



# Monthly Generation Performance Report

February 2024

# 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 GeneraPR 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.



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# Executive Summary – December Performance

## Overview

The maximum peak demand for February 2024 is approximately 2529 MW.

Aguirre 1 ETR has been pushed back to February 12. Aguirre 2 is expected to come back February 4. Costa Sur 5 ETR has been pushed back to February 13. Costa Sur 6 is expected to come back March 20. Palo Seco 3 ETR has been pushed back to June 6. Palo Seco 4 ETR has been pushed back to February 28 of 2025.

## Major Events

In February, the electric system experienced 0 load shed events due to generation shortfall, and 7 generation events that resulted in load shed to prevent a frequency decay.

## System Reserves

In February, the hourly reserve levels averaged 691 MW, with 396 hours during the month having less than 750 MW in reserves (equal to 57% of the time.)

Without the additional 350 MW of generation from the FEMA units, the electric system would have potentially experienced 15 additional load shed events at peak hours due to generation shortfall this month.

The forecast for March 2024 shows lower reserve levels to the same month last year (March 2023), with 769 MW average reserves forecasted versus 951 MW seen for the same month last year.

The System Availability for the month of February was 43%.

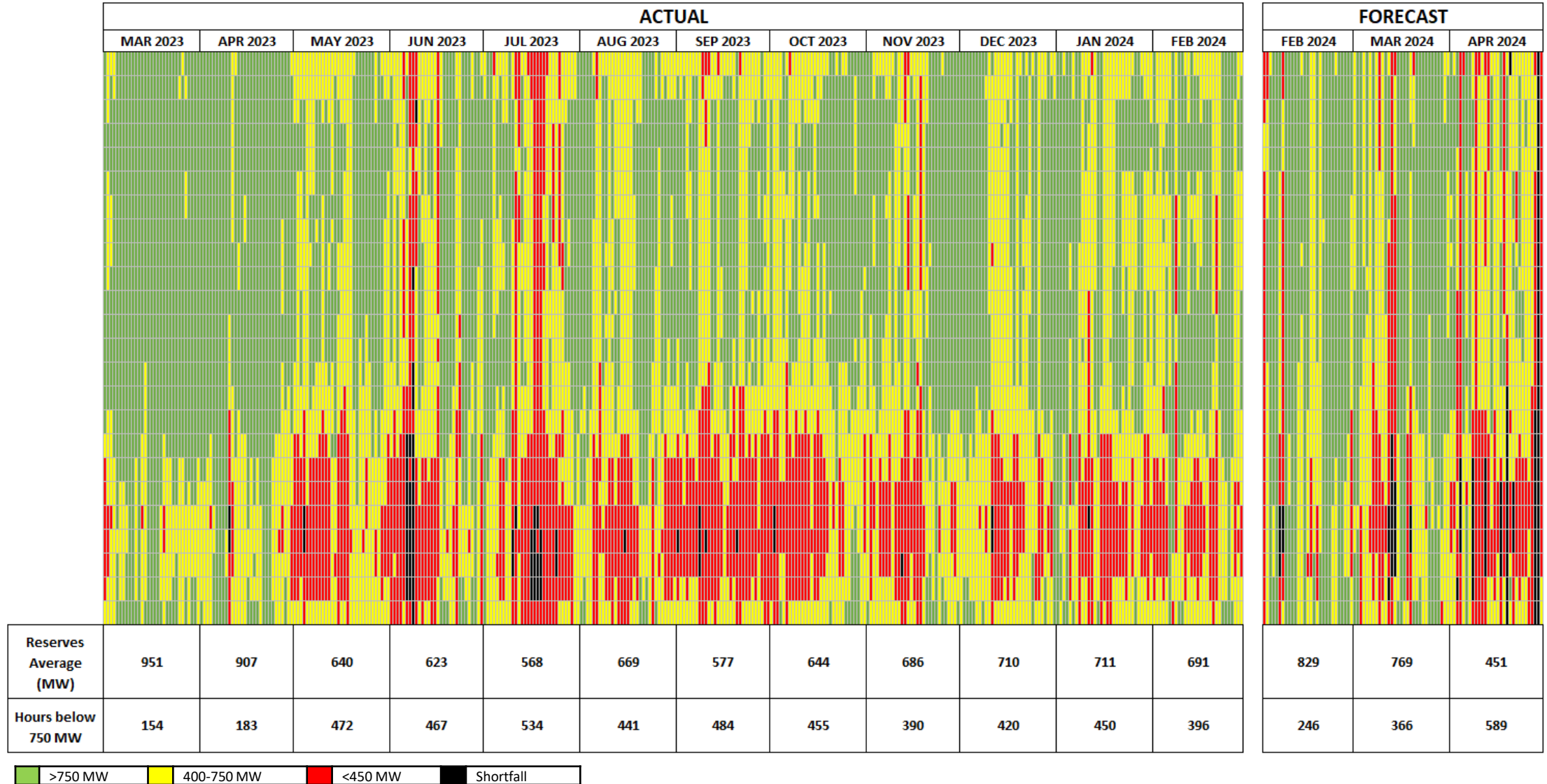
- PREPA – 30%
- AES – 65%
- EcoEléctrica – 99%



