LUMA

Review Proceeding and Prefiling Technical Conference for the 2024 IRP - (Phase 2)

October 31, 2023

Agenda

1. LUMA Introduction & Update
2. PR100 / DOE information
3. Core Modeling Assumptions
4. Modeling Scenarios / Analysis Structure / Approach
5. Topics and Schedule for Next Technical Conferences
6. Questions and Discussion

1. LUMA Introduction

1. LUMA Introduction

- Please Note: All information presented in this second pre-filing IRP technical conference and provided in response to the Energy Bureau's Request of Information (ROI) is preliminary and subject to change as 2024 IRP development progresses.

SETPR

Solutions for the Energy Transformation for Puerto Rico (SETPR)

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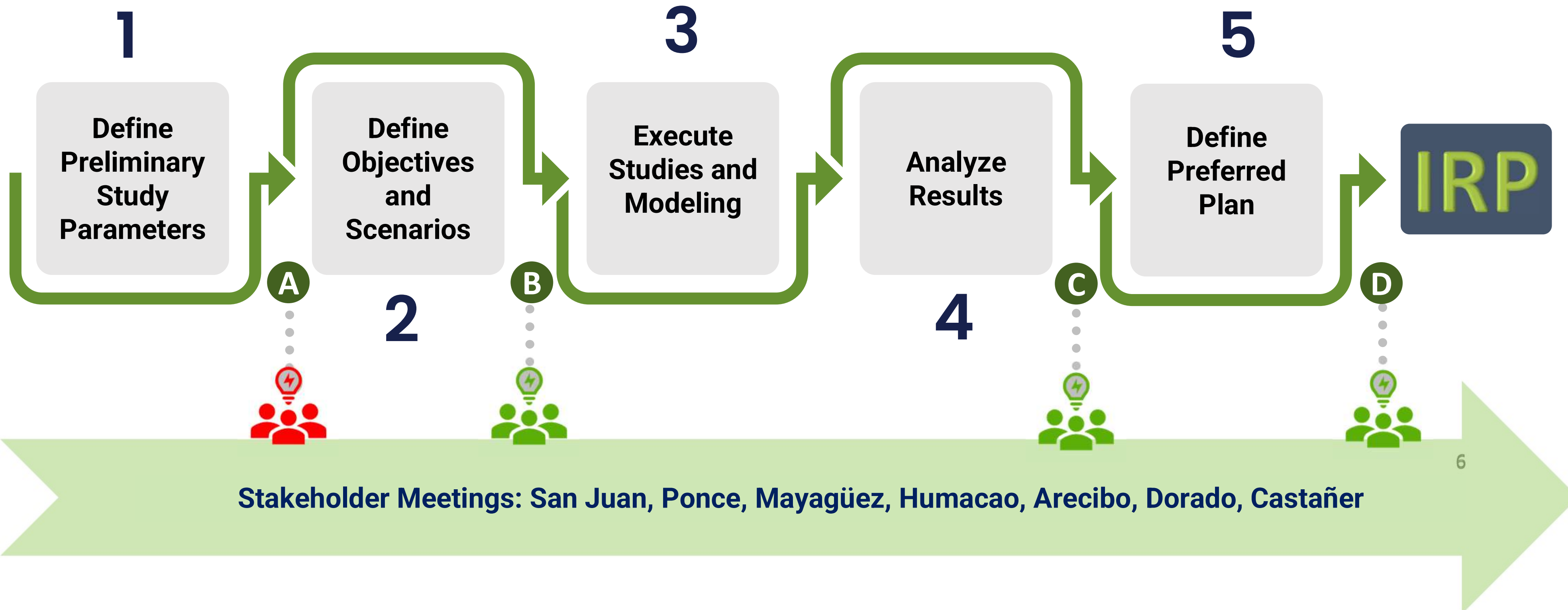
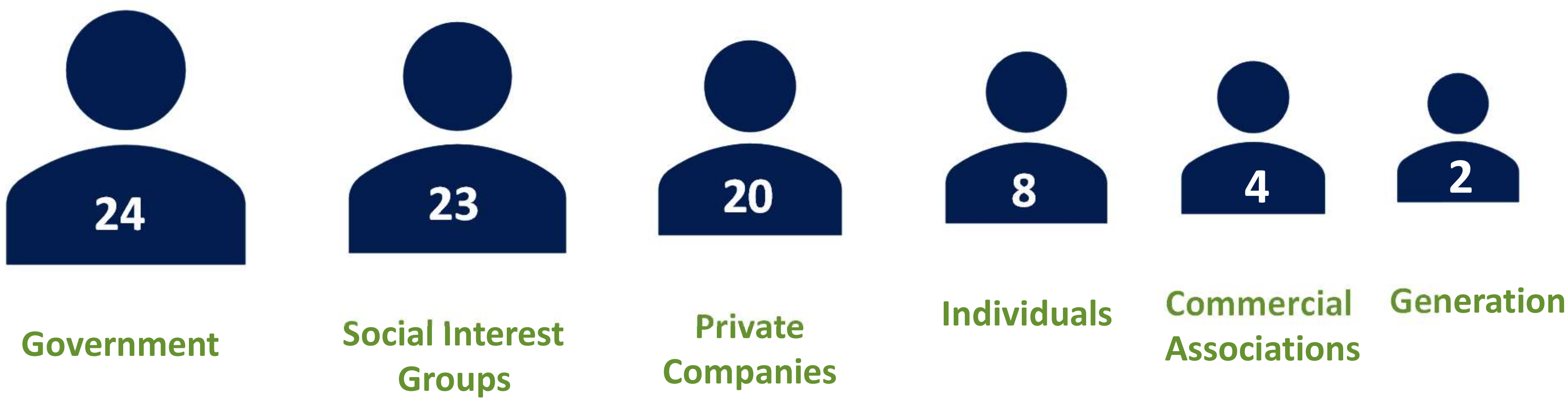
SETPR / IRP Process



