As such, the actual pace at which DG technologies are adopted in Puerto Rico may vary from those currently assumed by PREB and LUMA.
- **Electric Vehicles:** The EV uptake projections included in the current Certified Fiscal Plan are based on historical averages and make broad, top-down assumptions about the adoption of electric vehicles resulting in very high EV penetration as compared to projections in other locations. A overestimated long-term EV growth rate may cause LUMA and PREB to overestimate generation needs beyond those actually necessary, potentially incurring in costs in excess of those needed to serve Puerto Rico's energy needs.

To mitigate the risk of pursuing an energy policy that is not backed by actionable implementation plans and creates uncertainty for critical infrastructure planning, PREB and LUMA must accelerate the review and update of the IRP. Developed during 2019, and finally approved in August 2020, the process for the ordinary 3-year review and update should be already ongoing. More importantly, regardless of the 3-year update cycle, macroeconomic events since then, as well as the actual implementation progress, require an urgent, thorough and near-term review of the IRP. As such, PREPA and LUMA should aim to commence a new IRP review process during the first quarter of FY2023.

## **Increasing Share of Renewable Generation and Storage**

In the Final Order, PREB ordered PREPA to develop a plan to procure 3,750 MW of renewable energy and 1,500 MW of battery storage by 2025. In addition, PREB approved the installation of up to 81 MW of local peaking capacity procured through a technology-agnostic, competitive bid RFP process that is open to all single or aggregate sources of demand and supply-side options. PREB also approved the conversion of eight (8) retired steam plants to synchronous condensers to enable voltage stability following the installation of inverter-based renewable generation and battery storage. The Final Order clarified that the conversion plan will be subject to additional studies and coordinated with retirement schedules, with funding for said works yet to be determined.

PREB rejected the development and construction of most proposed new fossil fuel generation resources, including the retirement and wholesale replacement of all eighteen (18) existing gas turbine peaking units, any new liquified natural gas infrastructure, and large-scale development efforts on a new combined cycle gas turbine unit at Palo Seco. PREB did authorize up to \$5 million for preliminary economic, siting, permitting, and feasibility analysis at the Palo Seco site for a new fossil fuel-powered unit and fuel infrastructure, so long as it does not interfere with or delay the procurement of renewable energy or battery storage. Regarding fossil fuel-powered power PPOAs PREB approved both the extension of the EcoEléctrica contract through 2032 and the cessation of the agreement for coal-fired AES units by the end of 2027, pursuant to Act 17-2019.

Finally, PREB approved the retirement of approximately 2.4 GW of existing fossil fuel units<sup>84</sup> subject to the EPA's MATS rule.

## **Enhancing Grid Resilience**

The Final Order found that the Proposed IRP adequately established the need for (1) transmission system upgrades; (2) the expenditure of up to \$2 billion for hardening of transmission infrastructure; and (3) the investment of \$911 million in distribution system upgrades to enhance resiliency and support distributed generation. However, PREB ordered PREPA to seek PREB approval for specific T&D expenditures prior to making any final planning or investments. PREB also announced the opening of an optimization proceeding that will determine the optimal transmission investments for ensuring a more resilient electric power system, including assessing the ability for small-scale distributed resources—such as minigrids—to contribute to resiliency.

## **Enabling Customer Choice**

The approved IRP's Modified Action Plan enables further customer choice through various programs, including DG, EE, and DR. PREB ordered PREPA to further enable DG by ensuring all distribution system planning and expenditures support DG. Regarding DR, the Modified Action Plan requires PREPA to develop internal systems and external programs and offerings available to all customer classes to engage aggregators of DR resources to offer, dispatch, and be compensated for cost-effective DR resources. For EE, PREB ordered PREPA to take all necessary steps to support PREB's forthcoming EE Regulation and underlying objective of 30% EE savings

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<sup>84</sup> Units to be retired are Aguirre 1 & 2, Costa Sur 3, 4, 5, & 6, Palo Seco 1, 2, 3, & 4, San Juan 7, 8, 9, & 10, and AES's coal generation facility.

by 2040 (compared to FY 2019 net utility sales) as mandated in Act 17-2019, including providing support for program implementation, analysis, funding, and financing.

## **5.2 IRP Modified Action Plan Implementation**

PREPA and LUMA are required to comply with and implement the IRP Modified Action Plan. LUMA is now responsible for developing subsequent IRPs and amendments to it.

### *5.2.1 Renewable Generation and Storage*

Under the Modified Action Plan, PREPA was required to develop a detailed procurement plan for the acquisition of renewable resources and battery energy storage to achieve compliance with the RPS subject to the Energy Bureau's guidance and approval. Then, consistent with the PREB-approved procurement plan, PREPA was required to issue a series of RFPs for the provision of (a) renewable energy in support of Act 82's RPS mandate, and (b) battery energy storage in support of (1) capacity needed to meet PREPA's peak load requirements and (2) requirements for integration of renewable energy generation. These competitive procurements must be open to all forms of renewable energy including, but not limited to, wind, hydro, solar photovoltaic, Virtual Power Plants (VPPs), and storage. Successful proponents of renewable generation and energy storage projects will enter long-term PPOAs, energy storage services agreements, or grid services agreements (in the case of VPPs) with PREPA.

On February 22, 2021, as part of its efforts to implement the Modified Action Plan, PREPA issued an RFP<sup>85</sup> for 1,000 megawatts of renewable power production and 500 MWs of battery storage, incorporating recommendations from PREB and the Oversight Board. The RFP solicited proposals for the design, construction, installation, ownership, operation, and maintenance of renewable energy resources, energy storage resources, and VPPs for sites across Puerto Rico and for a service period of up to 25 years. The RFP is the first of six (6) planned RFP tranches to be released over the next three (3) years seeking a cumulative 3,750 MWs of renewable energy resources and 1,500 MWs of energy storage resources.<sup>86</sup> The cadence of each tranche RFP and the respective minimum required renewable energy and battery storage capacity to be procured per tranche, as ordered by PREB in the Modified Action Plan, is included in Exhibit 30. PREB is responsible for reviewing and approving any recommended projects and associated PPOA's resulting from the RFP process if deemed to be consistent with the IRP and Puerto Rico energy public policy.

Given the delays that occurred during the Tranche 1 RFP process, PREB determined it would appoint an independent coordinator, Acción Group to conduct the Tranche 2 and 3 RFPs. Acción Group's roles will include, without limitations: (a) prepare RFP documents; (b) manage all communications; (c) manage communications protocols; (d) manage code of conduct; (e) make recommendations regarding the RFP process; (f) develop evaluation methodology, models, criteria, and assumptions; (g) conduct evaluations of proposals; (h) lead contract negotiations; (i) report to PREB during process; and (j) assure that the goals of Tranches 2 and 3 RFPs and related Updated Procurement Plan provisions are achieved.

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<sup>85</sup> PREPA RFP No. 112648, February 22, 2021.

<sup>86</sup> More information on the status of the RFP process can be found in Chapter 3.

EXHIBIT 30: PREB GUIDANCE FOR PROCUREMENT OF RENEWABLE ENERGY GENERATION AND BATTERY STORAGE CAPACITY

PREB guidance for procurement of renewable generation and battery storage capacity

Tranche	RFP target release date	Actual or new release date	Solar PV or equivalent other energy, MW		4-hr battery storage equivalent, MW	
			Minimum	Cumulative	Minimum	Cumulative
1	Dec 2020	Feb 2021	1,000	1,000	500	500
2	Jun 2021	TBD	500	1,500	250	750
3	Dec 2021	TBD	500	2,000	250	1,000
4	Jun 2022	TBD	500	2,500	250	1,250
5	Dec 2022	TBD	500	3,000	125	1,375
6	Jun 2023	TBD	750	3,750	125	1,500

5.2.2 Grid Resiliency Measures

As the T&D System operator, LUMA is responsible for planning and implementing grid resiliency measures. As part of the Front-End Transition, LUMA developed capital plans, to be funded with federal- and non-federal capital, to repair, reconstruct, and modernize the existing T&D system and improve resiliency against extreme events. In its proposed Annual Budgets, filed on April 1, 2022, LUMA budgeted approximately \$2.6 billion from FY2023 through FY2025 for T&D infrastructure repair, modernization, and hardening projects. Further information on capital plans can be found in Chapter 6 (Capital Plans and Federal Funding) and Chapter 7 (LUMA Improvement Portfolios) for PREPA and LUMA, respectively. Further information on sources and uses of federal funding can be found in Chapter 6 (Capital Plans and Federal Funding).

5.2.3 Enabling Customer Choice

PREB’s Modified Action Plan calls for further customer choice through various programs, including DG, EE, and DR. Since Commencement on June 1, 2021, LUMA has made significant advancements with respect to DG, EE, and DR. Further, LUMA has supported PREB’s new initiative on Electric Vehicles which was launched in October 2021.

LUMA is responsible for the integration of DG and the activation of net energy metering on customers’ bills. When a customer installs behind the meter generation, they can apply for a net energy metering credit on their bill. This allows customers to give electricity back to the grid in exchange for a credit on their bill. Pursuant to Act 17-2019 the credit is equal to the full retail rate of electricity. At Commencement, there was a backlog of over 8,000 net energy metering applications. Since June 1, 2021, LUMA has activated net energy metering service for over 21,000 solar customers representing ~100 MW of renewable energy.

Act 57-2014 requires PREB to establish regulations governing EE and DR programs. PREB adopted a regulation for DR<sup>87</sup> on December 10, 2020, and EE<sup>88</sup> on January 21, 2022. The adopted DR and EE regulations utilize similar program approaches for development, administration,

<sup>87</sup> Adoption of Regulation for Demand Response, In Re: Regulation for Energy Efficiency and Demand Response, Case No. NEPR-MI-2019-0015, December 10, 2020.

<sup>88</sup> Adoption of Regulation for Energy Efficiency, In Re: Regulation for Energy Efficiency, Case No. NEP-MI-2021-0005, January 21, 2022.

implementation, and funding. Both documents require LUMA, or a program administrator (to be selected by LUMA following a competitive bid process) to develop and implement DR and EE programs. Implementation of the adopted and proposed regulations is centered on three-year periods driven by three-year plans which will be developed by LUMA, on behalf of PREPA, and approved by PREB. Each three-year plan will identify the proposed DR or EE programs, budgets, and goals for a three-year period. LUMA is required to prepare and submit separate three-year plans for DR and EE. Following the first and second years of implementation of each three-year plan, LUMA will be required to submit an annual update to PREB for approval that describes in detail any proposed changes to the program offerings, performance metrics, targets, and/or budget.

All DR and EE programs must be assessed for cost-effectiveness through a custom cost-benefit test called the “Puerto Rico Test” which will be developed by PREB. Until the Puerto Rico Test is defined, a standard interim cost/benefit test—currently the standard Utility Cost Test—will be used to determine cost-effectiveness of proposed programs. For both EE and DR, Evaluation, Measurement, & Verification (EM&V) activities are required to be performed. Per the DR regulation, PREB will be responsible for evaluating DR programs while LUMA will be responsible for measuring and verifying the DR resources provided by all DR program providers through a set of formal procedures approved by PREB. In the proposed EE regulation, PREB will be responsible for EM&V activities.

The adopted DR and EE regulations permit the PREB-approved program budgets to be recovered in customer rates. In addition, the DR regulation permits LUMA to develop and implement (with PREB’s approval) time-varying rates and/or demand charges informed by the costs of distribution or transmission infrastructure and energy supply and capacity, so long as the rate structure does not discourage beneficial electrification.

A Resolution and Order<sup>89</sup> filed by PREB on February 1, 2022 detailed the actions that follow from the EE Regulation which are 1) to establish a schedule for the filing of the first Three-Year DR Plan to coincide with the Transition Period Plan and the start of the energy efficiency programs; 2) to invite stakeholders to a workshop on February 28, 2022 regarding the process for developing and implementing the Three-Year DR plan and its association with the Transition Period Plan; and 3) to provide a template for the Transition Period Plan under section 2.02(C)(4) of the EE Regulation. According to the EE Regulation, LUMA can combine the planning processes and documents for EE and DR, and LUMA has stated a desire for such coordination. After amending the deadline for the Transition Period Plan, PREB ordered LUMA to submit a proposed Transition Period Plan on or before June 6, 2022. The deadline for the first Three-Year EE Plan is still March 1, 2024.

### **5.3 Role of the IRP in Capital Plans**

The Modified Action Plan and Modified Preferred Resource Plan within the IRP are key plans that in turn inform strategic capital plans, operational initiatives, and supply- and demand-side programs for the generation fleet and the T&D Systems. The generation portfolio’s 10-year

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<sup>89</sup> Notice of Revised Transition Period Plan Schedule, Workshop, and Plan Template, In Re: Demand Response Plan Review, Implementation, and Monitoring, Case No. NEPR-MI-2021-0006, February 1, 2022.

Infrastructure Plan and the T&D System's improvement programs & portfolios, including the LUMA SRP<sup>90</sup>, are all required to comply with the Approved IRP.

PREPA's 10-Year Infrastructure Plan is a work plan that was developed at the request of FEMA and COR3, following FEMA's obligation of \$9.6 billion earmarked for PREPA to repair and/or replace electrical systems, power generation systems, and to make other grid improvements. The development of this 10-Year Infrastructure Plan by PREPA preceded the Interim Service Commencement Date (June 1, 2021) when LUMA assumed the operation and maintenance responsibilities of the T&D System. The 10-Year Infrastructure Plan outlined PREPA's proposed investments in Puerto Rico's electric systems over the next decade. On December 30, 2020, PREB required PREPA to submit the 10-Year Infrastructure Plan to PREB for its review to confirm the alignment of the 10-Year Infrastructure Plan with the Approved IRP. By resolution and order<sup>91</sup> dated January 25, 2021, PREB found that certain elements of the 10-Year Infrastructure Plan were inconsistent with the Approved IRP and the Modified Action Plan. PREPA filed a revised plan addressing PREB's comments and requested PREB approval on February 16, 2021. On March 26, 2021, PREB issued a resolution and order<sup>92</sup> accepting those elements of PREPA's revised 10-Year Infrastructure Plan that were consistent with the Approved IRP and Modified Action Plan. For those elements that it found not aligned with the Approved IRP and Modified Action Plan, PREB ordered PREPA to further modify the revised 10-Year Infrastructure Plan. PREB also ordered PREPA to submit to the Bureau for evaluation and approval all capital investment projects PREPA had submitted to FEMA or any other federal or local agency. Associated with the 10-Year Infrastructure Plan, PREPA had submitted 88 Statements of Work for approval, all of which were conditionally approved or classified as a deferred project, and 7 of which were provided final approval by PREB.<sup>93</sup>

LUMA developed a comprehensive strategic planning framework, the Recovery and Transformation Framework, which is based on the Government of Puerto Rico's public policy and Applicable Law for the electric system in Puerto Rico. The Recovery and Transformation Framework used public policy and previously produced plans to set overarching guiding principles to prioritize and sequence all LUMA's improvement programs. The Recovery and Transformation Framework was used to ensure:

- That LUMA's priorities align with Puerto Rico's broader public policy objectives and customer needs,
- That the programs included in the SRP were developed and prioritized consistently alongside non-SRP programs,
- A balance of investment in programs that directly contribute to Performance Metrics improvements and those that do not, and

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<sup>90</sup> The System Remediation Plan is a plan to remediate, repair, replace and stabilize such equipment, systems practices, and services, as may be needed to enable LUMA to perform its O&M Services in compliance with Contract Standards.

<sup>91</sup> Resolution and Order, Determination on alignment with the Approved Integrated Resources Plan and Modified Action Plan, In Re: Review of the Puerto Rico Electric Power Authority's 10-Year Infrastructure Plan – December 2020, Case No. NEPR-MI-2021-0002, January 25, 2021.

<sup>92</sup> Resolution and Order, PREPA's Revised 10-Year Plan Evaluation, In Re: Review of the Puerto Rico Electric Power Authority's 10-Year Infrastructure Plan – December 2020, Case No. NEPR-MI-2021-0002, March 26, 2021.

<sup>93</sup> Resolution and Order, PREPA's Revised 10-Year Plan Evaluation, In Re: Review of the Puerto Rico Electric Power Authority's 10-Year Infrastructure Plan – December 2020, Case No. NEPR-MI-2021-0002, February 28, 2022.

- That LUMA's Initial Budgets include all federally funded, non-federally funded capital and O&M expenditures across all programs and deliverables and remained within current 2017 Rate Order limits to avoid increasing customer base rates.

Since the Service Commencement Date in June of 2021, LUMA has developed a set of improvement portfolios for the T&D System to align with the Recovery and Transformation Framework. These improvement programs are presented within LUMA's Annual Budget and SRP filings. In developing the goals and mission of the framework guiding these Portfolios, LUMA referenced public policy, and various plans including the Approved IRP and Modified Action Plan to ensure the improvement portfolios are aligned with some aspect of the Approved IRP and Modified Action Plan.<sup>94</sup> In addition, LUMA states that compliance with the Approved IRP was an objective in designing individual improvement initiatives.<sup>95</sup> LUMA's Initial Budgets and SRP were approved by PREB on May 31, 2021.<sup>96</sup>

Further information on the content of the improvement portfolios can be found in Chapter 7 (LUMA Improvement Portfolios). With LUMA's onboarding, PREPA is now responsible only for capital projects related to operations under its control (i.e. legacy generation, hydro and irrigation).

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<sup>94</sup> See Section VI.A in Petition, Filing of System Remediation Plan under Section 4.1(d) of the Operation and Maintenance Agreement for Energy Bureau's Evaluation and Approval, In Re: Review of the Puerto Rico Electric Power Authority's System Remediation Plan, Case No. NEPR-MI-2020-0019, February 24, 2021.

<sup>95</sup> See SRP, Section 1.4.2 as attached to Petition, Filing of System Remediation Plan under Section 4.1(d) of the Operation and Maintenance Agreement for Energy Bureau's Evaluation and Approval, In Re: Review of the Puerto Rico Electric Power Authority's System Remediation Plan, Case No. NEPR-MI-2020-0019, February 24, 2021.

<sup>96</sup> Resolution and Order, In Re: Determination of LUMA's Initial Budgets, Case No. NEPR-MI-2021-0004, May 31, 2021.



## Chapter 6. Capital Plans and Federal Funding

Over the coming years, significant federal funding resources are available for the rebuilding and transformation of Puerto Rico’s energy generation and T&D Systems. Approximately \$14 billion of federal and state funds has been obligated to this effort. The inflow of obligated federal capital—as well as the state funding commitment for cost-share amounts—is a significant opportunity to modernize Puerto Rico’s energy infrastructure and position it as a crucial enabler of general economic recovery.

LUMA, as T&D operator is now responsible for the deployment of funds to improve and reconstruct the island’s T&D System. Capital projects for the generation facilities will remain PREPA’s responsibility until transition to the new private operator(s) is complete. PREPA and LUMA have developed capital plans and roadmaps that reflect their perspectives on critical needs to recover and reconstruct the energy system.

LUMA’s improvement portfolios as outlined in LUMA’s Budgets define the capital plan for T&D assets, facilities, and IT OT, telecommunications, and grid management systems, among others.

PREPA near-term generation projects include repair of damages incurred during the 2017 hurricanes, emission control improvements, spare parts replenishments, equipment modernization, and system continuity investments.<sup>97</sup> Near-term dams and hydro projects focus on improving dam safety as well as repairing damage from sediment, storm debris, and erosion.

Finally, PREB must approve all federally funded projects and associated funding before significant planning and execution can begin, irrespective of PREPA or LUMA responsibility.

### 6.1 Capital Plans

#### 6.1.1 Overview of the PREPA 10-Year Infrastructure Plan, as amended

As part of its federal funding related work with FEMA and COR3, PREPA initially developed a 10-year Infrastructure Plan. This plan, which was finalized in December 2020 and is updated every 90 days per FEMA guidelines, provides an overview of:

- PREPA’s infrastructure investment strategy,
  - The context for the selection of projects included in the plan,
  - A prioritized list of the proposed infrastructure projects,
  - The expected benefits and projected costs associated with the prioritized projects,
  - Key milestones, and the estimated time horizon for each project, and
- A brief overview of PREPA’s approach to manage execution of the program and the proposed portfolio of projects.

LUMA’s capital plans and programs are based on the Recovery and Transformation Framework – which used public policy to set overarching guiding principles to prioritize and sequence improvement programs together. Described further in Chapter 7 (LUMA Improvement Portfolios), the Recovery and Transformation Framework, as approved by PREB as part of its

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<sup>97</sup> See Chapter 5 for further information on the ongoing regulatory process to ensure the Revised 10-Year Infrastructure Plan aligns with the IRP and Modified Action Plan.

Initial Budget proceedings, is based on LUMA’s broad review of key reports, plans, laws, and regulations to form a comprehensive picture of the policy and stakeholder landscape.

COR3 and FEMA have identified the 10-year Infrastructure Plan, as amended, as a “living document” that requires update and resubmission every 90-days. Updates are expected as PREPA and LUMA advance their preparatory plans and filings before the PREB. LUMA referenced the initial T&D System priorities and projects in PREPA’s December 2020, 10-Year Infrastructure Plan, to develop its improvement portfolios presented in the LUMA Initial Budgets and SRP, which are currently under review by the Puerto Rico Energy Bureau (PREB).<sup>98</sup>

Like previous Certified Fiscal Plans and the 10-Year Infrastructure Plan, as amended, this Certified Fiscal Plan references capital projects irrespective of funding source. This approach provides a holistic view of the work to be performed on Puerto Rico’s energy system, work that will be enabled by a variety of funding sources as discussed further in this chapter. It includes federally- and non-federally funded capital, as well as funding allocated through the budgetary and rate-making process to PREPA’s Necessary Maintenance Expense (NME) program.

#### 6.1.1.1 PROJECT PRIORITIZATION CRITERIA

The prioritization of capital projects is based on energy public policy, specifically the IRP, and inclusion of PREB’s guidance in response to the IRP approval process. Other overarching prioritization criteria included safety, impact to the community, relative complexity of the work, and regulatory requirements.

Given certain financial and other limitations, not all capital projects can be pursued at once. Therefore, initial development and prioritization methodology was based on the considerations most relevant to each investment focus area, with some common criteria for all capital projects, that include:

- Current status of asset (i.e., out of service, damaged)
- Safety, environmental, and regulatory compliance needs
- System operations needs and grid constraints
- Impacts of reliability performance and/or critical load infrastructure, and
- Severe storm hazard mitigation

The capital projects identified in the 10-year Infrastructure Plan span three time-horizons: near-term (i.e., 2021-2023), mid-term (i.e., 2024-2027), and long-term (i.e., 2028 and beyond). A proportion of projects are expected to be initiated in the near-term in that they have either already begun architectural and engineering (“A&E”) design or are expected to do so during the years 2022 or 2023. There are several policy and operational reasons for this sequencing, which include the following:

- To deliver operational results to customers as quickly as possible
- To support execution of the approved IRP and Modified Action Plan
- Some reconstruction projects already have completed preliminary engineering and are ready to proceed into the 30% A&E design phase

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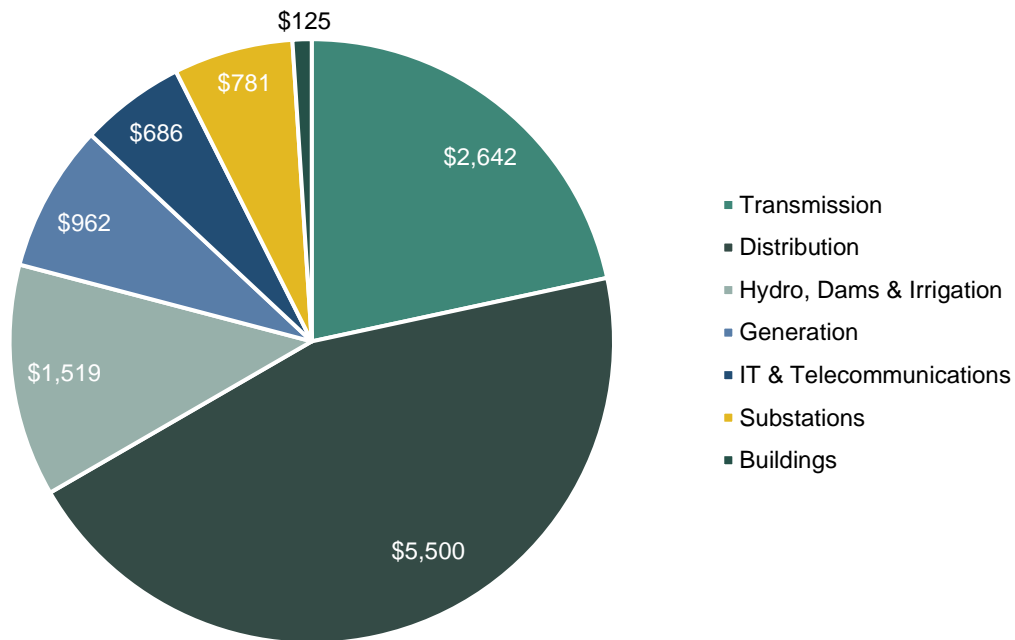
<sup>98</sup> Chapter 7 (LUMA Improvement Portfolios) provides a detailed overview of LUMA’s improvement portfolios and prioritized capital projects.

- Some infrastructure projects are very large in scope and must be initiated in the near-term to be completed within the later years of the plan, and
- In many cases, demolition work, environmental remediation, rights-of-way, permits, and approvals must be carried out before the actual reconstruction project begins.

#### 6.1.1.2 OVERVIEW OF PRIORITIZED PROJECTS

The 10-year Infrastructure Plan included eight (8) asset categories within its needs assessment framework: (1) generation; (2) dams and hydro; (3) transmission; (4) distribution; (5) substations; (6) IT / Telecom; (7) buildings, and (8) environmental. As otherwise mentioned, and including transmission, distribution, substations, IT/Telecom, and buildings, are projects associated with the T&D System as well as the grid management and communication systems that will be planned and executed by LUMA.<sup>99</sup> The total funding obligated by program and asset category is included below in Exhibit 31.

**EXHIBIT 31: TOTAL FUNDING FOR GRID AND GENERATION REBUILD AND TRANSFORMATION<sup>100</sup>**



All cost estimates provided in the 10-year Infrastructure Plan as amended were “class 5” estimates, meaning they were estimated in an early phase of the project development process. These cost estimates are expected to vary, based on industry standards, from 50% below to 100% above the actual final project costs. There are several factors—including the refinement of specific project costs, inflation trends, changes in the demands and needs of specific assets and the system over time, and requirements and suitability of identified program funds—that are expected to lead to changes in the projects that are ultimately implemented and their respective costs.

<sup>99</sup> The LUMA improvement portfolios are discussed further in Chapter 7 (LUMA Improvement Portfolios).

<sup>100</sup> Includes federal funds, cost-share, insurance payouts, and state matched amounts. PREPA 10-Year Infrastructure Plan, March 2021 Update, p. 13. Note: All costs, funding sources, and subtotals are estimates subject to change.

### 6.1.2 *FY 2022 Capital Plan Collaboration and Coordination*

The significant near-term planning and analyses that was completed by PREPA, its investment in comprehensive plans for the 10-year and 20-year time horizons, and the ongoing analysis and work of LUMA (including the proposed Recovery and Transformation Framework and activities included in LUMA's Initial Budgets and SRP), will help ensure that each completed capital project will contribute to the identified strategic and performance goals for the system. Furthermore, over the mid-term and long-term, completion of additional capital projects should substantially improve and accelerate the transformation of the island's electric infrastructure into a modern, customer-centric, affordable, reliable, resilient, and sustainable system (transformational change).<sup>101</sup>

Going forward, LUMA and PREPA must ensure that their capital project prioritization allows for navigating potential trade-offs that may arise from the labor and capital needs required to complete selected milestones. Both PREPA and LUMA must continue collaborating to ensure that these capital planning efforts advance with the pace and scale that are required for the recovery and transformation effort to meet stated public policy goals.

### 6.1.3 *Best Practices for Capital Project Delivery*

PREPA and LUMA must follow industry best practices for the implementation of their portfolio of capital projects to avoid costly schedule and budget overruns. To this end, PREPA has implemented an Enterprise Project Management (EPM) program which will support PREPA responsible capital works. During the front-end transition period throughout FY 2022, LUMA has largely completed development of its new Capital Programs team, specifically designed to handle large capital projects.

As PREPA and LUMA begin their deployment of projects, they must ensure that operations are based on industry best practices regarding:

- Permitting
- Contractor oversight
- Planning
- Workflow management
- Safety
- Training & qualifications
- Performance management; and
- Reporting requirements.

Additionally, each must develop an approach to address and mitigate potential supply chain constraints, created by the inflow of federal funds across instrumentalities and by overall macroeconomic conditions.

#### 6.1.3.1 *RISKS AND MITIGATION MEASURES*

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<sup>101</sup> See, 10-Year Infrastructure Plan, March 2021 Update, p. 26-28, and LUMA Draft System Remediation Plan, February 23, 2021, p. 27-29, 50.

Energy infrastructure improvements of the magnitude described in current planning stages have never been undertaken in Puerto Rico. A successful execution that addresses the challenges described above, and that ultimately meets desired policy goals, will require the collaboration and attention of all stakeholders in the energy supply system, regulators, government officials and policy makers. Given PREPA's history of underperformance in capital execution, the successful transition of the Legacy Generation operations and maintenance to new private operator(s) selected by the P3 Partnership Committee will be perhaps the most important step in meeting these challenges. Ultimately, the real time collaboration and alignment between PREPA, LUMA, P3A, COR3, PREB, the Oversight Board, and other governmental entities and federal stakeholders will be pivotal to ensure the successful and timely implementation and completion of capital project plans principally funded with FEMA and CDBG program funds. Failures in addressing process needs and in achieving collaboration between stakeholders will have dire repercussions in the restructuring of the electric system, with delays impacting the integration of renewable resources, the strengthening of the grid, electricity costs to residents and businesses and more.

#### *6.1.4 Reporting Cadence*

PREPA's project management process outlined above includes project reporting requirements that are purposefully inclusive of, and transparent with, all key stakeholders (local, federal, the Oversight Board, etc.) and decision-makers. The magnitude of capital improvements that are to be undertaken (whether by PREPA and/or private operators), and the historic juncture of the Island's energy sector transformation, and the new role of LUMA as operator of the T&D System and the forthcoming legacy generation operator(s) in the future, require that all stakeholders be fully and timely informed of changes and developments at all times, and that all stakeholders work together above and beyond leading utility practices. Transparency and collaboration are key to attaining the public policy and Certified Fiscal Plan objectives.

As part of such sweeping transparency, PREPA (for Generation) and LUMA (for the T&D System) intend to develop and publish specific project dashboards and routine reports to allow stakeholders to have access to real-time data and to participate and seek information at any interval as needed on both specific projects and the system. Reporting requirements as set by the Oversight Board are available in Chapter 16, Post-Certification Reporting.

## **6.2 Federal Funding**

### *6.2.1 Overview*

As a result of the severe damage inflicted by several natural disasters that struck Puerto Rico between 2017 and 2020, PREPA has qualified for federal support through multiple programs that fund eligible emergency work and permanent projects. The natural disasters included Hurricanes Irma and Maria in 2017 and a major earthquake that struck Puerto Rico in early January 2020 (the "2020 Earthquake"). As previously stated, this damage was exacerbated by years of underinvestment, and substandard operation and maintenance practices that resulted in a vulnerable energy infrastructure.

The amount of federal funds projected to flow into Puerto Rico, and specifically the share obligated for its energy infrastructure, provides Puerto Rico with the unique opportunity to modernize and rebuild its currently vulnerable system. It will be crucial to use these funds efficiently; federal funds can only be used for their approved purpose.

Funds from several distinct federal programs are available to PREPA and LUMA, each with its own funding guidelines and reimbursement processes:

1. **FEMA’s Public Assistance (“PA”) Program:** This program provides funds for communities to recover from federally declared disasters or emergencies through Sections 428 (“FEMA PA 428”) and 406 (“FEMA PA 406”). Funding is provided for both emergency assistance and for permanently restoring infrastructure.<sup>102</sup> Under certain circumstances, funding can be extended beyond restoring infrastructure and cover future hazard mitigation. For example, measures that directly reduce the potential of future, similar disaster damages.<sup>103</sup> PREPA must meet a 10-25% cost-share requirement (depending on the type of projects) for all funding under the PA program.<sup>104</sup>
2. **FEMA’s Hazard Mitigation Grant Program (“FEMA 404 HMGP”):** This program funds protection to undamaged parts of a facility or may be used to prevent or reduce damages caused by future disasters. Under Section 404 PREPA must meet a 25% cost-share requirement for this source of funding, which has to date been met by funding from CDBG, however, there is no guarantee that future share cost funding will be financed by the CDBG monies.<sup>105</sup>.
3. **Federal Housing and Urban Development (HUD) Community Development Block Grant (CDBG) – Disaster Recovery (DR) and Mitigation (MIT) Programs:** Funds from the CDBG programs must address a disaster-related impact in a Presidentially-declared disaster area and meet several additional criteria. PREPA intends to use the funds from this program to cover the cost-share requirements of the PA and 404 HMGP programs

As Table 5 below shows, an excess of \$14 billion dollars—including cost-share and state matched funds—has been obligated to rebuild energy infrastructure over the next decade. It should be noted that FEMA funding comes with a 10-25% cost-share requirement that PREPA, as sub-grantee, must cover for both generation and T&D System projects. For most projects, PREPA expects to use HUD CDBG funds to cover the cost-share. For this reason, HUD CDBG funds are not shown separately in Table 5.

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<sup>102</sup> FEMA Public Assistance Alternative Procedures (Section 428) - Guide for Permanent Work from February 10, 2020. Document #: FEMA-4339-DR-PR

<sup>103</sup> FEMA press release, last updated March 18, 2021, retrieved from: <https://www.fema.gov/press-release/20210318/fema-hazard-mitigation-grants-404-and-406>

<sup>104</sup> FEMA Public Assistance Alternative Procedures (Section 428) - Guide for Permanent Work from February 10, 2020. Document #: FEMA-4339-DR-PR

<sup>105</sup> HMGP 404 for DR-4339 was fully matched by CDBG.

TABLE 5: TOTAL FUNDING BY PROGRAM OBLIGATED TO GRID AND GENERATION REBUILD AND TRANSFORMATION<sup>106</sup>

Asset Category	FEMA 428 (\$M)	FEMA 404 (\$M)	FEMA 406 (\$M)	Estimated Total Cost (\$M)
Distribution	\$5,500	\$0	\$0	\$5,500
Transmission	\$2,642	\$0	\$0	\$2,642
Generation	\$109	\$853	\$0	\$962
Substations	\$782	\$0	\$0	\$781
Hydro, Dams, and Irrigation	\$861	\$659	\$0	\$1,519
IT and Telecommunications	\$686	\$0	\$0	\$686
Buildings	\$125	\$0	\$0	\$125
<b>Total</b>	<b>\$10,705</b>	<b>\$1,512</b>	<b>\$0</b>	<b>\$12,216</b>

To date, PREPA has received approximately \$1.8 billion in funds through the FEMA Public Assistance Program, mainly related to damages caused by Hurricanes Irma and Maria. The funds have been used to cover contractor expenses related to reconstruction work, as well as increased cost from peaking units (typically low-utilization, highly flexible, and more expensive generation facilities designed to provide power during times of peak demand), among others. Section 0 provides an overview of the FEMA Public Assistance funding received to date. PREPA has so far received new obligations on FEMA 404 amounting to \$1.5 billion and \$4.7 million on HUD CDBG funds.

#### 6.2.1.1 OVERVIEW ACROSS PROGRAMS AND SOURCES

##### **FUNDING RECEIVED TO DATE: FEMA’S 428 AND 406 PUBLIC ASSISTANCE PROGRAM**

The cash funding PREPA has received to-date that has been provided through FEMA PA is related to eligible emergency costs associated with the 2017 hurricanes and the 2020 Earthquake, as shown in detail in Exhibit 32.

Through February 2022, PREPA has received \$1.6 billion in FEMA PA funds related to Hurricanes Irma and Maria. The funds received relate to contractor expenses, mutual aid assistance, incremental costs incurred by PREPA related to increased peaking unit usage, and other eligible costs incurred by PREPA. PREPA expects to receive additional reimbursements once various PWs are obligated and/or modified by FEMA, and PREPA can submit RFRs.

PREPA has received \$238 million out of the total \$317 million appropriated by FEMA PA as of February 2022 for incremental costs related to increased peaking unit usage associated with the damages caused by the 2020 Earthquake from January through June 2020. On December 2020, PREPA submitted a cost revision to increase obligated funds for the period of July 2020 up to

<sup>106</sup> Includes federal funds, cost-share, insurance payouts, and state matched amounts. PREPA 10-Year Infrastructure Plan, March 2021 Update, p. 13. Note: All costs, funding sources, and subtotals are estimates subject to change.

January 2021 totaling \$515 million. Nevertheless, amount expected to be funded by FEMA will be reduced by insurance proceeds and local cost-share requirements.

