



# Monthly Generation Performance Report

## December 2024

# Introduction

This report oversees Puerto Rico's electrical system overall performance; from system level to unit's level. System level measures shown are generation, availability and reserves level. Additionally, a summary of load shed events occurred in the last 12 months prior to this report's month. At plant and unit level, it oversees generation, availability, heat rate, and outage hours (planned, maintenance and forced). Finally, in terms of economics, fuel and variable costs are shown.

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 Genera PR 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

## Operations

- System Level Performance
  - System Reserve Status
  - System Heat Rate
  - System Availability
  - Load Shed Events
- Plant 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

## December 2024 performance

### Overview

The maximum peak demand for December 2024 was approximately 2,512 MW.

San Juan 6 (220 MW) is currently offline and is expected to return to service on May 31, 2025. San Juan 7 (100 MW) is currently offline, and the expected date of return is May 31, 2025. San Juan 9 (100 MW) is offline and is expected to return on January 21, 2025. Aguirre 1 & Aguirre 2 (450 MW each) are currently offline, Aguirre 1 is expected to return the first week of January, and Aguirre 2 is expected to return on January 24, 2024. Palo Seco 4 (216 MW) is expected to return to service by June 30, 2025

### Major Events

In December, the electric system experienced 7 generation events that led to load shedding, with 6 caused by underfrequency due to generation unit trips and 1 caused by a generation shortfall event.

For December, the hourly reserve levels averaged 934 MW, with 211 hours during the month having less than 750 MW in reserves (equal to 28% of the time.)

The forecast for January 2025 shows fewer reserve levels to the same month this year (January 2024), with 561 MW average reserves forecasted versus 711 MW seen for the same month this year.

The System Availability for the month of December was 47%.