SETPR Participation (Oct. 10 - Oct. 19)

81 Workshop Participants to Date



SETPR (Cont.)

SETPR Workshops

IRP Update

- Completed final draft of the demand response study
- Completed base load forecast study
- Completed baseline transmission analysis
- Continue to work on distribution hosting capacity analysis
- Developing a distributed solar and storage forecast based on customer cost benefits with current and modified net energy metering (NEM) rates, and includes customer value of resiliency
- Analyzing select results from DOE PR100: Puerto Rico Grid Resilience and Transitions to 100% Renewable Energy (PR100) with the IRP technical consultant to potentially use in the 2024 IRP
- Working with existing generators to collect the best information possible to include in the IRP

2. PR100 / DOE Information to Inform Assumptions in the IRP

a. Solar potential and performance

- PR100 used NREL solar insolation data for both the distributed and utility scale solar in the PR100 analysis
- PR100 utility-scale solar used fixed-tilt utility-scale solar that produced on average a 20% capacity factor for projects assessed
- LUMA intends to use the NREL solar insolation data
- LUMA's IRP Technical Consultant, Black and Veatch (B&V), will review the PR100 cost and performance data and, based on their experience, provide LUMA a recommendation to either use PR100 data as the expected cost and performance or potentially as an alternate scenario

2. PR100 / DOE Information to Inform Assumptions in the IRP

b. Wind potential and performance

- PR100 used wind potential and turbine characteristics from the 2022 NREL report Wind Energy Costs in Puerto Rico Through 2035 (2022 NREL Wind Report)
  - PR100 wind projects incorporated the costs and performance of typhoon-class wind turbines that were analyzed in the 2022 NREL report. Performance of the turbines were highly dependent of their location
- LUMA intends to use wind potential and turbine characteristics from the wind potential and turbine characteristics
  - B&V will review the PR100 cost and performance data and, based on their experience, provide LUMA a recommendation to either use PR100 data as the expected cost and performance or potentially as an alternate scenario

2. PR100 / DOE Information to Inform Assumptions in the IRP

c. Distributed scale vs. Utility-scale resource scenarios

- PR100 assessed three (3) scenarios based primarily on the differences in the amount of Distributed Photovoltaic (DPV) and Distributed Battery Energy Storage Systems (DBESS) installed:

  1. Lowest - DPV forecasted based on economically justified DPV, including a savings of a reduced electric bill, and an estimate of the value of resiliency from the solar+storage
  2. Highest - DPV were based on DPV installations on every rooftop
  3. A third scenario that adds additional customer to the lower forecast

- PR100 bill savings portion of the assessment assumed net energy metering (NEM) remains the same, providing a full retail rate credit through 2050

- PR100 then added utility-scale resources to provide the remaining energy not served by DPV

2. PR100 / DOE Information to Inform Assumptions in the IRP

c. Distributed scale vs. Utility scale resource scenarios (Cont.)