On February 27, 2022, the president of the United States filed a notice amending the notice dated January 16, 2020, increasing the federal share from 75% up to 90%. FEMA is currently performing amendments to previously obligated projects for all sub-recipients to claim additional funding.

EXHIBIT 32: SUMMARY OF FEMA REIMBURSEMENT RECEIVED THROUGH FEBRUARY 25, 2022

<b>FEMA PA Reimbursements</b>	
<b>Category</b>	(USD Million)
<b>Cobra</b>	\$944.4
<b>Mutual Aid</b>	304.5
<b>Hurricane Peaking Units Fuel &amp; O&amp;M</b>	149.1
<b>Force Account Labor</b>	52.2
<b>Management Cost</b>	15.5
<b>Other</b>	20.0
<b>XGL</b>	6.4
<b>Local Contractors</b>	13.6
<b>Whitefish</b>	76.3
<b>Subtotal for Hurricanes</b>	<b>\$1,582.0</b>
<b>Earthquake Peaking Units Fuel &amp; O&amp;M</b>	\$238.0
<b>Total Emergency Reimbursement</b>	<b>\$1,820.0</b>

**FUNDING RECEIVED TO DATE: FEMA’S 404 HAZARD MITIGATION GRANT PROGRAM (“FEMA 404 HMGP”)<sup>107</sup>**

To date, PREPA has not received any funds under FEMA 404 HMGP projects. Currently, COR3 and the Governor are discussing eligible permanent work FEMA 404 HMGP projects, and PREPA has been approved a total of \$953 million<sup>108</sup> related to improvements for generation and water facilities. These projects are outside of, and in addition to, the Global Settlement. A total of \$1.4 million have been submitted to COR3 for reimbursement, outstanding as of March 2022. Several requests for information have been received and PREPA is working alongside COR3 to close outstanding matters.

<sup>107</sup> Source: <https://www.epa.gov/sites/production/files/2015-10/documents/hmcp.pdf>

<sup>108</sup> Source: FEMA approval letters dated September 29, 2020, October 15, 2020, and October 16, 2020.



## **FUNDING RECEIVED TO DATE: HUD CDBG–DISASTER RECOVERY AND MITIGATION PROGRAMS<sup>109</sup>**

To-date PREPA has received \$1.8 million in CDBG funds related to hurricane Irma peaking units.

The CDBG-DR program is intended to cover the 25% local cost-share associated with emergency work repairs for Hurricane Irma and the 10% local cost-share related to permanent work repairs from damages caused by Hurricane Maria. The CDBG-DR program is not intended to cover the 25% local cost-share related to damages caused by the 2020 Earthquake, which have been funded by PREPA.

On July 28 of 2021, PREPA executed a sub-award agreement with the Puerto Rico Department of Housing to utilize CDBG-DR funds to provide the non-federal cost share match for eligible project amounting to \$4,687,041.54. More recently, on March 25, 2022, HUD issued a partial approval of the Commonwealth's Action Plan for its electrical power system enhancements and improvements program. On March 31, 2022, the partially approved CDBG-DR Energy Action Plan was published on the PRDOH CDBG-DR webpage.<sup>110</sup> This plan confirms the initial availability of \$500,000,000 for 10% cost share requirement for permanent work for damages from hurricane Maria for FEMA PA funds.<sup>111</sup>

For permanent work outside of the Global Settlement PREPA must seek federal funding assistance from FEMA 404 HMGP for the federal cost-share and CDBG-MIT for the local cost-share.

### **6.2.1.2 EMERGENCY WORK REIMBURSEMENT PROCEDURE**

All cash funding for emergency work received by PREPA to-date related to the 2017 hurricanes and the 2020 Earthquake has been provided through FEMA PA.

The general procedure for PREPA as the subrecipient to obtain FEMA PA funds related to emergency work includes PREPA incurring and tracking eligible costs, the development of Project Worksheet (PWs) through the FEMA obligation process, the obligation of funds to the recipient, and the Request for Reimbursement (RFR) and subsequent cash funding to the subrecipient. The detailed steps are as follows:

- PREPA incurs costs due to damages caused by the disaster(s)
- PREPA tracks these costs and works with FEMA and COR3 to determine eligibility
- FEMA creates a PW which then goes through various levels of review until the PW is obligated
- Once the PW is obligated, the funds are appropriated for the recipient (i.e., COR3)
- PREPA can then submit a RFR to COR3

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<sup>109</sup> Source: <https://www.hud.gov/hudprograms/disaster-recovery>

<sup>110</sup> See, [https://cdbg-dr.pr.gov/en/download/cdbg-dr-action-plan-for-the-electrical-systems-enhancements-effective-on-march-25-2022/?ind=1648758532100&filename=2022%2003%2025\\_ADM\\_POLI\\_Action%20Plan\\_Energy%20Action%20Plan%20Draft.pdf&wpdmdl=25442&refresh=627c0f6e213681652297582](https://cdbg-dr.pr.gov/en/download/cdbg-dr-action-plan-for-the-electrical-systems-enhancements-effective-on-march-25-2022/?ind=1648758532100&filename=2022%2003%2025_ADM_POLI_Action%20Plan_Energy%20Action%20Plan%20Draft.pdf&wpdmdl=25442&refresh=627c0f6e213681652297582)

<sup>111</sup> Ibid, Energy Grid Rehabilitation and Reconstruction (ER1) Cost Share Program, Table 20, page 116.

- COR3 reviews the RFR and draws down funds from FEMA related to the obligated PW, which will be subsequently sent to PREPA as the subrecipient; and
- Funds are then transferred from COR3 to PREPA.

As previously stated, the federal share of assistance under FEMA PA is not less than 75% of the eligible cost. For Hurricane Irma the FEMA PA federal share covers 75% of eligible costs and for the 2020 Earthquake a 90% cost-share was recently amended. For Hurricane Maria FEMA PA federal share covers 100% of costs incurred by PREPA through August 16, 2018, and 90% thereafter. For PREPA to receive funds to cover the local cost-share associated with the 2017 hurricanes, PREPA and PRDOH must execute the related grant agreement which is pending final approval.

PREPA has submitted projects to PRDOH to obtain CDBG-DR funds to cover the local cost-share related to emergency projects for Hurricane Irma and Maria. On July 28, 2021, PREPA executed a sub-award agreement with the Puerto Rico Department of Housing to utilize CDBG-DR funds to provide the non-federal cost share match for eligible project amounting to \$4.7 million. PREPA expects to pay the local cost-share related to the 2020 Earthquake.

### 6.2.1.3 PERMANENT WORK REIMBURSEMENT PROCEDURE

#### 6.2.1.3.1 FEMA PA 428

PREPA must receive reimbursement for the federal share of permanent work through FEMA PA 428. Funding for permanent work is applicable to projects related to restoring facilities through repair or restoration to pre-disaster design, function, and capacity in accordance with codes or standards.<sup>112</sup> Through FEMA PA 428, FEMA will fund the federal share of 90% of the eligible costs related to the Global Settlement. The procedures for drawing down the funds obligated as part of the agreed upon settlement as set forth in the FEMA Advanced Award Strategy Initiative (“FAASt”).

Specifically related to damages caused by Hurricanes Irma and Maria, the Bipartisan Budget Act (“BBA”) allows FEMA to provide assistance to restore disaster-damaged facilities or systems that provide critical services to an industry standard without regard to pre-disaster condition. FEMA may approve standards that are widely accepted and used, or best practices that are generally accepted by experts in the industry if standards are reasonable. BBA allows for the repair or replacement of components not damaged by the disaster if the work is required to restore the critical service function of the facility or system to approved industry standard(s). The pre-disaster condition of components, regardless of damage, is not a factor in determining the eligible scope of work.

The federal share of the Global Settlement under FEMA PA 428 is \$9.5 billion (or 90% of the \$10.7 billion after deducting expected insurance proceeds of \$193 million). While PREPA has assumed that the 10% local cost-share of the Global Settlement (which is approximately \$1.05 billion) is expected to be funded by CDBG-DR, only \$500 million for local cost-share has been submitted by PRDOH to HUD for approval. PREPA must work diligently to identify the source of funds needed to cover the remaining ~50% cost-share requirement, including requiring the

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<sup>112</sup> Source: FEMA Public Assistance Applicant Handbook as of March 2010.

necessary rate adjustments. Failure to identify an adequate source of funding may jeopardize the ability to access and deploy a significant portion of FEMA funds.

The Global Settlement may be structured as a reimbursement program, but PREPA management is currently working with COR3 to request advances to assist with PREPA's liquidity position. PREPA may request an advance from COR3 if the following criteria are met:<sup>113</sup>

- PW is obligated by FEMA
- Procurement for the advance is complete and the subrecipient has awarded the contract to the vendor
- Subrecipient provides a complete set of procurement and award documents for the contract which advance funds are requested
- Subrecipient provides a timeline of when costs are expected to be incurred and paid
- Subrecipient has no outstanding/unsubstantiated advance payments for the contract which advance funds are requested; and
- COR3 determines the subrecipient has immediate cash needs.

If PREPA, or its authorized agent, must request reimbursements instead of receiving advances, the process is expected to be like the process for emergency work (see Section **Error! Reference source not found.**). However, for permanent work, the following additional actions must occur prior to RFR submission:

- PREPA, or its agent, submits the proposed project Scopes of Work (SOW)
- The SOWs are reviewed by COR3 and FEMA to determine eligibility; and
- PREPA/agent may not commence work prior to receiving approval from FEMA PA and FEMA Environmental and Historical Preservation (EHP). Initiation of construction prior to FEMA PA and FEMA EHP completion of reviews may jeopardize part of or all the federal funding for the project.

#### 6.2.1.3.2 FEMA 404 HMGP

PREPA expects to obtain FEMA 404 HMGP funds for various permanent work mitigation projects outside of the Global Settlement. FEMA 404 HMGP projects are typically funded at a 75% federal cost-share. However, on October 22, 2018, FEMA approved the Governor's request, dated February 26, 2018, to use the Global Match approach to meet the HMGP 25% non-federal cost-share requirement. Therefore, the Government of Puerto Rico dedicated approximately \$1 billion in CDBG-DR funding to provide the required cost-share for HMGP projects.

This means that all HMGP projects are expected to be fully funded, with no additional local cost-share required from PREPA. The CDBG-DR funding is expected to provide eligible matching projects that will count as the HMGP cost-share.

The expected process to ultimately obtain these funds is as follows:

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<sup>113</sup> Refer to Ch. 7 – Payment and Cash Management section of the COR3 Disaster Recovery Federal Funds Management Guide.

- COR3 will notify PREPA as subrecipient of available FEMA 404 HMGP funding
- After notification of available funds, PREPA will submit a Letter of Intent (LOI) describing overall scope of any hazard mitigation projects to COR3
- COR3 will review the LOI and determine which projects are aligned with the Governor’s strategy and notify PREPA of which projects are approved
- PREPA can then prepare a comprehensive package including additional details related to scope, any necessary clearances and anticipated costs/budget related to the project to be submitted to COR3 and FEMA for review and approval
- Upon FEMA review, FEMA may include conditions for approval for the subrecipient
- PREPA can begin incurring costs only for projects which have been approved by COR3 and FEMA
- Once costs are incurred, PREPA can submit RFRs
- COR3 will review RFRs for consistency with the project and eligibility prior to funds being disbursed to PREPA; and
- Funds will then be transferred from COR3 to PREPA.

#### 6.2.1.4 FUNDING SOURCES FOR 10% COST-SHARE REQUIREMENT

Under the Global Settlement, PREPA, or its agent, is required to meet a 10% local cost-share requirement for its FEMA-funded permanent work projects. PREPA plans to meet its local cost-share portion through the CDBG-DR program, as it becomes available. If these funds are not available, PREPA must find funding elsewhere and/or adjust rates to cover the local cost-share obligation.<sup>114</sup> Failure to identify the funds necessary for cost-share may prevent PREPA from having access to the portion of the Global Settlement contributed by FEMA.

Access to CDBG-DR and CDBG-MIT funds are subject to various US HUD actions. The Appropriations Act requires HUD to allocate almost \$2 billion of CDBG-DR funds to provide enhanced or improved electrical power systems in response to Hurricane Maria. HUD announced the allocation of these funds to the Commonwealth and provided that the electrical power system allocation shall be governed by a subsequent notice. Therefore, the grantee is prohibited from using CDBG-MIT funds for mitigation activities to reduce the risk of disaster related damage to electric power systems until after HUD publishes the Federal Register notice governing the use of the almost \$2 billion for enhanced or improved electrical power systems.<sup>115</sup>

To receive CDBG-DR and CDBG-MIT funds for the local cost-share associated with permanent work projects, HUD must file a Federal Register notice governing the use of the almost \$2 billion CDBG-DR funds for enhanced or improved electrical power systems. The CDBG-DR and CDBG-MIT reimbursement process will follow the “Implementation Guidance for Use of Community Development Block Grant Disaster Recovery Funds as Non-Federal Cost Share” issuance dated October 13, 2020. On June 22, 2021, HUD published Federal Register Vol. 86, No. 117 (June 22,

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<sup>114</sup> The financial projections included in this Certified Fiscal Plan assume CDBG funds cover the local cost-share required for federal funding.

<sup>115</sup> See Docket No. FR-6109-N-04.

2021), 86 FR 32681, which governs the use of the \$2 billion CDBG–DR allocation for enhanced or improved electrical power systems in Puerto Rico and the U.S. Virgin Islands. Of those \$2 billion, \$1.9 billion was allocated to Puerto Rico to enhance the Puerto Rico electrical power system, with only \$500 million available for PREPA use as cost-share matching, as the remainder is assigned to facilitate community projects and private and non-profit sector developments. PREPA will need to identify the source of funding for the remainder of their matching responsibilities, with the risk of not delivering on available FEMA funds for the recovery and reconstruction of the energy system.

### *6.2.2 Federal Funding Impact*

The successful transformation of Puerto Rico’s energy system will require significant capital investment at least over the next ten (10) years. Federal funding plays a critical role in mitigating the burden of these costs on ratepayers. With adequate federal funding, the overall impact on energy rates would not be too burdensome in the next ten (10) years.

The appropriated federal funds are necessary for the full deployment of Puerto Rico’s grid modernization plans. If federal funding fails to materialize, or costs turn out to be more expensive, Puerto Rico would have to make a difficult choice between increasing energy rates to meet unfunded capital investment needs, or remain unable to implement the necessary repairs and grid system modernization called for in Puerto Rico Public Policy and captured in the IRP approved by the Puerto Rico Electric Bureau (PREB), 10 year-Infrastructure Plan, PREPA and Commonwealth Certified Fiscal Plans, and LUMA’s Recovery and Transformation Framework as detailed within the Initial Budgets and SRP.

Beyond the dollar impact on customers, a lack of federal funding would have serious consequences on the resiliency of the system and the achievement of PREPA’s long-term energy vision and LUMA’s Recovery and Transformation Framework. Lack of federal funding availability for the rebuild of the T&D System and generation facilities represents a significant risk for overall service delivery and affordability. Federal funding is also critical for delivering system improvements necessary for resiliency and environmental compliance, including deployment of microgrids, distributed energy resources, and renewable resources.

### *6.2.3 Distribution of Federal Funding Responsibilities for the T&D System<sup>116</sup>*

Puerto Rico’s energy sector continues advancing its transformation pursuant to Puerto Rico’s energy public policy. During FY 2022, LUMA will continue to have full control over the operation and maintenance functions of the T&D System and will provide the O&M Services that are detailed and defined under the T&D OMA, which includes performing and supervising Capital Improvements of the T&D System.

The T&D OMA provides specific roles and responsibilities for LUMA, PREPA, and the P3A related to the use, management, recordkeeping, and oversight of federal funds used for T&D System capital improvements (which include grid reconstruction). The parties to the T&D OMA will cooperate, and work as described in the T&D OMA to ensure legal compliance, effective and

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<sup>116</sup> This section references that certain Operation and Maintenance Agreement (T&D OMA) dated as of June 22, 2020, by and among PREPA, LUMA Energy, LLC, LUMA Energy Servco, LLC and the P3A. All language and statements under this section are meant to be illustrative only and shall be interpreted in accordance with, and subject to, the T&D OMA.

efficient use of federal funding, maximized eligibility of projects for federal funding, and secure adequate recordkeeping and access for compliance audit purposes.

#### *6.2.4 Challenges and Mitigation Measures<sup>117</sup>*

PREPA and LUMA are coordinating to assess risks and mitigation measures as part of the broader capital planning process for federally funded capital expenditures under the T&D OMA. The key areas of risk include (local and federal) permitting, federal funding compliance, and eligibility of T&D-related projects for federal funding (maximizing eligibility of new or additional projects beyond those eligible under FEMA 428).

LUMA's has established a Risk Management office to be responsible for identifying project risks, analyzing risk probability, impact and ranking, planning risk mitigation and calculating required contingency levels for mitigating unavoidable risks. Further LUMA continues to prepare a risk assessment and analyses in support of prioritization and planning for T&D System capital projects taking into account the IRP, load and energy forecasts, fuel price and quantity forecasting, long and short-range system plans and proposed annual operating and maintenance plans.

As established under the T&D OMA, PREPA and LUMA must cooperate also with the P3A in obtaining and maintaining all government approvals as defined under the agreement. Regarding federal funding, as well as project eligibility matters, LUMA is responsible for procurement and administration of federal funding, with PREPA and P3A support as relevant, as well as compliance with applicable law, regulation, and policy, as prescribed by the T&D OMA.<sup>118</sup>

#### *6.2.5 Overview of Reporting Cadence and Level of Detail*

PREPA's reporting related to restoration progress, reconstruction progress, spending, and reimbursements for emergency work has been provided on a weekly basis and will continue until project completion and settlement of outstanding amounts. The restoration and reconstruction flash report includes key information by major category of spending, including but not limited to: amounts submitted to FEMA, obligated amounts by PW, federal funding received, cash paid to suppliers, invoice amounts, payables outstanding, and status of RFR, etc. While substantially all activity to date has been related to emergency work, future permanent work will be reported as agreed to in the T&D OMA. LUMA must develop its own T&D System reporting cadence and structure for relevant stakeholders, including PREPA as T&D System owner and subrecipient of federal funds under FEMA regulations.

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<sup>117</sup> Ibid.

<sup>118</sup> See, e.g., T&D OMA, Sect. 5.9 (a), (b) and (c).

## Chapter 7. LUMA Improvement Portfolios

LUMA is responsible for overseeing T&D System improvements, including planning and execution of capital projects. Funds of \$10.7 billion were obligated for use in the rebuilding and transforming of Puerto Rico’s energy generation and T&D System.

As a required part of the Front-End Transition, LUMA developed a set of improvement programs to restore and modernize Puerto Rico’s T&D System, including the management system and processes. Programs were subsequently organized into seven interdependent portfolios of similar topics that together cover all functional areas of the utility. These improvement portfolios are described in the LUMA Initial Budgets and the SRP. LUMA’s Initial Budget was reviewed by P3A and approved by the PREB on May 31, 2021, prior to service commencement and program implementation.<sup>119</sup> Additionally, LUMA’s SRP was reviewed by P3A and approved by PREB on June 23, 2021, prior to service commencement and program implementation.<sup>120</sup> Subsequently LUMA filed Annual Budgets for Fiscal Year 2023 with PREB on April 1, 2022, and an update to the SRP on April 14, 2022. The relationship between LUMA’s Budgets and SRP is as follows:

- **LUMA Budgets:** The LUMA budgets contain operating and capital expenditures for the T&D System for the next fiscal year and projected budgets of the same for the subsequent two fiscal years, together the next three years of LUMA’s operation of the T&D System. All improvement portfolios and associated expenditures for FY2023-FY2025 are included in the most recent LUMA budget application.
- **System Remediation Plan:** The SRP is a plan to “remediate, repair, replace, and stabilize equipment, systems, practices, and services” in the T&D System such that the legacy assets and processes that may not comply with the standards of performance required under the T&D OMA can be brought up to compliance. Only initiatives to remediate high-probability, high-impact asset or process failures are included in the SRP. As such, the SRP forecasts a *subset* of T&D program-related improvement programs and related operating and capital expenditures through FY2029.

In developing the improvement programs for both physical system assets and the management system and processes, LUMA utilized a three-stage approach of: (a) assessing the current state of the system; (b) analyzing and comparing the current state to industry standards and the T&D OMA contract standards and developing initiatives to address any identified gaps; and (c) prioritizing and sequencing the initiatives based on criticality and guiding documents. Similar programs were compiled into seven (7) portfolios: (1) customer service; (2) distribution; (3) transmission; (4) substations; (5) control center & building; (6) enabling; and (7) support services.

The improvement portfolios use a range of funds depending on the scope of each program and funding usage limitations (e.g. limitations on the use of certain types of federal funds). Program-related operating expenditures, federally funded capital, and non-federally funded capital are allocated to improvement programs. LUMA has projected spending an estimated \$3.5 billion on improvement portfolios from FY2023 through FY2025.

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119 Determination on LUMA’s Initial Budgets filing on May 31, 2021 Docket ID: NERP-MI-2021-0004,

120 Resolution and Order Approving the Proposed System Remediation Plan filing on June 23, 2021 Docket ID: NERP-MI-2020-0019

Through the implementation of its improvement portfolios, LUMA has already achieved significant operational improvements within the first nine months of Fiscal Year 2022 including improving safety metrics by an average of 82%, activating over 17,000 net energy metering customers representing 95 MW of distributed solar energy, enabling over 1 million electronic registration or app downloads to allow customers to connect with LUMA online. In addition, LUMA has fielded over 2.7 million calls, all while reducing customer call wait times to less than 1 minute from over 26 minutes and demonstrating an 80-point improvement in the J.D. Power Customer Satisfaction score. LUMA has also developed 190 initial scopes of work representing \$7.8 billion of federal funding and have advanced 79 projects, representing \$1.2 billion into preliminary engineering. Section 7.4 gives an overview of expected continual improvements.

## **7.1 Background on LUMA’s improvement programs and Portfolios**

### *7.1.1 Development of the improvement programs and Portfolios*

To develop the improvement programs and Portfolios outlined below, LUMA utilized a three-stage approach of: (1) assessing; (2) analyzing; and (3) planning.

#### **Assessment**

In the assessment stage, LUMA conducted a gap assessment and determined the condition of PREPA’s existing T&D System assets and management systems and processes. In evaluating the physical assets, LUMA assigned each asset a health condition score from 0 to 4 as defined in Exhibit 33. For the existing management system and processes,

Exhibit 34 includes the organizational maturity scoring criteria LUMA used to score different portions of the existing organization.

In assessing the assets, LUMA identified that a lack of accurate data to inform business and asset management decisions was particularly prevalent. Based on the sample of asset inspections, asset health was consistently poor from storm damage and deferred maintenance. In assessing the organization, low maturity scores were noted with most organizational areas rated as “Unfocused” or “Aware.” LUMA noted in the SRP that most North American electric utilities have a maturity rating between “Developing” and “Competent.” Based on the results of its assessment, LUMA indicated that physical assets and the organizational systems and processes required significant improvement resources and capital.



## EXHIBIT 33: PHYSICAL ASSET HEALTH CONDITION SCORE VALUE DEFINITIONS

Physical asset health condition score value definitions	
Score value	Health/condition
4	System like new (replaced or refurbished within the last 5 years)
3	System has been maintained with general operations and maintenance on a routine basis; no major issues noted
2	Deficiencies were noted or components were out of service
1	Major issues noted causing a safety, reliability, or unit output issue
0	End of life or not operational

## EXHIBIT 34: ORGANIZATIONAL HEALTH ASSESSMENT MATURITY SCORING CRITERIA

Organizational health assessment maturity scoring criteria					
Score	Unfocused - 1	Aware - 2	Developing - 3	Competent - 4	Excellent - 5
Scoring criteria	<p>The organization has not recognized the need for the basic elements and/or there is no evidence of commitment to put them in place</p> <p>Work is performed informally or ad hoc</p> <p>Processes are <u>undocumented</u> and/or <u>undefined</u></p> <p>Issues present major exposures</p> <p>Required expertise/training does not exist, capacity is insufficient or both</p>	<p>The organization has a basic understanding of the need to address these elements and is in the process of deciding how/starting to apply them</p> <p><u>Preliminary documentation</u> of processes being compiled</p> <p>Performance is unmeasured</p> <p>Little organizational effort to identify issues</p>	<p>The organization has identified the means to address the major elements and some work is progressing on implementation</p> <p>Basic performance can be measured</p> <p>Performance is minimally adequate</p> <p>Processes are documented and defined</p> <p>Issue identification is performed</p> <p>Competitively subpar</p>	<p>All elements are in place and are implemented in the day-to-day operations of the business</p> <p>Major improvements made</p> <p>Performance is adequate and continuously measured/verified</p> <p>Processes are managed (followed consistently) with appropriate controls</p> <p>Disciplined issues identification</p> <p>Competitively at par</p>	<p>The organization is using processes and approaches beyond the basic requirements, driving to achieve maximum value</p> <p>Verifiable issues/defect reductions and or practices continuous improvement</p> <p>Deliberate effort to optimize/improve processes</p> <p>Competitively differentiated</p>

### Analysis

In the analysis stage, LUMA compared the conditions found in the assessment stage to industry standards and developed over 600 initiatives to remediate identified concerns, enact infrastructure recovery, achieve operational and customer satisfaction improvements, and meet regulatory imperatives (e.g. Renewable Portfolio Standards). All initiatives were screened for inclusion in the SRP and initiatives to remediate high-probability, high-impact asset or process failures were included as SRP initiatives.

### Planning

In the planning stage, LUMA utilized a framework to prioritize and sequence the programs, further discussed in Section 7.2. LUMA's planning process referenced several guiding documents, including the approved Integrated Resources Plan (IRP) and Modified Action Plan, previous Certified Fiscal Plans, COR3's Grid Modernization Plan, Act 17-2019, numerous independent engineering reports and FEMA damage assessment reports. Improvement programs were developed with Puerto Rico's public policy in mind.

### 7.1.2 Summary of Improvement Portfolios

Initiatives were grouped into programs and programs were subsequently organized into seven (7) interdependent portfolios of similar size that together cover all functional areas of the utility:

1. The **customer service portfolio** includes programs to improve customer service through modernized customer service technology, improve billing systems, implement advanced metering infrastructure, establish a “Voice of the Customer” program, and upgrade and replace distribution streetlights.
2. The **distribution portfolio** includes improvements to the distribution system, including overhead and underground distribution line rebuilds, pole and conductor repairs, system inspections, spot repairs and replacements as needed, and implementation of technology that enables planning.
3. The **transmission portfolio** includes improvements to the transmission system, including line rebuilds and hardening, priority pole replacements, system inspections, spot repairs and replacements as needed, and improved transmission monitoring systems, as well as telecommunications investments to improve first responder and emergency response communication and centralized monitoring and control.
4. The **substations portfolio** includes investments to rebuild, harden, and modernize transmission and distribution substations, including physical security upgrades, and studies to eliminate major cascading outages and ensure system compliance with applicable laws, codes, and regulations.
5. The **control center & buildings portfolio** includes investments in rebuilding damaged facilities, upgrading security systems, and implementing energy and advanced distribution management systems that enable renewable energy, demand response, and battery storage integration and dispatch.
6. The **enabling portfolio** includes a number of safety and operational excellence programs such as: provision of new tools and Personal Protective Equipment (PPE); skills and safety training for all employees; a new program management office to plan and execute large capital projects; a new data system to manage T&D asset data; and vegetation and fleet management.
7. The **support service portfolio** includes cross-functional programs that service all departments, such as Human Resources, IT / OT, and finance. This portfolio also includes studies on renewables integration and minigrids.

### 7.1.3 Overview of Expected Spend per Improvement Portfolio through FY2025

LUMA included the proposed annual spending estimates for each portfolio from FY2023 through FY2025 in the Initial Budgets. The estimates for FY2025 include federally funded programs, non-federally funded capital expenditures, and program-related operational expenditures. The proposed annual estimated expenditures for each portfolio as filed to PREB on April 2, 2022, are included in Exhibit 35.

EXHIBIT 35: LUMA'S PROPOSED ANNUAL IMPROVEMENT PORTFOLIO SPENDING ESTIMATES FOR FY2023 THROUGH FY2025 (USD MILLION, NOMINAL)

Portfolio	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spending Estimate	Total Spending Estimate	Total Spending Estimate
Customer Experience	107	7	21	135	119	139
Distribution	151	15	13	179	306	577
Transmission	126	0	0	127	279	374
Substations	111	22	2	135	173	71
Control Center and Buildings	45	4	3	51	91	89
Enabling	20	22	71	113	124	122
Support Services	9	10	84	102	92	91
<b>Grand Total</b>	<b>569</b>	<b>78</b>	<b>195</b>	<b>842</b>	<b>1,185</b>	<b>1,463</b>

## 7.2 Goals and Roadmap of improvement programs

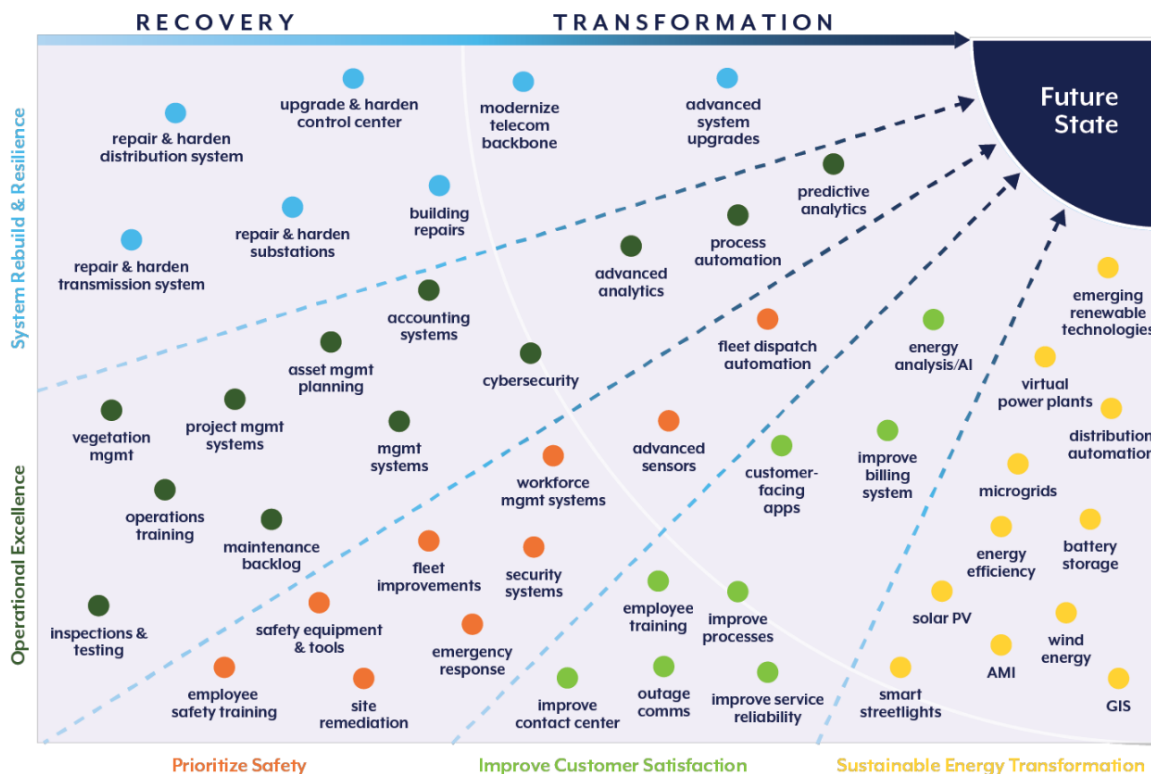
In order to prioritize and sequence the improvement work, LUMA developed a Recovery and Transformation framework and roadmap to guide planning and decision making across all Front-End Transition deliverables, including the SRP and improvement portfolios. LUMA states that the framework references public policy objectives, stakeholder needs, and regulatory and contractual requirements. The framework has five (5) key goals in delivering LUMA's stated mission of customer-centric, reliable, resilient, safe, sustainable electricity at reasonable prices:

1. **Prioritize Safety** – Reform utility activities to support a strong safety culture focused on employee safety and the safety of the people of Puerto Rico;
2. **Improve Customer Satisfaction** – Transform operations to deliver a positive customer experience and deliver reliable electricity at reasonable prices;
3. **System Rebuild and Resiliency** – Effectively deploy federal funding to restore the grid and improve the resilience of vulnerable infrastructure;
4. **Operational Excellence** – Enable employees to pursue operational excellence through new systems, processes, and training; and
5. **Sustainable Energy Transformation** – Modernize the grid and utility to enable sustainable energy transformation.

The recovery phase of the roadmap begins with the restoration of the high-risk infrastructure and processes to a safe and functioning state. During this phase, LUMA will complete remedial investments to systems and processes, in addition to the grid. After stabilizing infrastructure and processes, LUMA will implement the transformation phase, with the goal of redesigning the utility to meet Puerto Rico's energy policies and needs for the coming decades. Recovery and

transformation are not distinct, sequential phases as many transformation programs will begin alongside and in coordination with recovery programs. The recovery and transformation roadmap is included in Exhibit 36.

EXHIBIT 36: LUMA’S PROPOSED RECOVERY AND TRANSFORMATION ROADMAP<sup>121</sup>



### 7.3 Improvement Portfolios

After developing its improvement programs as outlined above, LUMA subsequently organized them into seven (7) interdependent portfolios of similar size that together cover all functional areas of the utility: (1) customer service; (2) distribution; (3) transmission; (4) substations; (5) control center & buildings portfolio; (6) enabling; and (7) support services. For each of the programs contained in the portfolios, LUMA developed a program summary, benefits, costs, and key milestones. The programs within each portfolio are summarized below with estimated annual funding and sources for that funding. For one or two key programs within each portfolio, additional detail and benefits are included.

Further detail on all improvement programs can be found in Appendix C of LUMA’s Annual Budgets’ submission to PREB.<sup>122</sup> A summary of major improvement programs is summarized below by portfolio.

121 Filing of System Remediation Plan under Section 4.1(d) of the Operation and Maintenance Agreement for Energy Bureau’s Evaluation and Approval. In Re: Review of the Puerto Rico Electric Power Authority’s System Remediation Plan. Case No. NEPR-MI-2020-0019. February 24, 2021.

122 Annual Budgets filing in Case No. NEPR-MI-2021-0004. April 1, 2022.

### 7.3.1 Customer Service Portfolio

Customer service will be enhanced in multiple ways. LUMA’s Voice of the Customer program and the deployment of enhanced customer service technology will improve interactions with customers. In addition, streetlighting will be repaired and billing systems improved. Advanced Metering Infrastructure (AMI) will expand remote meter reading, along with a host of reporting, control, and customer engagement capabilities. The exhibit below presents a summary of the spending of each of the largest programs in the Customer Service Portfolio.

EXHIBIT 37: CUSTOMER SERVICE PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, REAL)

Customer Experience Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate	Total Spending Estimate
Distribution Streetlighting	105	-	-	105	70	80
Billing Accuracy and Back Office	-	1	12	13	12	11
Loss Recovery Program	-	-	5	5	8	16
Distribution Meter Replacement & Maintenance	2	1	1	4	22	22
Standardized Metering and Meter Shop Setup	-	4	1	4	4	7
Modernize Customer Service Technology	-	2	1	3	2	3
Streetlight Billing	-	-	1	1	1	-
Voice of the Customer	-	0	1	1	1	1
AMI Implementation Program	-	-	-	-	0	-
<b>Grand Total</b>	<b>107</b>	<b>7</b>	<b>21</b>	<b>135</b>	<b>119</b>	<b>139</b>

A key Improvement Program in the Customer Service Portfolio is the billing accuracy and back-office program.

#### **Billing Accuracy and Back-Office**

##### Program Summary:

The billing accuracy and back-office program includes updates to bill print and delivery (BP&D) and other back-office systems to ensure LUMA can continue to produce customer invoices. Current technology, machines and systems are outdated, creating a financial liability in delayed revenue of ~\$12.5 million for each day invoices are not produced. This upgrade includes acquisition of new hardware and software to support billing and customer contracts, along with

removing redundant bill printing and enveloping equipment. Additionally, the program supports back-office processing of service order paperwork and mobilizes resources to address backlogs of estimated and unbilled accounts. The program also implements a customer experience metrics dashboard and agent routing technology for Billing Services to reduce resolution time and increase customer satisfaction.

Program Benefits:

The benefits of this program include:

- Providing more reasonable prices for customers by improving efficiencies and removing billing backlogs;
- Delivering a more positive customer experience by refining efficiency in handling billing and associated back-office functions, along with increasing use of digital platforms to engage with customers;
- Improving the systematic management of the business by ultimately eliminating the significant backlog of estimated, unbilled and other exception related accounts, which will enhance back-office efficiency, improve collections metrics, and reduce accounts receivable;
- Improving employee productivity and work quality by improving automated distribution and management of back-office work to back-office agents;
- Improving the resilience of the billing system by outsourcing the BP&D function to a third-party vendor with a reliable emergency response plan and business continuity plan; and
- Enable the digital transformation by actively reducing manual processes currently in place and help support the implementation of a workforce management system.

