



# Monthly Generation Performance Report

February 2023

# Introduction

As part of the Transmission and Distribution System Operation and Maintenance Agreement (OMA), LUMA serves as both the operator of the electric grid and as the island's System Operator.

As the Operator of the electric grid, LUMA oversees and maintains the transmission and distribution system that is critical to delivering energy to over 1.5 million Puerto Rican customers.

As the System Operator, LUMA monitors the performance of the Puerto Rico Electric Power Authority (PREPA) and other private generators' generation units, implements dispatch of available units, and plans and maintains adequate generation reserve levels to meet customer's energy demands.

While LUMA does not generate energy, LUMA's responsibility as the System Operator includes measuring the performance of the island's generation fleet. This report summarizes generation performance, identifies trends, compares facility performance, and provides a high-level picture of the entire generation portfolio.



# Table of Contents

## Executive Summary

## Operations

- System Level Performance
  - System Reserve Status
  - System Heat Rate
  - System Availability
- Plant/Unit Level Performance
  - Available Capacity
  - Heat Rate
  - Generation and Capacity Factor
  - Planned Outage Hours
  - Maintenance Outage Hours
  - Forced Outage Hours
  - Renewables Capacity Factor

## Economics

- Fuel Prices
- Fuel Production Costs

## About This Report

- Glossary of Terms
- Plant and Unit List



# Executive Summary – February Performance

## Overview

As the temperatures are expected to increase during the month of March, the demand will also increase especially at peak hours, which correspond to late afternoon and evenings. Maintenance on base load units in preparation for the summer season continues.

## Major Events

During February, the electric system experienced 3 generation events that caused underfrequency load shed to prevent a frequency decay.

## System Reserves

In February, the hourly reserve levels averaged 828 MW, with 253 hours during the month having less than 750 MW in reserves (equal to 37.6% of the time.)

The forecast for March 2023 shows lower reserve levels to the same month last year (March 2022), with 1042 MW average reserves forecasted for this March versus 1241 MW seen for the same month last year.

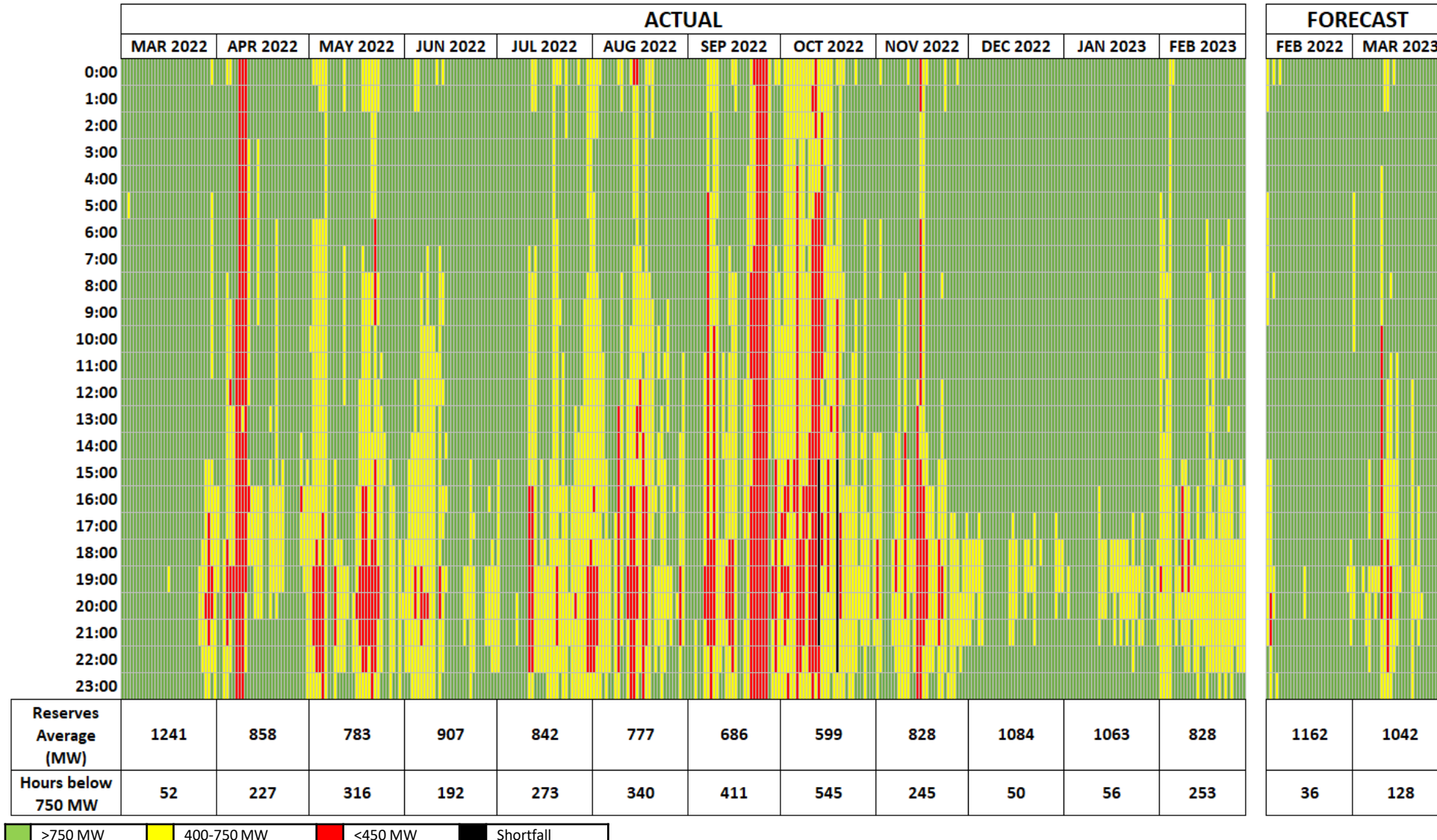
The System Availability for the month of January was 48%.

- PREPA – 42%
- AES – 50%
- EcoEléctrica – 100%

# System Reserves

System Reserves is the amount of generating capacity available to meet peak or abnormally high demands for power and to generate power during scheduled or unscheduled outages.