- LUMA DPV and DBESS forecasts will be based on economically justified projects, including savings of a reduced electric bill, and an estimate of the value of resiliency from the solar + storage installations
- LUMA will create two (2) foundational DPV and DBESS forecasts differentiated by the NEM credit value for excess generation flowing to the grid
  1. Existing NEM - assumes NEM remains the same, providing a full retail rate credit
  2. Modified NEM - assumes the NEM credit reflects only the value of time-based avoided costs, which could go to zero $/kWh value at times when system generation from combined utility-scale and distributed solar exceeds system demand

2. PR100 / DOE Information to Inform Assumptions in the IRP

c. Distributed scale vs. Utility-scale resource scenarios (Cont.)

- LUMA will then create two (2) or more DPV forecasts for modeling that vary the date of the transition from growth rates with the current NEM structure to those growth rates that occur with the transition of NEM customer credits to the actual avoided costs
- LUMA will also take into consideration technical limits of the grid to host the forecasted DPV
- LUMA will then add utility resources to provide the remaining energy not served by the distributed scale solar resources

2. PR100 / DOE Information to Inform Assumptions in the IRP

d. Transmission and/or distribution analysis

- PR100 found that even for the scenario with their lowest distributed solar forecast, scenario 1LMNet, most of the existing distribution feeders would require upgrades to accommodate the distributed solar
- LUMA looks forward to reviewing the conclusions and recommendations of the PR100 T&D analysis for potential insights that could enhance the 2024 IRP
- LUMA plans to utilize the results from its own transmission and distribution analyses as input to 2024 IRP

3. Core Modeling Assumptions

a. Load forecast - components for IRP modeling

i. Base forecast (peak load and annual energy)

ii. Energy efficiency effects on base forecast (energy and peak load modification)

iii. Distributed generation (solar PV) behind-the-meter (BTM) effects on base forecast (energy load modification)

iv. Distributed battery storage behind the meter (BTM) effects on base forecast, if any (energy and peak load modification)

3. Core Modeling Assumptions

a. Load forecast - components for IRP modeling

i. Base forecast (peak load and annual energy)

- LUMA and Guidehouse have made considerable progress in a forecasting improvement initiative
  - Historical data from both system metering and customer metering was thoroughly reviewed to address errors and missing data and to identify anomalies in customer or system data that were not reflective of normal usage
  - Historical and recent weather impacts on the system were refined
  - New econometric forecasting model was created by assessing the forecasting accuracy using alternative sets of econometric drivers
  - Once the econometric model was determined, alternate forecasts were created using upper and lower probabilistic projections of the selected econometric drivers in addition to changing temperature expectations

LUMA

3. Core Modeling Assumptions

a. Load forecast - components for IRP modeling Energy Forecast (GWh)

Preliminary Draft Forecast

	CY 2025	CY 2030	CY 2035	CY 2040	CY 2044	Source
Base (before consideration of the next four rows)	18,753	19,207	18,518	17,633	17,127	LUMA – Guidehouse
Energy Efficiency*	(929)	(1,497)	(1,480)	(1,682)	(1,778)	PR100-draft
Distributed PV+BESS**	(1,296)	(1,723)	(2,046)	(2,340)	(3,007)	PR100 – until new forecast is complete
Combined Heat and Power	(392)	(683)	(712)	(627)	(627)	LUMA -draft
Electric Vehicle Charging	70	287	791	1406	1811	PR100-draft
Total (Net Energy Requirements)	16,206	15,591	15,071	14,390	13,256	

*PR100 EE programs begin in the historical year 2022 and ramps up rapidly. LUMA will review the forecast and may adjust this PR100 forecast.