*7.3.2 Distribution Portfolio*

The distribution system received temporary emergency repairs after hurricanes Irma and Maria to quickly restore service and has required further permanent recovery work. The majority of distribution portfolio spending over the next three years will therefore be focused on improving system recovery and resilience. Investments in reliability improvements will also aid in providing a better customer experience and distribution automation investments will contribute to enabling the sustainable energy transformation. The exhibit below presents a summary of the spending for the largest programs in the Distribution Portfolio.

EXHIBIT 38: DISTRIBUTION PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, Nominal)

Distribution Programs	FY2023			FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate
Distribution Pole & Conductor Repair	54	1	11	66	81
Distribution Line Rebuild	51	5	0	56	422
Distribution Automation	26	8	1	36	53
Distribution Lines Assessment	20	0	1	21	20
<b>Grand Total</b>	<b>151</b>	<b>15</b>	<b>13</b>	<b>179</b>	<b>577</b>

A key improvement program in the Distribution Portfolio is distribution line rebuild.

### **Distribution Line Rebuild**

#### Program Summary:

This program replaces damaged or ineffective overhead and underground distribution lines. This program includes the following initiatives, a mix of SRP and non-SRP work:

- Perform distribution line upgrades to improve reliability and resiliency;
- Restore out of service circuits as deemed necessary;
- Complete unfinished circuit construction presently abandoned as deemed necessary;
- Perform circuit voltage conversions to improve distribution capacity (non-SRP);
- Build new distribution line extensions to connect new customers (non-SRP); and
- Install underground cable and/or tree wiring to improve service reliability and resiliency to critical customers (non-SRP).

#### Program Benefits:

The benefits of this program include:

- Providing a safe workplace and improving public safety by repairing and/or replacing assets that are in poor or damaged condition and present potential safety risks;
- Increasing service continuity and reliability to customers by replacing and upgrading facilities that have poor reliability performance and by adding and completing facilities that allow for alternate feeds; and
- Enabling grid modernization where practical, as replaced assets such as switches may be incorporated into future distribution automation schemes.

### 7.3.3 Transmission Portfolio

Transmission assets damaged by Hurricanes Irma and Maria received temporary emergency repairs to quickly restore service. FEMA has allocated nearly \$2 billion for further permanent repairs and/or replacement of these assets, to upgrade them to current codes and standards. LUMA’s Transmission Portfolio is comprised of a set of “Recovery” programs to complete these system hardening upgrades including rebuilding towers, reinforcing anchors, and replacing poles and associated hardware and conductors. The Transmission Portfolio also includes significant investments in telecom backbone modernization which will help enable transformation. The exhibit below presents a summary of the spending for each of the largest programs in the Transmission Portfolio.

EXHIBIT 39: TRANSMISSION PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, NOMINAL)

Transmission Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate	Total Spending Estimate
Transmission Line Rebuild	85	-	-	85	232	314
IT OT Telecom Systems & Network	32	-	0	32	39	51
Transmission Priority Pole Replacements	6	-	-	6	6	6
Assessment of Transmission Lines	3	0	-	3	3	3
<b>Grand Total</b>	<b>126</b>	<b>0</b>	<b>0</b>	<b>127</b>	<b>279</b>	<b>374</b>

A key improvement program in the Transmission Portfolio is the IT OT Telecom Systems & Network program.

#### IT OT Telecom Systems & Network

##### Program Summary:

This program includes IT and OT telecom investments to improve and revamp PREPA’s mobile radio system, phone exchange and telephone systems and fiber optic and microwave data radio systems. These systems are used to carry all PREPA IT and OT data. Capability enhancements will include improved first responder and emergency response communication, greater resilience of the internal telecommunications network, an enhanced microfiber network and network control center to improve centralized monitoring and control over facilities and IT traffic.

##### Program Benefits:

The benefits of this program include:

- Improving communications between employees and contact call centers, control centers, colleagues or customers, including during emergency conditions like traffic accidents, equipment failures and severe weather conditions;



- Enabling the implementation of Advanced Metering Infrastructure in the distribution network and its associated benefits (see Section 7.3.1);
- Improving control of protection circuits—which protect both people and equipment from accidental harm when coming in contact with a high voltage line—by repairing the microwave radio and fiber backbone;
- Improving reliability as the data networks and telecom systems are repaired and provide more accurate outage prediction, detection, and remediation as more smart meters are connected;
- Informing operational decision-making with better-quality operational data from upgraded data networks and improved data integration between systems;
- Enabling the transition to a modern, sustainable grid by upgrading the system to be compatible with modern sustainable energy systems (e.g. internet, IoT protocols, etc.); and
- Improving system resiliency by reducing the cyber risk to the networks by creating separate systems configured on different networks.

#### 7.3.4 Substation Portfolio

LUMA plans to rebuild, harden, and modernize substations over the next three years. Substations will be repaired, rebuilt, and made safer, while increasing mitigation against future disasters. These programs will result in significant improvements to system resilience and safety. The exhibit below presents a summary of the spending for each of the largest programs in the Substation Portfolio.

EXHIBIT 40: SUBSTATION PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, REAL)

Substation Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate	Total Spending Estimate
Substation Rebuilds	95	7	-	102	139	49
Substation Security	15	1	1	18	15	4
Substation Reliability	-	14	-	14	19	18
Regional & Technical Facilities Security	-	0	1	1	1	1
<b>Grand Total</b>	<b>111</b>	<b>22</b>	<b>2</b>	<b>135</b>	<b>173</b>	<b>71</b>

A key improvement program in the Substation Portfolio is Substation Rebuilds.

#### **Substation Rebuilds**

##### Program Summary:

This program focuses on improvements to transmission and distribution (T&D) substations to strengthen the electric grid. This includes (1) hardening and modernizing T&D substations, (2) making upgrades to the latest codes, industry standards and practices and (3) replacing electromechanical and electronic relays. To accomplish this, LUMA will conduct required assessment, repair, and rebuilding of damaged substations per the latest codes, industry standards and practices to improve long term reliability, install Gas Insulated Switchgear (GIS), replace electromechanical and electronic relays, and repair and / or rebuild substations impacted by flooding.

This program will also focus on the demarcation requirements for Transmission and Generation (T&G) assets, required under the T&D OMA, specifically the Scope of Services as set forth in Annex I. The program must also include high accuracy metering to accurately measure power generation into the network and facilitate communication with the system operator. This measurement will provide transparency of total net power generation and energy losses to the network. This demarcation will also be defined in a non-complicated manner to provide LUMA and GenCo operators sufficient clarity regarding the separation of assets to prevent misoperation, and subsequent damage to equipment and / or system outages. This initiative is subject to change based on the recommendations from the Sargent and Lundy Demarcation Study and the plant retirement projections called for in the IRP.

#### Program Benefits:

The benefits of these programs include:

- Improving workplace and public safety by addressing critical substation issues (e.g. missing grounding components, bent structures, etc.) and bringing most substations up to optimum safety levels;
- Increasing service reliability by replacing damaged equipment and bringing most substations to optimum reliability levels;
- Improving resiliency and system restoration times by rebuilding and upgrading assets, deploying Gas Insulated Switchgear, and reducing the susceptibility of high voltage equipment to flooding; and
- Improving employee productivity and efficiency by collating data to support system operations, grid modelling, and asset conditions.

#### *7.3.5 Control Center and Buildings Portfolio*

Control centers are critical facilities that play a vital role in the safe, reliable, and economic performance of the entire electric grid. It is imperative that control center operators have access to tools that provide situational awareness and a comprehensive and integrated visibility of the all the systems—generation, transmission, and distribution. This visibility allows the operators, using real time data, to minimize the impact to customers and the electrical system from outages and system instability that could cause a complete collapse of the system resulting in a black-out scenario.

LUMA's near-term spending in the Control Center & Buildings Portfolio involves a number of improvements in policies, procedures, and technologies that will enable LUMA to better operate the system more reliably and efficiently. LUMA will also invest in rebuilding damaged facilities,

upgrading security systems, and Advanced Distribution Management Systems that enable renewable energy, demand response, and battery storage integration and dispatch. The exhibit below presents a summary of the spending for each of the largest programs in the Control Center & Buildings Portfolio.

EXHIBIT 41: CONTROL CENTER AND BUILDINGS PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, REAL)

Control Center and Buildings Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate	Total Spending Estimate
Critical Energy Management System Upgrades	25	0	-	26	20	6
Facilities Development & Implementation	10	2	2	15	25	44
Control Center Construction & Refurbishment	9	0	-	9	39	26
Warehouse Security	0	1	-	1	1	-
Critical Energy Management & Load Generation Balancing	-	0	0	0	7	13
Critical System Operation Strategy & Processes	-	-	0	0	-	-
<b>Grand Total</b>	<b>45</b>	<b>4</b>	<b>3</b>	<b>51</b>	<b>91</b>	<b>89</b>

Critical upgrades to the Energy Management System (EMS) is one of the key improvement programs in the Control Center & Buildings Portfolio.

### **Critical Energy Management System Upgrades**

#### Program Summary:

This program will replace an obsolete and unsupported EMS and add relevant technology to operate the electric system safely and reliably. This program will also implement an Advanced Distribution Management System (ADMS). The EMS is a computer-based system that is used by operators to monitor, control and optimize the performance on the generation, Transmission and Distribution System.

#### Program Benefits:

The benefits of this program include:

- Improving reliability by providing modern tools for better visibility of equipment operations; and
- Enabling the integration of new energy sources (e.g. renewables, DG, etc.) and energy storage systems through the implementation of new digital technologies.

### 7.3.6 Enabling Portfolio

The Enabling Portfolio is composed of safety and operational excellence programs that provide a safe workplace through new procedures, tools, and training. Investment programs include providing new tools and PPE (including their inventory and management), training in skills and safety for all employees, creating a new program management office specifically designed to handle large capital projects, and implementing new data systems to accurately store and manage data on T&D assets gathered through inspections. LUMA will implement new project and business management procedures and controls to ensure transparent, systematic management of the business and to effectively administer federal grant funding. The exhibit below presents a summary of the spending for each of the largest programs in the Enabling Portfolio.

EXHIBIT 42: ENABLING PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, REAL)

Enabling Programs	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spend Estimate	Total Spending Estimate	Total Spending Estimate
Vegetation Management	-	-	50	50	60	60
Compliance, Studies, Technology & Performance	16	2	-	18	9	8
HSEQ and Technical Training	-	-	15	15	8	5
T&D Fleet	2	8	2	12	29	25
Tools Repair & Management	-	6	-	6	7	5
Asset Data Integrity	-	5	0	5	3	3
Permits Processes & Management	-	-	2	2	2	-
Workflow Processes & Tracking	-	-	1	1	1	10
Materials Management	0	0	0	1	5	5
Project Management Software & Tools	1	-	-	1	-	-
Construction & Commissioning Management Office	1	-	-	1	-	-
Operator Training	-	-	0	0	-	-
Emergency Response Preparedness	-	0	-	0	2	0
Project Controls, Risk Management & Estimating Offices	0	-	-	0	-	-
Capital Programs, PMO & Funding Management Office Setup	0	-	-	0	-	-
<b>Grand Total</b>	<b>20</b>	<b>22</b>	<b>71</b>	<b>113</b>	<b>124</b>	<b>122</b>

A key improvement program in the Enabling Portfolio is vegetation management.

#### Vegetation Management

##### Program Summary:

This program includes work to abate or mitigate immediate vegetation risk in the most critical locations, along with an ongoing program to clear and re-establish rights of way to standard widths. This includes an immediate response for the highest risk sites—those that pose hazards to public safety or routinely experience tree-caused service interruptions—and reclaiming rights of way corridors, specifically those impacting the T&D Systems. The program will also use a field-enabled IT tool to manage the vegetation management program; vegetation management training; and along with ongoing line clearance, pruning, tree removal, herbicides, etc. In

addition, the program will evaluate and pilot an advanced AI remote sensing project to improve vegetation management.

**Program Benefits:**

The benefits of this program include:

- Mitigating public safety risks by correcting the backlog of untrimmed trees;
- Improving system reliability by reducing outages from vegetation-caused line faults (a substantial contributor to the poor reliability of the system);
- Increasing the efficiency of the workforce and the reliability of the system by proactively trimming and managing vegetation in order to reduce the time and challenge of assessing storm damage and improving site access for preventative maintenance; and
- Improving reliability of the system following future hurricanes or other weather events by clearing existing debris and vegetation encroaching on rights of way.

**7.3.7 Support Services Portfolio**

The Support Services Portfolio includes key cross-functional programs that affect/serve all LUMA teams and departments. They include HR programs for attracting and retaining a high performing employee base through standardized processes for performance management, talent management, succession planning, recruitment and onboarding management, learning management, and compensation management. Other programs include implementation of processes and tools to secure information resources while permitting appropriate access to authorized stakeholders at any time and at any location through information systems that are prudently maintained. The portfolio also includes regulatory studies and plans to inform the development of a more detailed roadmap for meeting IRP milestones. The exhibit below presents a summary of the spending for each of the largest programs in the Support Services Portfolio.

**EXHIBIT 43: SUPPORT SERVICES PORTFOLIO SPENDING ESTIMATES BY PROGRAM (USD MILLION, NOMINAL)**

Support Services Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spending Estimate	Total Spending Estimate	Total Spending Estimate
HR Programs	-	0	62	63	64	65
Renewables Integration, Minigrids & Generation Studies	-	3	5	8	4	2
IT OT Asset Management	6	0	1	7	3	6
Update to Third Party Use, Audit, Contract and Billing Procedures	3	-	3	6	4	4
IT OT Cybersecurity Program	-	2	2	4	5	6
IT OT Enablement Program	-	1	2	3	3	4
Critical Financial Systems	-	3	0	3	3	1
Critical Financial Controls	-	-	2	2	1	-

Support Services Programs	FY2023				FY2024	FY2025
	Federal Funded Capital	Non-Federal Funded Capital	OpEx	Total Spending Estimate	Total Spending Estimate	Total Spending Estimate
Land Record Management	-	1	2	2	2	2
Resource Planning and Processes to Improve Resource Adequacy and Cost Tracking	-	-	1	1	-	-
Improvements to Systems Dispatch for Increased Reliability and Resiliency	-	-	1	1	-	-
Land Acquisition & Dispute Management	-	-	1	1	1	-
Financial Management Functions	-	-	1	1	1	1
Waste Management	-	-	0	0	0	0
IT OT Collaboration & Analytics	-	0	-	0	0	2
Integrated Safety & Operational Management System	-	0	0	0	0	0
Safety Equipment	-	0	0	0	0	0
Public Safety	-	-	0	0	0	0
<b>Grand Total</b>	<b>9</b>	<b>10</b>	<b>84</b>	<b>102</b>	<b>92</b>	<b>91</b>

The Renewables Integration, Minigrids, and Generation Studies is a key program within the Support Services Portfolio.

### **Renewables Integration, Minigrids & Generation Studies**

#### Program Summary:

This program involves completing planning, technical studies, program development, and pilot implementation related to support compliance with the IRP and regulatory requirements linked to renewable integration, distributed energy resources and generation. The activities conducted in this program will lead to a coordinated, data-driven approach to the energy transition.

#### Program Benefits:

The benefits of this program include:

- Enabling renewable energy integration by guiding customers and developers to areas, regions, and nodes where renewable resources will add more value to the grid with contained overall cost;
- Improving understanding and planning for the impacts of the integration of renewable energy sources and new technologies and potential mitigation options; and
- Enable the implementation of renewables, distributed energy resources, and potential minigrids by ensuring existing system infrastructure is rebuilt to accommodate these new sources.

## 7.4 Projected impact of LUMA’s improvement portfolios

Through its various improvement portfolios, LUMA expects significant improvements in key performance metrics, as shown below.

EXHIBIT 44: CUMULATIVE IMPROVEMENTS IN PERFORMANCE METRICS PROJECTED BY LUMA<sup>123</sup>

Performance metric	Projected cumulative improvements		
	FY2022	FY2023	FY2024
Customer service	11%	26%	31%
Safety	22%	36%	48%
System Average Interruption Frequency Index (SAIFI)	7%	20%	30%
System Average Interruption Duration Index (SAIDI)	10%	25%	40%

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<sup>123</sup> The performance metrics are subject to the PREB regulatory process and final PREB approval.

## Chapter 8. LUMA Performance Metrics

Electric utilities operate critical infrastructure and are held to high standards of transparency and reporting. This enables effective regulatory oversight, ensures performance is achieved, and builds trust between service providers, regulators, customers, and key stakeholders. A set of performance metrics is a crucial prerequisite to meet these requirements. LUMA, who has assumed the full role of O&M service provider for PREPA's T&D System as of June 1, 2021, will be held to these performance standards.

LUMA will be evaluated against a set of metrics in three categories: 1) customer service metrics; 2) technical, safety, and regulatory metrics; and 3) financial performance metrics. These metrics enable transparency and help assess whether the negative performance trends observed under PREPA (see Chapter 2 for details) have reversed. The metrics LUMA will be reporting on and which it will be measured against are outlined in detail in its T&D OMA.<sup>124</sup> As part of its work during the Front-End Transition period, LUMA has proposed to the Puerto Rico Electric Bureau (PREB) any desired revisions to these performance metrics as well as developing baselines and performance targets for each. Any modifications proposed by LUMA, including the proposed baselines and targets, are subject to final approval by PREB.

To ensure incentives are aligned, LUMA's compensation is tied to achieving certain target thresholds for each of the performance metrics. In other words, LUMA's performance metrics are standards by which LUMA's performance may be measured and incentives are granted if targets are achieved. Incentives will be paid in the form of a variable and capped incentive fee (see Section 8.2).

The following overview summarizes LUMA's performance metrics as presented to PREB in the revised Annex IX of the T&D OMA. On September 24, 2021, LUMA submitted to PREB a Revised T&D OMA Annex IX with a proposed set of performance metrics, baselines, and performance targets for PREB to review, modify if appropriate, and approve.<sup>125</sup> As of the certification of this Certified Fiscal Plan, the proposed Revised Annex IX to the T&D OMA has not been approved by PREB and therefore may change in whole or in part. The proceeding is currently ongoing with written testimonies submitted and discovery performed. PREB's procedural calendar for the review of LUMA's performance metrics has changed numerous times over the last 12 months. The most recent procedural calendar that was set with the Evidentiary Hearing May 16 through 20, 2022 was postponed indefinitely until PREB issues a ruling on several outstanding matters that would impact the proceeding.

### 8.1 Summary of the T&D OMA performance metrics

#### 8.1.1 T&D OMA normal operation performance metrics

LUMA's performance for normal operations will be measured by and evaluated against performance metrics across three major categories:

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<sup>124</sup> Annex IX. Performance Metrics. Puerto Rico Transmission & Distribution System Operation & Maintenance Agreement. June 22, 2020.

<sup>125</sup> Request for Authorization to Submit Revised Pre-Filed Testimony of Melanie Jeppesen, Second Amended Revised Annex IX to the OMA, and Redline of Second Amended Revised Annex IX to the OMA. In Re: Performance Targets for Luma Energy ServCo, LLC. Case No. NEPR-AP-2020-0025. = September 24, 2021.



1. **Customer service metrics** to ensure LUMA is achieving a high-level of customer satisfaction across all customer classes
2. **Technical, safety, and regulatory metrics** to verify LUMA is operating a safe, reliable electric grid while remaining compliant with applicable safety, environmental, and other regulations
3. **Financial performance metrics** to ensure LUMA is operating sustainably within the Operating and Capital Budgets (both federally funded and non-federally funded)

LUMA’s metrics, by category, and a description are included in Table 6. This overview reflects the revised Annex IX of the T&D OMA as filed with PREB on September 24, 2021. As discussed above, PREB has not yet approved these proposed performance metrics.

TABLE 6: OVERVIEW OF T&D OMA PERFORMANCE METRICS<sup>126</sup>

	<b>Metric</b>	<b>LUMA description</b>
<b>Customer service metrics</b>	J.D. Power Customer Satisfaction Survey (Residential Customers)	Third party measure of customer satisfaction
	J.D. Power Customer Satisfaction Survey (Business Customers)	Third party measure of customer satisfaction
	Average speed of answer (minutes)	The average wait time from the moment the customer enters the Automated Call Distribution (ACD) queue to the time the call is answered by an agent
	Customer complaint rate	Total annual complaints registered with PREB divided by the total number of customers and then multiplied by 100,000
	Abandonment rate	The percentage of callers who hang up (abandon) while the call is still in the ACD queue
<b>Technical, safety, and regulatory metrics<sup>127</sup></b>	Occupational Safety & Health Administration (OSHA) Recordable Incident Rate	Total number of OSHA recordable incidents as a result of work-related injury
	OSHA Fatalities	All work-related fatalities
	OSHA Severity Rate	Total number of work-related injuries with severity days (both restricted and lost time days)
	OSHA Days Away Restricted or Transferred (DART) Rate	Total number of OSHA recordable cases with lost-time days (away, restricted or transferred)
	System Average Interruption Frequency Index (SAIFI)	Indicates how often the average customer experiences a sustained interruption over a predefined period of time
	System Average Interruption Duration Index (SAIDI)	Indicates the total duration of interruption for the average customer during a predefined period of time

<sup>126</sup> Subject to final PREB approval

<sup>127</sup> The descriptions for SAIFI and SAIDI are from the Institute of Electrical and Electronics Engineers (“IEEE”) Guide for Electric Power Distribution Reliability Indices IEEE Std. 1366™-2012.

	<b>Metric</b>	<b>LUMA description</b>
	Distribution Line Inspections & Targeted Corrections	The number of distribution line inspections completed, with data recorded in a database for analysis. Category 0 and Category 1 findings shall be incorporated in a plan to be addressed within 60 days of identification.
	Transmission Line Inspections & Targeted Corrections	The number of transmission line inspections completed, with data recorded in a database for analysis. Category 0 and Category 1 findings shall be incorporated in a plan to be addressed within 60 days of identification.
	T&D Substation Inspections & Targeted Corrections	The number of distribution and transmission substation inspections completed with data recorded in a database for analysis. Category 0 and Category 1 findings shall be incorporated in a plan to be addressed within 60 days of identification.
<b>Financial performance metrics</b>	Operating budget	Measures ability to stay within budget
	Capital budget: federally funded	Measures ability to stay within budget
	Capital budget: non-federally funded	Measures ability to stay within budget
	Overtime	Measures ability to manage overtime costs under normal operations (excluding emergency events)
	Days Sales Outstanding (DSO) - General Customers	Measures ability to collect bills from general customers
	Days Sales Outstanding (DSO) - Government Customers	Measures ability to collect bills from government customers

The Revised Annex IX includes modifications to the draft Annex IX within the T&D OMA through proposed additions, deferrals, and deletions, which are currently under review by PREB and are further detailed below. Most deferrals are due to limited or insufficiently accurate operation data to develop a baseline or target performance. LUMA’s proposed modifications are under review by PREB. Some of these the key deferrals or deletions are further explained below for clarification: Deferrals:

- **First Call Resolution (FCR):** PREPA’s systems historically did not have the ability to track and report FCR. LUMA proposed deferring the calculation and reporting of this metric until a new cloud-based Contact Center platform is fully implemented and FCR performance tracking can be established. This is currently targeted for Year 2.
- **Customers Experiencing Multiple Interruptions (CEMIN):** Due to data quality issues, including lack of accurate customer information and lack of customer connectivity in the Outage Management System, LUMA proposed deferring CEMIN until after the information can be corrected and a baseline accurately determined, currently expected to be Year 4.
- **Momentary Average Interruption Frequency Index (MAIFI):** Due to data availability and quality issues, LUMA recommended deferring the MAIFI metric until it can be accurately

measured. This requires replacing the Energy Manage System which is currently targeted for year 4 or 5.

- **Reduction in Network Line Losses:** PREPA does not currently allocate losses to the components of the system. Such allocation requires the development of an appropriate model, as well as additional metering and other measures. This is currently targeted for Year 2.
- **Customer Average Interruption Duration Index (CAIDI):** Proposed eliminating based on growing industry concerns that CAIDI is very limited as a performance metric. Since CAIDI is the ratio between SAIDI and SAIFI, CAIDI can be misleading because it can remain the same even when the SAIDI and SAIFI values decrease.

Most performance metrics in the T&D OMA Annex IX have three (3) calculated performance levels; (1) an initial baseline level based on historical operating data or an analysis subject to approval by PREB; (2) a target level expected to be achieved over the initial three-year period and determined by consideration of past performance, effort and resources required and available to achieve performance improvements, including available budgets; and (3) a minimum level for eligibility to earn credit towards the Incentive Fee for that particular metric. On the other side, four (4) metrics will be binary: OSHA fatalities; operating budget; capital budget: federally funded; and capital budget: non-federally funded. For binary metrics, failing to meet the metric is equivalent to missing the minimal performance level and LUMA will be ineligible to earn credit towards the Incentive Fee through that particular metric.

A subset of the performance metrics has been designated Key Performance Metrics. If LUMA fails to meet the determined minimum performance level for any three Key Performance Metrics for three consecutive contract years and this failure is not excused by a Force Majeure Event, Outage Event, or Owner Fault, then LUMA shall be in a Minimum Performance Threshold Default of the T&D OMA. A list of proposed Key Performance Metrics are included in the T&D OMA and are as follows:

1. **Customer service metrics:** Average Speed of Answer and Abandonment Rate;
2. **Technical, safety, and regulatory metrics:** OSHA Fatalities, OSHA Severity Rate, SAIFI, SAIDI, and Distribution Line Inspections & Targeted Corrections;
3. **Financial performance metrics:** Operating Budget, Capital Budget: Federally Funded, and Capital Budget: Non-Federally Funded.

### 8.1.2 T&D OMA Major Outage Event Performance Metrics

The T&D OMA also includes a set of Major Outage Event Performance Metrics to measure LUMA's performance during a Major Outage Event. For the purposes of the T&D OMA and Major Outage Event Performance Metrics, a Major Outage Event is defined as:<sup>128</sup>

“Major Outage Event” means an event as a result of which (i) at least two hundred and five thousand (205,000) T&D Customers are interrupted for more than 15

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128 As stated in Section 2.8 of Request for Authorization to Submit Revised Pre-Filed Testimony of Melanie Jeppesen, Second Amended Revised Annex IX to the OMA, and Redline of Second Amended Revised Annex IX to the OMA In Re: Performance Targets for Luma Energy ServCo, LLC, Case No. NEPR-MI-2020-0025, September 24, 2021.

minutes or (ii) at any point in time during the event, there are one thousand five hundred or more ( $\geq 1,500$ ) active outage events for the T&D System, which are tracked in the Outage Management System (OMS). The major outage event is deemed ongoing so long as the interruptions/outages continue to remain above the stated cumulative amounts, in each case for a period of twenty-four hours or longer ( $\geq 24$ ) and are caused by an act of God. If such an act of God is a storm, the storm must be designated as a named storm by the U.S. National Weather Service or a State of Emergency declared by the Government of Puerto Rico. The major outage event shall be deemed to have ended when the cumulative number of T&D customers remaining interrupted falls below ten thousand (10,000) for a continuous period of eight (8) hours.

The T&D OMA Annex IX metrics for a Major Outage Event and a description of each metric are included in Table 7.

TABLE 7: OVERVIEW OF T&D OMA MAJOR OUTAGE EVENT PERFORMANCE METRICS<sup>129</sup>

<b>Metric</b>	<b>Description</b>
1. Preparation Phase	Completion of steps to provide timely and accurate emergency event preparation following an alert from U.S. National Weather Service or the company's private weather service, in accordance with the Emergency Response Plan, for an event expected to impact the company's service territory.
2. Downed Wires	Response to downed wires reported by municipal public Officials
3. Damage Assessment	Completion of preliminary damage assessment
4. Crewing	50% of the forecast crewing [from mutual assistance] committed to the utility.
5. Estimated Time of Restoration (ETR) for 90% of Service Outages	Estimated Time of Restoration for 90% of service outages (made available by utility on web, IVR, to Customer Service Representatives (CSRs), etc.)
6. ETR Accuracy for 90% of Service Restoration	Regional ETR accuracy Municipal ETR accuracy
7. Municipality Coordination	Coordination with municipalities regarding road clearing, down wires, critical customers, etc.
8. Municipal Emergency Operation Centers (EOC) Coordination Puerto Rico Commonwealth/Federal EOC Coordination	Coordination with municipal Puerto Rico Commonwealth and Federal EOCs.
9. Utility Coordination	Coordination with other utilities (communications, water, etc.)
10. Safety	Measure of any employee or contractor injured doing hazard work during storm/outage and restoration
11. Mutual Assistance	Crew requests made through all sources of mutual assistance or other pre negotiated contracts with utility service providers

<sup>129</sup> Subject to final PREB approval.

<b>Metric</b>	<b>Description</b>
12. Call Answer Rates	Customer calls answered by properly staffed call centers (use of IVR and other technology is an acceptable solution).
13. Web Availability	Company’s website, specifically the section pertaining to outage impact and restoration, must be available around the clock during a major storm event and information must be updated hourly until final restoration. In the event no new information is available, the web site must display the last time and date that information was updated. The web site and/or section pertaining to outage impact and restoration may be taken offline for a short period during off peak hours to perform system maintenance.
14. PREB and Administrator (P3A) Reporting	Provide storm event information to PREB and Administrator (P3A) in accordance with Electric Outage Reporting System guideline requirements to be established in the ERP for LUMA.
15. Customer Communications	Availability of press releases, text messaging, email and social media.
16. Outgoing message on telephone line	Recorded message providing callers with outage information is updated within two hours of communication of press releases.

### 8.1.3 T&D OMA performance metrics revision cadence

Within LUMA’s Revised Annex IX submission, LUMA proposes that the performance metrics for both normal operation and a Major Outage Event, as well as the baseline, target, and minimum performance levels, remain through the third contract year. The draft Annex IX proposes five-year revision cadence, however given the quality of the PREPA data and the speed of change within the first Contract Years of the T&D OMA, LUMA proposed reviewing metrics prior to the fifth contract year. Any changes to the performance metrics must be reviewed and may be submitted to PREB for approval.

## 8.2 Incentive Fee calculation approach

LUMA’s performance in the contract year as measured against the normal operation performance metrics shall determine LUMA’s eligibility to the T&D OMA Incentive Fee. Each category of metrics is allocated a percentage of the incentive compensation pool and each metric within the category is assigned a certain number of base points. Customer service metrics and financial performance metrics are allocated 25% of incentive compensation pool each while technical, safety, and regulatory metrics are allocated 50%. If LUMA exceeds the minimum performance level for a particular metric, LUMA may earn from 25% to 150% of the base point value for that metric depending on the extent to which LUMA exceeds the minimum performance level. The more LUMA exceeds the minimum performance level, the larger the multiplier on the base point value. This process is repeated for all metrics and categories to determine LUMA’s overall point score and the corresponding Incentive Fee.<sup>130</sup> For the first contract year, performance levels will be adjusted proportionately if the service commencement date occurs after the beginning of the fiscal year.

<sup>130</sup> Further information on this process and an example Incentive Fee calculation can be found in the OMA at <https://www.p3.pr.gov/wp-content/uploads/2020/06/executed-consolidated-om-agreement-td.pdf>

Finally, if any Major Outage Event (including a Major Outage Event that is a Force Majeure Event) prevents LUMA from achieving one or more of the normal operation performance metrics, LUMA is still entitled to earn the Incentive Fee for the period of the Major Outage Event as long as LUMA achieves the Major Outage Performance Metrics during such period of time.

# Chapter 9. Operational Measures

## 9.1 PREPA Operational Measures

### 9.1.1 Overview

Operational measures defined in previous PREPA Certified Fiscal Plans remain imperative for the transformation of Puerto Rico’s energy sector. Together, these measures span all aspects of the energy service value chain – generation, transmission and distribution, and customer service – and address chronic issues in electric service reliability, safety, sustainability, and affordability.

Consistent with requirements set forth in PROMESA Section 201(b) and guidance provided by the Oversight Board, PREPA, as a covered territorial instrumentality, is required to identify and describe operational improvements necessary or beneficial to achieve its fiscal targets and advance the energy sector transformation goals described in Chapter 3 (Transformation). The Certified Fiscal Plan broadly defines “operational measures” as groups of projects or activities that share a common theme and are targeted at revenue enhancement, expense savings and/or performance improvements. PREPA must continue working on implementing multiple measures for its remaining operations, as it works with P3A to achieve the Commonwealth Government’s vision and the Certified Fiscal Plan’s requirements FY 2022.

### 9.1.2 Key Accomplishments for FY 2022

Over the course of the past fiscal year, PREPA made progress towards several key operational measures as part of its transformation. However, much work remains to be done to complete other operational measures across PREPA’s generation assets and T&D System. Highlights of key accomplishments are presented below.

- **Fuel Procurement:** At the beginning of FY 2022, PREPA issued RFPs for both diesel and bunker-C and completed the evaluation and selection process by the end of September and October, respectively. Both RFPs attracted considerable market interest and resulted in improved terms to PREPA when compared to prior agreements
  - On October 29, 2021, PREPA executed a \$606 million fuel contract with Puma Energy Caribe LLC for bunker-C fuel. The contract price adder in the competitively procured agreement represents an ~33% price reduction compared to the previous bunker-C fuel supply contract.
  - On November 18, 2021, PREPA executed a \$265.5 million diesel fuel supply contract with Novum Energy Trading Inc. The contract price adder in the competitively procured agreements represents a 19% savings when compared to the terms provided by the previous diesel supplier, Puma Energy Caribe LLC, which was PREPA’s sole provider of diesel fuel since 2014.
- **Renewable PPOA procurement:** Although the process is delayed, PREPA selected 18 projects that represented savings when compared to prior pricing terms achieved through non-competitive means. However, all these projects are still pending final negotiations and execution and have not commenced construction.

### 9.1.3 Overview of PREPA Initiatives for FY2023

As LUMA continues to advance remediation and transformation of the T&D System, and as the new Legacy Generation operator begins its transition period, PREPA must continue to implement interim initiatives on generation asset-related initiatives, Title III-related financial reporting and implementation requirements, and support of Legacy Generation P3 and reorganization efforts needed to complete the transformation objectives.

TABLE 8: FY2023 INITIATIVES

<b>FY2023 Initiative Category</b>	<b>Initiative List</b>
1) Renewable Procurement	1.1 Renewable Generation & Battery Storage RFP
2) Fuel Supply	2.1 Fuel Needs and Cost Analysis
	2.2 Diesel Fuel Supply Contract
	2.3 Bunker Fuel Supply Contract
3) Generation Repair and Maintenance	3.1 Federally Funded Generation Capacity
	3.2 San Juan Repairs
	3.3 Plant Maintenance Program
	3.4 Environmental Regulatory Compliance Program
4) Pension Reform	4.1 Pension Plan Reform Implementation
5) PREPA Reorganization and Legacy Generation P3	5.1 Legacy Generation P3 Transition
	5.2 PREPA Reorganization Implementation
6) Net Metering Program	6.1 Study on Net Metering and DG

#### 9.1.3.1 RENEWABLE PROCUREMENT

In PREB’s final order on the IRP, it ordered PREPA to develop and execute a plan to procure renewable generation and battery storage in a series of six (6) tranches. On February 22, 2021, PREPA issued an RFP for up to 1,000 megawatts of renewable power production and up to 500 MWs of battery storage, incorporating recommendations from PREB and the Oversight Board. The RFP solicits proposals for the design, construction, installation, ownership, operation, and maintenance of renewable energy resources, energy storage resources, and VPPs for sites across Puerto Rico and for a service period of up to 25 years. On February 2, 2022, PREB approved 18 of the solar PPOAs recommended by the Evaluation Committee.