Target: ▲ Reserves >750MW per the System Operation Principles

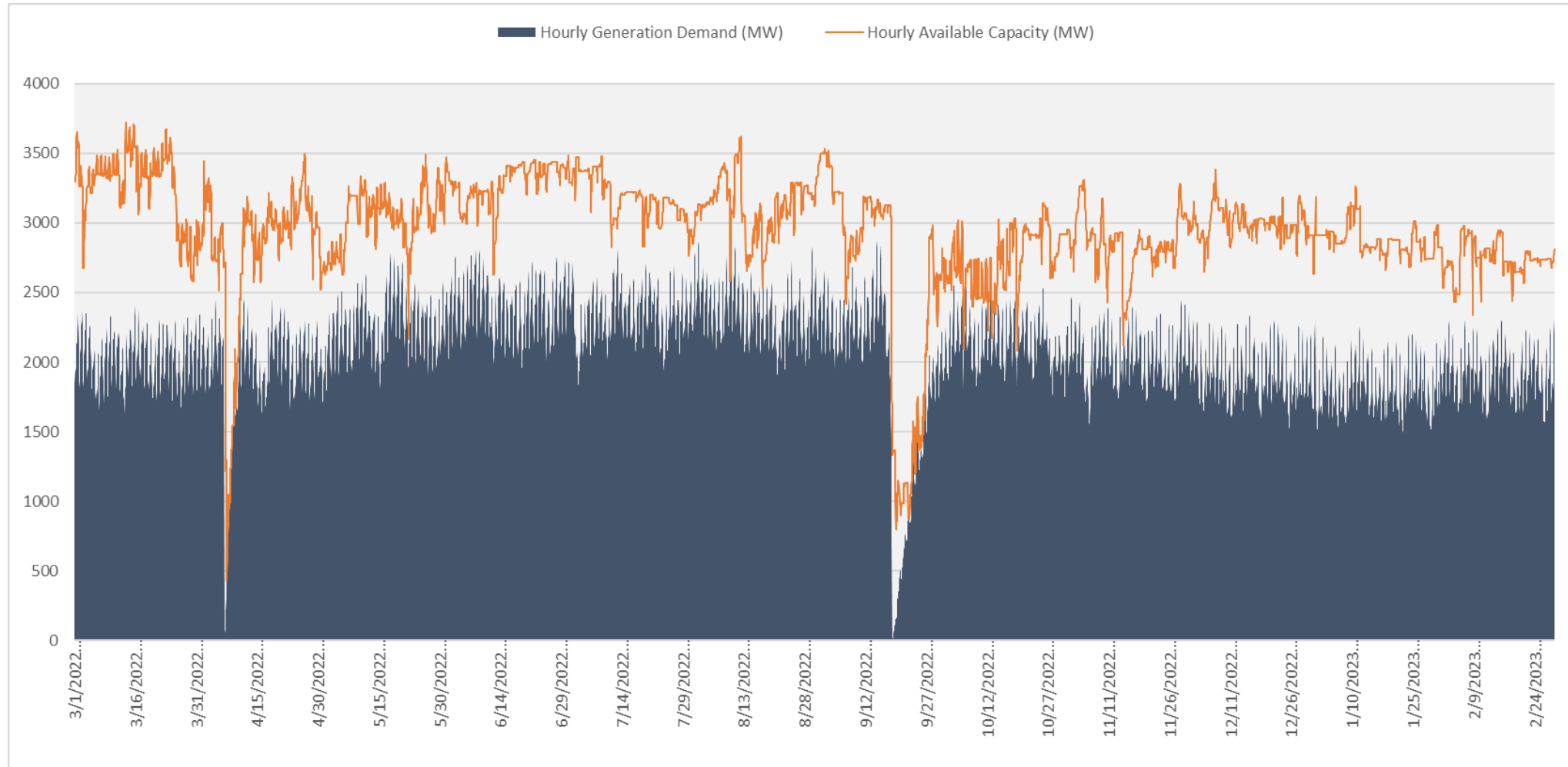


\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# System Availability

The System Availability is the maximum expected output that generating units can supply to system load, adjusted for scheduled or unscheduled outages. In this graph, the availability is being compared with the total generation required to meet demand to visualize the gap between the two lines (the gap represents the reserves level).

Target: ▲ A bigger gap between availability and generation demand means a better chance of recovery in emergency events due to adequate reserves.



- The dip in availability and generation in April is due to the April blackout event.
- The dip in availability and generation in September is due to the passing of Hurricane Fiona.

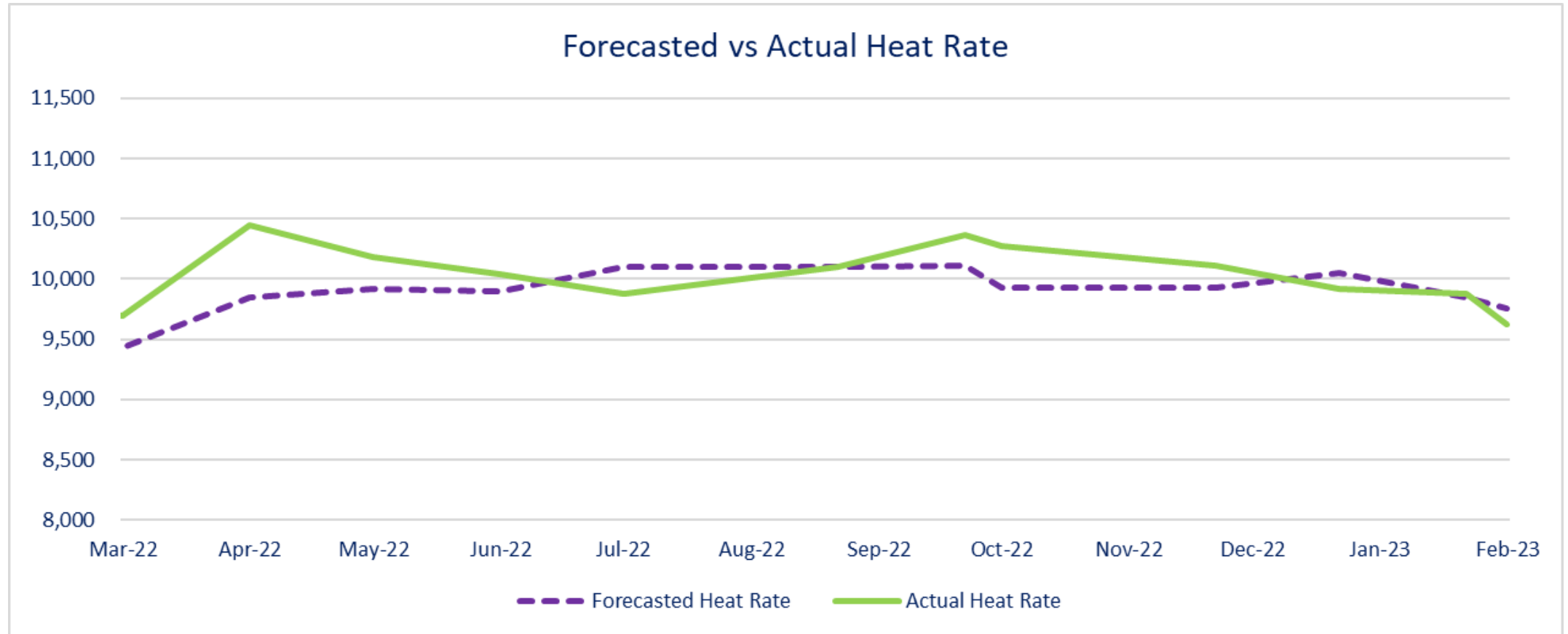
\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.