** The PR100 DPV and DBESS forecast from scenario 1LMNET will be replaced with a new forecast under development by LUMA and Guidehouse. LUMA assumed an 18.5% capacity factor to estimate the energy output from the PR100 capacity values.

3. Core Modeling Assumptions

a. Load forecast - components for IRP modeling Peak Load Forecast (MW)

	CY 2025	CY 2030	CY 2035	CY 2040	CY 2044	Source
Base Peak Load	2,843	2,902	2,827	2,702	2,620	LUMA - Guidehouse
Energy Efficiency*	(178)	(252)	(236)	(243)	(263)	PR100- draft
Distributed PV+BESS with full retail rate NEM credit	0	0	0	0	0	PR100 – until new forecast is complete
Combined Heat and Power	-	-	-	-	-	LUMA estimate pending
DR (Flexible Demand)	(24)	(281)	(389)	(576)	(857)	LUMA – Guidehouse-draft
Electric Vehicle Charging	18	77	190	319	395	PR100-draft
Total	2,659	2,446	2,392	2,202	1,895	

*PR100 EE programs begin in the historical year 2022 and ramps up rapidly. LUMA will review the forecast and may adjust this PR100 forecast.

3. Core Modeling Assumptions (Cont.)

b. New resource options - attributes, cost trajectories and implementation constraints for IRP modeling

Technology	2025 CapEx ($/kW)	2030 CapEx ($/kW)	2035 CapEx ($/kW)	2040 CapEx ($/kW)	2044 CapEx ($/kW)	Source
vii. Demand response including BTM BESS	1,852	1,722	1,642	2,024	2,271	LUMA – Guidehouse – Draft

- LUMA and the IRP Technical Consultant are analyzing PR100 cost estimates that were recently received for the other potential technologies

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources - characterization

i. Overview - fossil and hydro

ii. Operating & Availability metrics

iii. Retirement trajectories - fossil

iv. Hydro incremental capacity and improved performance

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

i. Overview – Fossil and hydro: Power plants location

Capacity shown is the nameplate capacity of each power plant.

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

ii. Operating & availability metrics (Baseloads)

Generator	Start of Operations	Fuel Type	Nameplate Capacity (MW)	Available Capacity (MW)	Forced Outage Rate (%)	Ramp-Up Rate (MW/hr)	Ramp-Down Rate (MW/hr)
AES 1	2002	Coal	227	227	5	120	120
AES 2	2002	Coal	227	227	5	120	120
Aguirre ST_1	1971	Bunker	450	350	20	300	300
Aguirre ST_2	1971	Bunker	450	330	15	300	300
Costa Sur 5	1972	Natural Gas	410	350	12	360	120
Costa Sur 6	1973	Natural Gas	410	350	15	360	120
EcoEléctrica	1999	Natural Gas	535	535	2	600	600
Palo Seco 3	1968	Bunker	216	190	12	180	180
Palo Seco 4	1968	Bunker	216	190	18	180	180
San Juan 5 CC	2008	Diesel / Natural Gas	220	200	12	900	900
San Juan 6 CC	2008	Diesel / Natural Gas	220	200	12	900	900
San Juan 7	1965	Bunker	100	70	30	180	180
San Juan 9	1968	Bunker	100	90	8	180	180

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

ii. Operating & availability metrics (Peakers)

Generator	Start of Operations	Fuel Type	Nameplate Capacity (MW)	Available Capacity (MW)	Forced Outage Rate (%)	Ramp-Up Rate (MW/hr)	Ramp-Down Rate (MW/hr)
Aguirre 1 CC	1977	Diesel	296	220	40	300	300
Aguirre 2 CC	1977	Diesel	296	100	30	300	300
Cambalache CT 2	1998	Diesel	82.5	75	10	180	180
Cambalache CT 3	1998	Diesel	82.5	75	10	180	180
Mayagüez GT 1	2009	Diesel	55	50	30	300	300
Mayagüez GT 2	2009	Diesel	55	25	30	300	300
Mayagüez GT 3	2009	Diesel	55	50	30	300	300
Mayagüez GT 4	2009	Diesel	55	50	30	300	300
Palo Seco MP 1	2021	Diesel	27	27	9	300	300
Palo Seco MP 2	2021	Diesel	27	27	9	300	300
Palo Seco MP 3	2021	Diesel	27	27	9	300	300
Gas Turbines (7 total)	1972	Diesel	21 each (147 total)	147	40	300	300