# 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

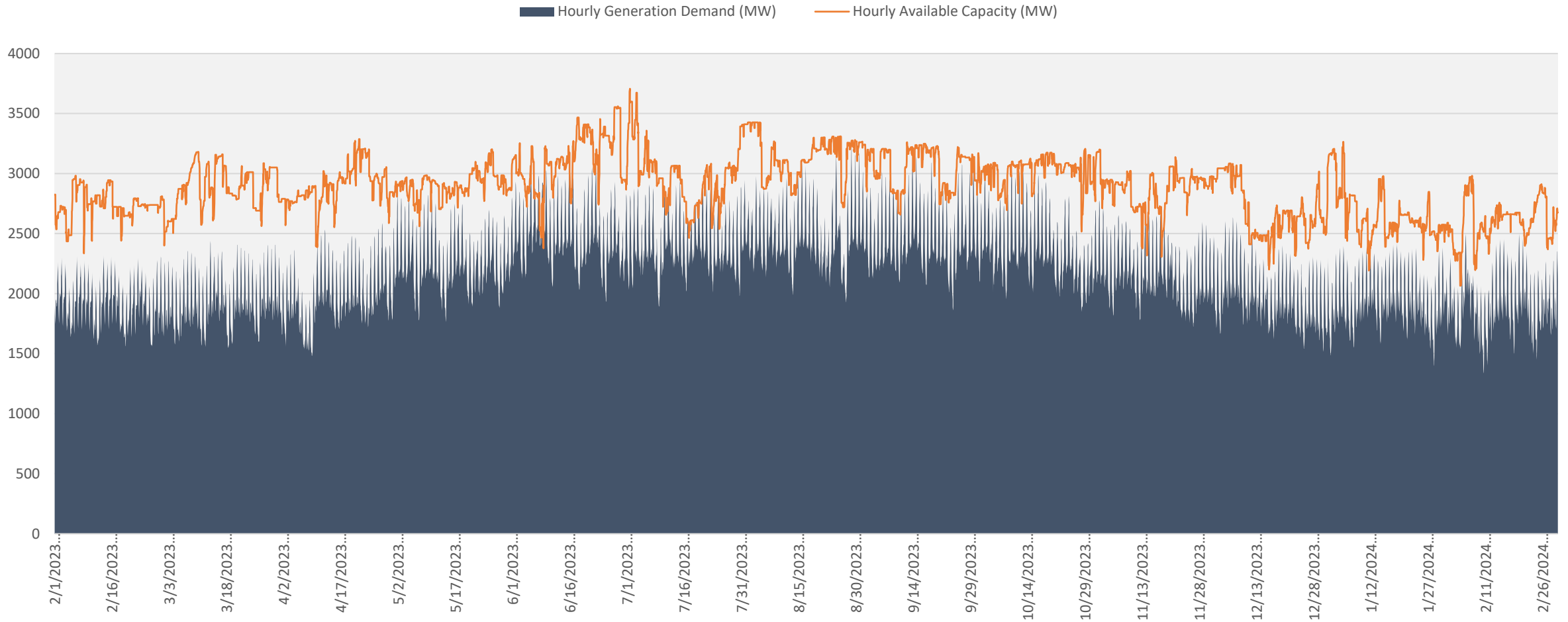


\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

# 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.



\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

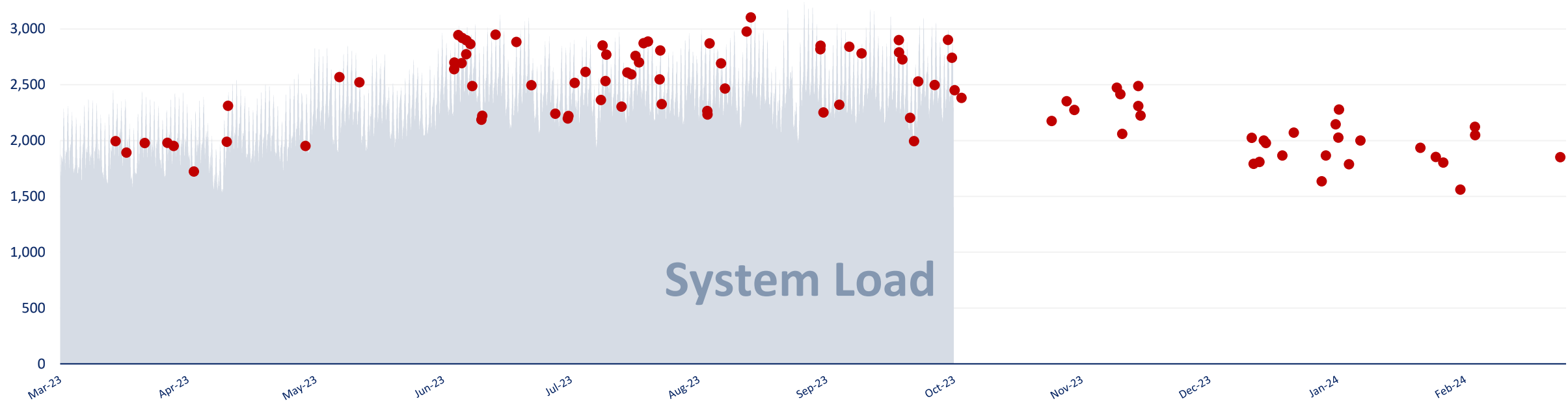
# Load Shed Events

Load shed events can occur due to unexpected generation unit losses (Unit Performance Load Shed Events). Also, when the demand for electricity exceeds available supply levels, LUMA, as the system operator and in compliance with its responsibilities under the T&D OMA, implements load shedding to stabilize the electric system and prevent larger and longer outages (Generation Shortfall Events).