# System Heat Rate

The System Heat Rate measures the efficiency of the system to convert fuel into electricity. System Heat Rate will vary depending on the available generation units and required resources to satisfy electrical demand. It is calculated as energy consumed (MMBtu) / energy produced (MWh). The forecasted Heat Rate is determined by the last forecast calculated for the Fuel Clause Adjustment Factor.

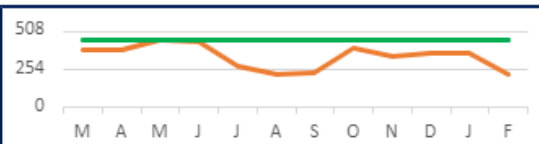

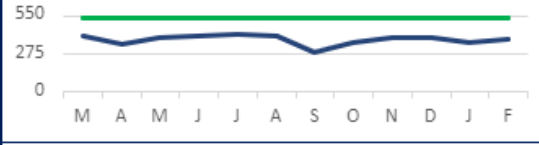










Target: ▼ Lower heat rates represent higher efficiency.



# Available Capacity – Baseload Units

Available Capacity is the maximum output that a unit can generate at any given time. The Availability Rate indicates the percent of available capacity out of the total nameplate capacity. Variables in the chart below are shown in MW (gross) representing an average over the month.

Target: ▲ A higher availability indicates the plant is able to produce power closer to its nameplate capacity.

Average Generation (MW) and Capacity Factor		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
AES		MW 382	386	450	434	279	225	233	400	342	365	367	219
Nameplate Cap: 508		84%	85%	99%	96%	61%	50%	51%	88%	75%	80%	81%	48%
EcoElectrica		MW 402	351	388	407	412	406	292	356	395	390	360	383
Nameplate Cap: 550		75%	66%	73%	76%	77%	76%	55%	67%	74%	73%	67%	72%
PREPA Aguirre		MW 239	146	194	287	281	231	155	145	83	250	87	0
Nameplate Cap: 900		27%	16%	22%	32%	31%	26%	17%	16%	9%	28%	10%	0%
PREPA Costa Sur		MW 442	262	377	495	473	498	400	299	503	471	441	429
Nameplate Cap: 820		54%	32%	46%	60%	58%	61%	49%	37%	61%	57%	54%	52%
PREPA Palo Seco		MW 167	270	326	305	277	275	114	149	152	258	239	261
Nameplate Cap: 602		28%	45%	54%	51%	46%	46%	19%	25%	25%	43%	40%	43%
PREPA San Juan		MW 280	285	242	262	374	419	353	404	365	141	293	432
Nameplate Cap: 840		33%	34%	29%	31%	45%	50%	42%	48%	43%	17%	35%	51%
Total Baseload		MW 1913	1701	1978	2189	2096	2054	1547	1752	1842	1875	1787	1723
Nameplate Cap: 4220		46%	41%	48%	53%	50%	49%	37%	42%	44%	45%	43%	42%

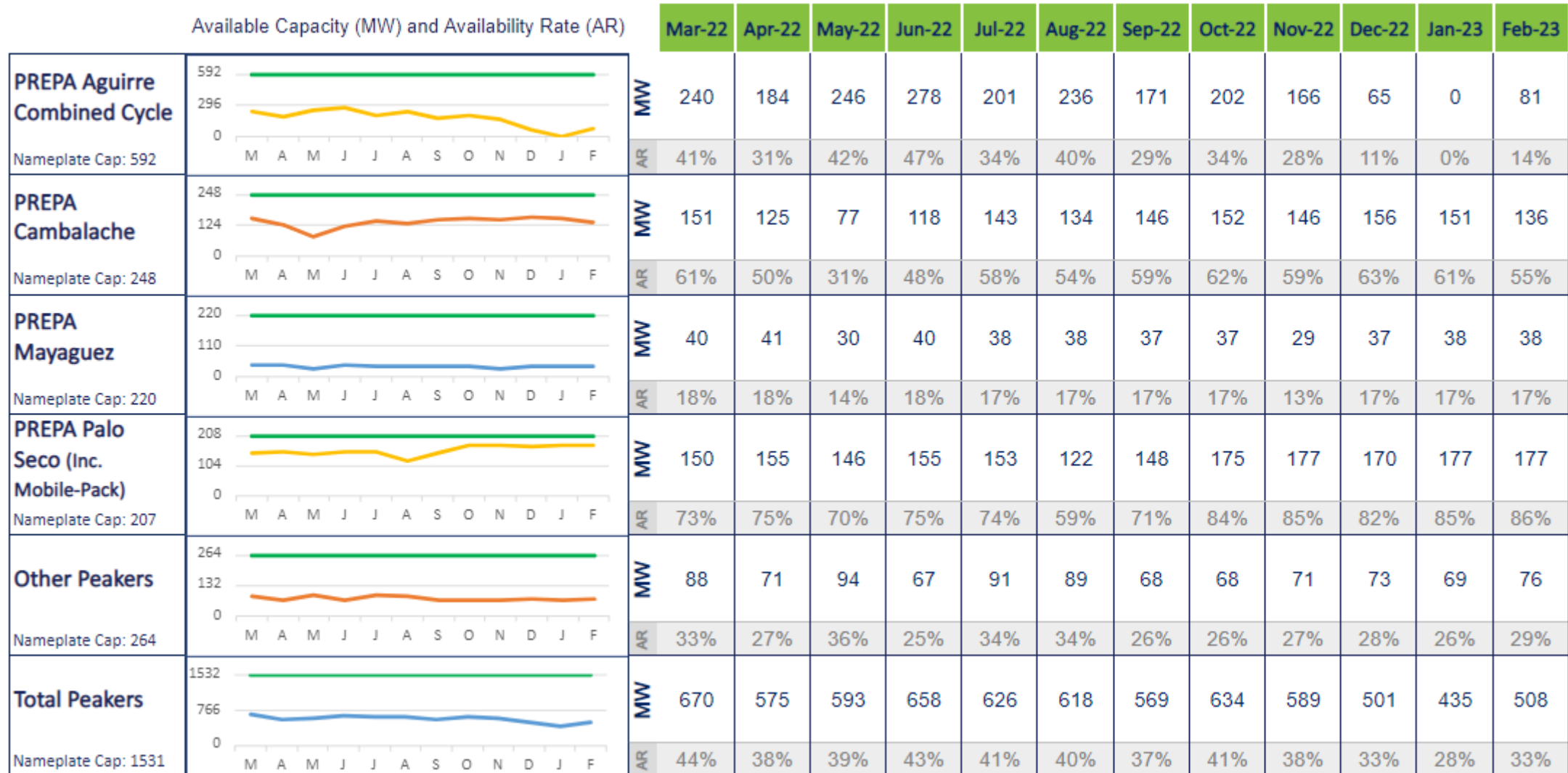
\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.