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

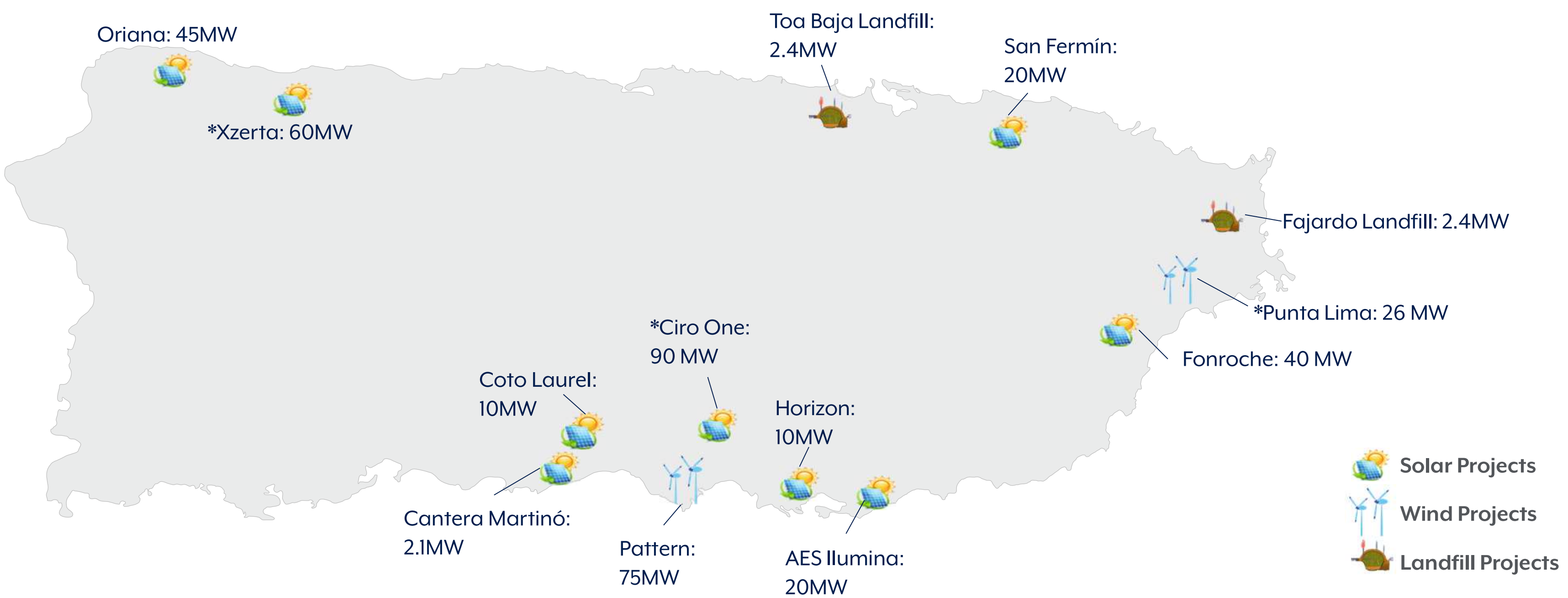
ii. Operating & availability metrics (FEMA Generators)