LUMA does not generate energy and can only operate the system with the electricity that is provided by GeneraPR, PREPA, and other island generators.

## Hourly System Load (MW)

**Rolling 12 Months Load Shed Events: 105**



MTD (February 1, 2024 – February 29, 2024)	Total Events	Average Customers Affected	Average Duration (min)	Rolling 12 Months (March 1, 2023 - February 29, 2024)	Total Events	Average Customers Affected	Average Duration (min)
<b>Generation Shortfall Events</b>	0	0	0	<b>Generation Shortfall Events</b>	27	84,007	142
<b>Unit Performance Load Shed Events</b>	4	49,429	16	<b>Unit Performance Load Shed Events</b>	78	92,417	15

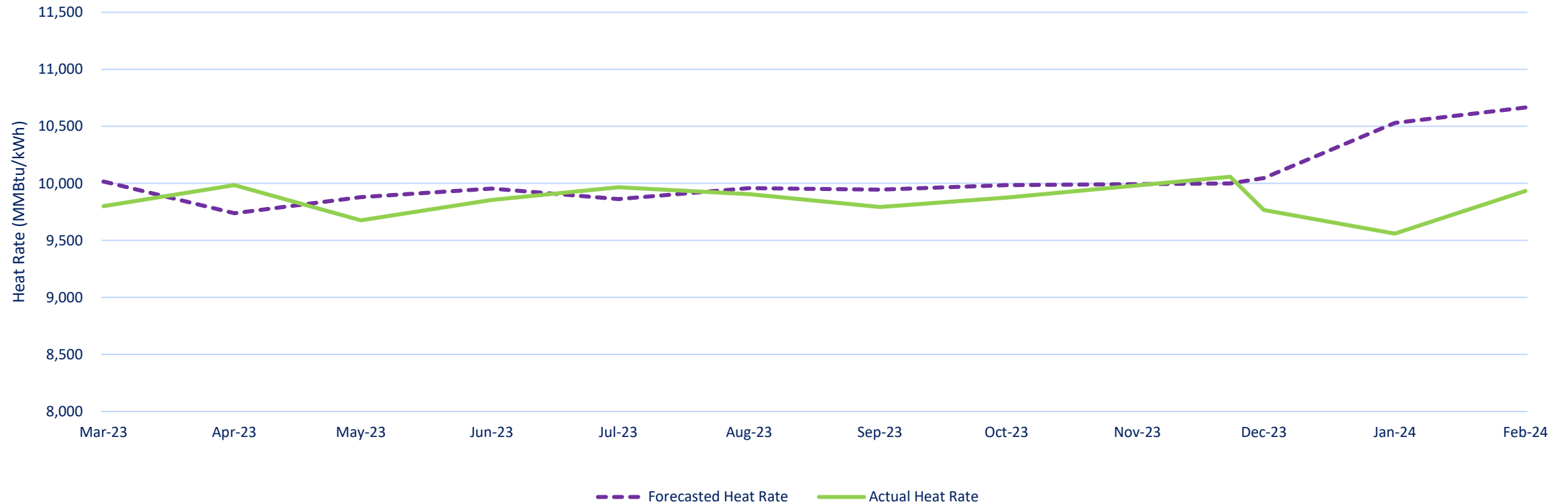
\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

# 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.

### Forecasted vs Actual Heat Rate



\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.



# 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.

Available Capacity (MW) and Availability Rate (AR)		Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	
<b>AES</b> Nameplate Cap: 508		MW	333	323	424	437	290	449	448	243	249	263	370	330
	AR	66%	64%	83%	86%	57%	88%	88%	48%	49%	52%	73%	65%	
<b>EcoElectrica</b> Nameplate Cap: 550		MW	313	385	550	545	552	531	549	550	531	550	550	547
	AR	57%	70%	100%	99%	100%	97%	100%	100%	97%	100%	100%	99%	
<b>Genera Aguirre</b> Nameplate Cap: 900		MW	248	297	91	310	277	344	316	373	257	152	210	368
	AR	28%	33%	10%	34%	31%	38%	35%	41%	29%	17%	23%	41%	
<b>Genera Costa Sur</b> Nameplate Cap: 820		MW	615	534	437	480	224	347	313	333	363	366	48	3
	AR	75%	65%	53%	59%	27%	42%	38%	41%	44%	45%	6%	0%	
<b>Genera Palo Seco</b> Nameplate Cap: 602		MW	377	357	337	235	291	153	168	171	121	0	0	0
	AR	63%	59%	56%	39%	48%	25%	28%	28%	20%	0%	0%	0%	
<b>Genera San Juan</b> Nameplate Cap: 840		MW	615	572	570	641	700	661	690	679	510	652	723	478
	AR	73%	68%	68%	76%	83%	79%	82%	81%	61%	78%	86%	57%	
<b>FEMA Palo Seco</b> Nameplate Cap: 150		MW	0	0	0	0	149	145	142	148	151	150	147	143
	AR	0%	0%	0%	0%	99%	97%	95%	99%	100%	100%	98%	95%	
<b>FEMA San Juan</b> Nameplate Cap: 200		MW	0	0	0	0	0	0	0	199	202	196	201	200
	AR	0%	0%	0%	0%	0%	0%	0%	0%	100%	101%	98%	101%	100%
<b>Total Baseload</b> Nameplate Cap: 4370		MW	2501	2469	2410	2648	2484	2631	2626	2697	2384	2329	2249	2070
	AR	59%	58%	57%	63%	57%	60%	60%	59%	52%	51%	49%	45%	