# Available Capacity – Peaker Units

Available Capacity is the maximum output that a unit can generate at any given time. The Availability Rate indicates the percent of available capacity out of the total nameplate capacity. Variables in the chart below are shown in MW representing an average over the month.

Target: ▲ A higher availability indicates the plant is able to produce power closer to its nameplate capacity.

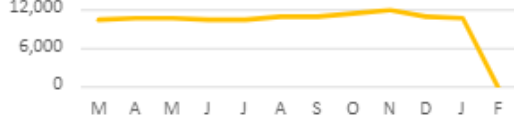


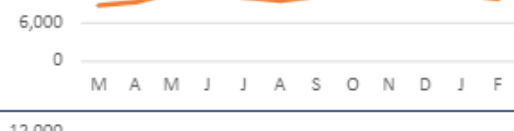
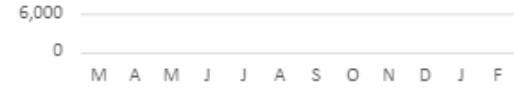


\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Heat Rate – Baseload Units

Heat Rate measures the efficiency of a power plant to convert fuel into electricity. It is calculated as energy consumed (MMBtu) / energy produced (MWh).

Target: ▼ Lower heat rates represent higher efficiency.




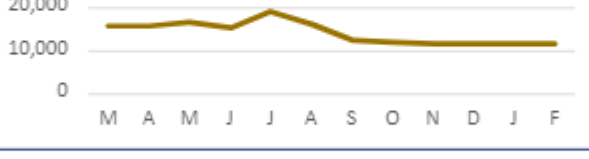


Heat Rate (MMBtu/MWh)		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
AES		8,104	9,726	9,694	9,766	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800
EcoElectrica		9,182	7,718	7,739	7,692	7,683	7,683	7,683	7,932	7,932	7,932	7,932	7,945
PREPA Aguirre		10,406	10,610	10,767	10,362	10,366	10,847	10,935	11,486	12,016	10,957	10,699	-
PREPA Costa Sur		10,778	10,899	10,791	10,362	10,447	10,620	10,749	10,724	10,736	10,845	10,909	11,408
PREPA Palo Seco		10,337	10,403	9,840	9,839	9,738	10,249	9,865	10,960	9,876	10,131	10,483	10,363
PREPA San Juan		8,836	9,369	10,872	10,768	10,102	9,662	10,271	11,417	11,404	11,603	10,559	9,869
Total Baseload		9,539	9,617	9,794	9,723	9,651	9,729	9,871	10,189	10,079	10,010	9,957	9,890

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Heat Rate – Peaker Units

Heat Rate measures the efficiency of a power plant to convert fuel into electricity. It is calculated as energy consumed (MMBtu) / energy produced (MWh).

Target: ▼ Lower heat rates represent higher efficiency.

Heat Rate (MMBtu/MWh)		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
PREPA Aguirre Combined Cycle		13,071	14,686	14,316	13,796	11,602	12,169	13,170	12,150	13,145	15,978	-	15,272
PREPA Cambalache		13,059	12,450	13,005	13,117	13,001	12,530	12,481	12,646	13,185	14,794	14,509	13,971
PREPA Mayaguez		10,599	10,626	10,878	10,557	10,552	10,406	10,728	13,418	10,919	10,413	10,816	10,934
PREPA Palo Seco (Inc. Mobile Pack)		15,548	15,556	16,687	15,226	19,157	15,922	12,234	11,818	11,481	11,719	11,341	11,719
Other Peakers		15,381	15,082	14,951	15,888	13,496	15,487	14,860	15,750	14,053	15,681	16,101	17,324
Total Peakers		12,950	13,394	13,501	13,306	11,936	12,319	12,421	12,587	12,438	12,628	12,332	13,085

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Generation and Capacity Factor – Baseload Units

Generation indicates the average amount of energy each plant produced per month, in MW (gross). The Capacity Factor measures what percentage of the nameplate capacity was used to produce energy during that time period.

Target: ▲ Higher Capacity Factor, and a Generation closer to the nameplate capacity will represent a better utilization of the units.

Average Generation (MW) and Capacity Factor			Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
<b>AES</b> Nameplate Cap: 508		MW	431	435	504	488	296	318	266	452	390	414	414	253
			CF	85%	86%	99%	96%	58%	63%	52%	89%	77%	82%	50%
<b>EcoElectrica</b> Nameplate Cap: 550		MW	423	372	409	428	433	428	309	373	416	411	380	404
			CF	77%	68%	74%	78%	79%	56%	68%	76%	75%	69%	73%
<b>PREPA Aguirre</b> Nameplate Cap: 900		MW	239	146	194	287	281	231	155	145	83	250	87	0
			CF	27%	16%	22%	32%	31%	26%	17%	16%	9%	28%	0%
<b>PREPA Costa Sur</b> Nameplate Cap: 820		MW	442	262	377	495	473	498	400	299	503	471	441	429
			CF	54%	32%	46%	60%	58%	61%	49%	37%	61%	57%	52%
<b>PREPA Palo Seco</b> Nameplate Cap: 602		MW	167	270	326	305	277	275	114	149	152	258	239	261
			CF	28%	45%	54%	51%	46%	46%	19%	25%	25%	43%	43%
<b>PREPA San Juan</b> Nameplate Cap: 840		MW	280	285	242	262	374	419	353	404	365	141	293	432
			CF	33%	34%	29%	31%	45%	50%	42%	48%	43%	17%	51%
<b>Total Baseload</b> Nameplate Cap: 4220		MW	1983	1771	2054	2265	2134	2169	1597	1822	1910	1945	1854	1778
			CF	47%	42%	49%	54%	51%	51%	38%	43%	45%	46%	42%

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Generation and Capacity Factor – Peaker Units

Generation indicates the average amount of energy each plant produced per month (MW). The Capacity Factor measures what percentage of the nameplate capacity was used to produce energy during that time period.