Generator	Start of Operations	Fuel Type	Nameplate Capacity (MW)	Available Capacity (MW)	Forced Outage Rate (%)	Ramp-Up Rate (MW/hr)	Ramp-Down Rate (MW/hr)
FEMA PS Gen 4-1	2023	Natural Gas / Diesel	20.5	20.5	3	1200	1200
FEMA PS Gen 4-2	2023	Natural Gas / Diesel	20.5	20.5	3	1200	1200
FEMA PS Gen 6-1	2023	Natural Gas / Diesel	25.3	25.3	3	1200	1200
FEMA PS Gen 8-1	2023	Natural Gas / Diesel	29.5	29.5	3	1200	1200
FEMA PS Gen 8-2	2023	Natural Gas / Diesel	29.5	29.5	3	1200	1200
FEMA PS Gen 8-3	2023	Natural Gas / Diesel	29.5	29.5	3	1200	1200
FEMA SJ Gen 6-1	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-2	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-3	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-4	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-5	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-6	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-7	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-8	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200
FEMA SJ Gen 6-9	2023	Natural Gas / Diesel	24.8	24.8	3	1200	1200

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

ii. Operating & availability metrics (Renewables location)



Actual operating renewable Power Plants total capacity: 226.9MW

*Punta Lima, Xzerta and Ciro One projects are already approved, but are not on operations.

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

ii. Operating & availability metrics (Renewables information)

Generator	Start of Operations	Technology	Nameplate Capacity (MW)	Available Capacity (MW)	FY 2024 Values ($/kWh)	Annual Escalator (%)
AES Ilumina	2012	Sun	20	20	$0.1960	2.0%
Fonroche Humacao	2016	Sun	40	40	$0.1717	1.0%
Horizon Energy	2016	Sun	10	10	$0.1823	2.0%
Yarotek (Oriana)	2016	Sun	45	45	$0.1799	2.0%
San Fermin Solar	2015	Sun	20	20	$0.1863	2.0%
Windmar (Cantera Martino)	2011	Sun	2.1	2.1	$0.2250	2.0%
Windmar (Vista Alegre / Coto Laurel)	2016	Sun	10	10	$0.1940	2.0%
Pattern (Santa Isabel)	2012	Wind	75	75	$0.1654	1.5%
Fajardo Landfill Tech	2016	Methane Gas	2.4	2.4	$0.1000	0.0%
Toa Baja Landfill Tech	2016	Methane Gas	2.4	2.4	$0.1000	0.0%
*Punta Lima	2023 (expected)[1]	Wind	26	0	$0.1473	0.0%
*Xzerta	2025 (expected)	Sun	60	0	$0.9900	1.0%
*Ciro One	2025 (expected)	Sun	90[2]	0	$0.9890	2.0%

*Punta Lima, Xzerta and Ciro One projects are approved, but are not in operations.

[1] Expected to be available for December 2023.

[2] Waiting approval for capacity expansion to 140MW.

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources - characterization

iii. Retirement trajectories - fossil

- As demonstrated in the recent Resource Adequacy Study, the PR generation fleet is significantly below the capacity needed to meet industry planning standard of 1 day in 10 years Loss Of Load Expectation (LOLE).
- Resource adequacy is an important constraint that will contribute to the determination of future retirement dates for generation assets.

3. Core Modeling Assumptions (Cont.)

c. Existing supply side resources – characterization

iv. Hydro incremental capacity and improved performance

- Timeframe to restore the 15 PREPA HydroCo capacity units will be available once the design is completed
- Goal is to reach 125MW

Units	Available for Generation
Dos Bocas 1	Available by end of 2023
Dos Bocas 2	YES
Dos bocas 3	YES
Yauco 2-1	YES
Yauco 2-2	YES
Toro Negro 1-1	YES
Toro Negro 1-2	YES
Toro Negro 1-3	YES
Toro Negro 1-4	Available by 2nd quarter of 2024
Toro Negro 2-1	Available by end of 2023
Garzas 1-1	YES
Garzas 1-2	YES
Garzas 2-1	Subject to repair of transmission line 1100
Rio Blanco 1	Available by 2nd quarter of 2024
Rio Blanco 2	Available by 2nd quarter of 2024

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

i. Tranches - solar PV and battery storage: Tranche 1 Project locations:

Confidential information submitted separately

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

i. Tranches - solar PV and battery storage: Tranche 1 Project locations:

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3. Core Modeling Assumptions (Cont.)