\*Refer to Glossary of Terms on page 22 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.


Available Capacity (MW) and Availability Rate (AR)		Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
<b>Genera Aguirre Combined Cycle</b> Nameplate Cap: 592		MW 93	139	190	193	191	199	148	172	191	185	150	138
		AR 16%	23%	32%	33%	32%	34%	25%	29%	32%	31%	25%	23%
<b>Genera Cambalache</b> Nameplate Cap: 248		MW 134	114	155	146	152	142	144	74	76	104	152	156
		AR 54%	46%	63%	59%	61%	58%	58%	30%	31%	42%	62%	63%
<b>Genera Mayaguez</b> Nameplate Cap: 220		MW 33	40	37	35	28	29	20	32	19	26	24	33
		AR 15%	18%	17%	16%	13%	13%	9%	14%	9%	12%	11%	15%
<b>Genera Palo Seco (Inc. Mobile-Pack)</b> Nameplate Cap: 207		MW 178	179	165	161	176	192	178	188	186	182	183	182
		AR 86%	86%	80%	78%	85%	93%	86%	91%	90%	88%	89%	88%
<b>Other Peakers</b> Nameplate Cap: 264		MW 78	59	57	56	71	69	69	59	62	61	71	68
		AR 30%	22%	22%	21%	27%	26%	26%	22%	24%	23%	27%	26%
<b>Total Peakers</b> Nameplate Cap: 1531		MW 516	531	604	591	618	631	560	524	535	557	581	577
		AR 34%	35%	39%	39%	40%	41%	37%	34%	35%	36%	38%	38%

\*Refer to Glossary of Terms on page 22 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
<b>AES</b>		9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800
<b>EcoElectrica</b>		7,945	7,945	7,945	7,945	7,945	7,945	7,945	7,945	7,945	7,945	7,957	7,957
<b>Genera Aguirre</b>		10,764	11,075	10,937	10,741	11,082	10,687	10,644	10,734	11,008	11,034	11,207	11,397
<b>Genera Costa Sur</b>		10,639	10,892	11,053	10,733	11,835	10,616	10,788	10,887	10,857	10,838	11,323	40,045
<b>Genera Palo Seco</b>		9,817	9,799	10,270	10,224	10,168	10,379	9,813	10,463	10,254	-	-	-
<b>Genera San Juan</b>		8,091	8,419	8,059	8,248	8,458	8,476	8,477	8,574	9,317	8,956	8,973	9,432
<b>Total Baseload</b>		9,446	9,548	9,356	9,336	9,343	9,278	9,215	9,365	9,477	9,267	8,968	9,381

- The FEMA Palo Seco units are not included as not all the units' consumption is included in the Genera Fuel Report

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# 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
<b>Genera Aguirre Combined Cycle</b>		13,524	14,562	14,945	14,766	14,365	14,969	14,444	14,811	14,969	14,921	14,671	14,989
<b>Genera Cambalache</b>		13,005	13,403	12,535	12,595	12,355	12,573	12,492	12,341	12,435	13,231	12,834	12,785
<b>Genera Mayaguez</b>		10,257	10,566	10,726	10,764	10,716	10,840	10,824	10,942	10,801	11,013	10,882	10,945
<b>Genera Palo Seco (Inc. Mobile Pack)</b>		11,233	10,896	11,320	11,517	11,324	11,454	11,572	15,072	15,981	14,925	15,146	16,487
<b>Other Peakers</b>		14,612	13,287	14,056	13,343	13,677	14,906	14,631	15,086	14,893	14,771	15,064	15,462
<b>Total Peakers</b>		12,419	12,634	13,005	12,819	12,501	12,697	12,578	13,731	13,962	13,195	12,755	12,951