As it relates to the Tranches 2 through 6, PREB has not yet clarified the timeline for issuance of these tranches nor certain key details on process. On June 9, 2022, PREB issued a resolution and order establishing PREPA and LUMA’s respective roles in any future tranche. Some of PREPA’s responsibilities include, but are not limited to: (a) Select one (1) PREPA Governing Board member, selected from the members appointed by the Governor at his sole discretion to form part of the Selection Committee; (b) Provide guidance and input to the Energy Bureau and PREB-IC concerning the lessons learned of Tranche 1 to ensure they are incorporated in future tranches; (c) Provide legal advice and resources in ensuring the RFP documents, including the PPOAs to be included as part of the RFP and final contracts execution. On the other hand, the roles and duties of LUMA include, but are not limited to: (a) Select one (1) LUMA officer, with knowledge and/or experience in similar transactions, to form part of the Selection Committee; (b) Provide any data and information required by the PREB-IC; (c) Provide guidance and input to the Energy Bureau and PREB-IC concerning the lessons learned of Tranche 1 regarding interconnection studies,



system impacts and other related technical matters to ensure they are incorporated in future tranches. Finally, PREB also reiterated that any final decisions required during the RFP process shall be determined by the PREB and that PREPA and LUMA’s roles shall in no manner delay the RFP process.<sup>131</sup>

TABLE 9: RENEWABLE PROCUREMENT – REVISED POTENTIAL TIMELINE

Projects	#	Milestones	Proposed Deadline
Renewable Generation & Battery Storage RFP	1	Execute Tranche 1 RFP PPOA’s approved by PREB and FOMB	Q1 FY2023
	2	Issue RFP for Tranche 2	Q1 FY2023
	3	Issue RFP for Tranche 3	Q3 FY2023
	4	Issue RFP for Tranche 4	Q1 FY2024
	5	Issue RFP for Tranche 5	Q3 FY2024
	6	Issue RFP for Tranche 6	Q1 FY2025

### 9.1.3.2 FUEL SUPPLY

PREPA’s current Light Distillate No. 2 Fuel Oil (“diesel”) and bunker fuel (“HFO”) supply and delivery contracts expire on October 29 and November 18, 2022, respectively, but include an optional one-year extension under the same terms and conditions as the current contracts. In light of this, prior to issuing an RFP for future diesel and HFO contracts, PREPA must analyze whether a competitive procurement process is expected to yield more favorable results than those that PREPA would maintain if it elected to extend the existing agreements. Should PREPA conclude a competitive procurement process would be most beneficial, it must endeavor to begin such process as early as possible, as reflected in Table 10 below.

TABLE 10: FUEL SUPPLY ACTION PLAN

Projects	#	Milestones	Proposed Deadline
Diesel Fuel Supply	1	Begin Fuel Needs & Cost Analysis	May 2022
	2	Begin competitive process to award a new contract for diesel fuel supply, if determined to be in PREPA’s best interest.	June 2022
	3	Finalize competitive process to award a new contract for diesel fuel supply, if determined to be in PREPA’s best interest.	September 15, 2022
	4	Finalize agreement with selected supplier and seek approval to execute the contracts with the PREPA Governing Board and the Oversight Board	October 31, 2022
	5	Current contract expires	November 18, 2022
	6	Commence new contract	November 19, 2022
Bunker Fuel Supply	1	Begin Fuel Needs & Cost Analysis	May 2022
	2	Begin competitive process to award a new contract for bunker fuel suppliers, if determined to be in PREPA’s best interest	June 2022

<sup>131</sup> Resolution and Order, Roles of PREPA and LUMA in the Procurement Process for Upcoming Tranches, In Re: The implementation of the Puerto Rico Electric Power Authority integrated resource plan and modified action plan, Case No. NEPR-MI-2020-0012, June 9, 2022

Projects	#	Milestones	Proposed Deadline
	3	Finalize agreement with selected supplier and seek approval to execute the contracts with the PREPA Governing Board and the Oversight Board	August 31, 2022
	4	Current contract expires	October 29, 2022
	5	Commence new contract	October 30, 2022

### 9.1.3.3 GENERATION PLANNING AND MAINTENANCE

During FY 2023, PREPA will undertake measures to execute on critical maintenance work for generation plants and implement performance improvement projects. PREPA's necessary maintenance plan for FY2023 was prepared against the backdrop of the forced outages and ensuing blackouts during 2021 that impacted nearly all of Puerto Rico, along with recent ongoing outages, including the most recent island-wide blackout in early April 2022, as well as ensuring that the legacy generation system can achieve a minimum level of reliability, stability, compliance, and ability to maintain sufficient reserves to avoid severe outage incidents.

PREPA's Governing Board, approved an emergency declaration on October 8, 2021 authorizing the use of emergency procurement procedures to: (i) address immediate repairs; (ii) support scheduled maintenance programs; and (iii) maintain necessary reserves to avoid future major plant outages.

#### EXHIBIT 45: REVISED & UPDATED MAINTENANCE SCHEDULE

GenCo's Outage Schedule		
Unit	Capacity	Outage Schedule Timeline
SJ CC 5	2020	NA
SJ CC 6	220	NA
SJ 7	100	March 2023 – June 2023
SJ 8	100	November 2022 - January 2023
SJ 9	100	October 2022 – November 2022
SJ 10	100	NA
PS 3	6216	January 2023 – April 2023
PS 4	216	May 2023 – June 2023
CS 5	410	November 2022 – February 2023
CS 6	410	May 2023 – June 2023
AG 1	450	NA
AG 2	450	March 2023 – April 2023

One of the key areas of focus for planned maintenance for FY2023 is the projects at the San Juan Combined Cycle Power Plant, units 5 and 6, which are PREPA's most modern base load units with the capability to burn diesel or natural gas. Both units supply roughly 35% of load for the north region and 15% for the rest of the island with efficient, environmentally compliant, and reliable energy. These units are fueled with natural gas, which offers a reduction of 90% in SO<sub>2</sub> emissions rates compared with diesel fuel oil within an area classified by the U.S. Environmental Protection

Agency (EPA) as a non-attainment area. Potential emissions from other pollutants such as PM, PM<sub>10</sub>, PM<sub>2.5</sub>, H<sub>2</sub>SO<sub>4</sub>, NO<sub>x</sub>, and CO were also reduced due to the implementation of the San Juan 5 and 6 natural gas conversion, and the emission limits accompanied by these efforts. The reliability and availability of San Juan Units 5 and 6 is critical to maintain a stable and efficient electrical system. By running San Juan Units 5 and 6 at higher capacity factors with natural gas, PREPA has been able to reduce its reliance on other generating units that consume heavy fuel oil, yielding additional emissions reductions. With these units, PREPA can achieve significant reductions in air emissions, at lower generation costs.

PREPA is planning to perform major maintenance and repairs on San Juan unit 6 during FY 2023, after the peak summer months have passed. Furthermore, PREPA plans to complete the necessary Installation of Modules D & E, Heat Recovery Steam Generator and the Supply and the Installation (Replacement) of the Online Condenser Cleaning System of Unit 5.

PREPA's maintenance plan will also address the Hydrogas and Cambalache Division power plants, which includes the 220MW of capacity at Mayagüez, 248MW of capacity at Cambalache (165MW excluding Unit1), and 378MW of capacity from the 18 Frame 5 peaking and emergency backup units distributed across the island at various power plant complexes and distributed peaking facilities. PREPA routinely faces capacity limitations and a total lack of availability at these power plants, and units, which are responsible for immediate emergency response and electrical grid restoration during load sheds and after blackouts. Greater availability of these units could have mitigated or avoided altogether the most recent blackout event that occurred starting on April 6, 2022. PREPA FY 2023 Generation NME Budget includes major inspection, maintenance, and repairs at most of the Division's facilities, including annual costs of the LTSA for Cambalache and specific projects for maintenance of Mayagüez and the 18 Frame 5 peaking units. Maintenance and repairs costs at Mayagüez also include expansion of water demineralization capacity to ensure adequate production availability for the full plant operation.

### **Natural Gas Generation**

PREPA is evaluating the use of federal funding to install new base load gas powered generation in the North of the island to improve reliability, allow for orderly integration of renewables, and lower overall generation costs for the benefit of Puerto Rico. PREPA is also evaluating the expansion of certain units' capability to use natural gas with federal funding. To that end, on February 11, 2022, PREPA submitted a motion before PREB titled *Petition for Leave to Conduct Works in PREPA's Steam Units to Achieve Environmental Regulatory Compliance*, on PREB docket no. NEPR-MI-2021-0002.

PREPA is seeking leave from PREB to pursue the conversion of San Juan units 7-10 to natural gas as a potentially necessary step to achieve attainment with the 2010 1-Hour SO<sub>2</sub> National Ambient Air Quality Standard (NAAQS) in the San Juan air district. Doing so would enable PREPA to avoid costly sanctions and achieve compliance with the Mercury and Air Toxics Standards (MATS) required by EPA, 40 CFR 63 Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants. The MATS became effective on April 16, 2012, at the San Juan site, if the IRP renewable deployment schedule is delayed.

#### 9.1.3.4 PENSION REFORM

Please refer to Chapter 15 (Pension Reform) for a detailed discussion regarding the challenges faced with PREPA's employee retirement system

#### 9.1.3.5 PREPA REORGANIZATION AND LEGACY GENERATION P3

To achieve Puerto Rico's energy system transformation, a change in PREPA's historical roles and responsibilities and their reassignment through multiple entities is imperative. Accordingly, PREPA's vertically integrated operations to be disaggregated into Generation and T&D utility functions – GenCo and GridCo, respectively. GenCo is comprised of existing PREPA-owned generation resources that are to be operated and maintained by one or more private operators until their retirement, as mandated by Act 17-2019<sup>132</sup> and outlined in PREPA's approved Integrated Resource Plan. In addition to the selection of LUMA as the T&D operator, Puerto Rico's transformed energy sector also rests on the GenCo private operator(s) as the party responsible for, among other activities, the operation and maintenance of existing PREPA-owned generation resources, environmental compliance, safety, and plant retirement and decommissioning. Additionally, the private operator(s) will be responsible for working closely with LUMA to ensure appropriate short-, mid-, and long-term system planning and timely and efficient execution of system-wide capital improvements. As such, on November 10, 2020, the P3A issued a RFP to select one or more private operators for PREPA's existing generation assets. (See Chapter 3)

In addition to the measures outlined above, PREPA must play an integral role in the Front-End Transition to the legacy generation P3 O&M service provider in FY 2022, in accordance with the milestones and requirements specified in the O&M agreement. In FY2023, PREPA must continue to advance and complete corporate reorganization activities (see Table 11 below for objectives and milestones).

TABLE 11: GENERATION FRONT-END TRANSITION AND REORGANIZATION PLAN

Projects	#	Milestones	Proposed Deadline
Front-End Transition to Legacy Generation P3 Service Provider	1	Formation of teams and development of plans to prepare the organization for financial, operational, and legal transition	July 1, 2022
	2	Complete all other conditions and requirements before Service Commencement Date	TBD <sup>133</sup>
PREPA Reorganization Plan Implementation	1	Submit subsidiaries for approval by PREB	July 31, 2022
	2	PREB to issue its determination on the creation of the subsidiaries	August 30, 2022
	3	Submitting an updated work plan with detailed dates and workstreams.	August 30, 2022
	4	Finalize the creation of the subsidiaries: GenCo, GridCo, HydroCo, PropertyCo and HoldCo (including defined roles and responsibilities)	August 30, 2022
	5	Finalization and execution of the GGHOA	September 30, 2022
	6	Transferring of Assets (capital agreements)	February 28, 2023

<sup>132</sup> The Puerto Rico Energy Public Policy Act, Act No. 17 of April 11, 2019

<sup>133</sup> Subject to the milestones for service commencement once the OMA is signed.

### 9.1.3.6 STUDY ON NET METERING AND DISTRIBUTED GENERATION

As provided in Act 114-2007, as amended by Act 17-2017, existing customers who have installed distributed generation (i.e. rooftop solar) systems and who participate in the net metering program are entitled to receive a credit for the excess energy exported to the grid that is equal to the cost of the energy purchased from the grid. On other words, the energy exported to the grid is purchased by LUMA at the same price (the prevailing retail electricity rate) as the energy purchased by the customer from LUMA. Under Act 17-2019, this same compensation and credit structure will apply to new net metering customers, at least until April 11, 2024 (5-years from the enactment of Act 17-2019), and until PREB concludes a study on net metering and distributed energy and issues a determination establishing a new net metering compensation and crediting structure.

While renewable DG provides unquestionable benefits to rooftop solar customers and the system as a whole, a sub-optimal net metering program may have unintended detrimental effects and risks an unequitable distribution of costs throughout the system. Similarly, by requiring LUMA to purchase the excess energy produced by net metering customers at the prevailing energy rate, the effective cost to ratepayers of the renewable energy generated by net metering customers may be higher than the cost of purchasing that same quantity of electricity from other resources. As of June 2022, LUMA was required to pay \$0.28 for each kWh of energy exported to the grid by net metering customers, a cost that is then passed on, on whole or in part, to all other remaining customers.

Accordingly, as required by Act 17-2019, PREB must commence the net metering and distributed generation study contemplated in Section 4 of Act 114-2007, as amended by Act 17-2019, which study must be concluded by June 30, 2023. Thereafter, PREB must initiate a process for implementing the conclusions and recommendations of the study and updating a net metering compensation and crediting structure, which process must be concluded on or before April 11, 2024, with the updated net metering structing coming into effect on that same date.

TABLE 12: STUDY ON NET METERING AND DISTIRBUTED GENERATION

Projects	#	Milestones	Proposed Deadline	Responsible Party
Study on Net Metering and DG	1	Conclude study on net metering and distributed generation required by Section 4 of Act 117-2007, as amended by Act 17-2019	June 30, 2023	PREB
	2	Conclude administrative proceeding to establish updated net metering compensation and crediting structure	On or before April 11, 2024	PREB
	3	Implement updated net metering compensation and crediting structure	April 11, 2024	PREB

## 9.2 LUMA Operational Measures

In April 2022, LUMA submitted its Annual Budgets and update to the SRP to PREB for approval. These filings are closely interrelated and are aligned through LUMA’s Recovery and

Transformation Framework. The Framework seeks to align T&D System O&M Services with current Puerto Rico public energy policy.

The activities proposed within LUMA's filings aim to improve safety for utility employees and the people of Puerto Rico (including better training and safety equipment), improving customer experience, including faster response and resolution times, greater service reliability, and overall, more effective delivery of utility services. LUMA also anticipates it will complete significant remediation and improvement work to the utility grid across Puerto Rico, while driving operational excellence through system measures. Further, the activities described in LUMA's filings will lay the groundwork for grid modernization, digital transformation, and renewable energy integration called for in Act 17-2019<sup>134</sup>, as well as this and prior Certified Fiscal Plans, and outlined in the Modified Action Plan of PREPA's Integrated Resource Plan (IRP).

The information presented below is a summary of the initiatives included in LUMA's Annual Budgets and SRP. LUMA's improvement programs have been organized into portfolios of similar, interdependent programs that together cover all functional areas of the utility. The following overview describes the seven (7) portfolios at a high level.

The **customer service portfolio** includes a set of programs to improve customer service through modernized customer service technology, improve billing systems, implement advanced metering infrastructure, establish a "Voice of the Customer" program, and upgrade and replace distribution streetlights.

The **distribution portfolio** includes improvements to the distribution system, including overhead and underground distribution line rebuilds, pole and conductor repairs, system inspections, spot repairs and replacements as needed, and implementation of technology that enables better planning.

The **transmission portfolio** includes improvements to the transmission system, including line rebuilds and hardening, priority pole replacements, system inspections and spot repairs with replacements as needed, and improved transmission monitoring systems, as well as telecommunications investments to improve first responder and emergency response communication and centralized monitoring and control.

The **substations portfolio** includes investments to rebuild, harden, and modernize transmission and distribution substations, including physical security upgrades, and studies to eliminate major cascading outages and ensure system compliance with codes and regulations.

The **control center & buildings portfolio** includes investments in rebuilding damaged facilities, upgrading security systems, and implementing energy and advanced distribution management systems that enable renewable energy, demand response, and battery storage integration and dispatch.

The **enabling portfolio** includes a number of safety and operational excellence programs and initiatives including the provision of new tools and Personal Protective Equipment (PPE), skills and safety training for all employees, a new program management office to plan and execute large

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<sup>134</sup> The Puerto Rico Energy Public Policy Act, Act No. 17 of April 11, 2019.

capital projects, a new data system to manage T&D asset data, and vegetation and fleet management.

The **support service portfolio** includes cross-functional programs that service all departments, such as Human Resources (HR), IT / OT, and finance. This portfolio also includes studies on renewables integration and minigrids.

More details on the improvement portfolios, including a summary of annual spending estimates for each portfolio for FY 2022 through FY2024, are provided in Chapter 7 (LUMA Improvement Portfolios).

As part of LUMA's obligations under the T&D OMA, LUMA has assumed reporting of certain statistics related to the T&D System and system planning. LUMA reports these statistics along with PREPA's generation related statistics to PREB quarterly as part of PREB's review of the Performance of the Puerto Rico Electric Power Authority within docket NEPR-MI-2019-0007. Since commencement, LUMA's implementation of improvement programs described within the seven portfolios and in Chapter 7 (Improvement Portfolios), has resulted in several improvements to system statistics include faster customer service with wait times both for customers visiting one of LUMA's 25 customer service centers and for those calling one of LUMA's on-island customer contact centers. LUMA answered calls 94% faster than the first quarter of FY 2022 and reducing wait times at customer service centers by 25%. Further, during the second quarter of FY 2022, LUMA received 44% fewer customer complaints, the lowest number in Puerto Rico since Act57-2017 complaints started to be recorded. LUMA has also put into service more than 590 vehicles enabling crews to attend outages quicker and have provided modern and functional tools and personal protective equipment for its employees as well as over 50,000 hours of safety and technical training for LUMA employees to enable them to perform the work safely and more effectively.

# Chapter 10. Legal and Regulatory Structure

## 10.1 Overview of Regulatory Structure and Key Legislation

### Historical Context

For much of its history, PREPA was structured as an unregulated monopoly, it did not have a strong, independent third-party regulator. The successful transformation of Puerto Rico's energy sector into a safe, reliable, affordable, and modern system depends on the presence and active involvement of a rational, politically independent, and professionally supported regulator. The utility industry has long recognized that an independent regulator is critical to overseeing the performance of utility energy service providers and protecting the interests of consumers. The regulator plays a vital role in ensuring that: (i) energy rates are just and reasonable; (ii) targets for quality of service, efficiency improvement, and renewable resources are met; and (iii) capital spending programs are implemented on time and budget.

The Puerto Rico Energy Bureau (PREB) was established by Act 57-2014 as an independent and professional regulatory body to promote and enable the transparent implementation of Puerto Rico's energy policy. Act 57-2014 also established standards and procedures for PREB to assess and approve electricity rates, requiring that rates be "just and reasonable, as well as consistent with sound fiscal and operational practices which result in a reliable service at the lowest reasonable cost."<sup>135</sup>

As Puerto Rico's energy sector continues its transformation into a reliable, sustainable, modern and efficient system, PREB will be responsible for promoting prudent investments, assuring increased quality of service to customers, and ensuring industry trends and technological advancements are appropriately incorporated into Puerto Rico's energy system.<sup>136</sup> To fully achieve its purpose, PREB must remain financially and operationally independent from the Commonwealth Government and its determinations must be free from any direct or indirect political influence or interference.

Several legislative acts have strengthened the regulatory framework and empowered PREB with greater authority and independent administrative budget, setting forth ambitious goals for private sector operations and revitalization of the energy sector.

### Act 17-2019

Act 17-2019 established a comprehensive energy policy that sets forth aspirations for the transformation of Puerto Rico's electric sector and establishing regulatory guidelines for the realization of these goals. Key tenets and requirements of the Act include:

- **Unbundling – Functional Reorganization:** The Act requires the unbundling of the electric system through the transfer of operation and maintenance responsibilities of PREPA's transmission and distribution (T&D) and generation assets to private operators, thereby ending PREPA's existing vertically integrated monopoly.

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<sup>135</sup> Act 57-2014, as amended.

<sup>136</sup> Ibid.

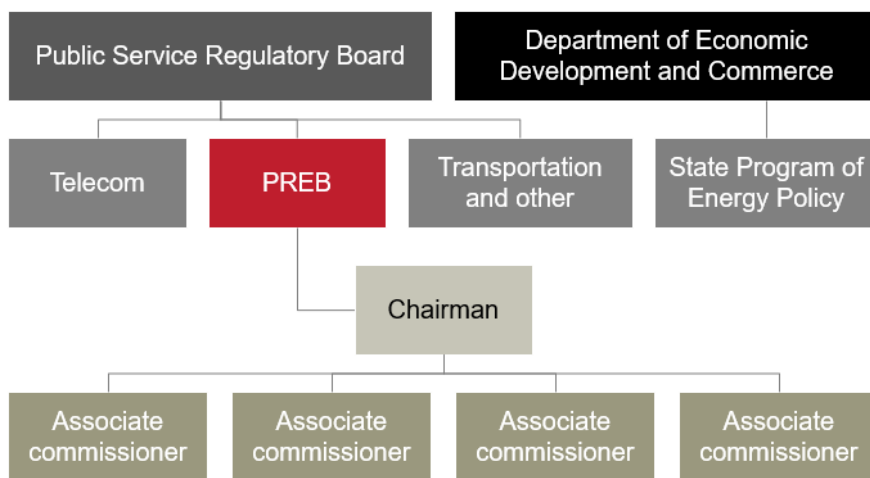


- **System modernization and renewable energy:** Along with promoting grid resiliency through the development of microgrids for critical loads and facilities, the Act strongly promotes renewable energy and distributed generation. It updates Puerto Rico’s Renewable Portfolio Standard (RPS) (e.g., 40% by 2025, up from 20%; 60% by 2040, and 100% by 2050), allows faster permitting and interconnection for residential renewable projects, and mandates the elimination of coal-fired generation by January 1, 2028.
- **Expanded PREB authority under Puerto Rico law:** The act confirms PREB’s role as an independent, apolitical regulator and expands its authority to (i) establish mechanisms for imposing incentives/penalties, (2) exercise a high degree of scrutiny over the maintenance of the electric network, (3) require reporting on the state of the electricity systems, and (iv) use alternative mechanisms to regulate tariffs based on service costs. The act also delineates PREB’s annual budget of \$20 million and makes it clear that this budget is not subject to executive or legislative approval. In addition, PREB is currently mandated to transition from its current employee structure to one with no less than 75% civil servant employees and no more than 25% trust employees.<sup>137</sup>

### PREB’s Organizational Structure

Although administratively located within the Public Service Regulatory Board (PSRB), PREB is a functionally independent entity (Exhibit 46). PREB is comprised of five commissioners and makes decisions with majority approval. Commissioners are appointed by the Governor with the advice and consent of the Puerto Rico Senate and serve staggered terms.<sup>138</sup> Commissioners must meet certain requirements relating to professional education and experience to hold their position and can only be removed for just cause.

EXHIBIT 46: PREB REGULATORY STRUCTURE



<sup>137</sup> See Act 17-2019, Section 5.13 amending Section 6.7(k) of Act 57-2014.

<sup>138</sup> PREB has its full slate of five commissioners, including the Chairman, in place. Under Act 57-2014, as amended, the terms are: The Chairman shall hold office for six (6) years, two (2) commissioners for four (4) years; and two (2) commissioners for two (2) years. The successors of all commissioners shall be appointed for six (6) year terms.

## 10.2 Key Regulatory Issues

PREB's statutory mandate as an independent regulator is to promote an efficient, reliable, resilient, and customer-responsive energy system. As such, PREB's primary responsibilities include (1) rate setting, (2) Integrated Resource Plan (IRP) approval and compliance, (3) protecting the interests of customers and consumers, and (4) ensuring workforce safety.

Pursuant to its enabling act, as amended, PREB is responsible for the oversight and implementation of Puerto Rico's energy public policy, including the various transformations currently under way with PREPA's T&D System and the legacy generation assets. Some of PREB's more important responsibilities include:

- **Oversight & Execution** – exercising direct oversight responsibilities of, and ensuring execution by, all energy market participants (including the T&D operator, operators of existing generation assets and current and new independent power producers, etc.) to ensure full compliance with energy public policy goals as mandated by law. This includes (a) overseeing the quality and reliability of the electric power services provided by PREPA, LUMA, and any other electric power company certified in Puerto Rico, and (b) formulating and implementing strategies to achieve the objectives of Act 57-2014 as amended by Act 17-2019, including, but not limited to, reducing and stabilizing energy costs permanently, controlling volatility in the price of electricity in Puerto Rico, and ensuring that prices are fair and reasonable, consistent with the public interest, and compliant with the parameters established by PREB through regulations.
- **Rates and Resource Planning** – reviewing rates and approving those found to be just and reasonable, ensuring expenditures in the energy system are prudent and consistent with energy public policy, and ensuring appropriate long-term resource planning through the periodic review and updates of IRPs and other capital investment plans.
- **Transparency** – requiring any electric power service company certified in Puerto Rico to keep, maintain, and regularly submit to PREB those records, data, documents, and plans that are necessary to attain the public policy objectives of Act 57-2014, as amended by Act 17-2019.
- **Renewable energy portfolio standards** – supporting investments in generation and related resources directed at reaching Puerto Rico's RPS of 40% by 2025, 60% by 2040, and 100% by 2050. Following PREPA's delay in conducting the renewable energy resource procurement processes, PREB will also execute the second tranche and future renewable generation procurements through an independent coordinator.<sup>139</sup>
- **Net metering** – establishing and periodically updating Puerto Rico's net metering program so that it both promotes cost-effective investment in renewable energy systems and ensures appropriate recovery of costs among customer classes.
- **Wheeling and cost unbundling** – establishing and enforcing the rules and regulations for the unbundling of PREPA costs and the proposal of new industry structures to introduce competition among generators to provide services, primarily to large industrial customers.

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<sup>139</sup> PREB Resolution & Order issued on October 29, 2021. See NEPR-MI-2020-0012.

- **Contributions in lieu of taxes (CILT)** – ensuring full compliance by PREPA and the municipalities with the establishment of CILT-eligible consumption levels and the billing, collection, and payment of amounts relating to electricity consumption by municipalities in excess of the CILT-eligible consumption levels. On October 22, 2020, PREB completed and approved the study for the Puerto Rico Legislature on alternatives for optimizing the value and benefits of the CILT structure to municipalities and PREPA, as required by Act 17-2019. PREB completed and approved the study for the Puerto Rico Legislature on alternatives for optimizing the value and benefits of the CILT structure to municipalities, as required by Act 17-2019.<sup>140</sup>
- **Energy Efficiency (EE)** – adopting regulation to establish framework promoting the adoption of energy efficiency measures in a manner that enables Puerto Rico an opportunity to reach the goal of thirty percent (30%) cumulative reduction in energy usage from energy efficiency by 2040 compared to PREPA’s FY 2019 net utility sales, using an array of energy efficiency programs that will be available to all customer classes, including municipalities. PREB adopted a regulation for Demand Response (DR) on December 10, 2020, and EE on January 21, 2022. The adopted DR and EE regulations utilize similar program approaches for development, administration, implementation, and funding. PREB has resolved that LUMA should launch pilot programs no later than July 1, 2022. Formal first three-year EE Plans shall be filed triennially on March 1 and cover three-year periods, beginning on March 1, 2024.

Currently, PREB is the power sector’s regulator and obtains its powers from the Legislature. The Oversight Board has ultimate responsibility under PROMESA on Certified Fiscal Plan and budget issues for the Commonwealth, PREPA, and other covered territorial instrumentalities. PROMESA provides the Governor and Legislature may not enact or implement any statute, regulation, policy, or rule that impairs or defeats the purposes of PROMESA as determined by the Oversight Board. Because PREB is a territorial entity, it is subject to the same constraints as state agencies and public corporations. Therefore, in the event PREB’s actions impair or defeat PROMESA’s purposes, as determined by the Oversight Board, the Oversight Board can enforce PROMESA’s constraints by directing PREB and seeking judicial intervention when necessary. To ensure PREB becomes a best-in-class regulator, the Oversight Board has included a few structural changes in the 2022 Commonwealth Certified Fiscal Plan.<sup>141</sup>

### 10.2.1 *Guiding Principles for Ratemaking*

To achieve an optimal rate structure, PREB is required by law to consider the following non-exhaustive set of guiding principles for Ratemaking:<sup>142</sup>

- **Just & Reasonable:** PREB must ensure that rates are just and reasonable and consistent with sound fiscal and operational practices which result in a reliable service at the lowest reasonable cost

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<sup>140</sup> Investigation Into Contribution in Lieu of Taxes. Case No. NEPR-IN-2019-0003, October 22, 2020.

<sup>141</sup> 2022 Commonwealth Certified Fiscal Plan, Chapter 10, “Power Sector Reform”

<sup>142</sup> PREB’s authority to review rates and approve modifications or temporary adjustments are established under Section 2.8 of Act 57-2014, which amends Section 6(B) of Act 83-1941.

- **Fiscal responsibility:** Rates must be sufficient to cover payment of, among other things, fuel and purchase power costs, and the costs of electric utility operations, including operating costs, capital requirements, and other obligations.
- **Affordability:** The Ratemaking process should account for customer socioeconomic factors (e.g., consideration of subsidies and other cost-allocation measures).
- **Cost causation/cost of service allocation:** Customer electricity rates are based on the cost of providing service to a specific type or class of customer, except where otherwise mandated by law (e.g., subsidies for low income, hotels, senior citizens).
- **Transparency:** Rate components and calculation methodology must be clearly communicated (fixed monthly and volumetric customer consumption), providing customers with detailed information on the costs covered by rate components.
- **Policy alignment:** Customer behavior is incentivized to be consistent with energy public policy (e.g., promote improvements in energy efficiency, reward customers for reliability benefits associated with customer-owned resources, encourage achieving renewable portfolio standards).

### 10.2.2 PREPA's Current Rate Structure

The current rate structure was established and approved within PREB's Resolution and Order in case CEPR-AP-2015-0001 dated January 10, 2017<sup>143</sup>. The Initial Budgets, and the now proposed Annual Budgets filed by LUMA with P3A and PREB on April 1, 2022, were within the limits of the base rate approved by PREB and implement methodologies consistent with riders associated with the 2017 Rate Order. LUMA is not seeking a base rate increase or revision in connection with or because of the LUMA Annual Budgets. The 2022 Certified Fiscal Plan's FY2023 through FY2025 expense forecast reflects LUMA's Annual Budgets as proposed to P3A and PREB on April 1<sup>st</sup>, 2022.

### Overview of PREB-Approved Rates

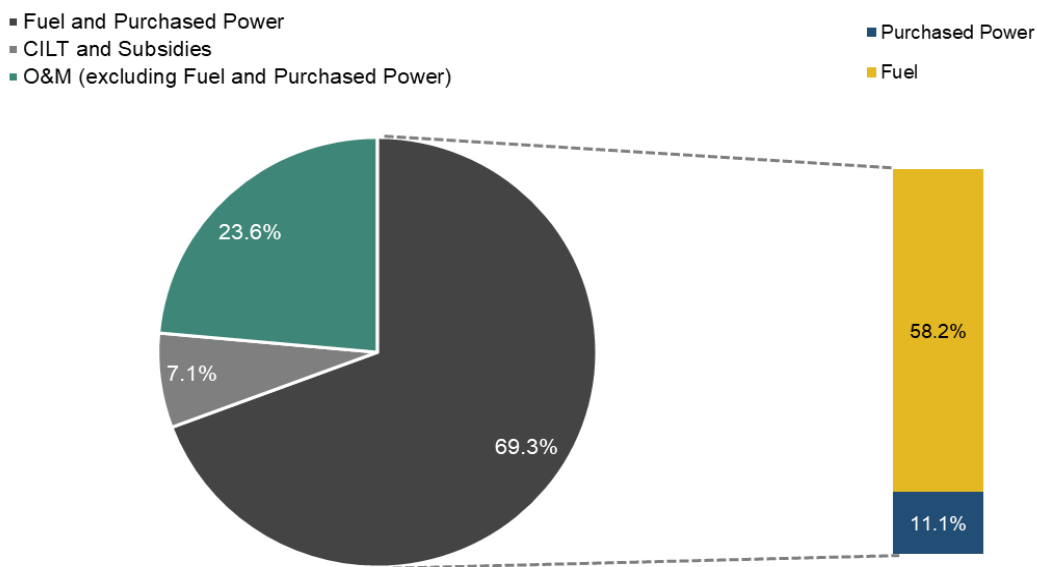
The 2017 rate order establishing PREPA's new rate structure marked a meaningful step toward greater transparency by separating CILT and subsidy riders from the fuel and purchased power rate components. In FY2023, the projected rate components 5% for CILT and other subsidies, 24% for base rate, including utility operating and maintenance costs, and 71% for power generation costs (

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<sup>143</sup> Amended in part and affirmed in part on March 8, 2017.

EXHIBIT 47).

EXHIBIT 47: FY 2023 OVERALL RATE COMPOSITION



Significant work remains to achieve a rate structure that covers relevant operational, maintenance, and capital expenditures for the benefit of customers and consumers while also encouraging sustainable economic development. The regulatory reform that has been set in motion will allow Puerto Rico's electric system to better serve its customers reliably and cost effectively.

### 10.3 Overview of CILT Reform

The Government of Puerto Rico has made significant changes in the treatment of the CILT by enacting Act 57-2014 and Act 4-2016. Under the revised rate structure, PREPA recovers the cost of CILT via the CILT and a subsidies rider on customer bills. The CILT rider provides greater transparency and accountability for customers and establishes incentives for improved municipal energy efficiency. Any additional reductions or amendments would require further legislation.

Actions taken to implement CILT reform include the following:

- **Transparent billing:** CILT costs are shown as a separate line item in customer bills.
- **New treatment for ineligible service accounts:** Removed municipal for-profit and other ineligible entities from receipt of the CILT electric service credit.
- **Municipal consumption cap:** Legally established total consumption (kWh) cap was implemented during FY 2017 on the municipal CILT per municipality and reduced by 15% over following three fiscal years (5% each year).
- **Energy efficiency incentives:** A mechanism that promotes energy efficiency and additional savings above the mandated total consumption cap imposed on municipalities by Act 57-2014; municipalities would receive a payment from PREPA for the value of the difference between the mandatory total consumption cap and actual consumption, which would only be payable if all municipalities, in the aggregate, comply with their respective caps.

In FY 2021, the CILT rider amounted to approximately 2% of the average customer rate.

- **Excluded Consumption and Consumption Above the Consumption Cap:** In FY 2017, the first year of the CILT consumption cap, municipalities' consumption in excess of the eligible consumption cap and consumption at ineligible (e.g. "for-profit") facilities was approximately \$20 million. In FY 2020, this figure declined to \$17.0 million and declined further in FY 2021 to approximately \$12.8 million.
- **Eligible Consumption Below the Consumption Cap:** The total cost of eligible municipal consumption declined from \$81.0 million in FY 2017 to \$63.9 million in FY 2020. Actual municipal consumption during FY 2020 was 279 million kWh, 23% below the cap of 363 million kWh. During FY 2021, the eligible municipal consumption decreased further to \$63.9 million and 271 million kWh, 25% below the cap.

Act 17-2019 required PREB to study "the implementation, effectiveness, cost-benefit, reasonableness, and economic impact of the contribution in lieu of taxes (CILT)" to determine the need for reform. Specifically, under Section 1.18 thereof, PREB was required to conduct a study on the implementation, effectiveness, cost-benefit, reasonableness, and economic impact of the CILT to determine the need and convenience, if any, of reforming this mechanism and the subsidies. The results of this study were completed by October 2020 and published<sup>144</sup> and submitted to both Houses of the Legislative Assembly for contemplation and consideration of any necessary legislation<sup>145</sup>.

The key milestones completed for CILT reform are described in brief below:

- **October 21, 2020:** as required by law, PREB completed, and its commissioners approved, the study regarding the implementation, effectiveness, cost-benefit, reasonableness, and economic impact of CILT and other subsidies.
- **December 15, 2020:** PREPA completed development of a process to categorize properly municipal accounts as eligible or ineligible for CILT and has implemented the process for municipalities to pay for electricity consumption not covered by CILT and to file complaints related to CILT before PREB.

<sup>144</sup> <https://energia.pr.gov/wp-content/uploads/sites/7/2020/10/Resolucio%CC%81n-y-Orden-NEPR-IN-2019-0003.pdf>

<sup>145</sup> Act 17-2019, Section 1.18

## **10.4 The Role of PREB and Regulatory structure after T&D transformation**

Pursuant to Act 57-2014, as amended, PREB has jurisdiction over PREPA and all other electric service companies operating in Puerto Rico. Act 17-2019 broadened PREB's authority and increased its budget substantially. Of particular relevance to the ongoing transformation efforts, Act 17-2019 entrusts to PREB oversight responsibility for electric system planning and operation, including the evaluation and approval of IRPs, and for approval of power purchase agreements and of Partnership Contracts implementing the transformation process defined in Act 120-2018.

Under the T&D OMA, LUMA is the agent for PREPA in regulatory proceedings before PREB related to T&D O&M Services and in making all relevant required filings and applications for Governmental Approvals.<sup>146</sup> For the avoidance of doubt, LUMA does not set the energy policy of Puerto Rico. Furthermore, the T&D OMA requires LUMA to comply with the public policy and regulatory framework for transforming the Puerto Rico electric system. LUMA is required to interact, support, work, and comply with PREB on several processes and roles including, but not limited to, (1) rate cases, (2) IRPs, (3) power purchase agreements (PPAs), (4) environmental compliance, (5) energy efficiency mandates, (6) renewable portfolio standards, (7) resource procurement (e.g., support through interconnection studies), and (8) customer complaints.

The T&D OMA further guarantees that PREB retains all rights, responsibilities or authority over the T&D System, Owner, or Operator.<sup>147</sup> PREB's regulatory authority and oversight, as outlined and summarized in this chapter, is and will continue to be, highly relevant for LUMA, and for any other private operator that may be selected as part of the ongoing PREPA legacy generation O&M public-private partnership. The safeguards provided by a strong, independent regulator like PREB will remain firmly in place following the T&D transformation.