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3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

i. Tranches - solar PV and battery storage: Tranche 2 Project locations:

Confidential information submitted separately

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

ii. New Genera resources - peakers, black start

Projects that may be considered in the IRP

Total Installed Capacity	336 MW
Projected Sites	Costa Sur: 100 MW San Juan: 150 MW Daguao: 18 MW Jobos: 34 MW Yabucoa: 34 MW
Simple Cycle CTs	5 × 50 MW = 250 MW
RICE	2 × 9 MW = 18 MW 4 × 17 MW = 68 MW

Source: GeneraPR

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

iii. Emergency demand response procurements

- The Battery Emergency Demand Response Program (BEDRP) will be launched in October 2023
- After launch, the BEDRP aggregators will enroll up to **6,500 participants**, representing approximately 40 MWh of energy available during grid emergencies
- The BEDRP will be an important tool to help increase the energy available to all customers during emergency conditions and reduce the need for load shedding
- LUMA sees the BEDRP as an important program that can provide added resiliency and reliability to the Puerto Rico electric system

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

iv. DOE solar and battery storage for low-income participants

- Federal and State Governments have allocated funds to install photovoltaic systems in residential and commercial sectors. Projected that approximately 51,000 residences and 1,200 small and medium businesses will be added

Program	Agency/ Department	Start date	Number of Projects*	Capacity	Funding
Nueva Energía	PR Housing Department	March 2023	15,000 Residential	Generation Min 3 KW Storage 9 kWh	$350 million
Incentivo Solar	PR Housing Department	August 2023	6,000 Residential		$100 million
Apoyo Energético II	DDEC	December 2023	1,200 commercial	Not determined	$30 million, Up to $25K per project
Puerto Rico Energy Resilience Fund	DoE	Jan 2024	30,000 Residential	Not determined	$ 450 million

*Projected

3. Core Modeling Assumptions (Cont.)

d. Resources under procurement or implementation - role in modeling - how are they accounted for in the IRP

iv. DOE solar and battery storage for low-income participants

- Puerto Rico Department of Housing (PRDOH) implemented a response plan for disaster recovery and mitigation that addresses climate change, equity, and renewables through CDBG-DR ER-2, which has a $1.3B allocation. One of the grants under this program is the installation of approximately 1,000 distributed solar plus BESS systems
- BESS are expected to be used as for backup only. These long feeders currently experience undervoltage and overloading

4. Modeling Scenarios / Analysis Structure / Approach

a. Scenarios

b. Methodologies

c. Methodology to evaluate and value distributed energy resources compared to utility scale resources in the IRP modeling - characterization of DER beyond load modifier context

- i. Optimization of distributed scale vs. utility scale - inclusive of on-site resiliency

4. Modeling Scenarios / Analysis Structure / Approach

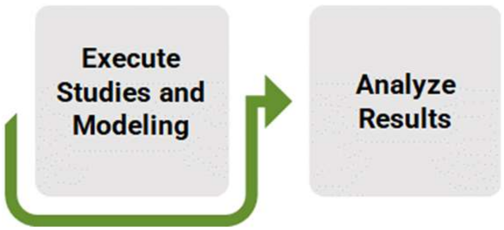
a. Scenarios

Define Objectives and Scenarios

- LUMA considers the objectives, performance indicators for the objectives, and plausible scenarios to be key foundational elements that drive the direction, results and the recommended solutions of the IRP
- LUMA is currently conducting workshops to gather broad stakeholder input on their preferred objectives, prioritization of objectives, and characteristics to describe future scenarios
- Stakeholder input will be used to guide LUMA in selecting a final list of 2024 IRP objectives and the characteristics described a set of future scenarios
- LUMA intends to craft a realistic and concise set of objectives, realistic scenarios and supplemental sensitivity analyses that collectively result in a rigorous analysis within a reasonable volume of results