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# 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	
<b>AES</b> Nameplate Cap: 508		MW	314	317	426	425	281	449	447	242	248	253	355	320
	CF	62%	62%	84%	84%	55%	88%	88%	48%	49%	50%	70%	63%	
<b>EcoElectrica</b> Nameplate Cap: 550		MW	261	326	421	430	449	426	434	435	403	410	412	405
	CF	47%	59%	77%	78%	82%	78%	79%	79%	73%	75%	75%	74%	
<b>Genera Aguirre</b> Nameplate Cap: 900		MW	191	233	74	245	231	258	249	289	190	156	134	284
	CF	21%	26%	8%	27%	26%	29%	28%	32%	21%	17%	15%	32%	
<b>Genera Costa Sur</b> Nameplate Cap: 820		MW	473	456	431	437	214	324	281	314	304	291	37	1
	CF	58%	56%	53%	53%	26%	39%	34%	38%	37%	35%	5%	0%	
<b>Genera Palo Seco</b> Nameplate Cap: 602		MW	241	231	295	207	259	130	141	147	105	0	0	0
	CF	40%	38%	49%	34%	43%	22%	23%	24%	18%	0%	0%	0%	
<b>Genera San Juan</b> Nameplate Cap: 840		MW	363	324	371	417	470	446	462	425	417	397	473	380
	CF	43%	39%	44%	50%	56%	53%	55%	51%	50%	47%	56%	45%	
<b>FEMA Palo Seco</b> Nameplate Cap: 150		MW	0	0	0	0	149	146	146	150	154	154	151	143
	CF	0%	0%	0%	0%	99%	97%	98%	100%	103%	103%	101%	95%	
<b>FEMA San Juan</b> Nameplate Cap: 200		MW	0	0	0	0	0	0	0	201	202	196	201	201
	CF	0%	0%	0%	0%	0%	0%	0%	0%	100%	101%	98%	101%	101%
<b>Total Baseload</b> Nameplate Cap: 4370		MW	1842	1886	2019	2161	2053	2178	2161	2204	2024	1858	1763	1735
	CF	44%	45%	48%	51%	47%	50%	49%	48%	44%	41%	39%	38%	

\*Refer to Glossary of Terms on page 22 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.

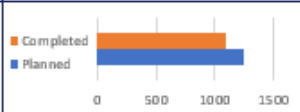



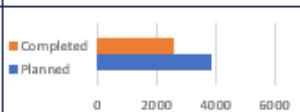


Average Generation (MW) and Capacity Factor		Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	
<b>Genera Aguirre Combined Cycle</b> Nameplate Cap: 592		MW	28	34	103	89	112	83	60	74	75	47	49	42
	CF	5%	6%	17%	15%	19%	14%	10%	13%	13%	8%	8%	7%	
<b>Genera Cambalache</b> Nameplate Cap: 247.5		MW	21	19	44	44	83	69	84	32	30	18	31	35
	CF	8%	8%	18%	18%	33%	28%	34%	13%	12%	7%	13%	14%	
<b>Genera Mayaguez</b> Nameplate Cap: 220		MW	17	26	55	56	88	64	44	32	23	50	77	72
	CF	8%	12%	25%	26%	40%	29%	20%	14%	10%	23%	35%	33%	
<b>Genera Palo Seco (Inc. Mobile-Pack)</b> Nameplate Cap: 207		MW	17	16	37	40	55	70	74	26	9	10	9	13
	CF	8%	7%	18%	19%	26%	34%	36%	13%	5%	5%	4%	6%	
<b>Other Peakers (Genera)</b> Nameplate Cap: 264		MW	7	3	10	11	22	13	24	15	23	7	12	9
	CF	3%	1%	4%	4%	8%	5%	9%	6%	9%	3%	5%	3%	
<b>Total Peakers</b> Nameplate Cap: 1530.5		MW	90	98	248	241	359	299	286	180	161	131	178	171
	CF	6%	6%	16%	16%	23%	20%	19%	12%	11%	9%	12%	11%	

\*Refer to Glossary of Terms on page 22 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 2023 - FEB 2024)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
AES		1080	718		
EcoElectrica		1248	1099		
Genera Aguirre		1896	72	Aguirre 1 - Environmental Maintenance	Aguirre 1 - 2/12/2024
Genera Costa Sur		6672	0		
Genera Palo Seco		5856	408		
Genera San Juan		3864	2598		
FEMA Palo Seco		0	602		
FEMA San Juan		0	318		
<b>Total Baseload</b>		<b>20616</b>	<b>5814</b>		

\*Refer to Glossary of Terms on page 22 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
AES		0	0	0	0	0	0	0	398	288	264	0	0
EcoElectrica		24	0	0	0	0	0	0	0	0	0	0	0
Genera Aguirre		44	0	0	0	0	0	0	0	0	0	0	0
Genera Costa Sur		0	0	0	35	0	0	0	10	0	0	0	0
Genera Palo Seco		0	0	0	0	0	0	0	0	0	0	0	0
Genera San Juan		39	37	0	0	0	0	0	37	136	551	34	48
FEMA Palo Seco		0	0	0	0	11	29	0	16	91	78	44	28
FEMA San Juan		0	0	0	0	0	0	0	255	192	61	40	25
Total Baseload		107	37	0	35	11	29	0	462	515	892	78	76