## **10.5 Federal Environmental Law Requirements & Compliance**

As an electric utility, PREPA must comply with different environmental laws and regulations, including the Clean Air Act (CAA), which is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes EPA to establish the national ambient air quality standard (NAAQS) to protect public health and public welfare and to regulate emissions of air pollutants, including hazardous air pollutants.

Under Section 107(a) of the CAA, each state, territory, or local air district has the primary responsibility for submitting a state implementation plan (SIP) for specifying the manner in which NAAQS will be achieved and maintained within each of its air quality control regions. 42 U.S.C. § 7407(a). The CAA also requires that the EPA review and approve SIPs that meet the requirements of the Act. In the case of Puerto Rico, compliance with the CAA requires the

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<sup>146</sup> Puerto Rico Transmission and Distribution System Operation And Maintenance Agreement, p. 66, Section 5.6: System Regulatory Matters. (a) General. From the Service Commencement Date and during the duration of the Term thereafter, Operator shall function as agent of Owner, and Owner hereby irrevocably authorizes Operator to (i) represent Owner before PREB with respect to any matter related to the performance of any of the O&M Services provided by Operator under this Agreement, (ii) prepare all related filings and other submissions before PREB and (iii) represent Owner before any Governmental Body and any other similar industry or regulatory institutions or organizations having regulatory jurisdiction.

<sup>147</sup> "[N]otwithstanding anything to the contrary..., no provision of this Agreement shall be interpreted, construed or deemed to limit, restrict, supersede, supplant or otherwise affect, in each case in any way, the rights, responsibilities or authority granted to PREB under Applicable Law with respect to the T&D System, Owner or Operator." Section 20.17, OMA Agreement, p. 165.

Department of Natural and Environmental Resources of Puerto Rico (DNER) to submit a SIP for EPA's approval in relation to the 2010 1-Hour Sulfur Dioxide (SO<sub>2</sub>) NAAQS.

The EPA designated the Guayama-Salinas and San Juan air districts as nonattainment areas for the SO<sub>2</sub> NAAQS, effective April 9, 2018. EPA's nonattainment designation was based on SO<sub>2</sub> modeling results from modeling performed on these air districts. On May 2016, the Government of Puerto Rico decided to use the EPA's approved air dispersion model (AERMOD) as the strategy to demonstrate compliance with the SO<sub>2</sub> NAAQS.

The air district of Guayama-Salinas includes part of the municipalities of Guayama and Salinas. In the case of the San Juan air district, it includes the municipality of Cataño and part of the municipalities of San Juan, Guaynabo, Bayamón, and Toa Baja. These air districts cover the area where PREPA's Aguirre, San Juan, and Palo Seco steam plants are located.

Given the nonattainment designation by EPA under the CAA, DNER must submit a final SIP for EPA approval, which shall provide for attainment of the 2010 1-Hour SO<sub>2</sub> NAAQS in the Guayama-Salinas and San Juan nonattainment areas by April 9, 2023. The deadline to submit the SIP to EPA was October 9, 2019. DNER missed the October 9, 2019, deadline, and on November 3, 2020, EPA issued Findings of Failure to Submit (FFS) SIP Required for Attainment of the 2010 1-Hour Primary Sulfur Dioxide (SO<sub>2</sub>) NAAQS, with an effective date of December 3, 2020. 85 Fed. Reg. 69,504 (Nov. 3, 2020). Per the RRS, there are certain deadlines that must be met to avoid mandatory EPA-imposed sanctions.

According to the current Puerto Rico SIP process, EPA must determine completeness of DNER's SIP by June 3rd, 2022, to avoid the imposition of "2-to-1" offset sanctions in the nonattainment areas. If the EPA does not determine that DNER has made a complete SIP submittal by June 3rd, each new ton of SO<sub>2</sub> emitted from any new or modified source in the nonattainment areas must be offset by a two-ton reduction. In addition to PREPA's power plants, the "2-to-1" offset sanction applies to all facilities considered as emissions sources in the nonattainment areas. To achieve compliance with EPA's regulations, the "2-to-1" offset sanction will require that all owners and operators of emissions sources in the nonattainment areas implement emissions control measures, assuming a doubling of their actual emissions. This sanction would increment the operational and maintenance costs of operating industrial and commercial facilities in the nonattainment areas, affecting the economic development in these areas.

Furthermore, if EPA does not determine that the SIP is complete by December 3rd, 2022, additional sanctions will apply, consisting of a moratorium on roads and highways funds for all projects in the nonattainment areas (except for projects related to safety). In general, these projects include new roads or improvements to existing roads and highways. Puerto Rico depends on receiving federal funds for developing roads and highways projects, which can exceed \$144 million annually. These federal funds or part of such funds would enter in a moratorium if the SIP submitted by the DNER is not declared complete by December 3, 2022.

As part of the development of the SIP, the DNER has modeled the SO<sub>2</sub> emissions in the Guayama-Salinas and San Juan air districts and found that these areas cannot achieve attainment if PREPA continues using Bunker C and regular Diesel fuels in the generating units located at Aguirre, San Juan, and Palo Seco. When modeling combustion turbines using ultra-low sulfur diesel (ULSD), the emissions are reduced but not enough to achieve attainment. In the absence of retiring generation units in the short run in full, timely compliance with the PREB approved IRP, PREPA



and the DNER have indicated that achieving attainment in the relevant air districts may require burning natural gas in existing steam units located at Aguirre, San Juan, and Palo Seco.

Considering the joint priorities of providing reliable electricity and meeting the SO<sub>2</sub> NAAQS, the DNER and PREPA have identified the following action items as feasible strategies for achieving attainment:

- Integration of renewable energy as mandated by the Approved IRP and Modified Action Plan.
- Substituting fuels used in existing thermal generating units, such as ULSD.
- Development of an SO<sub>2</sub> monitoring network within the designated nonattainment areas for demonstrating attainment with the NAAQS.
- Consistent with these actions, in the short term, PREPA will:
  - Complete the Tranche 1 procurement process and continue working diligently to support PREB with the remainder tranches mandated in the IRP Modified Action Plan.
  - Substitute regular diesel with ULSD fuel at combined cycle units, combustion turbines, and the aeroderivative machines located at the San Juan, Palo Seco, and Aguirre Power Plants.
  - Comply with the DNER's requirements for the development of an SO<sub>2</sub> monitoring network.

PREPA incurred a number of delays in conducting the Tranche 1 Renewable Energy and Storage Procurement Process and the launching of subsequent tranches, which led to PREB assuming the execution of future tranches in order to facilitate compliance with Puerto Rico RPS targets and the IRP. Specifically, fossil fuel generation unit retirements may be set back in case of delays in the integration of renewable energy generation sources. If such delays continue, to adequately maintain a safe and reliable electric service, PREPA may need to propose executing certain actions to keep its steam units operational and in compliance with applicable environmental regulations. DNER and PREPA modeling results indicate that achieving attainment with the SO<sub>2</sub> NAAQS, while maintaining the current steam units running (in the case of further delays in renewable integration), would require burning natural gas at existing steam units instead of Bunker C fuel. Thus, in the short and medium term, pursuing the substitution of Bunker C fuel with natural gas in the steam units located at San Juan, Palo Seco, and Aguirre may be necessary to achieve an EPA compliant SIP and avoid the above-mentioned penalties while maintaining serviceable generation load levels. However, lack of an amendment to the PREB approved IRP and the required funding to produce such conversion may cause implementation issues for these initiatives and thus be deemed an incomplete SIP subject to potential adverse action by the EPA. As such, any unit conversions should not be contemplated without approval from PREB in the form of leave, waiver or amendment from the PREB approved IRP.

To that end, on February 11, 2022, PREPA submitted before PREB a motion titled *Petition to Conduct Work in PREPA's Steam Units for Environmental Compliance*, seeking leave from the PREB to pursue the conversion of San Juan units 7-10 to natural gas to achieve attainment with the 2010 1-Hour SO<sub>2</sub> NAAQS in the San Juan air district and, consequently, avoiding costly sanctions, and achieving compliance with the MATS required by EPA, 40 CFR 63 Subpart U - National Emission Standards for Hazardous Air Pollutants which became effective on April 16, 2012, at the San Juan site. PREB has yet to issue a determination on PREPA's motion.

# Chapter 11. Summary of Financial Projections

The following chapters of the 2022 Certified Fiscal Plan provide an overview of PREPA's projected financials, both for the near term (next 5 years) and the longer-term (next 30 years). These projections reflect the potential impact of external factors (e.g., projected changes in fuel prices and the macroeconomic outlook for Puerto Rico), as well as the potential impact of internal developments (e.g., the Legacy Generation P3 RFP and the planned and initiated integration of renewable generation capacity, to name a few). The projections reflect the expected positive impact of PREPA's ongoing transformation, including the initiatives and operational measures that are in implementation or planned for by PREPA and LUMA. For example, the expense projections incorporate LUMA's April 1, 2022, Budget filings, which outline efficiency gains and factor in additional expense measures such as fuel cost reduction initiatives. For this reason, the next three chapters also show three separate entities that will make up PREPA in the future – HoldCo, GenCo, and GridCo. Expenses will be split according to their specific roles and responsibilities. Chapter 3 (Transformation), as well as Chapters 9 (Operational Measures) and 7 (LUMA Improvement Portfolios), outline the impact of PREPA's transformation as well as specific operational measures. The projections in this and the following two chapters are consistent with the macroeconomic assumptions underlying the Commonwealth Certified Fiscal Plan and assume full compliance with Act 17-2019 and IRP resource planning mandates.

## 11.1 Baseline rate and Revenue Requirement

To project and measure the impact of PREPA's ongoing transformation and of additional financial and operational initiatives and to estimate the resulting improvements in rates, this chapter describes the baseline rate projection. This baseline projection does not assume the restructuring of legacy debt and pension obligations, and instead includes the full cost for unstructured debt and pensions. As such, the baseline rate reflects the hypothetical state of the world in which PREPA does not proceed with the transformation or debt restructuring.

All rates in this Certified Fiscal Plan are based on revenue requirements. This means that the rates approved by PREB should provide PREPA with the revenue that it requires to pay for all the projected costs to provide adequate service to customers. FY 2021 is the last fiscal year in which consolidated expenses for PREPA are presented for reporting. For FY 2022 onwards, the Certified Fiscal Plans and Budgets present the three component units – GenCo, GridCo, and HoldCo.

Baseline rate projections are shown in Exhibit 48 below. They show that absent any transformation of PREPA, and without the benefits of any financial restructuring or operational improvement initiatives, customers are projected to increase by 11 to 16 c/kWh, when compared to FY 2021 rates.<sup>148</sup> Over the next thirty years, baseline rates without the positive impact of PREPA's ongoing transformation are expected to increase as high as 42.5 c/kWh largely driven by declining demand, as fixed cost are spread across a lower number of kilowatt-hours. The high and increasing baseline rates shown below illustrate the need for a comprehensive transformation of PREPA, as outlined in Chapter 3 (Transformation), and Chapters 9 (Operational Measures) and 7 (LUMA Improvement Portfolios).

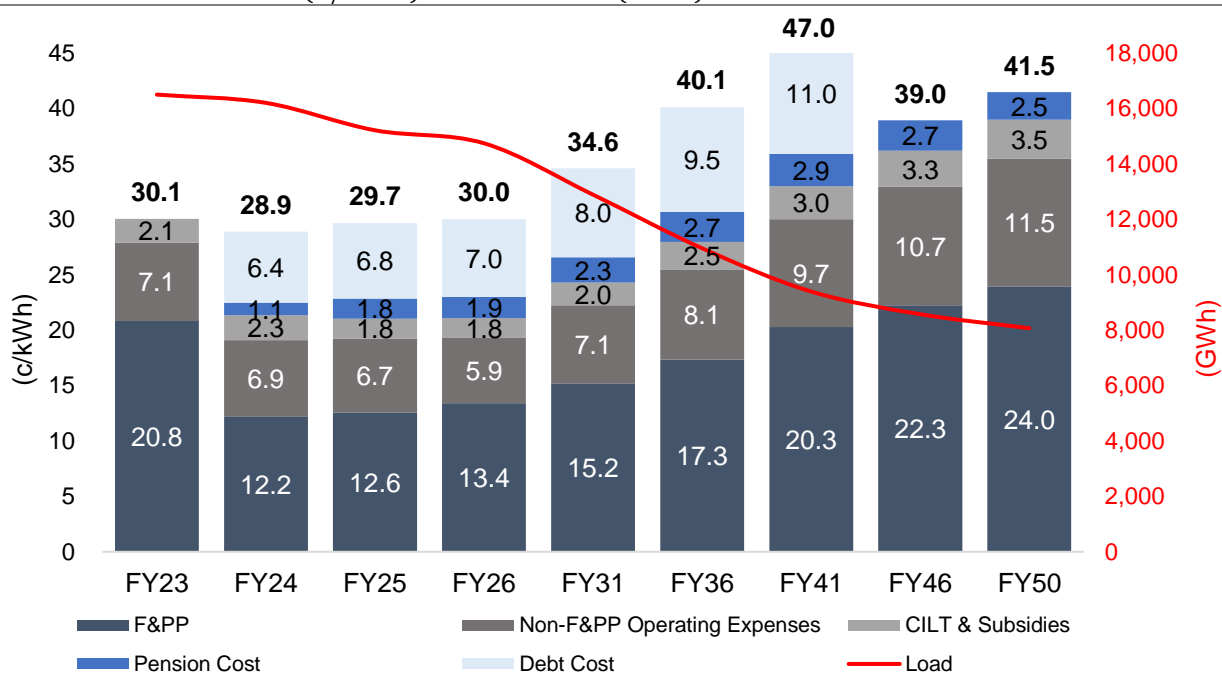
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<sup>148</sup> FY 2021 has been used as the base year to determine rate comparisons.

Several additional major factors beyond the initiatives and the transformation mentioned above could potentially have a large effect on future rates. They can be broadly categorized into expense related and demand related factors.

- **Expense related factors:** As explained above, as rates are based on revenue requirements, if PREPA's expenses go up, rates will have to increase to ensure PREPA has the funds to cover these expenses. Most of PREPA's utility operating costs can be projected in a predictable manner based on the PREPA and LUMA base cost expenses with inflation. Some costs, however, are dependent on third party process and political outcomes and market factors, and this cannot be projected in a predictable manner. These include, among others:
  - A 10% cost-share requirement that PREPA must cover for federally funded capital expenditures. PREPA currently assumes that it can cover the cost-share requirement by funds from HUD-CDBG (see Chapter 6 on Capital Plans and Federal Funding). If the cost-share cannot be covered by CDBG, rates will need to increase.
  - The market price for fossil fuel. At this point in time PREPA is still highly reliant on diesel, heavy-fuel oil, and coal, which are subject to price volatility.
  
- **Demand related factors:** If demand increases, PREPA's fixed costs, such as administrative costs, debt, and pensions, among others, that are not dependent on how much power is generated (e.g., fuel), – are spread across a higher number of kilowatt-hours, reducing the rate per kwh. Conversely, if demand decreases, rates per kwh go up. Therefore, several factors related to electricity demand have a potentially high impact on future rates. Key factors include, among others, usage of and electricity demand from electric vehicles, energy efficiency, and distributed generation. Electric vehicles have the potential to increase demand as more customers charge their vehicles by connecting to the power grid. Energy efficiency initiatives (e.g., transition to higher efficiency air conditioning units and other appliances) will result in a lower demand per customer or less power required from the system to support the same customer activities. Installation of distributed generation (e.g. rooftop solar on residential homes) will decrease demand in the system as these customers generate their own power for at least some of their needs. Electric Vehicles represent a source of new demand that could partially offset load losses from other drivers. Chapter 12 provides a discussion of the Puerto Rico load and rate impact of the factors.

EXHIBIT 48: REVENUE REQUIREMENT RATE INCLUDING PAYGO PENSION AND OPEX AND UNRESTRUCTURED DEBT (C/KWH) VERSUS LOAD (GWH)



## 11.2 FY 2022 Baseline and Future Revenues and Expenses

### 11.2.1 Financial Projections for FY 2022 and FY 2023

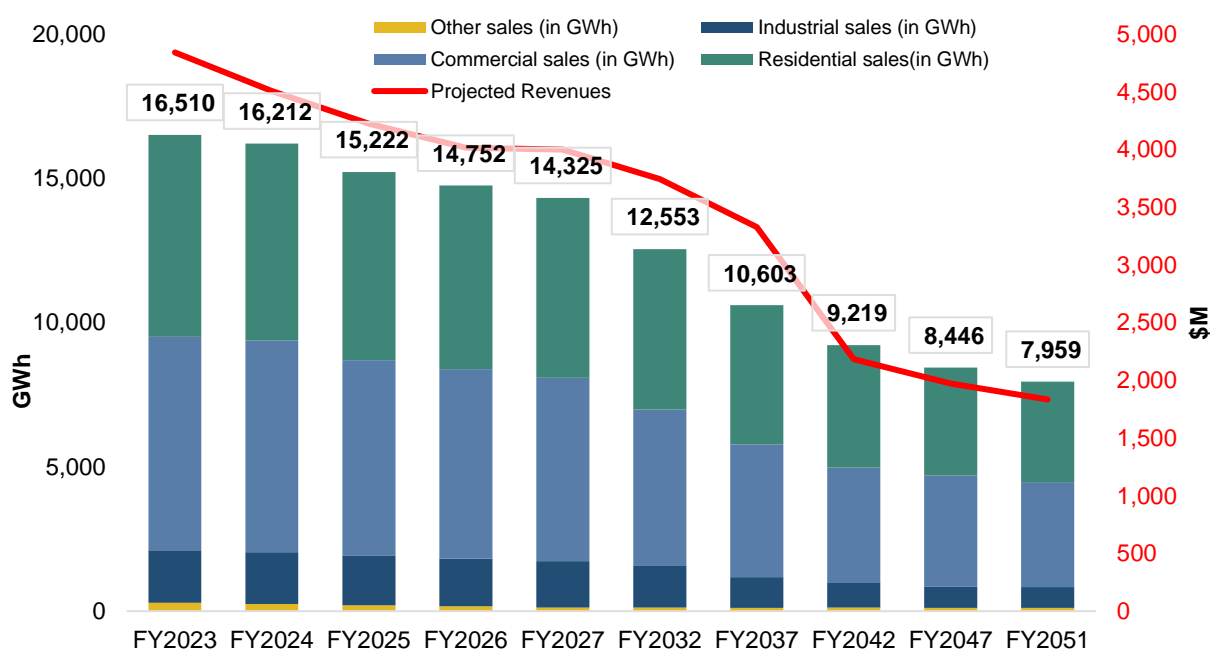
The Oversight Board approved a revised compliant FY 2022 budget for PREPA on July 1, 2021. The certified budget included the revised amounts for GenCo and HoldCo labor costs, and notably included amounts for pension funding that were substantially lower than prior year employer contributions. For years prior to FY 2022, PREPA had typically budgeted an employer contribution amount based on a percentage of employee salaries, approximately ~35% or \$70-80 million per year. For FY 2022, the Oversight Board approved \$26.5 million in employer contributions for GenCo and HoldCo employees, or approximately ~65% of budget salaries.

For the FY2023 period, the Certified Fiscal Plan does not project a deficit.

### 11.2.2 Forecasted Revenues

PREPA’s revenues are expected to follow a gradual decline in line with the projected decline in sales (Exhibit 49). The combined effects of energy efficiency and distributed generation are expected to further decrease overall electricity consumption. Chapter 13 discusses the load impact of EE, DG, and electric vehicles in more detail.

EXHIBIT 49: 30-YEAR SALES AND REVENUE PROJECTIONS (GWH AND USD MILLION)



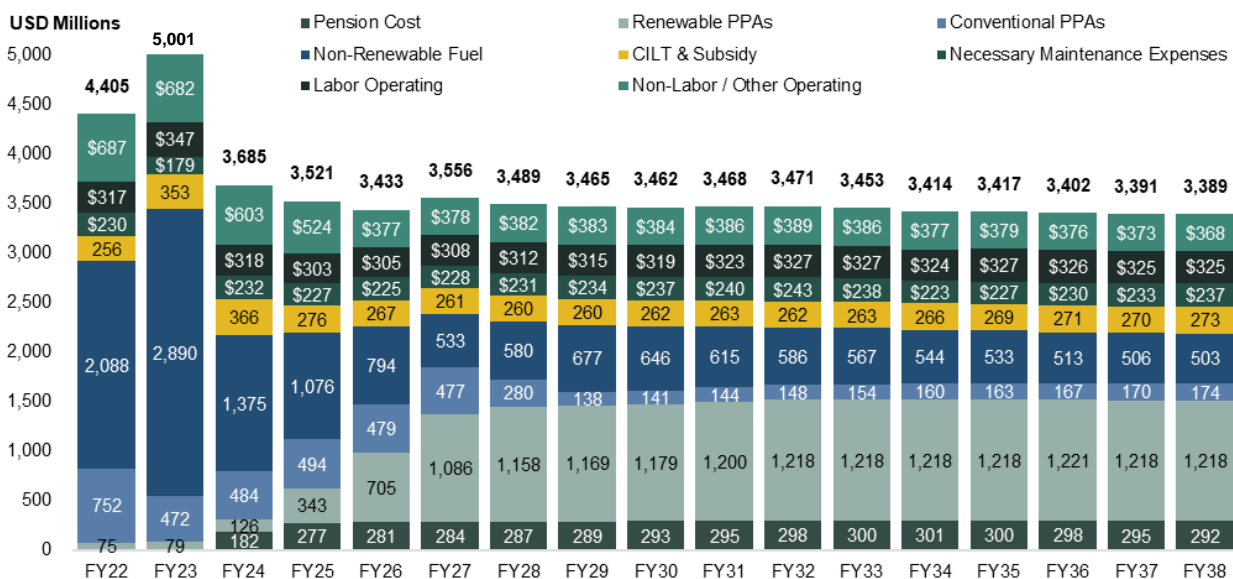
### 11.2.3 Forecasted Expenses

Overall expenses are projected to decrease substantially between FY 2023 and FY 2024 driven by two principal factors – a projected decrease in fuel prices and the dispatch modeling approach, as further explained in the Assumptions table on Chapter 13.2.

On the long run, it is expected that overall expenses would decrease in real terms. This is partially driven by decreasing labor and non-labor operating costs. Additionally, specific budget line items including Title III expenses and costs will likely decline after FY 2023, due to the expected exit of PREPA from Title III bankruptcy.

Most notably, however, the overall decline in expenses is driven by decreasing generation cost as renewable power replaces outdated and inefficient oil-based generation linked to volatile oil and gas prices. As the share of renewable generation capacity is increasing over the coming years, the cost associated with non-renewable fuel and power is expected to decline quickly until FY 2027. As cheap but polluting coal generation is projected to be phased out in FY 2028 (Exhibit 50) non-renewable fuel expenses are projected to increase again. However, thereafter, fossil fuel related costs are projected to decline steadily as more renewable generation comes online. Expenses for renewable PPAs is projected to increase over the same time period, consistent with Act 17-2019’s mandate to increase the share of renewable generation. Chapter 13 (Expenses) provides a more detailed discussion of PREPA’s expense projections.

**EXHIBIT 50: CONSOLIDATED FORECAST EXPENSES UNTIL THE END OF THE IRP, EXCLUDING DEBT SERVICE (USD MILLION, NOMINAL DOLLARS)**



## Chapter 12. Revenue

Understanding load, electricity sales, revenues, and the underlying drivers is crucial for utilities as it enables accurate planning for investments into generation and the T&D System. This chapter provides an overview of PREPA’s revenue compared to its budget, and discusses load projections, the underlying drivers, including emerging drivers like electric vehicles, as well as key assumptions that impact revenue projections. PREPA’s revenues are expected to follow a gradual decline in line with the projected decline in sales (Exhibit 49).

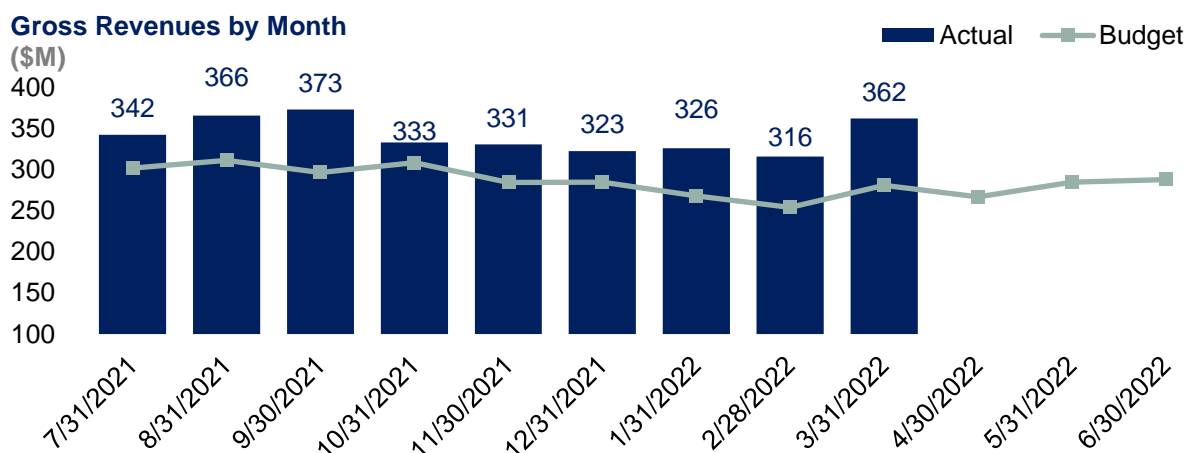
### 12.1 FY 2022 Actual Revenue Against Budget

According to the latest financial results for FY2022 through March, PREPA’s gross revenues, i.e., revenues from electricity sales without Other Income or other adjustments, were \$3.1 billion versus budget gross revenues of \$2.6 billion. The difference is driven by higher than projected fuel prices and resulting fuel and purchased power charges.

During the first three quarters of FY2022, PREPA’s gross revenues<sup>149</sup> were approximately 20% above the projected amount (see Exhibit 51). The FY2022 YTD sales / consumption figures are approximately 2% below budget overall (see

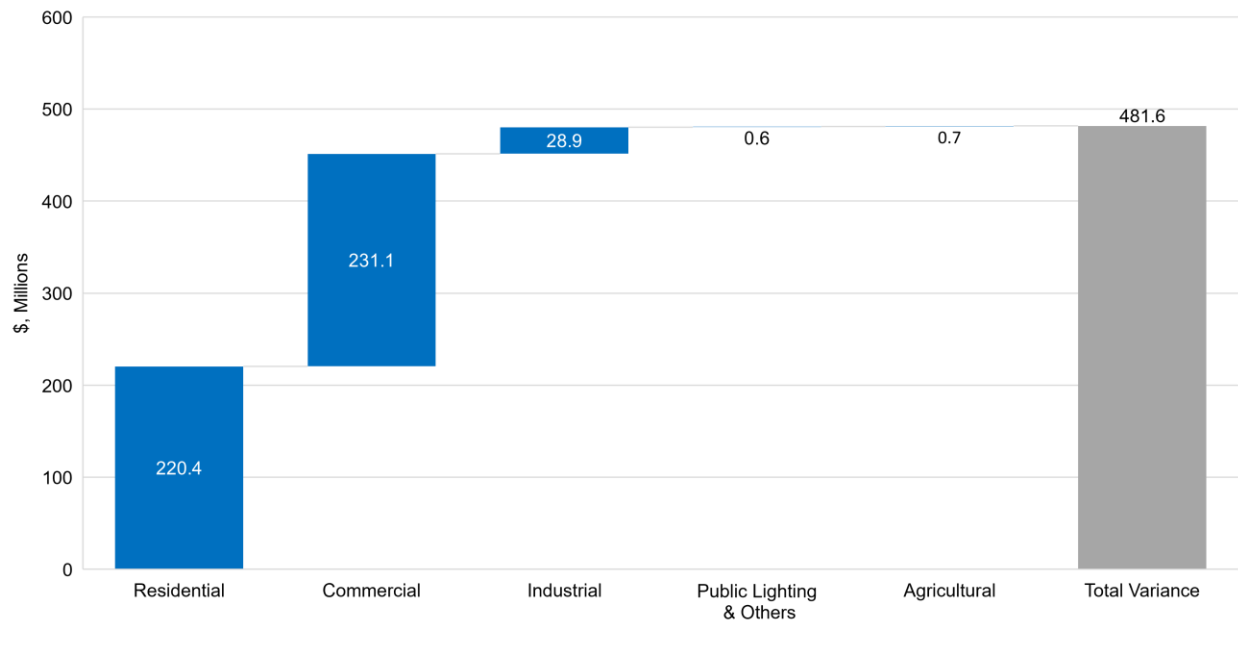
Exhibit 53), driven primarily by lower than budget industrial consumption.

EXHIBIT 51: FY2022 YTD (MARCH) BUDGET VS. ACTUALS (USD MILLION)

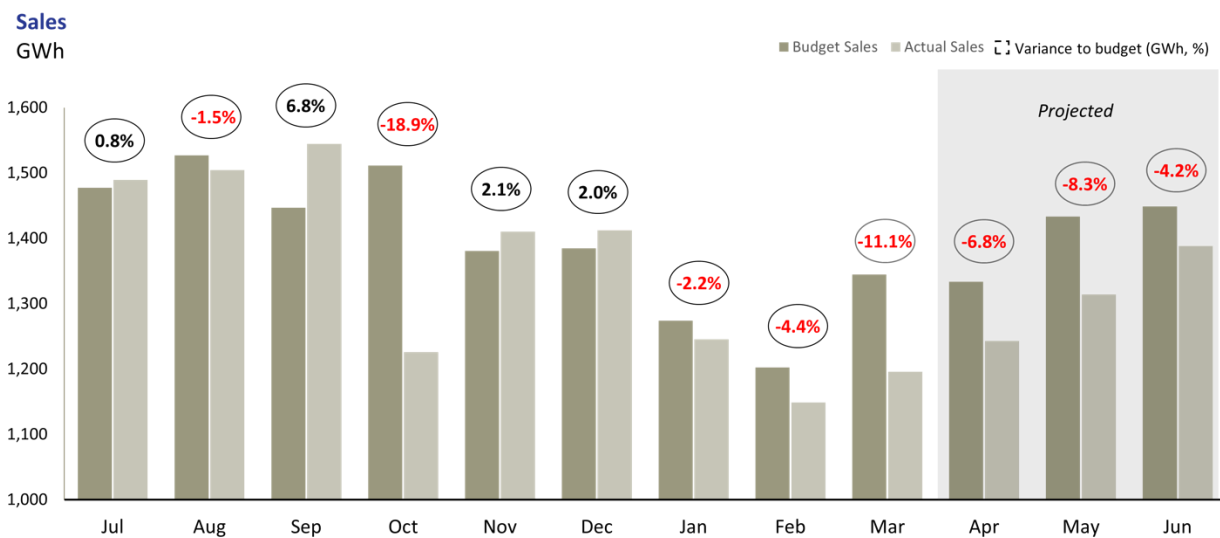


<sup>149</sup> Gross revenues include revenues collected from customers for consumption, whereas consolidated revenues include revenues collected from customers for consumption, revenue for other income sources, and other adjustments (bad debt expense, CILT and subsidies, etc.).

**EXHIBIT 52: FY2022 YTD REVENUE VARIANCE VS BUDGET BY CUSTOMER CLASS (USD MILLION)**



**EXHIBIT 53: FY2022 SALES AND VARIANCE VS BUDGET (GWH, %)**



## 12.2 Overview of Load Projections

### Historical Demand and Sales Impact

As referenced in Chapter 2 (Historical Context and Current Challenges), electricity consumption in Puerto Rico continues to be impacted by ongoing economic distress and demographic shifts of



a declining population. Energy consumption and peak demand, which are PREPA’s most critical billing determinants, have been in decline for approximately 16 years (

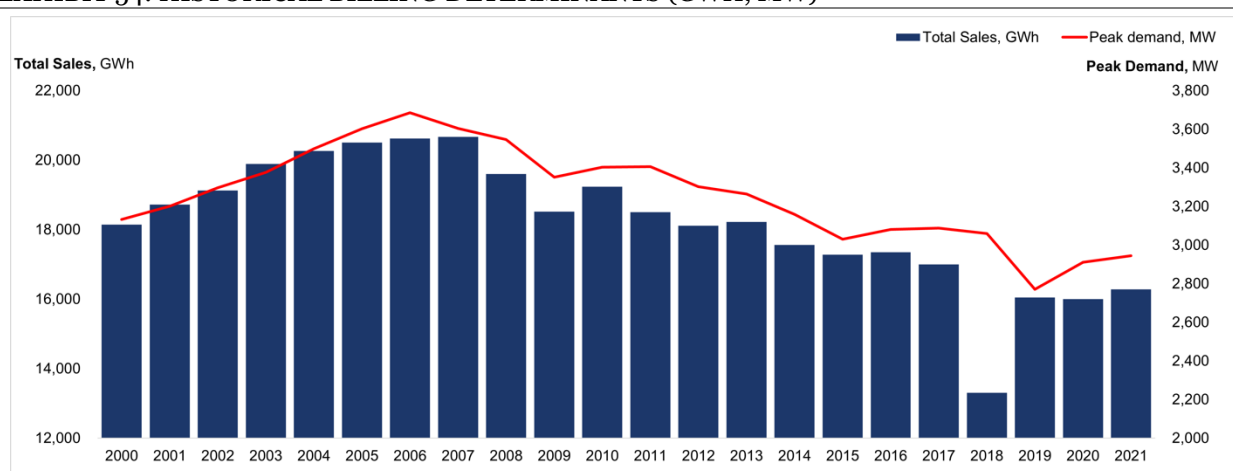
Exhibit 54). This decline is projected to continue, consistent with the most recent economic and demographic projections issued by the Oversight Board in its Commonwealth Certified Fiscal Plan.

Exhibit 54 shows that forecasted sales and peak demand in Puerto Rico fall below FY 2000 levels, driven by several key factors, which will also impact future electricity consumption patterns:

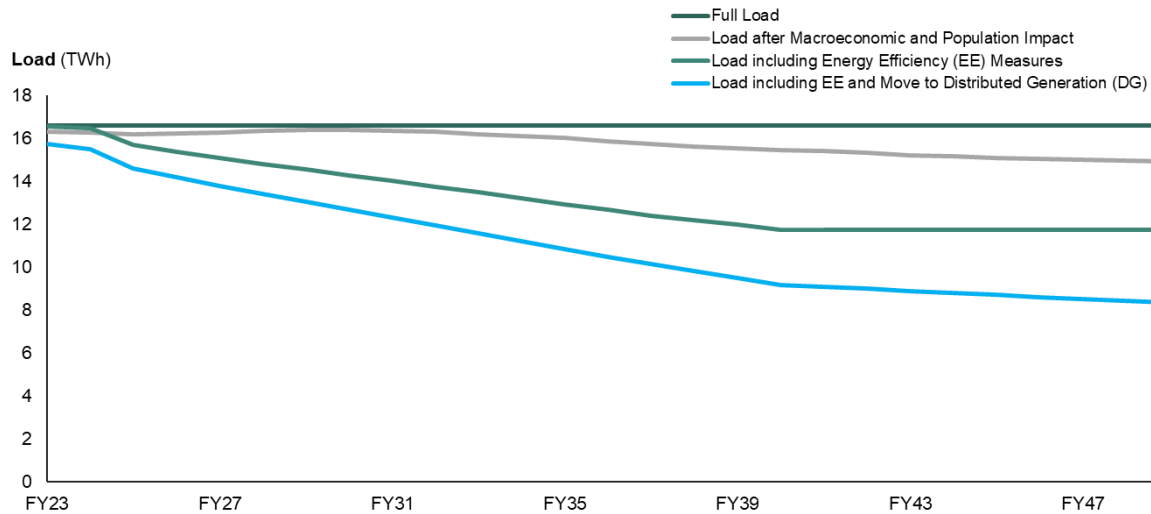
- **Macroeconomic indicators and demographics:** The Certified Fiscal Plan incorporate macroeconomic projections consistent with those used in the 2022 Commonwealth Certified Fiscal Plan. They show a steady population decline over the next 5 years, driven by a combination of outmigration and demographic factors, and they indicate that the previously projected rebound in economic activity driven by federal funding for restoration and associated short-term employment seen in 2019 was more than offset by COVID-19 related impacts in 2020. However, Covid-19 related fiscal stimulus is projected to lead to a rebound and recovery in FY 2022, that is expected to continue into FY 2023.
- **Energy efficiency (EE) and distributed generation (DG):** Expectations from various stakeholders and industry experts, including PREB and IRP intervenors, project further long-term declines in utility sales due to demand-side impacts from secular trends in EE and DG. Together with declining population, these factors represent the greatest drivers in load decline through the Certified Fiscal Plan forecast period (Exhibit 55).