Target: ▲ Higher Capacity Factor, and a Generation closer to the nameplate capacity will represent a better utilization of the units.

Average Generation (MW) and Capacity Factor		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
<b>PREPA Aguirre Combined Cycle</b> Nameplate Cap: 592		33	76	114	92	100	113	80	149	76	5	0	23
		6%	13%	19%	15%	17%	19%	14%	25%	13%	1%	0%	4%
<b>PREPA Cambalache</b> Nameplate Cap: 248		10	33	25	17	16	35	63	53	22	10	7	18
		4%	13%	10%	7%	6%	14%	25%	21%	9%	4%	3%	7%
<b>PREPA Mayaguez</b> Nameplate Cap: 220		6	38	42	22	26	29	53	46	51	18	8	23
		3%	17%	19%	10%	12%	13%	24%	21%	23%	8%	4%	10%
<b>PREPA Palo Seco (Inc. Mobile-Pack)</b> Nameplate Cap: 207		1	9	2	5	7	7	39	62	21	4	8	17
		1%	4%	1%	2%	3%	3%	19%	30%	10%	2%	4%	8%
<b>Other Peakers</b> Nameplate Cap: 264		2	12	15	4	3	12	14	23	16	2	1	2
		1%	4%	6%	2%	1%	5%	5%	9%	6%	1%	0%	1%
<b>Total Peakers</b> Nameplate Cap: 1531		53	167	198	140	151	196	249	332	186	39	24	83
		3%	11%	13%	9%	10%	13%	16%	22%	12%	3%	2%	5%

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Planned Outage Hours – Baseload Units

Planned Outage Hours represents the shutdown of a generating unit or facility for inspection or maintenance, in accordance with an advance schedule; represented in hours. This scoreboard compares the scheduled outage hours with the actual duration of the outage.

Target: ▼ A smaller gap between actuals and planned hours represents a more accurate planification.

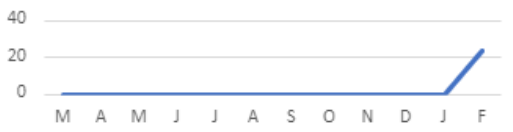






	Planned Outage Hours (MAR 2022 - FEB 2023)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
AES		1872	1280	AES 1 - Out since 2/1/23 (Environmental Maintenance)	AES 1 - 3/7/23
EcoElectrica		0	43		
PREPA Aguirre		5424	5256	Aguirre 1 - Out since 3/16/22 (Major and Environmental Maintenance) Aguirre 2 - Out since 1/12/23 (Environmental Maintenance)	Aguirre 1 - 4/30/23 Aguirre 2 - 3/5/23
PREPA Costa Sur		0	327		
PREPA Palo Seco		288	586		
PREPA San Juan		4824	7762	San Juan 9 - Out since 2/19/23 (Environmental Maintenance)	San Juan 9 - 3/31/23
Total Baseload		12408	15255		

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Maintenance Outage Hours – Baseload Units

Maintenance Outage Hours represent the shutdown of a generating unit or facility for nonemergency reasons or conditions which need repair outside of the advance schedule; represented in hours per unit.

Target: ▼ Less maintenance hours represents more available capacity in the system to meet demand.

Maintenance Outage Hours		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
AES		0	0	0	0	0	0	0	0	0	0	0	24
EcoElectrica		0	0	0	0	0	0	0	3	0	0	0	0
PREPA Aguirre		103	0	0	0	0	43	0	0	0	0	0	0
PREPA Costa Sur		0	0	48	3	0	37	0	0	0	90	0	0
PREPA Palo Seco		31	0	57	0	21	9	71	18	0	0	0	0
PREPA San Juan		0	41	0	0	98	15	0	19	137	421	0	2
Total Baseload		135	41	105	3	119	104	71	40	137	511	0	26

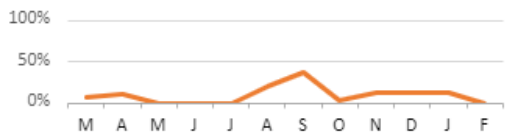
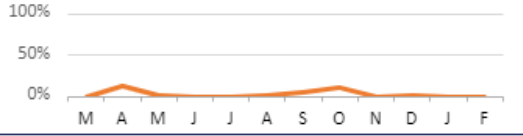
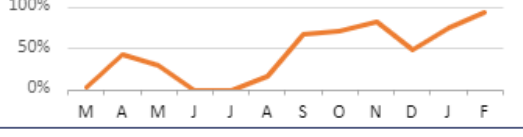

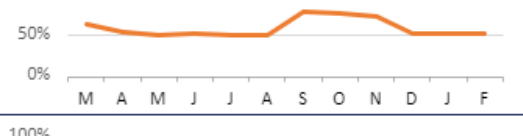
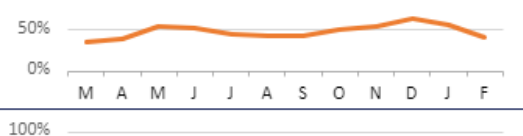
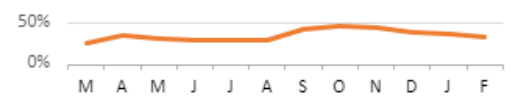
\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.



# Forced Outage Hours and Rate – Baseload Units

Forced Outage Hours represent the shutdown of a generating unit or facility for emergency reasons or a condition in which the generating equipment is unavailable for load due to an unanticipated breakdown; represented in hours per unit. The Forced Outage Rate represents the percentage of time the unit was in a Forced Outage condition out of the total time the unit was expected to be available.

Target: ▼ Less forced outage hours and a smaller outage rate represents more available capacity in the system to meet demand.

Forced Outage Hours and Outage Rate		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
AES		Hrs 100	161	0	0	0	281	543	36	175	178	173	0
		% 7%	11%	0%	0%	0%	21%	38%	2%	12%	12%	12%	0%
EcoElectrica		Hrs 0	256	16	0	0	7	118	211	0	4	0	0
		% 0%	12%	1%	0%	0%	0%	5%	10%	0%	0%	0%	0%
PREPA Aguirre		Hrs 28	320	213	0	0	130	899	1055	1180	720	815	720
		% 4%	43%	29%	0%	0%	16%	67%	71%	82%	48%	75%	94%
PREPA Costa Sur		Hrs 0	475	19	14	0	2	268	553	46	0	0	153
		% 0%	35%	2%	1%	0%	0%	19%	37%	3%	0%	0%	11%
PREPA Palo Seco		Hrs 1551	1543	1487	1482	1492	1507	2198	2250	2120	1572	1537	1395
		% 64%	54%	51%	51%	50%	51%	80%	77%	74%	53%	52%	52%
PREPA San Juan		Hrs 1601	1634	2230	2196	2574	2530	2432	3000	3071	2930	3174	2063
		% 36%	39%	54%	53%	44%	43%	42%	51%	55%	64%	55%	40%
Total Baseload		Hrs 3280	4390	3965	3691	4066	4455	6458	7105	6592	5405	5699	4330
		% 26%	34%	31%	29%	29%	30%	43%	46%	44%	38%	38%	34%









\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.