\*Refer to Glossary of Terms on page 22 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	
AES		Hrs	384	249	0	25	505	0	0	48	24	218	265	432
		%	27%	17%	0%	2%	34%	0%	0%	5%	3%	19%	18%	31%
EcoElectrica		Hrs	30	5	0	13	0	72	4	0	35	0	0	7
		%	2%	0%	0%	1%	0%	3%	0%	0%	2%	0%	0%	0%
Genera Aguirre		Hrs	768	778	1166	823	855	800	770	744	862	898	1014	370
		%	56%	54%	78%	57%	57%	54%	53%	50%	60%	60%	68%	27%
Genera Costa Sur		Hrs	0	0	139	116	771	743	795	744	720	720	1390	1356
		%	0%	0%	9%	8%	52%	50%	55%	50%	50%	48%	93%	97%
Genera Palo Seco		Hrs	1598	1498	1525	1751	1704	2293	2151	2242	2278	2854	2854	2662
		%	54%	52%	51%	61%	57%	77%	76%	75%	82%	97%	100%	100%
Genera San Juan		Hrs	2449	2342	2421	2196	2328	2489	2180	2283	2193	1589	1520	2198
		%	46%	47%	45%	40%	39%	42%	38%	39%	39%	30%	26%	41%
FEMA Palo Seco		Hrs	0	0	0	0	76	386	239	58	93	20	477	504
		%	0%	0%	0%	0%	1%	8%	5%	1%	2%	0%	9%	11%
FEMA San Juan		Hrs	0	0	0	0	0	0	505	382	295	254	641	
		%	0%	0%	0%	0%	0%	0%	7%	5%	4%	3%	9%	
Total Baseload		Hrs	5228	4872	5251	4923	6240	6784	6140	6624	6587	6594	7775	8170
		%	33%	32%	34%	33%	30%	33%	31%	24%	25%	25%	28%	32%

\*Refer to Glossary of Terms on page 22 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-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
<b>AES Ilumina</b>	20												
	Nameplate Cap: 20	MW	4	4	4	4	4	4	3	3	3	4	3
<b>Windmar Cantera Martinó</b>	2.0												
	Nameplate Cap: 2.1	MW	0.6	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4
<b>San Fermín</b>	20												
	Nameplate Cap: 20	MW	3	3	3	3	3	3	2	2	2	2	2
<b>Horizon Energy</b>	10												
	Nameplate Cap: 10	MW	3	3	3	3	3	2	2	2	2	2	2
<b>Oriana Energy</b>	40												
	Nameplate Cap: 45	MW	10	11	11	11	11	10	11	10	9	9	10
<b>Windmar Coto Laurel</b>	10												
	Nameplate Cap: 10	MW	2	2	2	2	2	2	2	2	2	2	2
<b>Fonroche Humacao</b>	40												
	Nameplate Cap: 40	MW	8	9	8	9	8	8	8	6	6	6	7
<b>Total Solar</b>	140												
	Nameplate Cap: 147	MW	31	33	32	32	31	29	31	26	25	25	27
		CF	22%	22%	21%	21%	20%	20%	21%	17%	17%	17%	19%
		CF	29%	24%	24%	21%	23%	22%	21%	19%	19%	21%	18%
		CF	14%	14%	13%	14%	13%	13%	13%	11%	10%	10%	9%
		CF	28%	28%	28%	26%	27%	23%	23%	24%	24%	24%	25%
		CF	23%	25%	25%	24%	24%	21%	25%	21%	20%	20%	22%
		CF	22%	20%	21%	21%	23%	22%	22%	18%	17%	17%	16%
		CF	19%	22%	21%	22%	21%	19%	20%	16%	15%	16%	16%
		CF	21%	22%	22%	22%	21%	20%	21%	18%	17%	17%	18%
		CF	21%	22%	22%	22%	21%	20%	21%	18%	17%	17%	17%

\*Refer to Glossary of Terms on page 22 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.