One factor that could mitigate the decline of load in the future is the adoption of **Electric Vehicles (EV)**. Driven by declining technology cost and regulatory support, EV sales are expected to increase over the next 2-3 decades and have a potentially large impact on load. The Fiscal Plan, in its base case, does project the impact of EVs until FY38. However, it fails to project further growth beyond that point.

EXHIBIT 54: HISTORICAL BILLING DETERMINANTS (GWH, MW)



**EXHIBIT 55: 30-YEAR LOAD FORECAST WITH THE INDIVIDUAL EFFECTS OF THREE DRIVERS CAUSING LOAD REDUCTION (TWH)**



**12.2.1 Macroeconomic Projections and Demographics**

The 2022 Certified Fiscal Plan incorporates the macroeconomic and demographic projections developed for and presented in the Commonwealth Certified Fiscal Plan. The population forecast shows a steady decline due to the combined effects of outmigration and demographic factors. The pace of decline is less severe than prior year’s assumptions. The COVID-19 pandemic has significantly dampened previous projections of economic rebound. Assumptions underlying the rebound were driven principally by federal funding for restoration, which would create short-term employment opportunities; however, overall trends now project a population decline (Exhibit 56). The macroeconomic projections include the combined effects of the COVID-19 pandemic, ongoing austerity, population decline, natural disaster recovery, and federal funding across all sectors of Puerto Rico’s economy (Exhibit 57). Forecast reflecting the abrupt impact of the COVID-induced recession at the end of FY 2020, followed by a rebound and recovery in FY 2021 (supported by significant federal and local disaster-related and Covid-19 related stimulus funds), that is expected to continue into FY 2023. Economic growth is expected to be limited (in real terms) between FY 2024 and FY 2027.

EXHIBIT 56: COMMONWEALTH OF PUERTO RICO POPULATION PROJECTIONS, IN THOUSAND

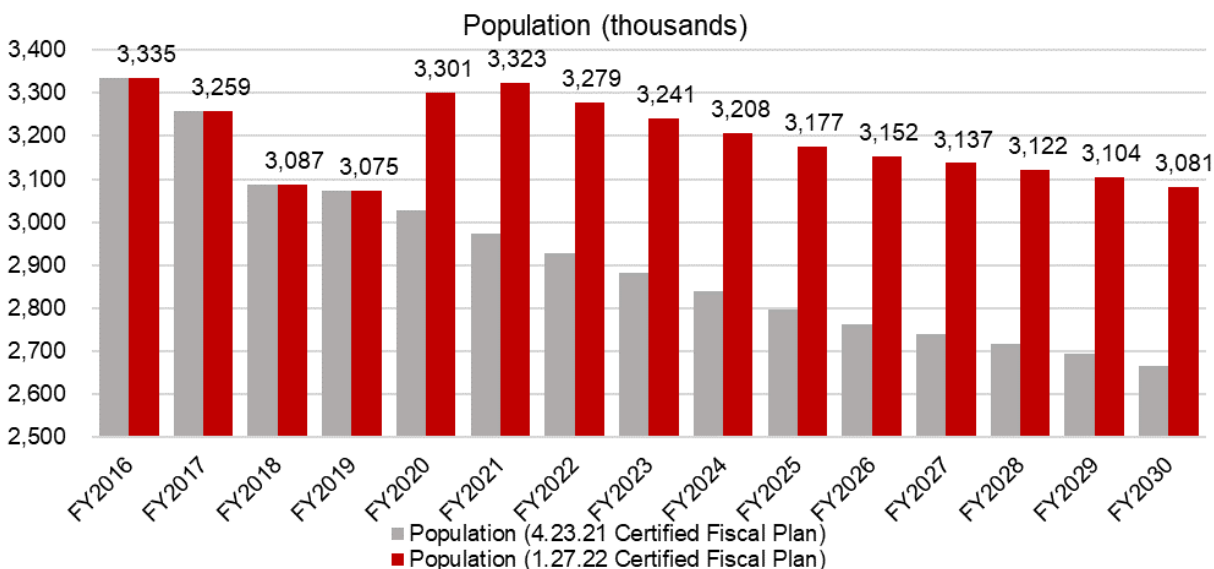
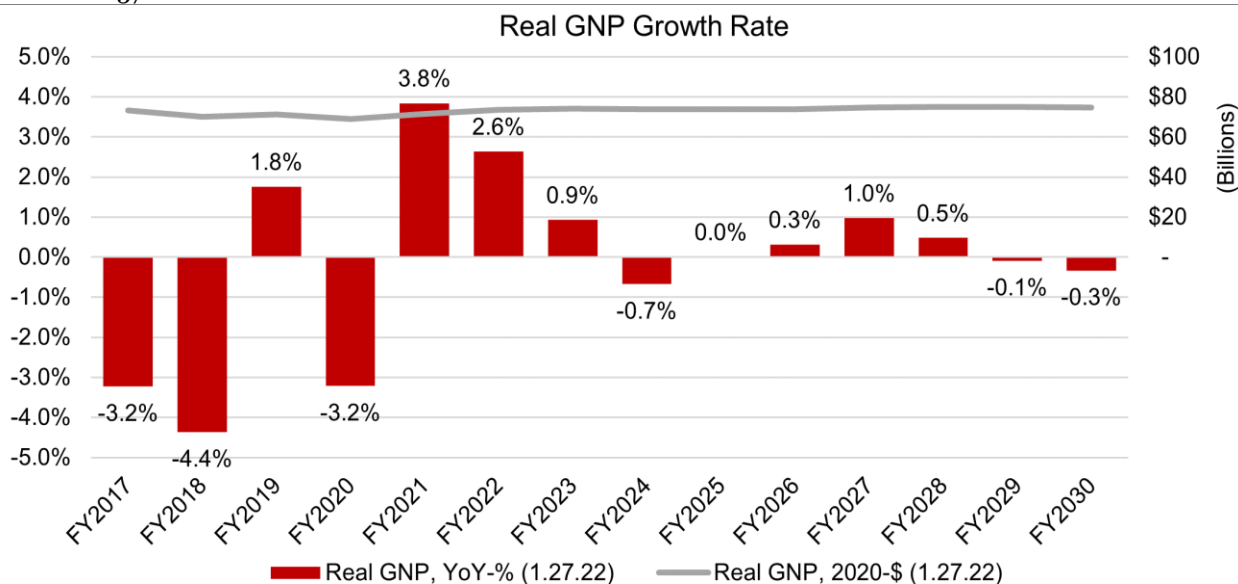


EXHIBIT 57: COMMONWEALTH OF PUERTO RICO GNP PROJECTIONS



### 12.2.2 Energy efficiency

The Certified Fiscal Plan load forecast assumes that PREPA achieves the target set forth by legislative mandate in Act 17-2019 of a 30% reduction in load attributable to energy efficiency by 2040 (compared to PREPA’s FY 2019 net utility sales). The annual reduction in load is consistent with the IRP projections with an adjustment for the program starting year. The energy efficiency

programs listed in the table below are consistent with the PREPA IRP, which included these programs as illustrative options for achieving the target energy efficiency results based on a screening assessment of programs used in other jurisdictions.

TABLE 13: ENERGY EFFICIENCY PROGRAMS

<b>EE Program</b>	<b>Description</b>	<b>Assumption</b>	<b>TRC<sup>150</sup></b>
<b>Residential A/C (Air conditioning)</b>	Incentivizes higher efficiency A/C systems in homes	Participation rates, energy savings, program costs based on comparable programs	3 – 5
<b>Residential Lighting</b>	Provides free LEDs to residential customers	Participation rates increase to 2.5% annually	4 – 6
<b>Commercial A/C</b>	Incentivizes high efficiency A/C systems in commercial buildings	A baseline average commercial A/C size is accurately assessed	1 – 2
<b>Commercial Lighting</b>	Incentivizes high efficiency lighting in commercial buildings	Annual kWh savings per participant based on comparable programs	3 – 4
<b>Public Street Lighting</b>	Full conversion to LED lamps	Public funding is available to support this program	n/a

The cumulative energy savings through implementing these programs is expected to be approximately 1,200 GWh in FY 2026. The biggest contribution to the savings comes from lighting improvements in commercial buildings, which was determined to be the highest impact and lowest cost potential program for PREPA to implement, followed by additional savings from streetlight conversions to LED<sup>151</sup> and installation of higher efficiency air conditioning systems in homes.

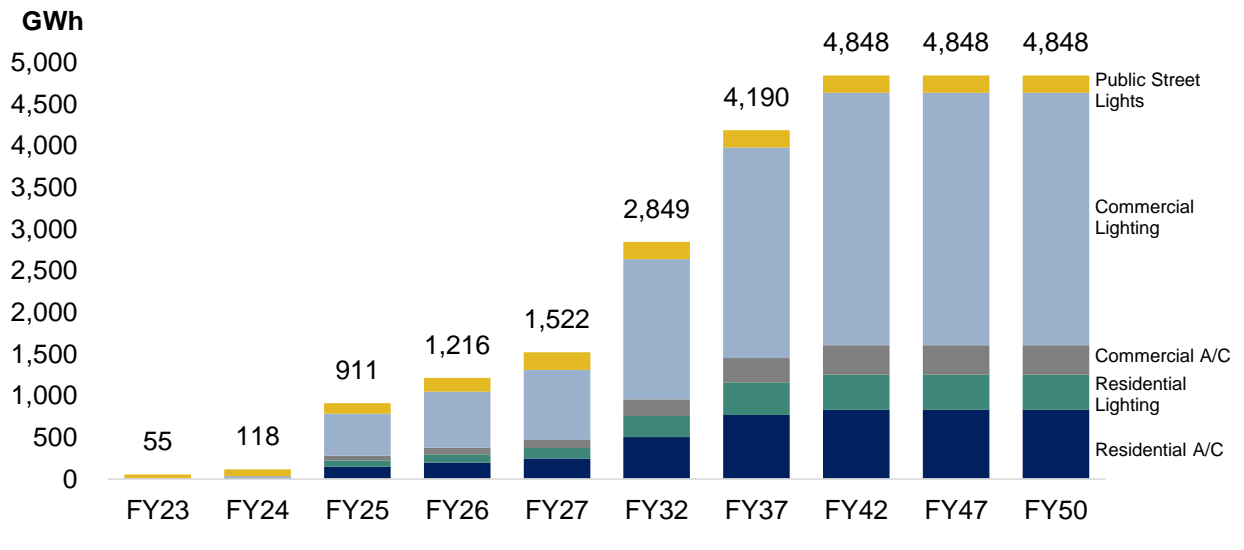
As these energy efficiency programs and implementation projections are purely illustrative, there could be many other combinations and types of programs implemented to achieve the target result. Actual energy savings from energy efficiency depend on the uptake of these measures among customers. As Act 17 compliant projections in the Certified Fiscal Plan are based on optimistic assumptions regarding participation rates and savings potential, the observed impact of such measures might be lower.

To comply with statutorily mandated EE targets, PREB, on April 22, 2021, started a new proceeding and released a draft regulation on EE to explore viable funding mechanisms for energy efficiency program implementation. Notably, to the extent these efficiency measures are delayed or not achieved there will be a more gradual decline in electricity demand.

<sup>150</sup> Total Resource Cost (TRC) estimates cost efficiency of energy efficiency programs. The TRC is calculated as the present value of the avoided energy cost (energy savings x average rate) to the present value of the program costs.

<sup>151</sup> LUMA, as T&D operator, will address repairing and replacing existing public lighting with LED within its Distribution Streetlight Program as detailed in LUMA's IRP.

EXHIBIT 58: CUMULATIVE ENERGY EFFICIENCY SAVINGS BY PROGRAM (GWH)



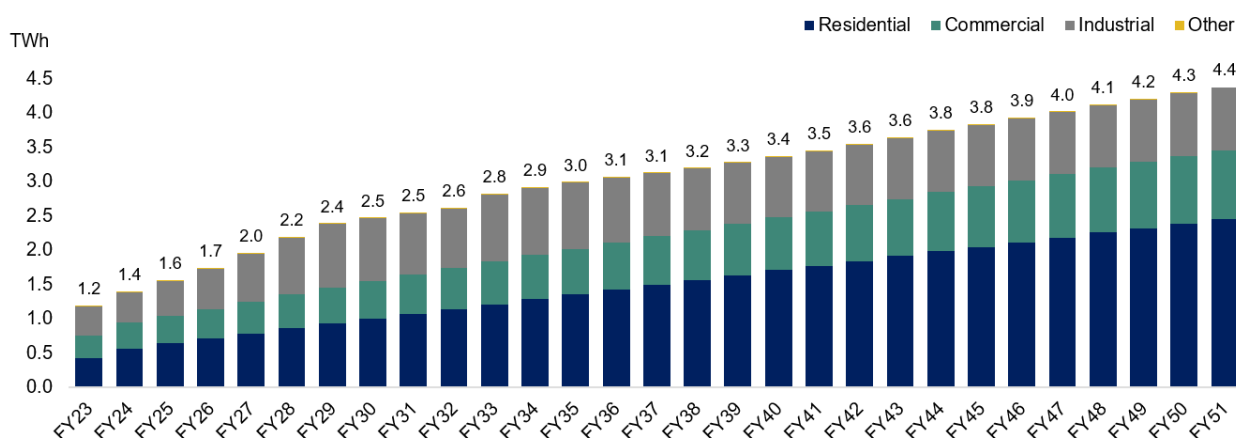
### 12.2.3 Distributed Generation (DG)

Deployment of distributed generation (i.e., rooftop solar and combined heat and power generation) is expected to grow and is projected based on the same methodology used for the IRP. The effect of DG is more significant in the later years of the 30-year projection, as the Certified Fiscal Plan assumes that DG will continue to rise because of declining costs for DG technology and increasing electricity rates. As the transformation process for the energy system advances, this trend is likely to continue.

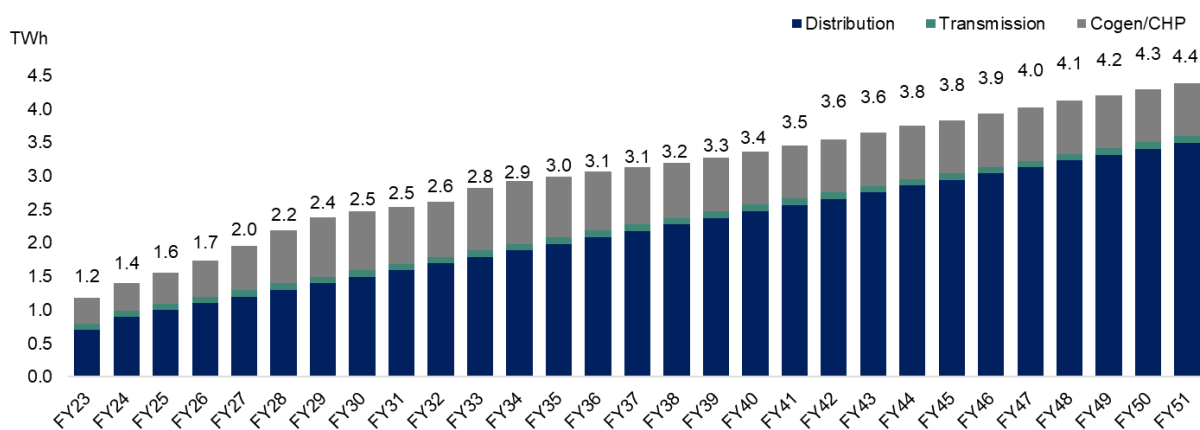
The adoption of DG is expected across all customer classes (Exhibit 59). While commercial and residential customers are more likely to adopt rooftop solar generation, industrial customers are more likely to build combined heat and power generation (CHP,

Exhibit 60). The assumptions for CHP are based on customer survey and data gathering used in the IRP and updated by PREPA Planning and T&D personnel. Because CHP is expected to be customer owned and associated with industrial processes there is no cycling of these units to accommodate renewable generation in the financial projections. CHP generation is assumed to be economically dispatched by customer-owners relative to available system generation costs (e.g., if system generation is cheaper than CHP, customer-owners use system generation).

**EXHIBIT 59: 30-YEAR DISTRIBUTED GENERATION FORECAST BY CUSTOMER CLASS (TWH)**



**EXHIBIT 60: 30-YEAR DISTRIBUTED GENERATION FORECAST BY SOURCE (TWH)**



### 12.2.4 Electric vehicles

Driven by technological development and regulatory support, the penetration of electric vehicles is expected to significantly increase in the upcoming decades. For instance, some estimates project that by 2040 EVs could reach nearly 60% of total vehicles sales in the US.<sup>152</sup> While these numbers depend on a variety of factors, including battery cost developments, regulation, and customer preferences, a significant uptake in EV sales will have an impact on electricity demand, both on average and peak load and has the potential to offset the effect of EE and DG. To understand the effects on average and peak load on a local level, and identify potential T&D investment needs, it is crucial to develop a thorough perspective on EV uptake. Nevertheless, PREPA must follow PREB’s guidance to include the impact of electric vehicles in future IRPs.

<sup>152</sup> Bloomberg NEF, Electric Vehicle Outlook 2020

## 12.2.5 *Load Projection Sensitivities*

### **Overview**

The Certified Fiscal Plan Base Case (the “Base Case”) developed by PREPA and LUMA includes a load scenario that is based on assumptions for key gross load drivers (GNP and population projections consistent with Commonwealth Certified Fiscal Plan) and for key net load drivers related to energy efficiency (EE), distributed generation (DG) adoption and electric vehicle (EV) uptake. The net load driver assumptions in the Base Case are based on Act 17 compliance (EE achieving 30% target by FY 2040) and basic assumptions of future growth based on historical growth (DG and EV).

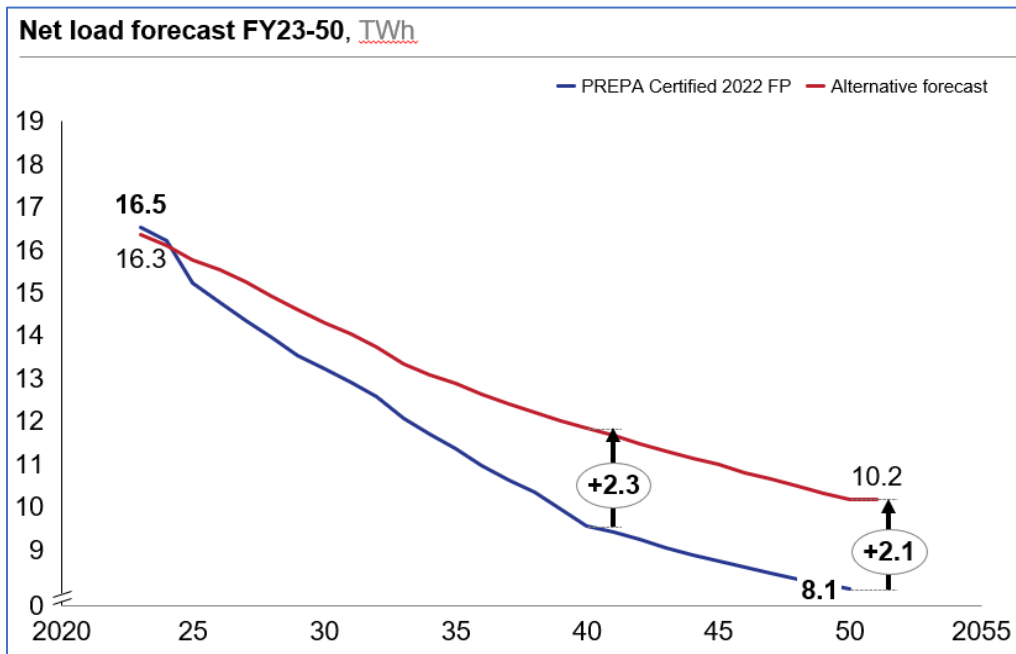
These assumptions in the Base Case do not fully capture the actual constraints and realities in Puerto Rico or the state of current programs and plans in place to support these assumptions. This has implications on resource planning. Please refer to Section 5.1.2 for a discussion of the associated implications.

An alternative forecast based on a bottom-up approach, that uses the current situation in Puerto Rico as the starting point, that is not constrained by Act 17, that incorporates the latest data available on current and future costs, and that is supported by driver specific models provides a perspective on a potentially different load forecast (the “Alternative Forecast”). This Alternative Forecast is subject to change in law and regulation, changes in price and cost trajectories and other factors.

### **1. Comparative View**

In general terms, the Alternative Forecast projects a net load that is 2.1 TWh higher than the Base Case by FY 2050. This difference results from different projection for EE, DG, and EV. In terms of EE, the Alternative Forecast projects savings of 1.5 TWh less than the Base Case by FY 2050. Regarding DG, the Alternative Forecast projects the load impact to be relatively close to the projection in the Base Case (0.1 TWh increase). Lastly, in terms of EV, the Alternative Forecast projects EV load to be 0.6 TWh higher than the Base Case by FY 2050. Figure 1 showcases the overall outcome of the Base Case and the Alternative Forecast.

Figure 1 - Net Load Forecast FY23-50, TWh



## 2. Key Differences and Assumptions

Fundamentally, the Base Case projections are based on top-down assumptions, while the Alternative Forecast approach is based on a bottoms-up perspective.

The Base Case projects EE load to reach the FY 2040 30% EE target established by Act 17 while the Alternative Forecast assumes organic growth of EE through incremental year-over-year technology efficiencies without considering legislation or program investments. More specifically, the Base Case starts with a top-down target and assumes that the 30% reduction by FY 2040 – as put forth in Act 17 – is achieved in time. Also, the Base Case assumes a constant yearly EE load increase of ~2% to get there. It is important to highlight that there are currently no programs, implementation plans, or funding incentives in place to support an energy efficiency program. The load decrease through EE is unlikely to be achieved only through commercial, industrial and residential lighting, equipment, and appliance replacements. On the other hand, the Alternate Forecast projects yearly load savings independent of any target through a bottoms-up model that uses as inputs – among others – equipment natural life cycles, yearly energy efficiency gains, and customer uptake.

Regarding DG, the Base Case forecasts DG load based on historical uptake rates, while the Alternative Forecast projects DG load based on adoption curves for different payback periods, calculated based on DG installation and O&M cost projections.

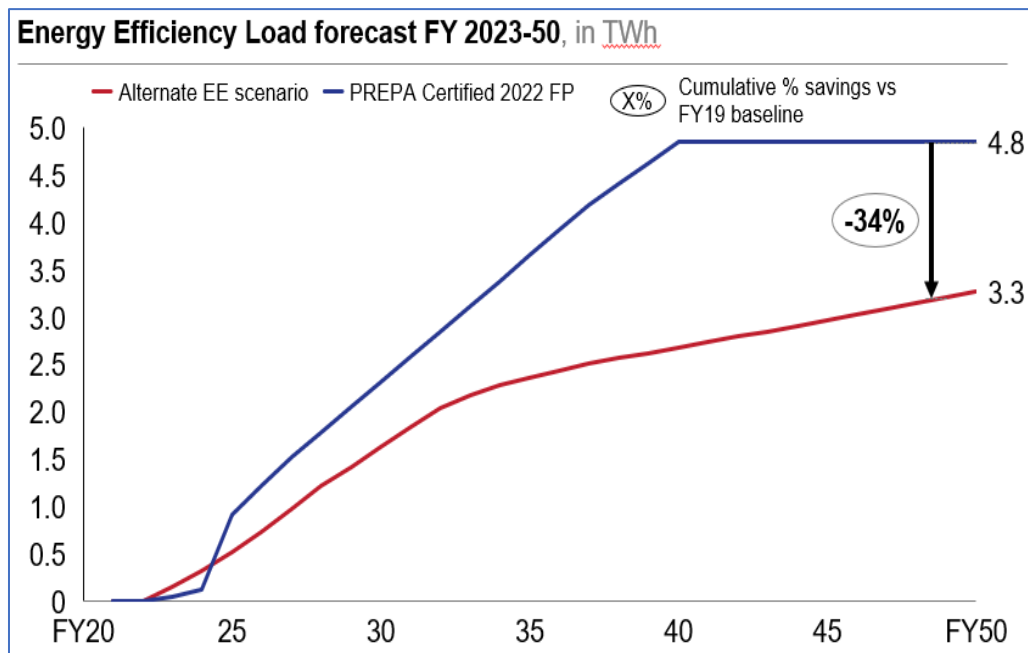
The Base Case forecasts EV load based on historical growth assumptions, while the Alternative Forecast projects EV adoption based on total cost of ownership (TCO). The TCO model includes a cost comparison of ownership for both EVs and combustion engine vehicles and customer preference, such as ease of purchase, maintenance, and availability of charging stations.



### 3. Specific Assumptions in the Alternative Forecast – Energy Efficiency

The EE forecast in Alternative Forecast is based on replacement life cycles, savings from energy efficiency gains, and customer uptake. For example, each equipment type is assumed to have a projected useful life/natural replacement cycle (e.g., residential lighting CFL is expected to be replaced every 4.7 years and LED lighting every 14.8 years). Additionally, the Alternative Forecast considers yearly efficiency gains specific to each equipment type from technology innovation (e.g., residential ACs are expected to have 0.3-0.4% annual efficiency gain), which is forecasted to be lower in Puerto Rico than in the US mainland. Finally, the Alternative Forecast also accounts for the yearly customer uptake based on the level of behavior change required and purchasing decisions (e.g. 40% uptake for residential LEDs and 60% uptake for commercial LEDs due to increased costs of technology). Figure 2 showcases the net difference that these assumptions generate in the projection of net load.

Figure 2 - Energy Efficiency Load forecast FY 2023-50, in TWh

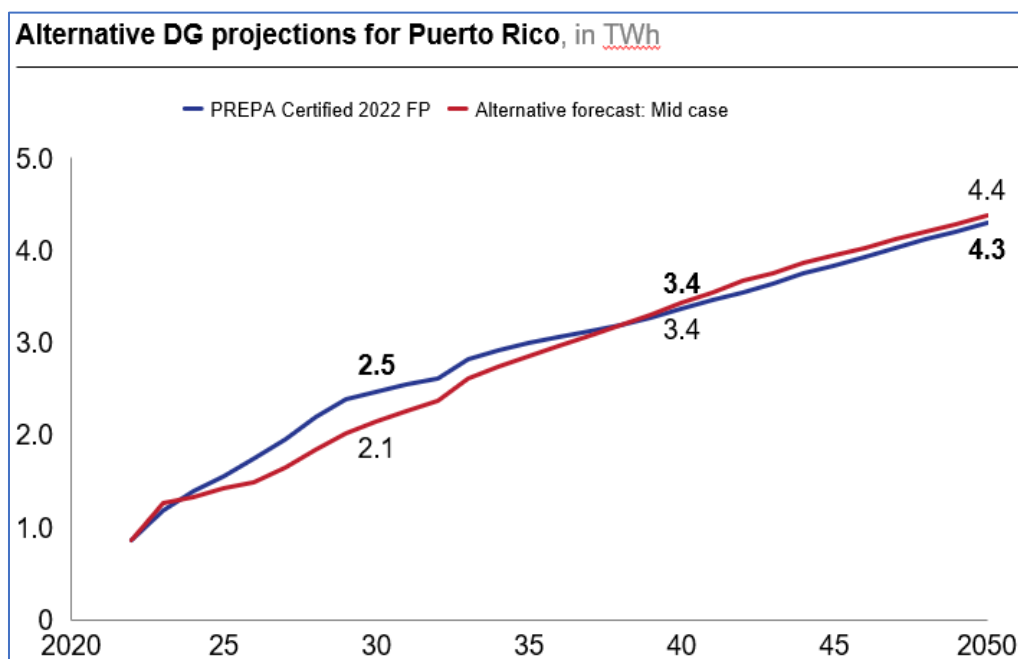


### 4. Specific Assumptions in the Alternative Forecast – Distributed Generation

In terms of DG, the projections from the Alternative Forecast are based on adoption curves for different payback periods, calculated based on projected DG technology costs. For instance, the Alternative Forecast assumes a payback period that continues to improve due to decreasing CapEx and O&M costs, in line with NREL ATB projections adjusted for Puerto Rico. As an example, this scenario assumes that the cost of installing residential PV systems is expected to decline 10% year-over-year from 2022 to 2040. It also assumes that Capex is expected to decrease from \$2.7k/kW in 2019 to \$0.9k/kW in 2040, in real terms. Furthermore, O&M costs are expected to decrease from \$27/kW/yr to 12/kW/yr over the same period. When adjusting for other costs on the island, the scenario assumes that Puerto Ricans are forecast to face a higher cost (+16%) when installing DG systems compared to the US mainland due to various constraints (e.g. Jones Act).

The Alternative Forecast also includes several additional assumptions. It assumes 100% net metering for customers who adopt DG until 2024, followed by policies covering the marginal cost of generation for new customers beyond 2024. It also assumes that batteries are not required to adopt PV systems, as examples from the mainland US show. For example, Michigan has the highest battery storage penetration, with 7% of solar DG adopters also having a co-located energy storage unit. Another important assumption considers that the eligible household's baseline is represented by 85% of customers per an NREL estimate. Puerto Rico's housing characteristics are more attractive for DG adoption compared to the US, California, and Hawaii (e.g. more single-structure housing units and fewer renters as a share of total).

Figure 3 - Alternative DG projections for Puerto Rico, in TWh



### 5. Specific Assumptions in the Alternative Forecast – Electric Vehicles

The EV forecast in the Alternative Forecast is based on economic incentives (total cost of ownership) and customer preferences. It projects 33% of cars in Puerto Rico to be EVs by FY50. These assumptions were generated by leveraging historical sales and scrap rates to forecast future ones and combining these projections with the historic number of cars in Puerto Rico to project the number of registered cars on the island per year. As a result, it assumes that the number of cars is projected to decrease over time as the population declines. It also assumes that the number of vehicles per capita stays relatively constant over time.

Another fundamental set of assumptions were generated by leveraging the FHWA National Household Travel Survey data for the average distance driven per year. As such, the Alternative Forecast assumes a decreasing technology cost, specifically with respect to batteries. It accounts for the total cost of ownership of EV models by using Puerto Rico-specific estimates. For instance, it includes Puerto Rico-specific gasoline prices, electricity rates, and the average US vehicle cost adjusted for Puerto Rico import duties and fees. Furthermore, the Alternative Forecast incorporates customer sentiment and evaluates energy grid readiness through PREPA's SAIDI

and SAIFI scores. Figure 4 highlights the difference in EV penetration in the Alternative Forecast contrasted with the Base Case. Figure 5 contrasts the overall difference in net load projections from the Alternative Forecast and the Base Case.

*Figure 4 - Puerto Rico EV penetration estimates (in %)*

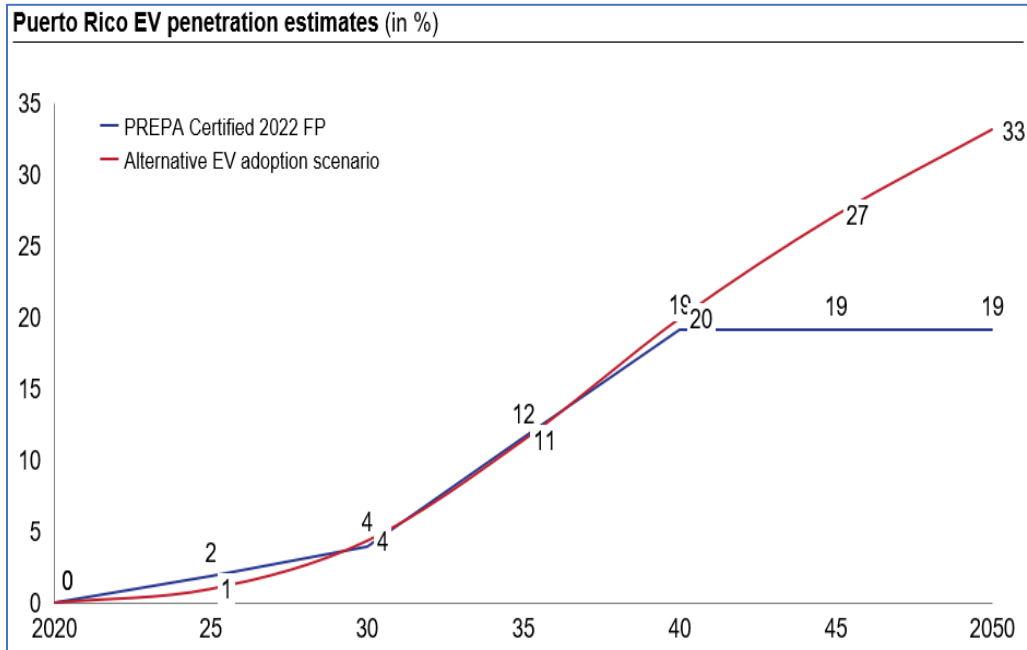
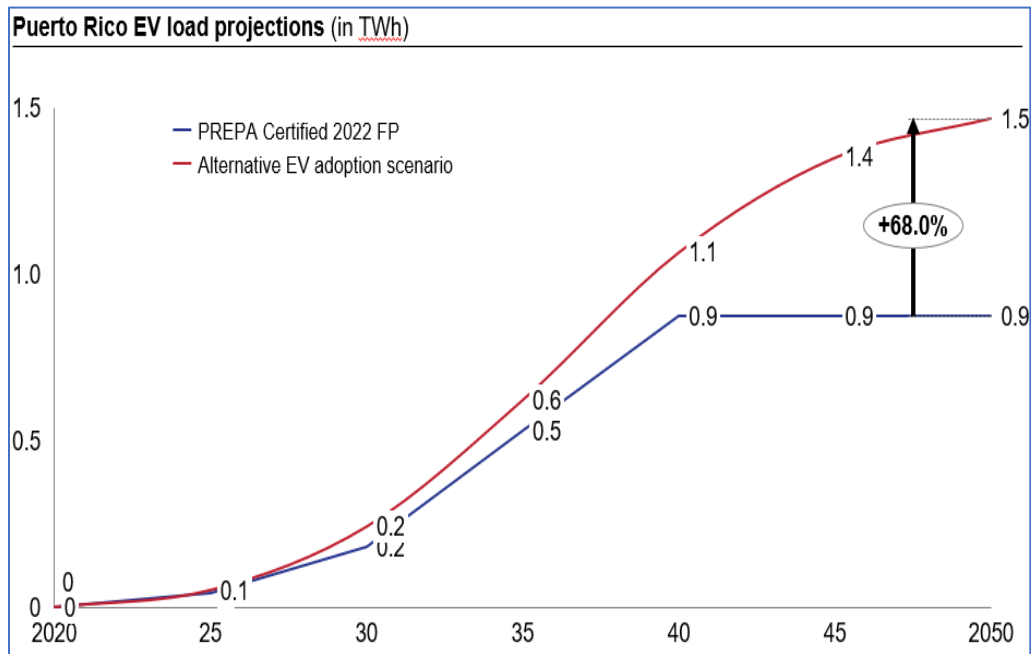


Figure 5 - Puerto Rico EV load projections (in TWh)

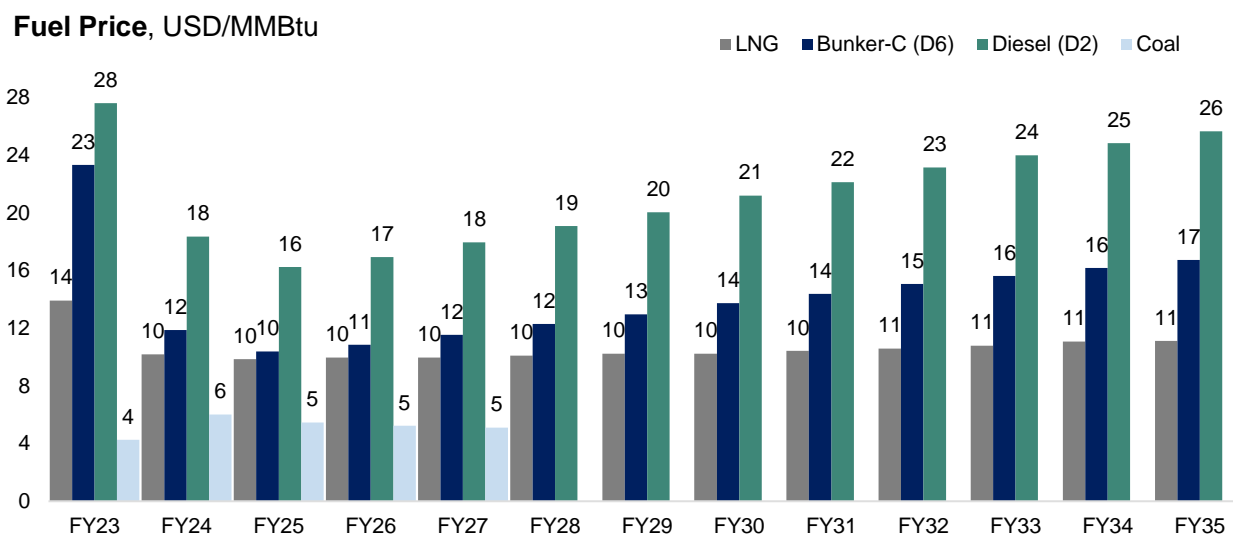


## 12.3 Other assumptions impacting revenue

### 12.3.1 Overview of Fuel and Purchased Power

Projections are based on fuel price forecasts using the IRP methodology for natural gas at the Henry Hub, crude oil (West Texas Intermediate or WTI), oil-derivate products of diesel (No. 2 fuel oil), and residual fuel oil (No. 6 fuel oil with 0.5% sulfur). The forecast has updated refined fuel prices for the near term based on financial futures pricing as of March 2022 and current effective PREPA contract adders. Prices for crude oil and refined oil products are projected to decrease substantially from FY 2023 to FY 2024, and then rise steadily at rates above general inflation.