# Renewables Capacity Factor - Solar

The Capacity Factor measures the actual production of electricity over the theoretical maximum output (nameplate capacity). For Renewable projects, the Capacity Factor is expected to be lower due to the solar and wind cycles.

Target: ▲ A higher Capacity Factor represents a better utilization of the maximum capacity the project is able to produce.








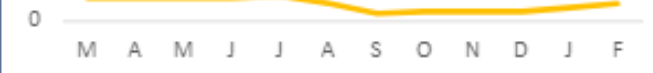
Average Production (MW) and Capacity Factor			Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
AES Ilumina		MW	5	4	4	4	4	4	3	4	4	3	4	4
Nameplate Cap: 20		CF	24%	22%	21%	22%	21%	21%	16%	19%	18%	17%	19%	21%
Windmar Cantera Martinó		MW	0.5	0.6	0.5	0.6	0.4	0.4	0.3	0.5	0.4	0.5	0.5	0.5
Nameplate Cap: 2.1		CF	25%	27%	25%	27%	20%	17%	15%	22%	21%	23%	22%	26%
San Fermín		MW	4	3	3	3	1	2	1	2	2	2	2	3
Nameplate Cap: 20		CF	19%	17%	17%	17%	7%	10%	6%	8%	10%	12%	11%	13%
Horizon Energy		MW	3	1	2	3	2	3	2	2	2	2	2	2
Nameplate Cap: 10		CF	28%	14%	20%	27%	25%	27%	17%	23%	22%	23%	24%	25%
Oriana Energy		MW	11	10	10	11	10	10	8	9	9	9	10	11
Nameplate Cap: 45		CF	24%	21%	23%	24%	23%	23%	17%	19%	20%	20%	21%	24%
Windmar Coto Laurel		MW	2	2	2	2	2	2	1	2	2	2	2	2
Nameplate Cap: 10		CF	24%	23%	22%	23%	21%	21%	14%	21%	20%	22%	20%	22%
Fonroche Humacao		MW	9	9	8	8	7	8	5	7	7	7	7	8
Nameplate Cap: 40		CF	22%	22%	19%	20%	19%	20%	14%	18%	17%	18%	18%	21%
Total Solar		MW	34	30	31	32	28	30	21	26	26	27	28	31
Nameplate Cap: 147		CF	23%	20%	21%	22%	19%	20%	14%	18%	18%	18%	19%	21%

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Renewables Capacity Factor – Wind and Landfill

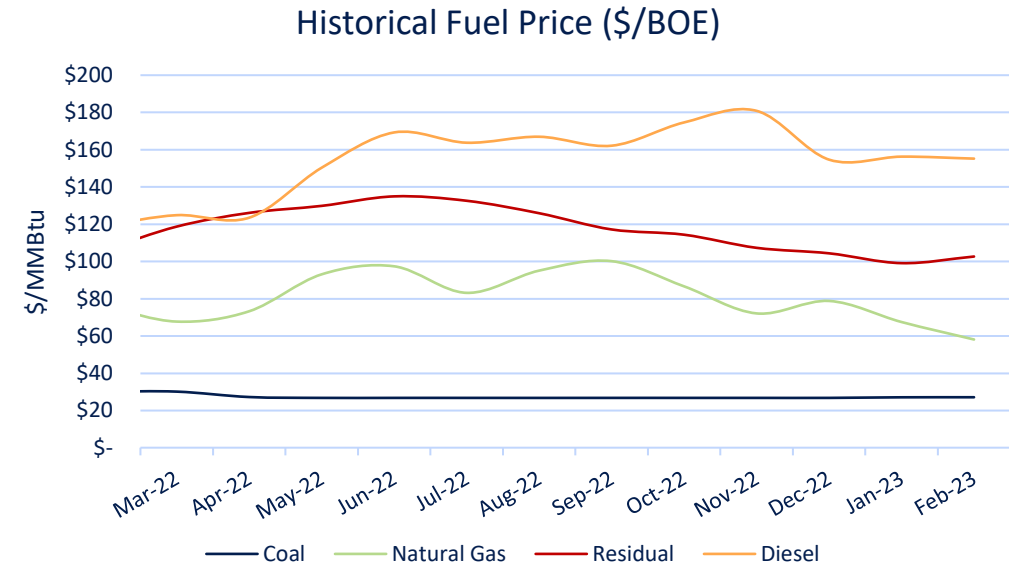
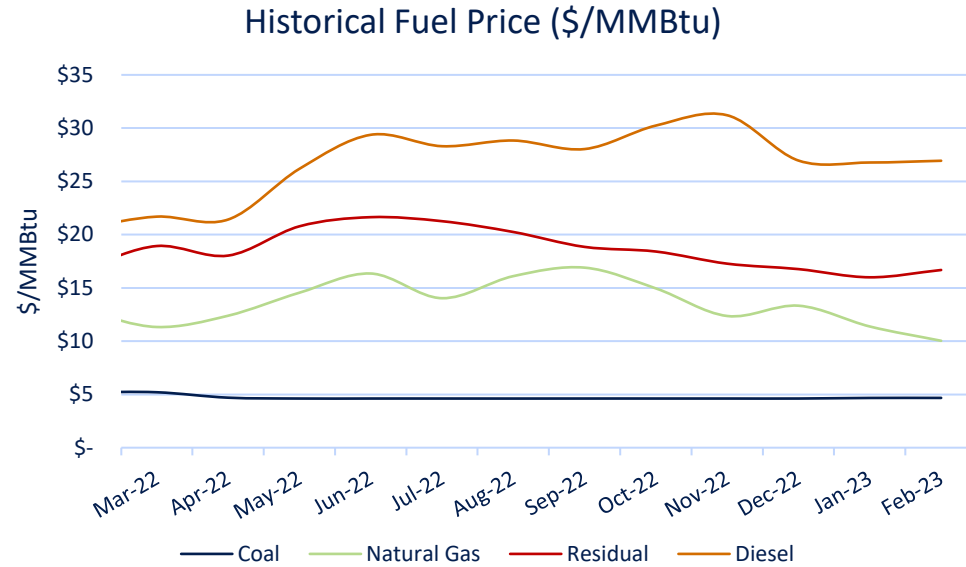
The Capacity Factor measures the actual production of electricity over the theoretical maximum output (nameplate capacity). For Renewable projects, the Capacity Factor is expected to be lower due to the solar and wind cycles.