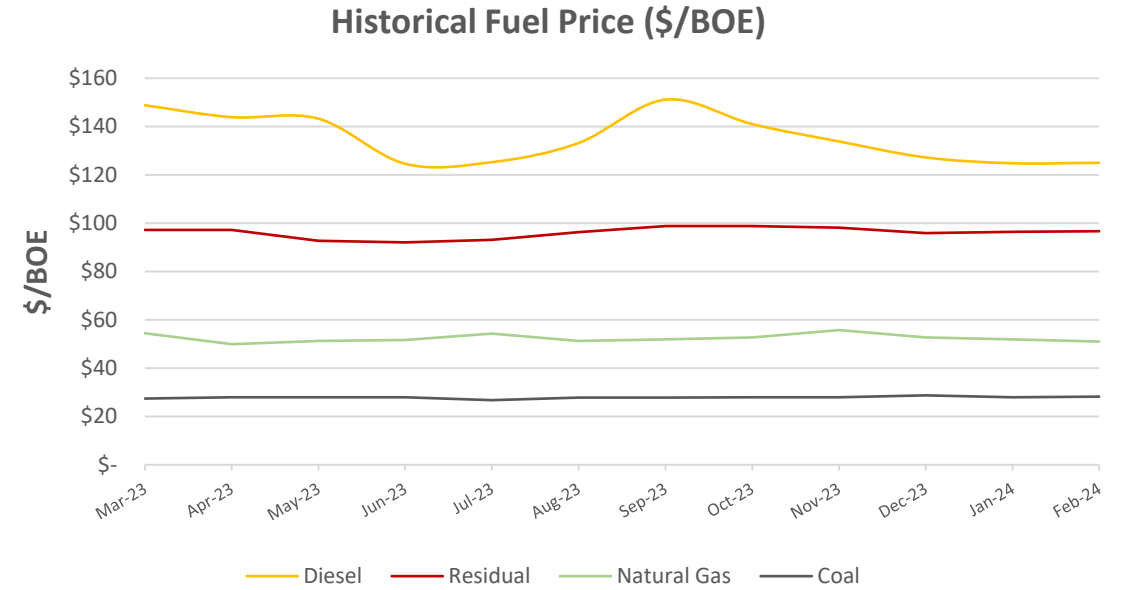
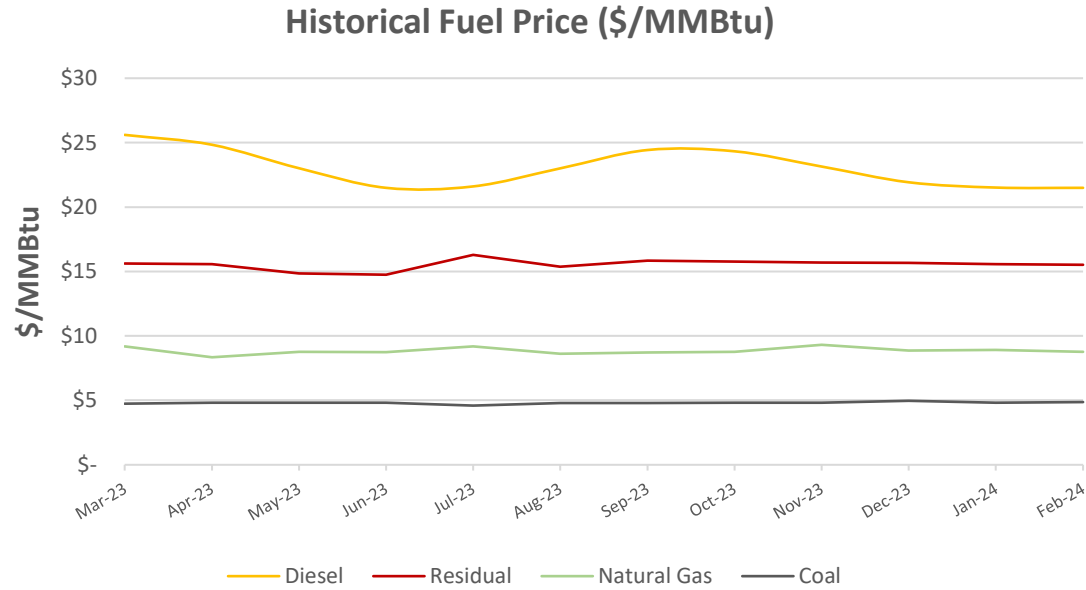
Average Production (MW) and Capacity Factor

		Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	
<b>Pattern Santa Isabel</b> Nameplate Cap: 75		MW	14	13	11	12	20	14	6	5	12	12	17	10
		CF	19%	18%	15%	15%	27%	19%	9%	6%	17%	15%	22%	13%
<b>Punta Lima</b> Nameplate Cap: 26		MW	0	0	0	0	0	0	0	1	3	4	6	4
		CF	0%	0%	0%	0%	0%	0%	0%	4%	11%	17%	25%	14%
<b>Landfill Gas Fajardo</b> Nameplate Cap: 2.4		MW	0.5	0.4	0.7	0.5	0.5	0.4	0.3	0.6	0.3	0.5	0.2	0.0
		CF	22%	15%	28%	22%	21%	16%	14%	24%	11%	22%	10%	0%
<b>Landfill Gas Toa Baja</b> Nameplate Cap: 2.4		MW	0.6	0.8	0.6	0.9	1.3	0.9	1.1	1.3	1.2	1.1	1.0	1.0
		CF	27%	32%	24%	39%	55%	36%	45%	55%	49%	46%	42%	43%
<b>Total Wind and Landfill</b> Nameplate Cap: 80		MW	15	14	12	13	22	16	8	8	17	17	24	14
		CF	14%	14%	12%	12%	21%	15%	7%	7%	16%	17%	23%	14%