EXHIBIT 61: FUEL PRICE FORECAST<sup>153</sup> (USD/MMBTU)



### 12.3.2 Price Elasticity

The PREPA IRP and Certified Fiscal Plan do not model customer price elasticity as a single variable or explicitly by customer class. Looking forward, the effects of higher utility power costs and declining costs of alternative sources of electric energy on customer behavior are captured through the assumptions on customer participation in energy efficiency programs, long-term efficiency improvements captured in macro-coefficients, and the selection of and switching to behind-the-meter distributed generation options. The base long-term forecast assumes large majority of Puerto Rico’s remaining industrial load is lost to DG and EE, along with substantial portions of residential and commercial sales.

### 12.3.3 Rate Structure

The 2017 PREB-approved rate structure implemented on May 1, 2019, is assumed to remain in place for the forecast period. Projections include annual adjustments to base rates are calculated based on corresponding annual revenue requirements. Note, however, the forecasted rates do not include any increases required for debt service of pension funding under a Title III plan of adjustment.

### 12.3.4 Transformation

The Certified Fiscal Plan base case financial projections assume that LUMA Interim Period Ends during FY 2023 and that achieves service commencement during FY 2021 by satisfying all conditions precedent to achieve the Service Commencement Date, or at least the Interim Service Commencement under the Supplemental Agreement. Unbundling or separation of Generation

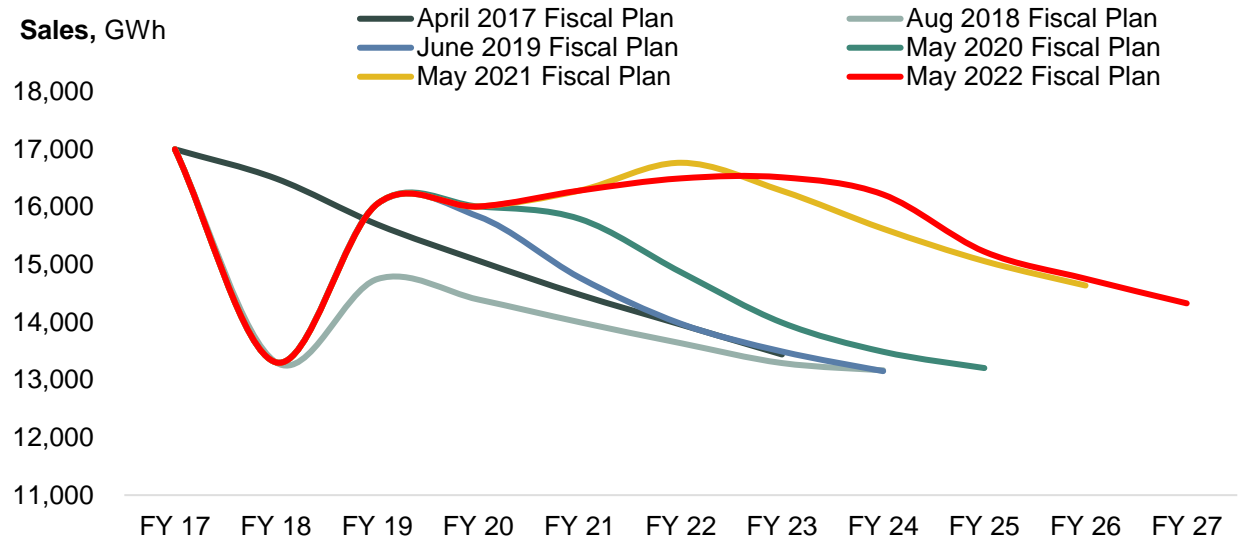
<sup>153</sup> Siemens Energy Business Advisory, commodity futures pricing as of 04/26/22 for April 2022-Sep 2023. 18 month blend to long-term forecast starting in April 2025

and T&D functions are expected to be completed during FY 2022, and PREPA Generation is taken over by one or more third party operator(s).

## 12.4 Comparison to Prior Certified Fiscal Plans

PREPA’s sales forecast for the near term predicts accelerated decline due to energy efficiency and distributed generation impacts. From FY 2023 to the end of the Certified Fiscal Planning period FY 2027, the total reduction in sales is projected to be approximately 10% (Exhibit 62).

EXHIBIT 62: PREPA CERTIFIED FISCAL PLAN NET UTILITY SALES IN GWH



## Chapter 13. Expenses

This chapter provides an overview of the projected expenses for the electric utility, i.e., the cost that customers will have to cover. PREPA's overall expenses are made up of nine (9) expense categories:

- **Non-renewable fuel:** Cost of fossil fuel, e.g., coal, diesel, heavy fuel oil
- **Conventional power purchase and operating agreements (PPOAs):** Expenses for non-renewable power purchased from 3<sup>rd</sup> party providers (e.g., EcoEléctrica and AES)
- **Renewable PPOAs:** Expenses for renewable power purchased from 3<sup>rd</sup> party providers – in the future this will include power from over 3GW in renewable capacity that PREB has ordered PREPA to bring online
- **CILT & subsidies:** Expenses for “contributions in lieu of taxes” and other subsidies that benefit e.g., low-income rate payers
- **T&D System Operating and Capital costs:** Expenses for labor, non-labor / other operating costs and necessary maintenance expenses as defined in the T&D OMA
- **Labor operating cost:** Expenses for labor associated with operating generation assets and the T&D System
- **Non-labor / other operating cost:** Expenses other than labor, e.g., supplies, rent, transportation, bad debt expense, etc., associated with operating, maintaining, and administering generation assets and the T&D System
- **Necessary maintenance expenses:** Expenses for maintaining generation assets and the T&D System. This includes repairs and associated materials, among others
- **PREPA ERS pension charge:** Expenses to fund pension benefits and OPEB for retirees
- **PREPA debt service:** Expenses to cover PREPA's debt obligations

As outlined above, PREPA's expenses are used by PREB, the regulator, to determine rates, i.e., rates are based on revenue requirements, such that they provide PREPA with the revenue – or funds – that it requires to pay for all the projected expenses needed to provide adequate service to its customers and pay its obligations. This chapter gives an overview of the 9 major expense categories described above that make up PREPA's revenue requirement and outlines how these categories are projected to develop over time. The focus of this chapter is on the near term, i.e., the next 5 years until FY 2027, as within this time-period the first major financial impact of PREPA's ongoing transformation is expected to materialize.

Overall, due to the impact of the ongoing transformation and additionally driven by declining load, PREPA expenses are expected to decrease over the next 5 years:

- Non-renewable fuel, the largest expense category in FY 2023, is expected to decline quickly over the next years, as PREPA's generation mix shifts from owned and operated fossil fuel powered generation to third-party provided renewable power

- Conventional PPA expenses are projected to decline in absolute terms, as generation shifts from conventional to renewable sources
- Expenses for renewable PPOAs are expected to increase quickly as outlined above, amid the shifting generation mix
- CILT & subsidies are expected to decrease over time
- Labor operating expenses are projected to decline in absolute terms, as generation assets are transitioned to private O&M operators that are expected to realize efficiencies
- Similarly, non-labor operating cost are expected to decline due to future efficiencies from private operators
- Necessary maintenance expenses are projected to decrease slightly in absolute terms, but keep their share of total expenses
- ERS pension expenses – not separately included in the FY 2023 rate in the absence of a determination of pension reform – are expected to make up a larger share in FY 2026.

### **13.1 Overview of Expense Projections**

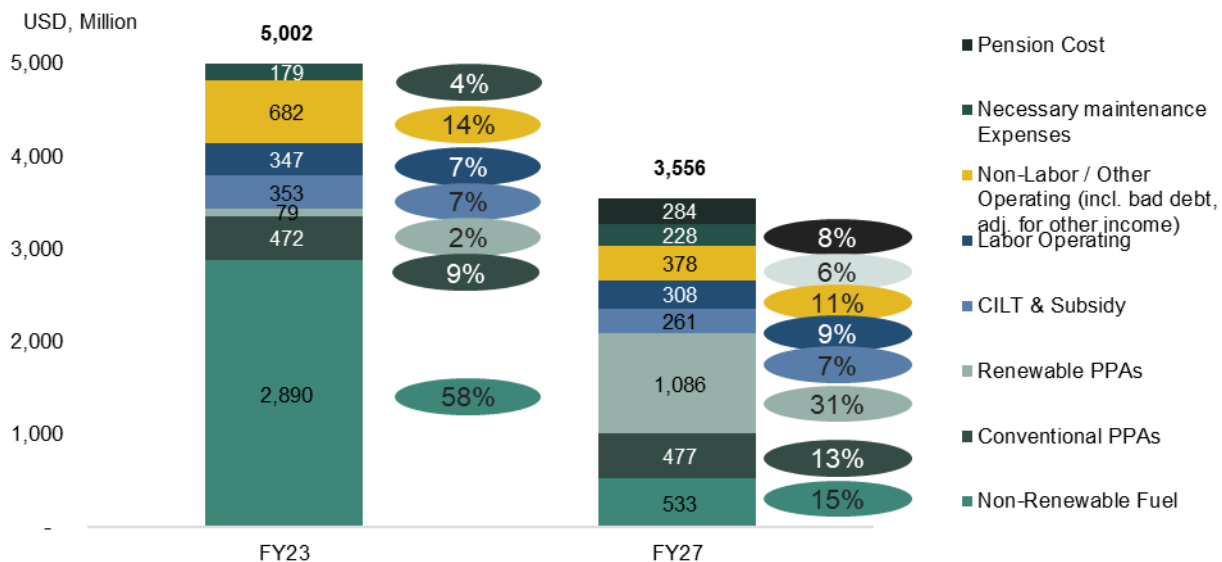
For FY2023 through FY2027, Exhibit 63 gives an overview of the expense categories and their projected relative shares.

Expense projections have been developed using a set of assumptions and inputs, including macroeconomic projections, load related assumptions, and inputs for specific expense categories, e.g., existing contracts for non-labor expenses, as well as capital plans, and PREPA’s IRP, among others. Furthermore, the projected expenses shown below are “post-measure” in the sense that they already account for the expected effects of certain improvement initiatives. Those include the ones outlined in Chapters 9 (Operational Measures) and 7 (LUMA Improvement Portfolios). The projections therefore also already account for the benefits of moving PREPA’s generation assets and T&D System to private operators. Without these effects, expenses - and as a result rates – would be higher, as outlined in Section 11.1 on baseline rates in Chapter 11 (Summary of Financial Projections).

The expense overview furthermore illustrates where additional future efficiencies can be expected. While LUMA and, in the future, one or more other private operator(s) for PREPA’s generation assets are expected to realize efficiencies in labor and non-labor cost, the biggest remaining opportunity will be related to fuel and purchased power. Chapters 9 (Operational Measures) and 7 (LUMA Improvement Portfolios) provide more details on initiatives addressing these opportunities that are already in progress and incorporated in the expense projections below, including PREPA’s fuel-related operational measures, and the procurement of 3.75GW in renewable generation capacity.



**EXHIBIT 63: FY 2023 VS. FY 2027 REVENUE REQUIREMENT PROJECTED BREAKDOWN BY CATEGORY (INCLUDING ERS PENSION PAYMENTS, EXCLUDING DEBT PAYMENTS)**



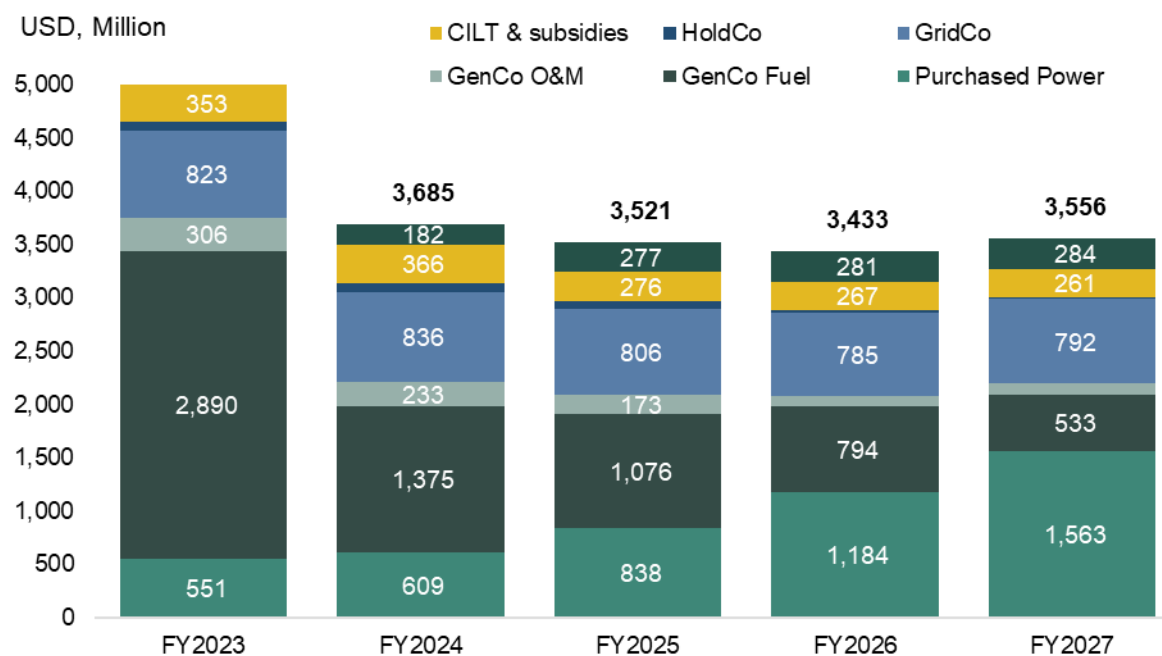
### 13.2 Overview of Expenses by Entity

During the forecast period of this Certified Fiscal Plan, PREPA’s vertically integrated operations will be, as mandated by law, disaggregated into Generation and T&D System functions – GenCo and GridCo, respectively. Additionally, there will be an entity that will be responsible for certain non-operational functions and associated payroll activities, along with paying Title III and advisor fees (HoldCo). Chapter 3 (Transformation) provides an overview of the future structure of PREPA.

As a result of the transition to GenCo, GridCo, and HoldCo, expenses will also be split across the three entities, too. Exhibit 64 shows the post-transition expense split for the next few years. ERS pension contributions after FY 2023, as well as bad debt, CILT/subsidies, and expenses for purchased power are separated. These expenses, including any employer contribution required to be made to the PREPA ERS for employees of these three entities, bad debt, CILT/subsidies, and purchased power are pass-throughs and cannot be considered part of the expenses per entity.

As illustrated above in Section 13.1, overall expenses are expected to decline to meet declining load and operational efficiencies. Additionally, GenCo expenses are projected to ramp down over time as PREPA’s units are retired and power is procured through PPOAs, which will be negotiate with Independent Power Procedures (see Chapter 3 (Transformation) for an overview of the roles and responsibilities after the transition to private operators). HoldCo expenses are projected to decrease quickly, too, especially after providing support for the transition of GenCo to private operators in FY 2023. GridCo expenses are projected to decline slowly over time, driven by the realization of efficiencies.

EXHIBIT 64: CONSOLIDATED PREPA EXPENSE BREAKDOWN<sup>154</sup> (USD MILLION)



Assumptions for expense projections are provided in the table below, consistent with underlying assumptions for the revenue and load projections in the previous chapter.

TABLE 14: ASSUMPTIONS FOR GENCO, GRIDCO, AND HOLDCO EXPENSES

Input	General Assumptions
<b>Fuel and Purchased Power Costs</b>	<ul style="list-style-type: none"> <li>Fuel and Purchased Power cost projections are based on an hourly generation dispatch model forecast that uses capacity expansion consistent with the PREB approved IRP and Modified Action Plan and recent market pricing and projections for refined fuel products.</li> <li>For FY 2023, a PROMOD simulation was used to estimate Fuel and Purchased Power expenses. Projections for FY 2024 onward are based on an Aurora capacity expansion model simulation which assumes an optimal economic dispatch, without the capacity to consider transmission constraints, which yields Fuel and Purchased Power projections that are significantly optimized compared to PROMOD’s projections. Therefore, absent changes on inputs, Aurora provides expense projections that are significantly lower than PROMOD.</li> </ul>
<b>GridCo Labor</b>	<ul style="list-style-type: none"> <li>FY 2023, FY 2024, and FY 2025 are in line with the LUMA filed budget for GridCo</li> <li>FY 2026 and beyond is projected using budget spending levels with an inflation factor</li> <li>Benefits expenses are based on historical spending levels and performance</li> </ul>
<b>GridCo Non-Labor Other Operating</b>	<ul style="list-style-type: none"> <li>FY 2023, FY 2024, and FY 2025 are in line with the LUMA filed budget</li> <li>FY 2026 and beyond is projected using historical spending levels with an inflation factor</li> </ul>

<sup>154</sup> PPAs between GridCo and GenCo are excluded to avoid double counting. New reporting structure for PREPA – split into GridCo and GenCo – is assumed to begin in FY 2022 for the purposes of presentation and discussion in the 2021 Certified Fiscal Plan.

<b>Input</b>	<b>General Assumptions</b>
	<ul style="list-style-type: none"> <li>■ Cost of service includes T&amp;D operator management fee for the forecast period</li> </ul>
<b>GridCo Maintenance</b>	<ul style="list-style-type: none"> <li>■ Based on historical spend and as outlined in LUMA's filed budget</li> <li>■ Maintenance costs are expected to return to historical averages as operational improvements reduce and are in place to support capital expenditure Federal funding is assumed to be available to cover a substantial amount of capital required for system rebuild and maintenance. Puerto Rico is requesting a cost-share adjustment for future FEMA program amounts under the Stafford Act. The projections in this Certified Fiscal Plan assume that Community Development Block Grant-Disaster Recovery (CDBG-DR) funding will be available to cover any matching requirements under the Stafford Act</li> </ul>
<b>GenCo Labor</b>	<ul style="list-style-type: none"> <li>■ FY 2023, FY 2024, and FY 2025 are in line with the filed budget for GenCo</li> <li>■ FY 2026 and beyond is projected using budget spending levels with an inflation factor</li> <li>■ Benefits expenses are based on historical spending levels and performance</li> </ul>
<b>GenCo Non-Labor Other Operating</b>	<ul style="list-style-type: none"> <li>■ FY 2023, FY 2024, and FY 2025 are in line with the filed budget</li> <li>■ FY 2026 and beyond is projected using historical spending levels with an inflation factor</li> </ul>
<b>GenCo Maintenance</b>	<ul style="list-style-type: none"> <li>■ It is expected that the exit from Title III should result in a return to the capital markets to finance capital improvements and improved counterparty risk to attract private investment into the generation system</li> <li>■ Federal funding is assumed to be available to cover a substantial amount of capital required for system rebuild and maintenance. Puerto Rico is requesting a cost-share adjustment for future FEMA program amounts under the Stafford Act. The projections in this Certified Fiscal Plan assume that Community Development Block Grant-Disaster Recovery (CDBG-DR) funding will be available to cover any matching requirements under the Stafford Act</li> </ul>

### 13.3 Overview of GenCo Expense Projections

From 2012 to 2021, PREPA’s generation workforce fell by over 50% due to the loss of 871 employees. This reduction was caused by several factors including austerity measures related to Act 66-2014 and Act 26-2017, among others. PREPA’s leadership is acutely focused on ensuring that PREPA can retain and hire the necessary employees to responsibly operate legacy generation units, however, unpredictable retirement patterns without available substitutes to assume the roles of skilled personnel eligible for retirement are driving a critical situation that could potentially cause major operational disruptions. To that point, PREPA’s generation directorate currently faces a (i) shortage of key operational personnel and (ii) a high proportion of key personnel eligible for retirement.

In order to address the issues mentioned above, PREPA’s projected spending on labor expenses is consistent with facilitating the transition to private operation via the P3 process currently underway and is designed to retain and hire/train the necessary employees to allow for the continuous and safe operation and maintenance of legacy generation assets. This is also relevant and necessary to enable PREPA’s implementation and orderly transition to renewable energy, as mandated by Act 17-2019 and the approved Integrated Resource Plan.

The non-labor expense category includes the purchase of non-capitalizable services, equipment and tools and materials that are essential and critical to carry out technical activities. This is essential to ensure a safe and reliable operation and maintenance of the generating units that make up the legacy generation fleet, and to meet the energy dispatch and load reserve requirements required during hours of regular and peak demand, as well as the hurricane season.

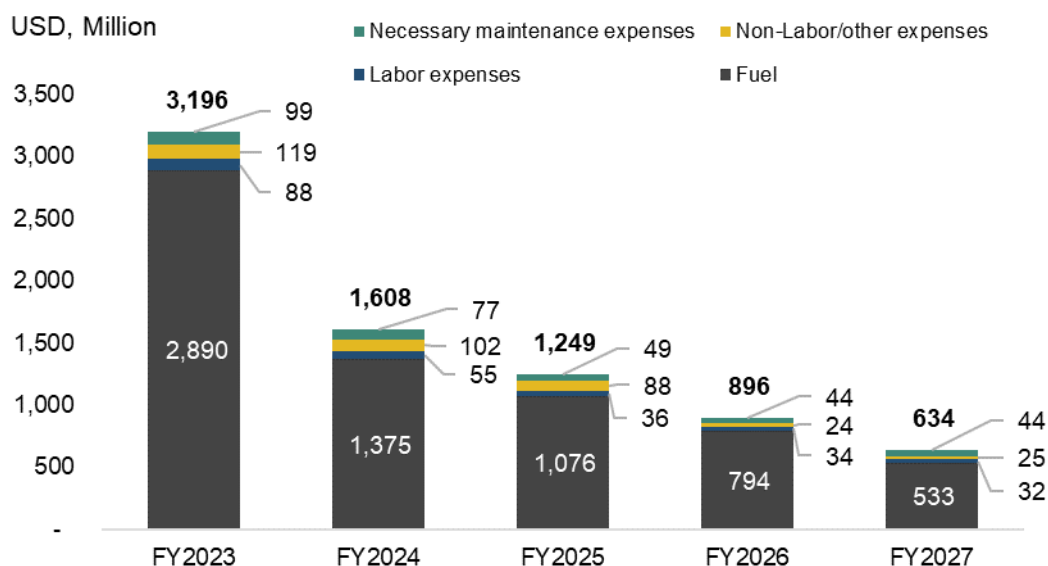
The budget for non-labor expense was developed by the PREPA generation directorate and executive management to ensure that generating units are available, reliable and in compliance with the requirements of the EPA Consent Decrees, as well as any operational and power plant's condition requirements under PREPA's property and casualty, business interruption, and other insurance policies<sup>155</sup>. The FY 2023 GenCo budget includes amounts sufficient to ensure that PREPA can undertake the necessary non-capitalizable maintenance and repair activities to comply with operational, environmental and insurance related requirements. For discussion on GenCo NME projections please reference Section **Error! Reference source not found. Error! Reference source not found.**

GenCo expenses are projected to decline over the Certified Fiscal Plan period as PREPA-owned generation units are retired, and the mix shifts to third-party owned generation, specifically renewable generation, which will be contracted through PPAs. PPA and fuel expenses are considered pass-through charges and are therefore not included in GenCo's expenses. PREPA will however transition O&M activities to one or more private operator(s) for its legacy generation units. This transition is expected to be completed in FY 2023. Labor, non-labor, and necessary maintenance expenses associated with operating and maintaining PREPA's legacy generation assets are expected to decrease from its current levels, as units are being retired. Exhibit 65 shows that the expense categories most closely correlated with the number of legacy generation units and their capacity - labor and necessary maintenance expenses - are expected to decrease between FY 2023 and FY 2027 by ~50% and ~70%, respectively. Non-labor and other expenses - which include expense sub-categories like the shared services agreement between LUMA and GenCo - are less correlated with legacy generation capacity than for instance labor as it includes insurance and IT cost, is expected to decrease less rapidly (~21%) over the same period.

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<sup>155</sup> Note that the cost of insurance premiums for the various insurance policies mentioned here is included in the cost of Shared Services with LUMA, not in Generation Non-Labor Expenses.

EXHIBIT 65: FIVE-YEAR EXPENSE FORECAST FOR GENCO<sup>156</sup> (USD MILLION)

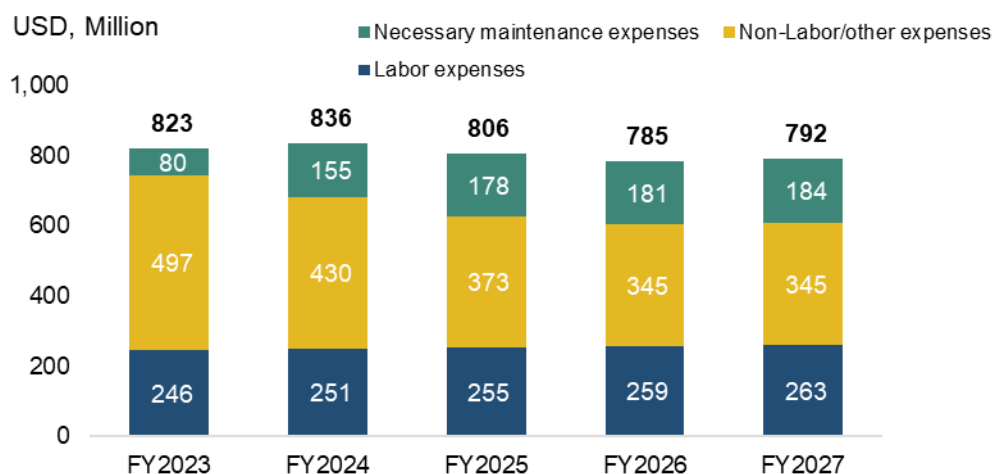


### 13.4 Overview of GridCo Expense Projections

GridCo expenses are projected to decrease slightly over the next 5 years, as the Title III process is completed and initiatives begin execution phase, leading to efficiencies. Labor costs are projected to slightly increase between FY 2022 and FY 2023, while the process of hiring LUMA’s workforce is being completed. After FY 2023 labor expenses are projected to stay stable in real terms. Non-labor/other expenses are expected to decrease over time, as future efficiencies from the transition to a private operator are being realized. These efficiencies have already been reflected in the projections shown in Exhibit 66 below. Necessary maintenance expenses are projected to increase over the forecast period as work begins on the execution of grid modernization and strengthening projects outlined in the T&D roadmap (see Chapter 7 (LUMA Improvement Portfolios) for details).

<sup>156</sup> Full transition to the private generation operator(s) is expected to take place by FY2022. Excludes ERS pension expense after 2022

EXHIBIT 66: FIVE-YEAR EXPENSE FORECAST FOR GRIDCO (USD MILLION)<sup>157</sup>



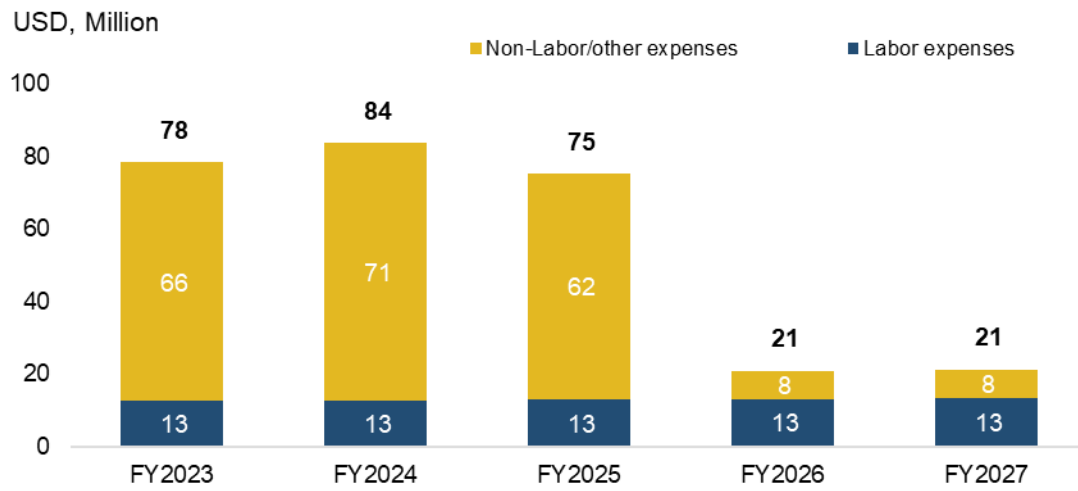
### 13.5 Overview of HoldCo

Exhibit 67 shows HoldCo’s expense projections over the next 5 years. Expenses are projected to decrease by approximately 50% between FY 2023 and FY 2027, as in FY 2022 HoldCo will still provide some transition support to GenCo (e.g., administrative support, etc.), but will transition these support activities to GenCo in FY 2023. Additionally, Title III related costs are expected to decrease in this time period, too, as PREPA is expected to leave Title III bankruptcy in FY 2023. After FY 2024, HoldCo expenses are expected to decrease further, as more and more activities from GenCo will be shifted to private operators, which will further decrease the support HoldCo will have to provide to GenCo. As HoldCo will not be responsible for any O&M work related to PREPA’s generation assets or the T&D System, HoldCo will not have any necessary maintenance expenses and will only have to cover its labor and non-labor expenses. As outlined above, non-labor expenses include Title III costs, advisor fees and P3A transaction costs, which will decrease between FY 2023 and FY 2024 and between FY 2026 and FY 2027, as PREPA exits Title III.

<sup>157</sup> Full transition to LUMA is expected to take place by FY 2022.

EXHIBIT 67: FIVE-YEAR EXPENSE FORECAST FOR HOLDCO (USD MILLION)<sup>158</sup>

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<sup>158</sup> Full transition to LUMA is expected to take place by FY2022. Excludes ERS pension expense after 2022.

# Chapter 14. Debt Service

## 14.1 Overview of PREPA Debt

As of May 2017, PREPA was burdened with approximately \$9 billion in bond and other debt obligations, along with an unsustainable repayment schedule. To pay full debt service on these obligations, PREPA would have been required to increase rates by approximately 6 to 8 c/kWh in real terms over the next twenty years. PREPA's unsustainable capital structure reflects decades of borrowing to fund operating deficits. In February 2014, three major credit-rating agencies downgraded Puerto Rico's public debt to below investment grade. In late June 2015, the debt was downgraded a second time when it became clear that the Island's debts were unpayable.<sup>159</sup> Finally, in the spring of 2016, as the investment community viewed default on nearly all of Puerto Rico's debt as a "virtual certainty," PREPA lost access to credit markets – thus eliminating debt as a means of funding necessary capital spending and operating deficits.<sup>160,161</sup>

In July 2017, in the interest of ensuring PREPA's future financial sustainability, and at the request of the Government of Puerto Rico, the Oversight Board filed a voluntary petition on behalf of PREPA for protection under Title III of the Puerto Rico Oversight, Management, and Economic Stability Act (PROMESA) in the U.S. District Court. Since then, a group of PREPA creditors, the Oversight Board, the Government, and PREPA negotiated a consensual debt restructuring support agreement. However, as a result of the uncertain and unpredictable effects of COVID-19 on PREPA and its customers, the Oversight Board and the Puerto Rico Fiscal Agency and Financial Advisory Authority (AAFAF) requested, and the court granted a pause in the Title III process to assess and understand the implications of COVID-19.

On March 8, 2022, due to concerns regarding affordability and sustainability of the electric system (among other reasons) AAFAF terminated the PREPA restructuring support agreement, an action supported by the Oversight Board. As a practical matter, the Oversight Board had the contractual right to terminate the agreement on its own. The termination terminated the agreement as to all parties such that the restructuring support agreement is no longer in effect.

Any future, successful restructuring scenario is dependent on achieving a compromise with one or more prepetition creditor groups, which include asset managers, insurers, and other financial institutions that allows for sustainable rates and affordable debt service. Sustainable rates and affordable debt service will both underpin PREPA's ability to operate in a financially viable manner, avoid undue burden on ratepayers, and provide a fair recovery to creditors.

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<sup>159</sup> D. Andrew Austin, Puerto Rico's Current Fiscal Challenges, (U.S. Library of Congress, Congressional Research Service, R44095, 2016), 4, <https://fas.org/sgp/crs/row/R44095.pdf>.

<sup>160</sup> "An obligation rated 'CC' is currently highly vulnerable to nonpayment. The 'CC' rating is used when a default has not yet occurred but S&P Global Ratings expect a default to be a virtual certainty, regardless of the anticipated time to default.", "S&P Global Ratings Definitions," S&P Global Ratings, last modified September 18, 2019, [https://www.standardandpoors.com/en\\_US/web/guest/article/-/view/sourceld/504352](https://www.standardandpoors.com/en_US/web/guest/article/-/view/sourceld/504352).

<sup>161</sup> D. Andrew Austin, Puerto Rico's Current Fiscal Challenges, [4](#).

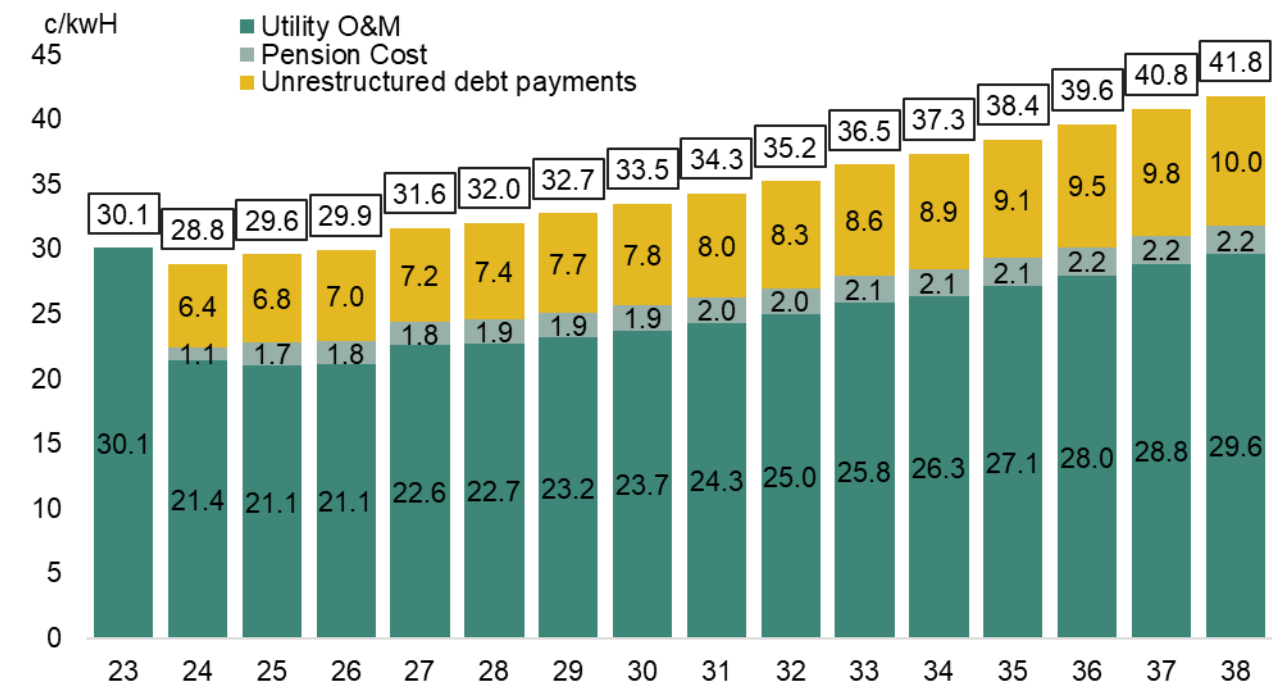


## 14.2 Implications of Unrestructured Debt on Projected Rates

Without restructuring its debt and other liabilities, PREPA would need to repay approximately \$3.2 billion of scheduled legacy debt service obligations over five years from FY 2023 to FY 2027 before considering the roughly \$4.1 billion of unpaid past and currently due amounts through FY 2022. Fully funding PREPA’s unrestructured debt service obligations in the near term would require rate increases of approximately 6 to 8 c/kWh in real dollars (Exhibit 68). In the longer term, PREPA’s estimated annual debt service obligation is approximately \$1 billion<sup>162</sup> per year based on amortization of all long-term financial liabilities at a 5.25% interest rate over 20 years. Absent restructuring of the debt, PREPA and its customers cannot afford to meet these obligations unless rates are increased by up to 8 c/kWh and collected which faces obstacles such as imposing higher rates on a poor population, incentivizing users to convert to solar power, deterring business investment, and spurring out-migration.