4. Modeling Scenarios / Analysis Structure / Approach

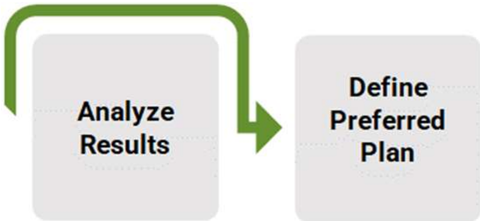
b. Methodologies



- PLEXOS will be used as the primary modeling software for both the selection of the cost-effective technologies and their dispatch
- PLEXOS is a leading industry simulation and optimization software used widely by utilities and power producers for resource analysis.
- The transmission system ability to deliver the energy will be assessed as part of the selection of the cost-effective portfolio
- We plan to model load and resource requirements across 8 Transmission Planning areas which align with the Puerto Rico Senate Districts
- The modeling will define a portfolio of resources for each scenario over the period of 2025 to 2044.
- Each of these portfolios will then be separately assessed based on their performance for each of the IRP objectives

4. Modeling Scenarios / Analysis Structure / Approach

b. Methodologies – (Cont.)



- Depending on the performance of the portfolios across the objectives, either all or a short-list of the best performing portfolios will then be assessed against the characteristics of each of the other scenarios.
- Assessing each portfolio against the differing conditions described by the scenarios evaluates the flexibility of the portfolio to perform across a range of plausible future conditions.
- Using the objectives, the performance of the portfolios across the different scenarios, will enable LUMA and B&V to select a preliminary, preferred portfolio which will then undergo additional sensitivity analysis and a more extensive transmission analysis.

4. Modeling Scenarios / Analysis Structure / Approach

b. Methodologies – (Cont.)

Define Preferred Plan

- Both Black & Veatch and the LUMA IRP team have found through experience that reaching agreement on quantitative weightings of scorecard attributes can be nearly impossible with diverse stakeholders
- LUMA expects that even if the Energy Bureau and LUMA reached agreement on quantitative weightings of attributes, a large percentage of other stakeholders would disagree with the weightings
- Due to the difficulty of arriving at a weighting that would satisfy stakeholders, LUMA requests this requirement be eliminated, and present value of revenue requirements (PVRR) remain the most important, but unweighted attribute
  - Regulation 9021, §2.03 (H)(2)(D)(i): "In selecting the Preferred Resource Plan, PREPA shall use the minimization of the present value of revenue requirements as the primary selection criterion."
- Expansion plans considered in the PVRR will also meet the minimum established criteria for reliability and renewable energy

4. Modeling Scenarios / Analysis Structure / Approach

c. Methodology to evaluate and value distributed energy resources vs. utility scale resources - characterization of DER beyond load modifier context

   i. Optimization of distributed scale vs. utility scale - inclusive of on-site resiliency

- Site resiliency will be considered in our DPV+DBESS forecast through inclusion in the cost effectiveness assessment of both electric bill savings and an estimate of the value of resiliency. This is similar to the inputs used for the PR100 Scenario 1 forecast
- LUMA plans also will assess the avoided costs of dispatching a portion of customer owned distributed resources as flexible resources to both inject and store energy for grid requirements
- However, these planned analyses provide directional indication of value rather than a true optimization
- LUMA can add to our analysis the system benefits and costs associated with customer or 3rd party installation of DPV+DBESS systems behind the meter to increase resiliency
- These customer-based options can be assessed against utility scale resources

5. Topics and Schedule for Next Technical Conferences

a. Transmission analysis

b. Distribution analysis

c. Other - Regulation 9021 elements as necessary

d. Two additional technical conferences: Mid-December and Late January

Proposed Revised IRP Filing Date – June 28, 2024

Task	2023			2024						
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Stakeholder Consultations and Input	■	■	■	■	■	■	■	■	■	■
Define IRP Objectives and Scenarios	■	■								
PLEXOS Model Data Load	■	■								
Modeling of First Scenario		■	■							
Modeling of Remaining Scenarios			■	■	■					
Sensitivity Modeling of Preferred Portfolio					■	■				
B&V Draft Report							■	■		
B&V Final Report									■	
LUMA Eng. Benchmark PLEXOS Load Flow with PSSe				■						
LUMA Eng Review PLEXOS results				■	■	■				
LUMA Eng. Transmission Modeling & Report						■	■	■	■	
LUMA Forecasts and Assumptions	■	■	■	■						
LUMA Distribution Analysis and Report	■	■	■	■	■	■	■			
LUMA IRP Filing Prep						■	■	■	■	
LUMA IRP File - June 28, 2024									★	

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Thank You