Target: ▲ A higher Capacity Factor represents a better utilization of the maximum capacity the project is able to produce.

Average Production (MW) and Capacity Factor		Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	
Pattern Santa Isabel		MW	25	24	24	24	26	18	7	10	10	11	14	18
Nameplate Cap: 75		CF	33%	33%	32%	32%	35%	25%	9%	13%	13%	14%	19%	24%
Landfill Gas Fajardo		MW	0.8	0.4	0.6	0.8	0.3	0.6	0.4	0.1	0.2	0.4	0.3	0.5
Nameplate Cap: 2.4		CF	33%	18%	24%	33%	14%	25%	16%	6%	9%	18%	12%	20%
Landfill Gas Toa Baja		MW	1.2	1.1	1.5	1.6	0.8	1.5	0.7	0.9	0.6	0.5	0.6	0.8
Nameplate Cap: 2.4		CF	48%	44%	64%	65%	33%	62%	31%	36%	26%	21%	24%	32%
Total Wind and Landfill		MW	27	26	26	26	27	20	8	11	11	12	15	19
Nameplate Cap: 80		CF	34%	32%	32%	33%	34%	26%	10%	14%	14%	14%	19%	24%

# Fuel Prices

Fuel Price shows the prices paid for fuel used by PREPA and private generators, both in terms of MMBtus and Barrel of Oil Equivalent (BOE). The Fuel Price is divided by Fuel Type to better illustrate the contribution to the total Fuel Price for the month.

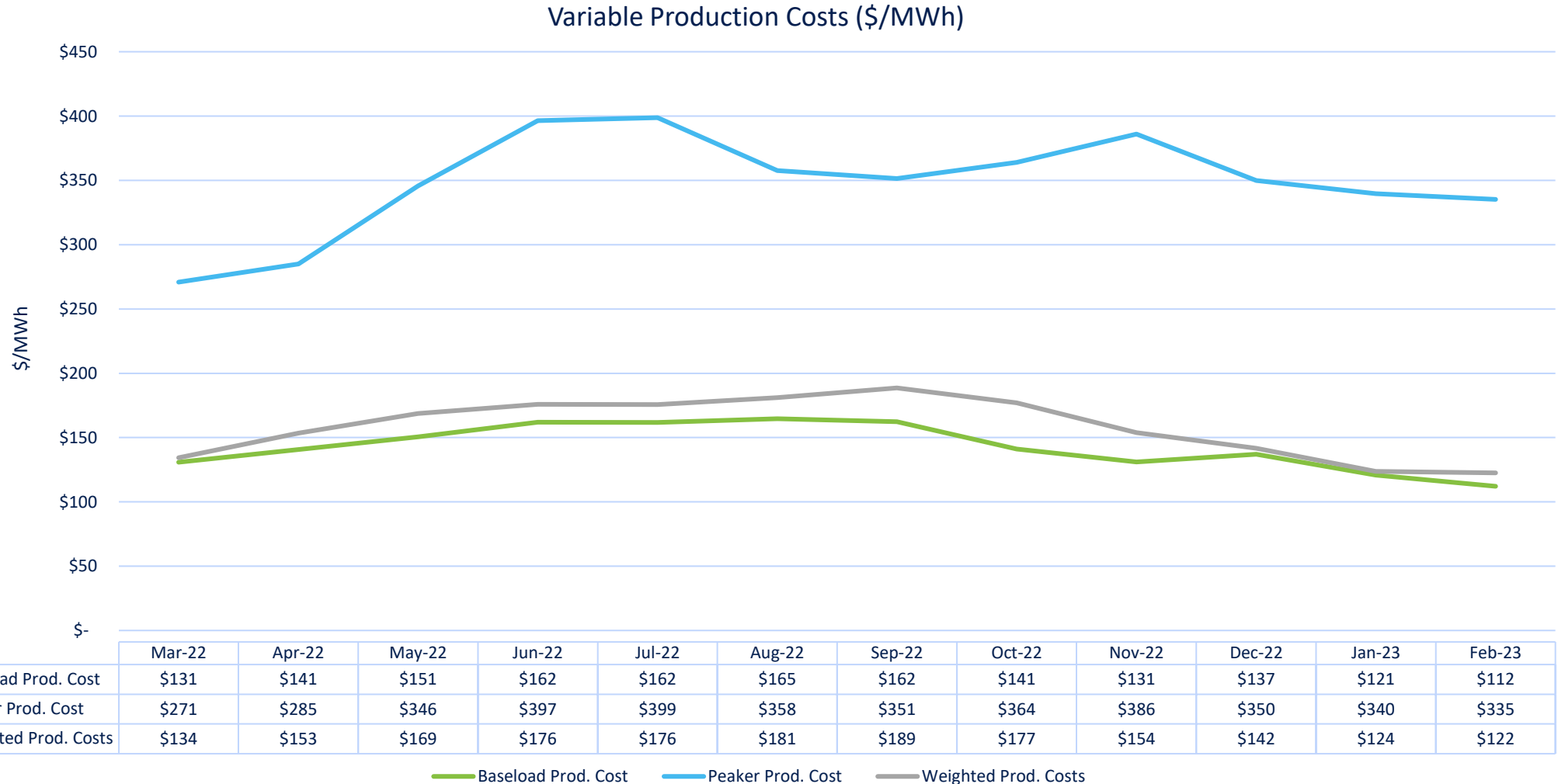


\$/MMBtu	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
Diesel	21.69	21.41	26.17	29.37	28.30	28.83	28.03	30.23	31.20	26.95	26.77	26.93
Residual	18.93	18.03	20.78	21.64	21.27	20.25	18.84	18.41	17.26	16.75	15.98	16.67
Natural Gas	11.32	12.38	14.54	16.35	14.02	16.10	16.90	14.94	12.35	13.32	11.36	10.02
Coal	5.20	4.70	4.63	4.63	4.62	4.62	4.63	4.63	4.63	4.62	4.68	4.68
\$/BOE	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
Diesel	124.91	123.56	150.39	169.30	163.78	167.00	162.18	174.68	180.89	154.70	156.31	155.24
Residual	118.78	126.14	129.91	135.01	132.64	125.96	117.24	114.41	107.37	104.42	99.14	102.69
Natural Gas	67.71	73.28	93.17	97.47	83.18	95.16	100.24	86.67	72.11	78.82	67.47	58.05
Coal	30.15	27.28	26.83	26.83	26.83	26.81	26.83	26.83	26.83	26.83	27.14	27.16

\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Variable Production Costs

Variable Production Costs are predominantly fuel costs and reflect the cost to produce one MWh of energy. In the graph, the cost is shown separately for Baseload units and Peaker units. The weighted average cost indicates the cost per MWh of energy produced for the System Portfolio.