Payments for unrestructured debt service directly translate into higher customer bills. For instance, for a typical customer with a monthly electricity consumption of 500 kWh in FY 2022, including payments for unrestructured debt in the electricity rate (on top of the pre-measure rate that does not include any debt payments) would increase the customer’s average monthly bill in FY 2025 by ~30% from \$94.9 to \$123.5. This illustrative calculation assumes energy efficiency improvements in compliance with Act 17-2019 (as included in PREPA’s IRP), unrestructured pensions, and no demand increasing effects from, for example, electric vehicles or other technologies.

EXHIBIT 68: RATE WITH UNRESTRUCTURED DEBT ADDED (IN NOMINAL 2022 C/KWH)



<sup>162</sup> This includes bond principal, bond interest, fuel line principal, fuel line interest, and UCC payments.

### 14.3 Debt Sustainability Analysis

The debt sustainability analysis (DSA) included here provides a framework for assessing PREPA’s long-term capacity to pay debt service.<sup>163</sup> PREPA’s debt levels need to align with the objective of recovering capital market access to fund ongoing and future infrastructure capital investment and/or refunding savings and ensuring sustainable electric system with affordable energy prices for the Commonwealth and its residents. The following debt sustainability analysis describes PREPA’s capacity to pay current and projected debt.

The DSA assesses PREPA’s long-term capacity to pay debt service. The analysis must take into account that raising rates to pay legacy debt is subject to persons’ and businesses’ ability to pay, alternatives available to them if rates increase beyond their ability or willingness to pay, and the negative impact higher rates have on a generally poor population and the Commonwealth’s ability to attract new investments to grow its economy and provide jobs for a population having a high unemployment rate. Exhibit 8, the “share of wallet” of electricity costs for the average Puerto Rico household, is far above the average for U.S. and comparable island markets even without the recent surge in fuel prices. PREPA’s debt levels also need to align with the objective of recovering capital market access at reasonable rates to fund essential ongoing and future infrastructure capital investment and/or refunding savings, ensuring a sustainable electric system with affordable energy prices for the Commonwealth and its residents, and avoiding the consequences to PREPA of accelerating load defection to solar and other alternative energy resources, along with electricity theft. This debt sustainability analysis incorporates PREPA’s capacity to pay current and projected debt through a rate increase that accounts for these concerns and PREPA’s statutory mission and duties. Thus, the analysis, of necessity, incorporates objective and subjective judgments and concerns concerning fairness to Puerto Rico residents, fairness to creditors, carrying out PREPA’s statutory mission, and risks of demand loss from multiple causes.

The DSA matrix illustrates PREPA’s implied debt capacity at varying coupon levels and hypothetical levels of net revenue (TABLE 15). The DSA assumes a 30-year term and level debt service (i.e., 1.0 times coverage). Restructuring is imperative to achieving a sustainable solution to PREPA’s debt obligations and paving the way to regaining its investment grade rating and ensuring a fiscally sustainable future for the Puerto Rico energy system and Puerto Rico residents.

TABLE 15: ILLUSTRATIVE DEBT CAPACITY SENSITIVITY (Values in \$000’s)

<b>Sensitivity Analysis – Implied Debt Capacity</b>					
<b>c/kWh</b>		<b>1.500</b>	<b>2.000</b>	<b>2.500</b>	<b>3.000</b>
<b>PV Rate %</b>	5.000%	2,804,419	3,739,225	4,674,031	5,608,838
	5.500%	2,673,610	3,564,813	4,456,016	5,347,219
	6.000%	2,552,796	3,403,728	4,254,660	5,105,592
	6.500%	2,441,019	3,254,692	4,068,365	4,882,038

<sup>163</sup> PROMESA Section 201(b)(1)(l) mandates that the Certified Fiscal Plan include a debt sustainability analysis.

# Chapter 15. Pension Reform

## 15.1 Historical Background and Organizational Structure

The PREPA Employees' Retirement System (PREPA ERS) was originally created through Resolution 200 of PREPA's Governing Board in accordance with the terms of a Collective Bargaining Agreement executed in 1942 between the Puerto Rico Electrical Industry and Irrigation Workers Union ("UTIER," by its Spanish acronym) and the Water Resources Authority, now known as PREPA. PREPA's Governing Board adopted the resolution establishing the PREPA ERS as of July 1, 1945. Through the years, the PREPA ERS expanded its scope to cover other PREPA employees. Since its inception, the PREPA ERS has been governed by its bylaws, as amended, which are contractual in nature, known as the "Electric Power Authority Employee Retirement System Regulations" (the "ERS Regulations").

The PREPA ERS is a public pension system. Its assets are dedicated for the benefit of the active members, retired members, and their beneficiaries. PREPA is the plan sponsor, contributes to the PREPA ERS, and pays for all the administrative costs of the PREPA ERS, which total approximately \$4.7M per year. The ERS Regulations establish a Board of Trustees (the "Board of Trustees") to administer the PREPA ERS. That Board is comprised of eight (8) members, of which one (1) member is the Executive Director of PREPA, three (3) members are active members of the PREPA ERS and are elected by the active members of the PREPA ERS, three (3) members are appointed by the PREPA Governing Board, and one (1) member is elected by the retired members of the PREPA ERS.

Article 7 of the ERS Regulations provides that the powers of the Board of Trustees are subject to the limitations that the Governing Board of PREPA may prescribe. Further, Article 11 of the ERS Regulations provides that the ERS Regulations may be amended by the Board of Trustees, provided that said board notifies the PREPA Governing Board thirty (30) days in advance of its intention to amend the ERS Regulations. PREPA's Governing Board may, within said thirty-day (30) period, veto the proposed amendment. Additionally, Article 9(2) of the ERS Regulations provides PREPA's Governing Board with the ability "upon recommendation of the Board of Trustees" to modify contributions to or terminate the PREPA ERS "for reasons that affect its development and normal operations as a solvent entity, discontinue, suspend or reduce its contributions." Article 9(3) allows PREPA to terminate operation of the PREPA ERS "based on causes or circumstances that are outside of its control".

The ERS Regulations provide for PREPA to make an employer contribution to the PREPA ERS in the amount of the actuarially determined contribution (ADC), which is an actuarially determined amount reflecting the cost of benefits earned during the year ("normal cost") plus the amortization of the unfunded status of the plan over a fixed number of years. The ADC is the amount needed, if contributed consistently based on each year's actuarial calculation, to fully fund all of the benefits payable by a plan, so long as it is based on a set of assumptions that accurately represents expected future costs of the plan. The ERS Regulations impose on the Board of Trustees the obligation to approve its actuarial reports and financial statements annually. Up until the June 30, 2016, actuarial valuation that the actuary for the PREPA ERS provided PREPA with an ADC that was demonstrated, in hindsight, to be based on overly optimistic assumptions regarding payroll, life expectancy, and return on system assets. As a result, the ADC that has been

historically approved by the Board of Trustees was too low to maintain the health and funded status of the PREPA ERS. An actuarial revision was performed by the ERS actuary in 2018, with the intervention of the PREPA Governing Board, which updated many key economic and demographic assumptions, and significantly increased the ADC beginning with the June 30, 2017, valuation reports (i.e., FY 2019 ADC). Under its bankruptcy status, however, PREPA continued to fund the ERS plan at the lower levels calculated from the ADC before such ADC was revised to more realistic assumptions.

## 15.2 Pension Benefits Background

PREPA ERS undertook a significant pension reform in 1993 including, most notably, an increase in the minimum retirement age and the imposition of a cap on pension benefits through the establishment of a maximum annual compensation limit of \$50,000 as the base for the calculation of the pension benefit (i.e., in comparison to pre-1993 employees who would receive a merit-based pension of 75% of the highest three years of compensation without any cap). The maximum amount of annual pension benefit that a post-January 1, 1993, hire could earn, therefore, is \$37,500 (75% of \$50,000). Such reform notwithstanding, the Cost-of-Living Adjustment (COLA) remained in effect and applies to all retirees, providing for an increase to benefits every three years. Additionally, effective June 30, 2002, and June 30, 2003, an annual \$400 Christmas bonus and a \$100 Summer bonus were added to retiree benefits. As of June 30, 2004, a lump sum Funeral Benefit of \$1,000 was also established.

Key retirement provisions are itemized in the table below, both for employees hired before and after January 1, 1993.

TABLE 16: KEY RETIREMENT PROVISIONS

<b>Defined Benefit</b>	<b>Hired Before January 1, 1993</b>	<b>Hired On or After January 1, 1993</b>
Eligibility for Full Retirement Benefit	<ul style="list-style-type: none"> <li>▪ 30 years of service</li> </ul>	<ul style="list-style-type: none"> <li>▪ Age 55 and 30 years of service</li> </ul>
Maximum Compensation	<ul style="list-style-type: none"> <li>▪ Average of the three highest annual base salaries</li> </ul>	<ul style="list-style-type: none"> <li>▪ Average of the three highest annual base salaries, but capped at \$50,000</li> </ul>
Annual Benefits	<ul style="list-style-type: none"> <li>▪ Merit annuity is 2.5% of compensation times years of service up to 30 years</li> <li>▪ Accrued benefit annuity is 1.5% compensation for each year of service, plus 0.5% of compensation for each year of service after 20 years</li> <li>▪ Maximum benefit at retirement is \$37,500 for those hired on or after January 1, 1993</li> </ul>	
Employee Contributions	<ul style="list-style-type: none"> <li>▪ Employee contributions are generally 9.06% of salary</li> </ul>	<ul style="list-style-type: none"> <li>▪ Employee contributions are 11% of salary</li> </ul>

Cost-of-Living Adjustment	<ul style="list-style-type: none"> <li>▪ Every three years: 8% increase for monthly pension of up to \$300; 4% increase for monthly pension between \$300 and \$600; 2% increase for monthly pension in excess of \$600</li> </ul>
Other Benefits	<ul style="list-style-type: none"> <li>▪ Annual bonuses of \$500 (\$400 for Christmas and \$100 for Summer); Funeral benefit of \$1,000 paid as a lump sum; Lump sum of one year's pay at death while active or retired</li> </ul>

Furthermore, surviving spouses of retired members are entitled to receive a life annuity equal to 30% of the annual pension level at the time of death.

### 15.2.1 *Other Post-Employee Benefits (OPEB)*

For Other Post-Employment Benefits (OPEB), PREPA provides postretirement medical benefits outside of the PREPA ERS (i.e., not paid from pension trust). The eligibility for receiving medical benefits is 30 years of service. Currently, PREPA provides medical coverage for retirees through a contract with Triple-S. This benefit is completely unfunded and is included in the PREPA operating budgets, costing approximately \$12 million annually under the current contract. There are approximately 8,200 retirees that receive the OPEB medical benefit.

### 15.2.2 *Distribution of Active Participants by Age and Years of Service*

As of June 30, 2020, there were approximately 12,480 retirees (12,336, as of April 2022) that receive an average monthly pension benefit of \$1,815, and 5,524 non-retired participants (3,592 as of May 2022<sup>164</sup>) that participate in the pension system. The exhibit below sets forth the distribution of active participants by age and years of service (as of June 30, 2020).

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<sup>164</sup> The 3,592 includes over 2,000 former PREPA employees that transferred to Commonwealth agencies at the time of the formation of LUMA. PREPA ERS and the Oversight Board are engaged in on-going conversations related to the continued accruals of additional pension benefits in PREPA ERS for these employees.

EXHIBIT 69: NUMBER OF PARTICIPANTS AND TOTAL SALARY

**SCHEDULE OF ACTIVE MEMBER DATA  
AS OF JUNE 30, 2020**

Age	Completed Years of Service							Total	Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+		
Under 20	0	0	0	0	0	0	0	0	0
20 to 24	22	0	0	0	0	0	0	22	693,108
25 to 29	72	13	0	0	0	0	0	85	2,758,548
30 to 34	84	72	39	0	0	0	0	195	6,967,177
35 to 39	88	108	171	121	2	0	0	490	18,804,397
40 to 44	67	89	167	538	68	1	0	930	37,160,243
45 to 49	46	67	134	582	405	62	0	1,296	53,164,491
50 to 54	27	66	93	353	438	271	32	1,280	54,007,577
55 to 59	15	27	50	195	218	203	63	771	33,139,192
60	1	3	11	20	37	23	12	107	4,449,645
61	1	3	6	20	13	19	4	66	2,653,976
62	0	1	3	15	22	15	8	64	2,810,360
63	1	0	1	15	11	14	4	46	1,885,625
64	0	2	1	5	11	3	3	25	1,064,201
65	0	0	2	6	5	8	1	22	882,777
66	0	1	1	2	3	2	0	9	369,297
67	0	0	0	0	3	3	1	7	314,020
68	0	0	0	2	2	3	2	9	368,357
69	0	0	0	0	0	2	0	2	118,014
70+	1	0	1	5	2	3	3	15	602,821
Total	425	452	680	1,879	1,240	632	133	5,441	222,213,824

**Average Active Age: 48.0**

**Average Service: 17.6**

### 15.3 Funded Status

As of March 31, 2022, the PREPA ERS total asset value was \$539 million, of which approximately 29% or \$157 million was invested in “illiquid assets,” such as venture capital and partnerships, as well as employee loans/mortgages (i.e., Other Assets). The exhibits below show the pension system’s assets declining rapidly, primarily due to (a) significant outflow resulting from benefit payments, (b) an insufficient employer contribution, and (c) a significant decrease in headcount leading to a reduced amount of employee/employer contributions. As also shown in Exhibit 75 below, based on the depletion rate of trust from FY 2022, there are approximately 19 months remaining until the liquid assets are depleted (or a projected asset depletion date in October 2023). Note that investment returns, administrative expenses, and employee contribution withdrawals, including any by employees that have transferred to LUMA, could potentially accelerate the time until liquid assets are depleted.

EXHIBIT 70: PENSION ASSETS AS OF MARCH 31, 2022

Asset class	6/30/2019	6/30/2020	3/31/2022	Allocation Percent
<b>Liquid assets</b>				
Equities	\$491,936,787	\$378,104,233	\$271,118,314	50
Fixed Income	90,845,694	105,864,027	87,364,841	16
Real estate	38,667,303	30,872,177	15,033,015	3
<u>Cash and cash equivalents</u>	<u>12,776,776</u>	<u>1,550,669</u>	<u>9,078,364</u>	2
<i>Liquid subtotal</i>	<i>\$634,226,560</i>	<i>\$516,391,106</i>	<i>\$382,594,534</i>	71
<b>Illiquid Assets</b>				
Venture capital and partnerships / private equity	\$63,614,127	\$42,278,970	\$16,076,079	3
<u>Other assets / internally managed portfolio</u>	<u>218,012,470</u>	<u>203,769,237</u>	<u>139,935,477</u>	26
<i>Illiquid subtotal</i>	<i>\$281,626,597</i>	<i>\$246,048,207</i>	<i>\$156,011,556</i>	29
<b>Total Assets</b>				
<i>Total</i>	<i>\$915,853,157</i>	<i>\$762,439,313</i>	<i>\$538,606,090</i>	100
Annualized year over year change		-17%	-18%	

**Note**

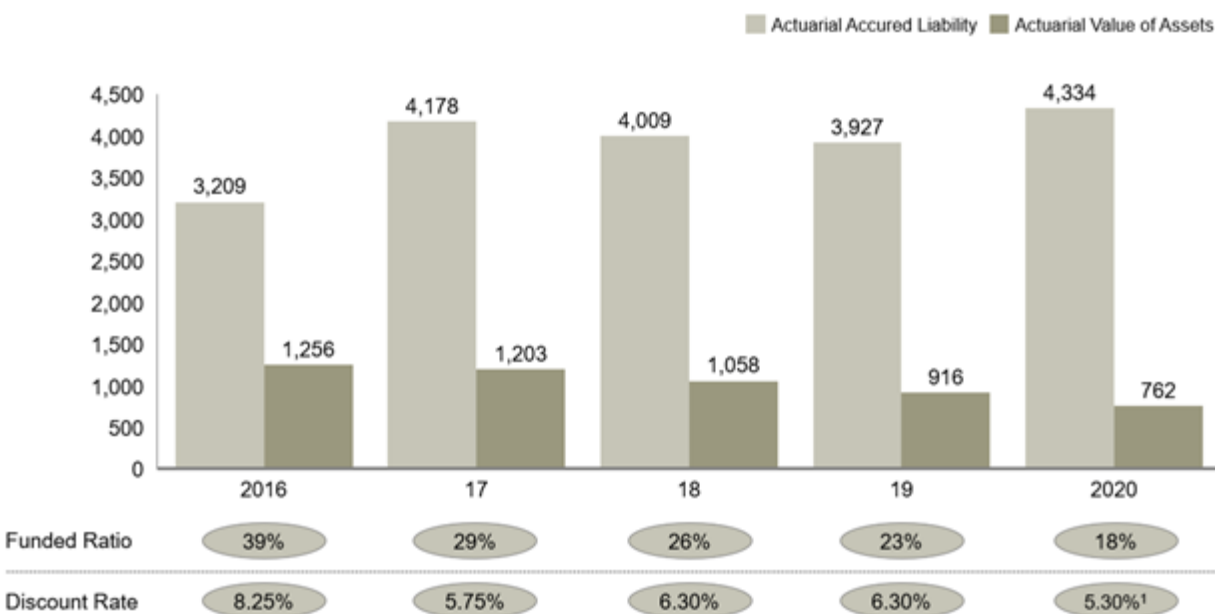
Expected monthly outflows based on FY22 run rate are as follows<sup>1</sup>

PREPA contribution	\$4 million
Benefit payment	-\$24 million
<b>Net outflow<sup>1</sup></b>	<b>-\$20 million</b>

Based on current run rate, assuming no other gains / losses, liquid assets will be depleted in ~19 months

<sup>1</sup> Does not account for investment return / decline

EXHIBIT 71: PENSION FUNDED STATUS AS OF JUNE 30, 2020



<sup>1</sup> The discount rate was reduced from 6.30% as a result of updated capital market assumption.

The exhibit above illustrates the funded ratio of the PREPA ERS plan for FY 2016-FY 2020. Historically, the funded ratio of the plan has steadily declined since 2008 when the plan was 67% funded. As of June 30, 2020, the pension liability was \$4.3 billion compared to an asset value of \$762 million, representing a funded ratio of eighteen percent (18%), which drops to twelve percent (12%) when excluding illiquid assets. A funded ratio of 18% means that all pension assets,

including those that may not be liquid, cover 18% of the actuarial accrued liability associated with the PREPA ERS Plan. The steady decline in funded status demonstrates a long history in mismanagement of pension costs resulting in significant underfunding of the plan.

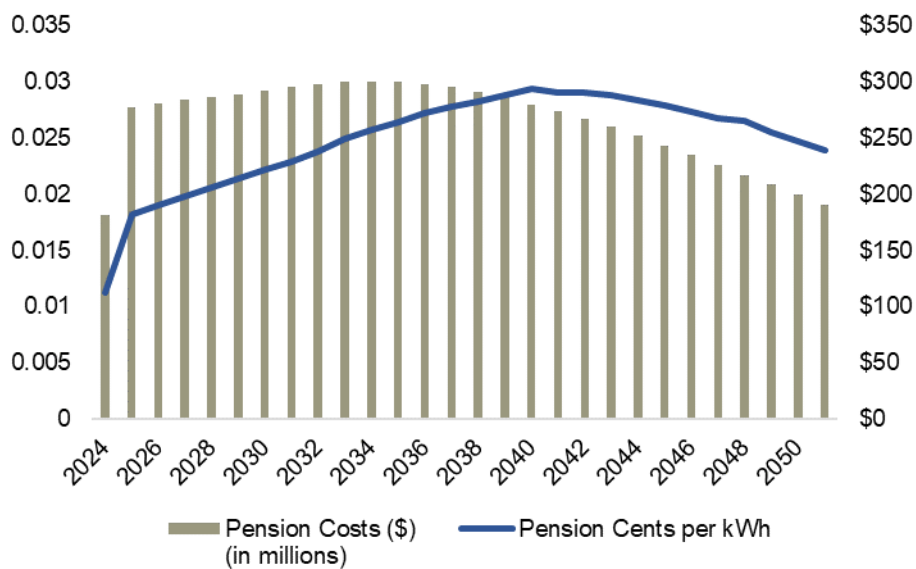
From FY 2017 to FY 2021, PREPA budgeted and contributed an approximate average of \$80 million per year as the employer portion of the pension system contribution, with the FY 2022 contribution decreasing to ~\$27 million. For FY 2023, the Certified Fiscal Plan reflects contributions of ~\$18 million.

### 15.4 Implications of Full Funding of ADC vs. PayGo Funding

The PREPA ERS’s current policy for calculating the ADC was established as of June 30, 2010, for the Unfunded Actuarial Accrued Liability (UAAL), to be fully amortized over a 30-year period on a closed basis. The UAAL is amortized as a level dollar amount, and, as of June 30, 2021, the remaining amortization period is 20 years.

PREPA estimates that for FY 2023 (July 1, 2022, to June 30, 2023), the full ADC will be \$313 million, based on the remaining 20-year amortization period. The expected benefit payments for the same period are estimated to be \$283 million, which represents over 1/2 of the market value of assets (liquid plus illiquid) as of March 31, 2022.

EXHIBIT 72: PROJECTED PAYGO COSTS AFTER PROJECTED PREPA ERS ASSET DEPLETION



If PREPA ERS assets are depleted and PREPA employer contributions are insufficient to cover pension benefits, PREPA would need to find resources to pay for pensions and employee contribution withdrawals on a Pay-As-You-Go (“PayGo”) basis, or risk non-payment of benefits to pensioners. At the current rate of funding, the PREPA pension system plan assets could become depleted PayGo during FY 24, requiring an emergency electric rate increase to fund pension obligations on a PayGo basis. Exhibit 72 shows the projected Paygo payments and the associated cost to ratepayers after PREPA ERS assets are exhausted Under PayGo, employer contribution would continue decades beyond the year 2050 until all benefits are paid. Possible solutions to



avoid such outcome include but are not limited to: (i) a future payment, potentially through the issuance of debt, made under the plan to PREPA ERS; (ii) or new pension trust from a transition charge established under the Plan; (iii) a separate stream of PayGo payments to pensioners directly (net of any distributions from residual PREPA ERS assets); or (iv) pro rata share of the unsecured creditor distribution under the Plan to PREPA ERS, requiring PREPA ERS to reduce pension payments to retirees pro rata.

## **15.5 Structural Pension Reform Considerations**

Because the PREPA-ERS trust is significantly underfunded a reform must be adopted to structurally support the ongoing needs of pensioners, while balancing the impact on power rates given the expected future reductions in electricity demand from the grid in future years. PREPA must determine the method by which these benefits will be funded, and the level of benefits that will be provided in the future (e.g. whether to apply a freeze, COLA elimination, cut etc.). The overarching decision that needs to be made relates to the pension funding vehicle. Currently, pension contributions are made to the PREPA ERS trust with benefits and administrative costs paid from the trust's accumulated assets. Current contributions to the plan are insufficient and will result in the trust becoming insolvent in the near future. If PREPA ERS assets are depleted, the payments will need to be converted to PayGo. A decision is needed whether to maintain a trust structure and rebuild the funded status of the plan to avoid the need to convert to PayGo, or simply accept the conversion to PayGo. In either case, additional decisions are needed in the areas outlined below to consider not only the contributions needed to appropriately fund the plan, but the impact of these costs on electricity rates.

### *15.5.1 Short term pension funding considerations*

If benefits are funded through a pension trust (either PREPA ERS or a newly established trust), PREPA will consider how best to reduce the negative impact of significant variations in the surcharge from year to year on customers. While rates would need to be reviewed annually to adjust for any losses occurring during the year, potentially adversely affecting long term adequate funding of the trust (for example variation in actual demand levels versus projected demand, unfavorable asset returns, etc.), funding benefits through a trust should allow the rate to be more even, providing increased stability in electricity rates over the years.

If pensions are paid via PayGo, the risk of fluctuation of revenue from the pension surcharge in electricity rates is even greater. Ideally, retirees need to be able to count on a stable monthly retirement income from PREPA ERS. Therefore, unlike other expenses which may be delayed for a period of time under challenging business conditions, a retirement system plan must be in place, with confirmations each month, to ensure that retirees receive their monthly pension checks in a timely manner. This may involve, for example, structuring the surcharge to collect revenue in advance for benefits that will be payable at some point in the future, so that if revenue is less than expected in the short term (e.g., lower demand due to natural disasters or general seasonal fluctuations), there is time to adjust the surcharge to generate the level of revenue necessary to pay benefits to retirees.

### *15.5.2 Longer term pension funding considerations*

If benefits are funded through a trust, there is more flexibility in how to structure the pension surcharge. Given the projected decline in future electricity demand and the long-term nature of

the pension obligation, a funding practice that results in a relatively stable contribution level each year will, as a by-product, result in continued increases in electric rates when lower demand levels in later years are factored in. As an alternative, a flat electricity rate could be determined that, if charged on current and future rates, would result in cumulative contributions at a level sufficient to fully fund the retirement system plan by the end of the closed amortization period.

If instead pension system expenses are funded via PayGo, there must be a recognition that pension payments for younger plan participants will extend decades beyond the length of the Certified Fiscal Plan. Therefore, a plan is necessary to make sure that these participants receive the pensions promised to them under PREPA pension reform as far out in years as necessary, even as demand may continue to decline.

## Chapter 16. Post-Certification Reporting

Electric utilities and energy providers operate critical infrastructure, often as monopolies. To provide transparency and inform regulators, employees, customers, and other stakeholders, regulated energy and utility companies must adhere to strict transparency and reporting requirements mandated by different federal, state, and other regulatory entities. Such reporting requirements are industry standard and apply to PREPA.

Historically, it has been PREPA's responsibility to report on its financial, operational, and reliability indicators. As part of the transformation of Puerto Rico's energy sector and LUMA's role as the operator of the T&D System, LUMA has continued to comply with some of these – and certain additional – reporting requirements, as specified in the T&D OMA. The T&D OMA authorizes LUMA to represent PREPA before PREB “with respect to any matter related to the performance of any of the O&M Services” provided by LUMA. It further specifies that LUMA will be responsible for all related filings and other submissions before PREB. Annex I of the T&D OMA details LUMA's accounting and financial information reporting requirements, including to both PREB and the P3A, and mandates LUMA to aid PREPA and P3A “in connection with the preparation of reports and other documents to satisfy PREPA's reporting requirements.” These include (among other requirements):

- quarterly and annual (year-end) financial reporting;
- monthly and annual federal agency reporting requirements;
- PREB reporting requirements;
- Budget Reconciliation Act of 2017 and other federal and Commonwealth stimulus or funding program reporting requirements; and
- Department of Energy reporting requirements.

To monitor the progress of PREPA's operational and financial reorganization and the transformation of Puerto Rico's energy sector, as well as the health and performance of Puerto Rico's electricity system, the Oversight Board has historically required PREPA to submit additional performance and implementation-related information to the Oversight Board on a regular basis. PREPA must continue to meet these reporting requirements until it is no longer a covered territorial instrumentality as designated by the Oversight Board pursuant to PROMESA.

Going forward and as defined in their respective OMAs, the private operators of PREPA's T&D and generation assets will be responsible for certain operational and non-operational measures. As a result, PREPA will be required to work closely with both entities to fully implement and complete the reorganization and transformation of Puerto Rico's energy sector.

The Oversight Board will use the private operators' reports to PREB and P3A on outcome metrics and implementation status to supplement the information provided by PREPA and continue to monitor the financial health and performance of Puerto Rico's electricity system, while reserving its right to request certain other reports from LUMA either directly or through PREPA.

The sections below describe various reports and metrics that must be submitted by PREPA, LUMA, and any other future generation asset private operator(s). Section 16.1 below describes the required information and submission cadence for each non-operational report PREPA must

submit to the Oversight Board, or that LUMA must submit to P3A and/or PREB, and to which the Oversight Board will have access to, as per the agreement with LUMA. “Non-operational” in this context means that these reports are not tied to specific operational measures but are overarching, indicating the overall performance and health of the electricity system. Section 16.2 includes an overview of the T&D-related metrics that LUMA is submitting to P3A and PREB as per the OMA<sup>165</sup>, and to which the Oversight Board will have access to as per the agreement with LUMA. The overview in section 16.3 summarizes generation-related metrics and reports that are tied to specific operational measures and that PREPA must submit to the Oversight Board. It reflects improvements to PREPA’s reporting process initiated in FY 2020. Once the transition of PREPA’s legacy generation assets has been finalized, the generation-related reporting responsibilities will move over from PREPA to the private operator. These changes will be reflected at a later point in time.

PREPA and the private operators will submit reports on a weekly, monthly, quarterly, or annual basis. The cadence and process for reporting is described in the table below.

TABLE 17: REPORTING CADENCE

<b>Report Type</b>	<b>Submission Timeline</b>
<b>Weekly</b>	Submitted on Wednesdays for the preceding week
<b>Monthly</b>	Expected 15 days after the end of the month
<b>Quarterly</b>	Expected 45 days after the end of the quarter in the form of a consolidated report
<b>Annually</b>	Expected 120 days after the end of a Fiscal Year in the form of a consolidated report

## 16.1 Non-operational Reports

Reporting of non-operational matters, i.e., information not tied to specific operational measures but information that is describing the performance and health of the electricity system at a more general level, is divided into two (2) categories: (1) Resilience and Resource Planning, and (2) Financial. Resilience and Resource Planning reports provide updates on implementation of the Integrated Resource Plan (IRP), grid modernization, and federal funding efforts. The financial reporting cadence varies based on the nature of the reported metric, ranging from weekly to annually.

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<sup>165</sup> Final metrics subject to PREB approval

TABLE 18: NON-OPERATIONAL REPORTS

	Report	Detail	Cadence	Responsible Entity
<b>Resiliency &amp; Resource Planning</b>	<b>Implementation of PREB approved IRP and Modified Action Plan</b>	Submission of all PREB required IRP status reports, including a two-year near-term forecast of the system’s expected capacity resource balance on a seasonal basis and its ability to meet peak load and operating reserve requirements with existing and anticipated resources at each of the forecasted intervals.	As determined by PREB	PREPA/ LUMA
	<b>Implementation of Grid Modernization</b>	Grid modernization plan must provide an overview of the major investment categories and projects that PREPA is considering in order to deliver reliable, resilient power and status of project delivery against milestones	Monthly	PREPA/ LUMA
	<b>Permanent and Emergency Work-Related Federal Funding Report</b>	Updates on FEMA and CDBG-DR funding programs for permanent and emergency work for generation and T&D assets. Provide the following by PW: <ul style="list-style-type: none"> <li>■ Intended use and description of project portfolio</li> <li>■ Obligated amount</li> <li>■ Received amount</li> <li>■ Cost-match requirements</li> <li>■ Cost-match funded (by source)</li> <li>■ Project timeline and/or milestones</li> </ul>	Monthly	PREPA/ LUMA
	<b>Budget to Actuals</b> (Reporting requirement is separate from any requirement under Section 203 in PROMESA)	Tracking of certified Budget to Actual for GenCo and HoldCo based on template to be provided by the Oversight Board: <ul style="list-style-type: none"> <li>■ Include explanation for material variances (greater than 10% and \$30 million)</li> <li>■ Include income statement in the reporting package</li> <li>■ Provide monthly budget reporting</li> </ul>	Monthly	PREPA/ LUMA
		Tracking of certified Budget to Actual for GridCo, GenCo and HoldCo based on template to be provided by the Oversight Board: <ul style="list-style-type: none"> <li>■ Include explanation for material variances (greater than 10% and \$30 million)</li> <li>■ Include income statement in the reporting package</li> <li>■ Provide quarterly budget reporting</li> </ul>	Quarterly	PREPA/ LUMA

	<b>Report</b>	<b>Detail</b>	<b>Cadence</b>	<b>Responsible Entity</b>
	<b>Accounts Receivable (AR)/Accounts Payable (AP) cash flow reporting</b>	Continued reporting on cash flow, payables and receivables by customer or vendor class.	Monthly	LUMA

**16.2 Transmission & Distribution-related Operational Measures**

Per the T&D OMA, LUMA will annually submit T&D-related performance metrics to P3A and PREB across three categories: (1) Customer Satisfaction and (2) Technical, Safety, & Regulatory, and (3) Financial Performance. LUMA will also submit performance metrics on LUMA’s performance during a Major Outage Event. The specific metrics within each category are included in Chapter 8.

In addition, LUMA shall provide to the Oversight Board copies of any monthly, quarterly or annual report submitted to PREB, the P3A, or any other government agency, until PREPA is no longer a covered territorial instrumentality, as designated by the Oversight Board pursuant to PROMESA. Moreover, LUMA and PREPA, will complement their System Remediation Plan updates to the PREB (NEPR-MI-2020-0019) with information related to vegetation management. Specifically, LUMA will provide updates on the number of miles cleared, the municipalities impacted, and number or percentage of service interruptions caused by it. The Oversight Board will use these reports to supplement the information provided by PREPA in monitoring the financial health and performance of Puerto Rico’s electricity system.

**16.3 Generation-Related Operational Metrics and Reports**

Until the private operator for PREPA’s generation assets assumes responsibility, PREPA is required to report on its generation asset related operational measures on a monthly cadence for all operational measures. The precise reporting requirements vary by the nature of the measure, as outlined by the table below.

TABLE 19: REPORTS ON GENERATION-RELATED OPERATIONAL MEASURES

	Report	Detail	Cadence
Fuel Supply and Power Purchase Agreements	<b>Diesel supply contract</b>	Report to include diesel purchases Year-To-Date (YTD), with year-over-year comparison of results. Reporting required on renegotiation or renewal extension process.	Monthly
	<b>Bunker fuel supply contract</b>	Report to include bunker fuel purchases YTD, with year-over-year comparison of results. Reporting required on renegotiation or renewal extension process.	Monthly
P3 Projects and Transformation	<b>Legacy generation P3</b>	Reporting requirements to include RFP process updates for generation operator(s) and subsequent front end transition process	Monthly
	<b>PREPA Reorganization Plan Implementation</b>	Reporting requirements to include a project workplan for execution of PREPA Reorganization Plan, including but not limited to: <ul style="list-style-type: none"> <li>• A clear description of PREPA’s reorganized corporate structure, including identifying all subsidiaries expected to be established in relation to its reorganization (GridCo, GenCo, HoldCo, HydroCo, and PropertyCo), as well as any other remaining subsidiaries (i.e., PREPA Holdings, PREPA Networks, LLC—now known as HUB Advanced Networks, etc.).</li> <li>• A description of each entity within the overall umbrella structure, including operational scope, roles, responsibilities, and required roster size of operations over time (i.e., Organizational Charts).</li> <li>• A detailed timeline with specific milestones that is consistent with the goal of a timely completion for PREPA’s reorganization.</li> <li>• A list of clear descriptions of PREPA’s intended transformation with regards to each entity or subsidiary (e.g., processes contemplated for managing and divesting assets, transferring operations to third party operators whether private or public, as applicable).</li> </ul>	Monthly

## Chapter 17. Conclusion

**The 2022 Certified Fiscal Plan lays out the actions the Government of Puerto Rico must take to accelerate and successfully complete the transformation of Puerto Rico's energy system.** As laid out in this Certified Fiscal Plan, as well as in the 2022 Commonwealth Certified Fiscal Plan, the full and complete implementation of the Energy Sector Reform is a fundamental component of Puerto Rico's strategy to promote economic development, improve its attractiveness as an investment destination, and, last but not least, improve the quality of life of its residents.

The modest steps taken by PREPA to procure renewable resources and the successful transition to LUMA as private operator of the T&D system important achievements that together provide PREPA's customers with a sense of hope that a modern, efficient and reliable energy system is possible. Nonetheless, the overall delays in many other initiatives, including the development of the 150MW of non-operational renewable resources previously approved by the Oversight Board, PREPA's corporate reorganization, the deployment of federal funding and the procurement of renewable resources in excess of those procured in Tranche 1, among others, pose a clear and present risk to the progress seen thus far. Unless urgent action is taken, in particular by PREPA, LUMA and PREB, Puerto Rico's residents may find themselves having to permanently rely on an outdated and unreliable energy system.

Aside from ensuring the short-term reliability of its generation fleet, PREPA's resources and focus should be deployed to enable the successful transition of Generation operations to one or more private operators, as mandated by Act 17-2019. Similarly, PREPA should continue to focus and enhance its efforts on facilitating the access and deployment of federal funds, both towards the improvement of generation resources as well as towards investments in the T&D System, by supporting and serving as a partner to LUMA in its efforts to improve the quality and reliability of energy services in Puerto Rico.

In the longer term, updating and implementation of the IRP, 10-year Infrastructure Plan, and LUMA's improvement programs, will be essential to building a modern, safe, reliable, and resilient electricity sector for Puerto Rico. The 2022 Certified Fiscal Plan sets PREPA on a course to fully transform the energy system with best-in-class operational technology and expertise.