\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

# 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.



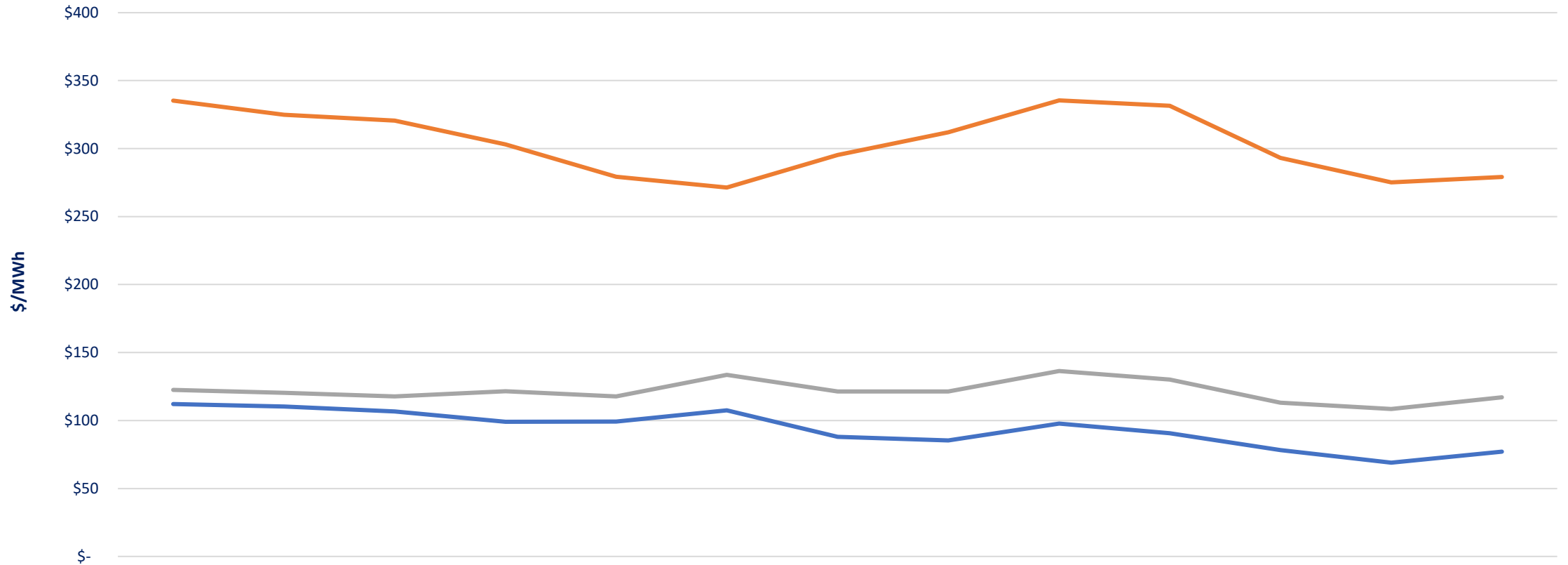
	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
<b>\$/MMBtu</b>													
Diesel	25.60	24.84	23.02	23.88	21.61	23.01	23.01	24.43	24.33	23.15	21.93	21.52	21.50
Residual	15.62	15.57	14.86	14.75	16.29	15.37	15.37	15.83	15.77	15.70	15.66	15.57	15.52
Natural Gas	9.19	8.34	8.77	8.73	9.18	8.62	8.62	8.72	8.77	9.30	8.87	8.91	8.77
Coal	4.73	4.80	4.80	4.80	4.60	4.79	4.79	4.79	4.80	4.80	4.95	4.80	4.85
<b>\$/BOE</b>													
Diesel	148.87	143.93	143.30	124.61	125.28	133.24	133.24	151.21	141.06	133.88	127.24	124.84	125.03
Residual	97.22	97.19	92.75	92.01	93.14	96.34	96.34	98.81	98.75	98.09	95.89	96.38	96.71
Natural Gas	54.41	49.88	51.27	51.62	54.32	51.23	51.23	51.93	52.63	55.73	52.63	51.96	50.94
Coal	27.43	27.86	27.86	27.86	26.68	27.78	27.78	27.78	27.86	27.86	28.69	27.85	28.16

\*Refer to Glossary of Terms on page 22 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.

Variable Production Costs (\$/MWh)



	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24
Baseload Prod. Cost	\$112	\$110	\$107	\$99	\$99	\$108	\$88	\$85	\$98	\$91	\$78	\$69	\$77
Peaker Prod. Cost	\$335	\$325	\$321	\$303	\$279	\$271	\$295	\$312	\$335	\$332	\$293	\$275	\$279
Weighted Prod. Costs	\$122	\$120	\$118	\$122	\$118	\$134	\$121	\$121	\$136	130	113	108	117

— Baseload Prod. Cost — Peaker Prod. Cost — Weighted Prod. Costs

\*Refer to Glossary of Terms on page 22 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
Generation Shortfall Events	An event in which customer demand for electricity is unable to be met due to lack of Available Capacity, leading to customers being manually disconnected from the grid.	N/A – Value is all events which occur in a specified time frame
Unit Performance Load Shed Events	An event in which a generating unit has an unanticipated breakdown and causes customers to be automatically disconnected from the grid to prevent potential damage to the system.	N/A – Value is all events which occur in a specified time frame

# 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		
FEMA Palo Seco	GT 1	X	X		X		
	GT 2	X	X		X		
	GT 4	X	X		X		
	GT 5	X	X		X		
	GT 6	X	X		X		
	GT 7	X	X		X		

## BASELOAD UNITS

Plant	Units	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
FEMA San Juan	GT 1	X	X		X		
	GT 2	X	X		X		
	GT 3	X	X		X		
	GT 4	X	X		X		
	GT 5	X	X		X		
	GT 6	X	X		X		
	GT 7	X	X		X		
	GT 8	X	X		X		
	GT 9	X	X		X		
	GT 10	X	X		X		
Palo Seco (Inc. Mobile-Pack)	1-1	X	X	X		X	
	1-2	X	X	X		X	
	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	
Aguirre CC	I-2	X	X	X		X	
	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	
Cambalache	Culebra 2	X	X	X		X	
	Culebra 3	X	X	X		X	
	1	X	X	X		X	
Mayaguez	2	X	X	X		X	
	3	X	X	X		X	
	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	

# 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 Martínó						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
Punta Lima						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						