\*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

# Glossary of Terms

Term	Definition	Formula
Heat Rate	Measures the efficiency of a power plant to convert fuel into electricity. It is the amount of energy used by a power plant to generate one kilowatt-hour (kWh) of electricity. The more efficient the generator is, the lower the heat rate.	MMBtu consumption by all units in the station during a specific period / MWh produced by the same units in the same period
Reserves	Amount of generating capacity available to meet peak or abnormally high demands for power and to generate power during scheduled or unscheduled outages.	Available Capacity (MW) during the reported period minus the Actual Generation (MW) during the same period
Available Capacity	The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load, adjusted for scheduled or unscheduled outages.	N/A – value is provided for each unit
Availability Rate	The ratio of the maximum output that can be supplied to system load for the period of time considered to the nameplate capacity.	Average available capacity for a specific period (MW) / nameplate capacity
Production	The amount of electric energy produced.	N/A – value is provided for each unit
Capacity Factor	The ratio of the electrical energy produced by a generating unit for the period of time considered to the nameplate capacity.	The average energy produced by all units in the plant during a specific period (MWh) / Nameplate capacity for the plant
Planned Outage Hours	The shutdown of a generating unit or facility for inspection or maintenance, in accordance with an advance schedule; represented in hours per unit (Equivalent Planned Outage Hours). Planned Hours – hours provided in the Generation Outage Schedule for the following 90-day outlook. Actual Hours – number of hours a unit was out of service due to a planned outage.	N/A – values is provided for each unit
Maintenance Outage Hours	The shutdown of a generating unit or facility for nonemergency reasons or conditions which need repair outside of the advance schedule; represented in hours per unit.	N/A – value is provided for each unit
Forced Outage Hours	The shutdown of a generating unit or facility for emergency reasons or a condition in which the generating equipment is unavailable for load due to unanticipated breakdown; represented in hours per unit.	N/A – value is provided for each unit
Forced Outage Rate	The ratio of the forced outages hours to the hours the unit was anticipated to be available for the reporting period.	Forced Outage Hours / Period Hours (excluding planned and unplanned outage hours)
Nameplate Capacity	The maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer.	N/A – value is provided for each unit

# Plant and Unit List – Baseload and Peaker Units

## BASELOAD UNITS

Plant	Units	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
San Juan	CT 5	X	X	X	X		
	STM 5	X	X	X	X		
	CT 6	X	X	X	X		
	STM 6	X	X	X	X		
	7	X	X	X	X		
	8	X	X	X	X		
	9	X	X	X	X		
	10	X	X	X	X		
Costa Sur	5	X	X	X	X		
	6	X	X	X	X		
Aguirre	1	X	X	X	X		
	2	X	X	X	X		
Palo Seco	1	X	X	X	X		
	2	X	X	X	X		
	3	X	X	X	X		
	4	X	X	X	X		
AES	AES 1	X	X	X	X		
	AES 2	X	X	X	X		
EcoEléctrica	ECO 1	X	X	X	X		
	ECO 2	X	X	X	X		
	STM 1	X	X	X	X		

## PEAKER UNITS

Plant	Units	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
Cambalache	1	X	X	X		X	
	2	X	X	X		X	
	3	X	X	X		X	
Mayaguez	1A	X	X	X		X	
	1B	X	X	X		X	
	2A	X	X	X		X	
	2B	X	X	X		X	
	3A	X	X	X		X	
	3B	X	X	X		X	
	4A	X	X	X		X	
	4B	X	X	X		X	
	1-1	X	X	X		X	
	1-2	X	X	X		X	
Palo Seco (Inc. Mobile-Pack)	2-1	X	X	X		X	
	2-2	X	X	X		X	
	3-1	X	X	X		X	
	3-2	X	X	X		X	
	MP 1	X	X	X		X	
	MP 2	X	X	X		X	
	MP 3	X	X	X		X	
	I-1	X	X	X		X	
	I-2	X	X	X		X	
Aguirre CC	I-3	X	X	X		X	
	I-4	X	X	X		X	
	ST-1	X	X	X		X	
	II-1	X	X	X		X	
	II-2	X	X	X		X	
	II-3	X	X	X		X	
	II-4	X	X	X		X	
	ST-2	X	X	X		X	

## PEAKER UNITS

Plant	Units	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
Other Peakers	Daguao 1-1	X	X	X		X	
	Daguao 1-2	X	X	X		X	
	Aguirre 2-1	X	X	X		X	
	Aguirre 2-2	X	X	X		X	
	Costa Sur 1-1	X	X	X		X	
	Costa Sur 1-2	X	X	X		X	
	Jobos 1-1	X	X	X		X	
	Jobos 1-2	X	X	X		X	
	Yabucoa 1-1	X	X	X		X	
	Yabucoa 1-2	X	X	X		X	
	Vega Baja 1-1	X	X	X		X	
	Vega Baja 1-2	X	X	X		X	
	Vieques 1	X	X	X		X	
	Vieques 2	X	X	X		X	
	Culebra 1	X	X	X		X	
	Culebra 2	X	X	X		X	
	Culebra 3	X	X	X		X	

# Plant and Unit List – Renewable Projects

## SOLAR PROJECTS

Projects	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
AES Ilumina						X
Cantera Martinó						X
San Fermín						X
Horizon Energy						X
Oriana Energy						X
Coto Laurel						X
Humacao						X

## WIND AND LANDFILL PROJECTS

Projects	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
Pattern Santa Isabel						X
Landfill Gas Fajardo						X
Landfill Gas Toa Baja						X

## HYDRO PLANTS

Projects	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
Caonillas 1-1						
Caonillas 1-2						
Caonillas 2-1						
Dos Bocas 1						
Dos Bocas 2						
Dos Bocas 3						
Garzas 1-1						
Garzas 1-2						
Garzas 2-1						
Patillas 1-1						
Patillas 1-2						
Rio Blanco 1-1						
Rio Blanco 1-2						
Toro Negro 1-1						
Toro Negro 1-2						
Toro Negro 1-3						
Toro Negro 1-4						
Toro Negro 2-1						
Yauco 1-1						
Yauco 2-1						
Yauco 2-2						