- Genera – 39%
- AES – 95%
- EcoEléctrica – 98%



# Operations

## System-Level Performance



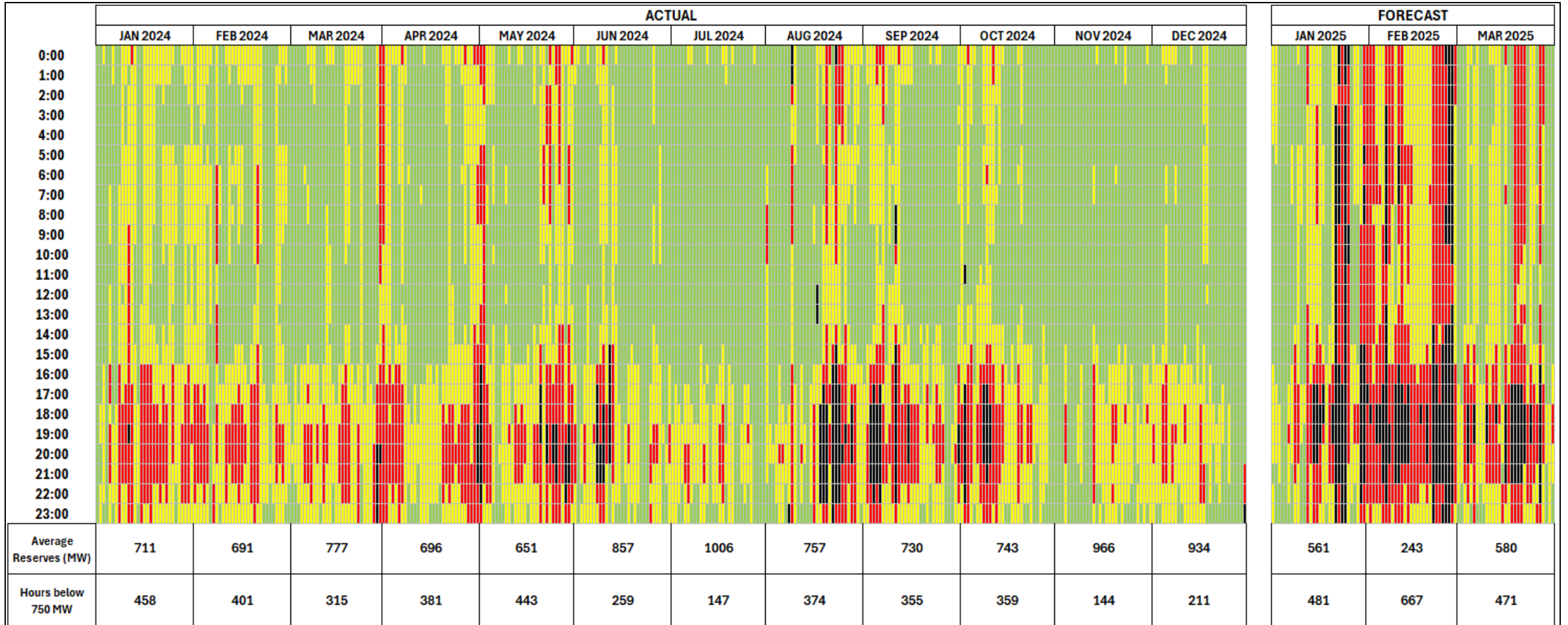
# System Reserves

Actual reserves timeframe: January 2024 – December 2024

Forecasted reserves timeframe: January 2025 – March 2025

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



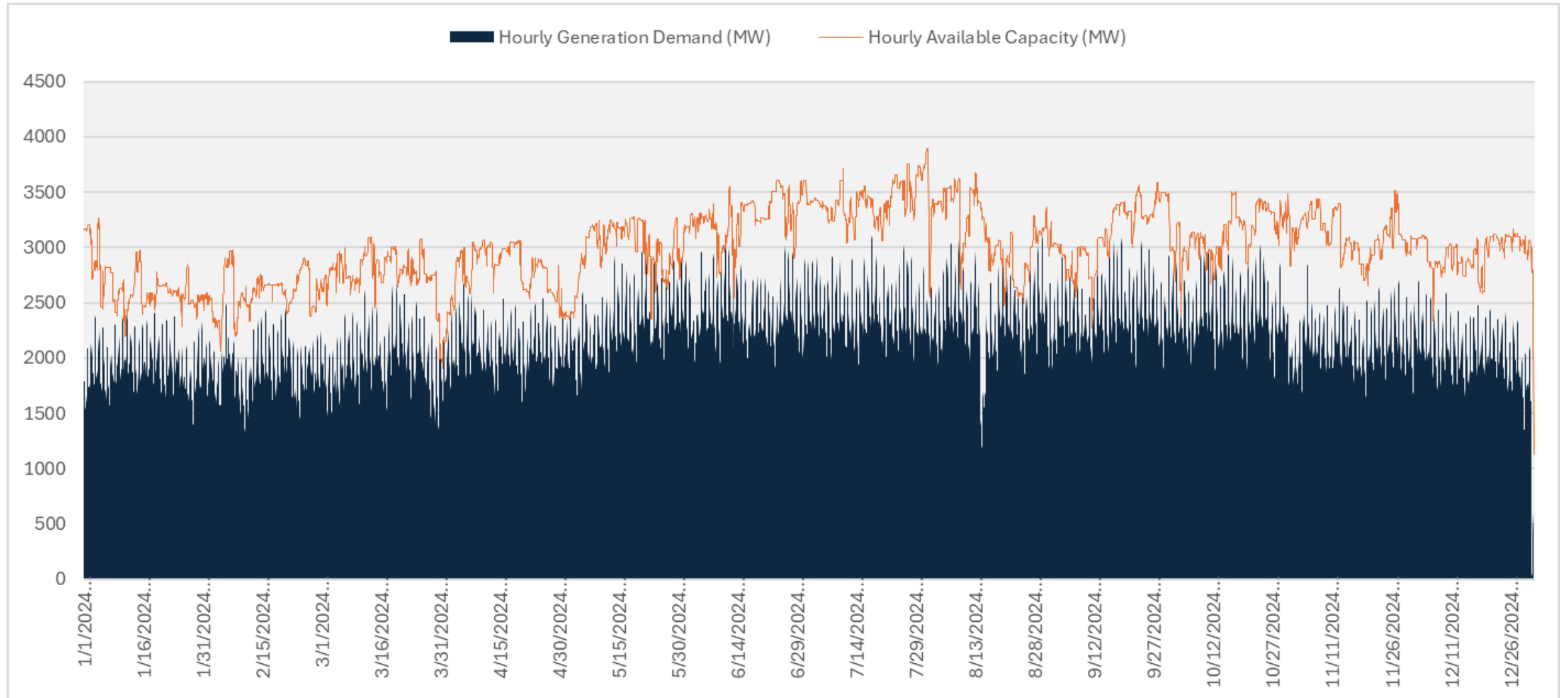
>750 MW
400-750 MW
<400 MW
Shortfall

\*Refer to Glossary of Terms on page 25 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.



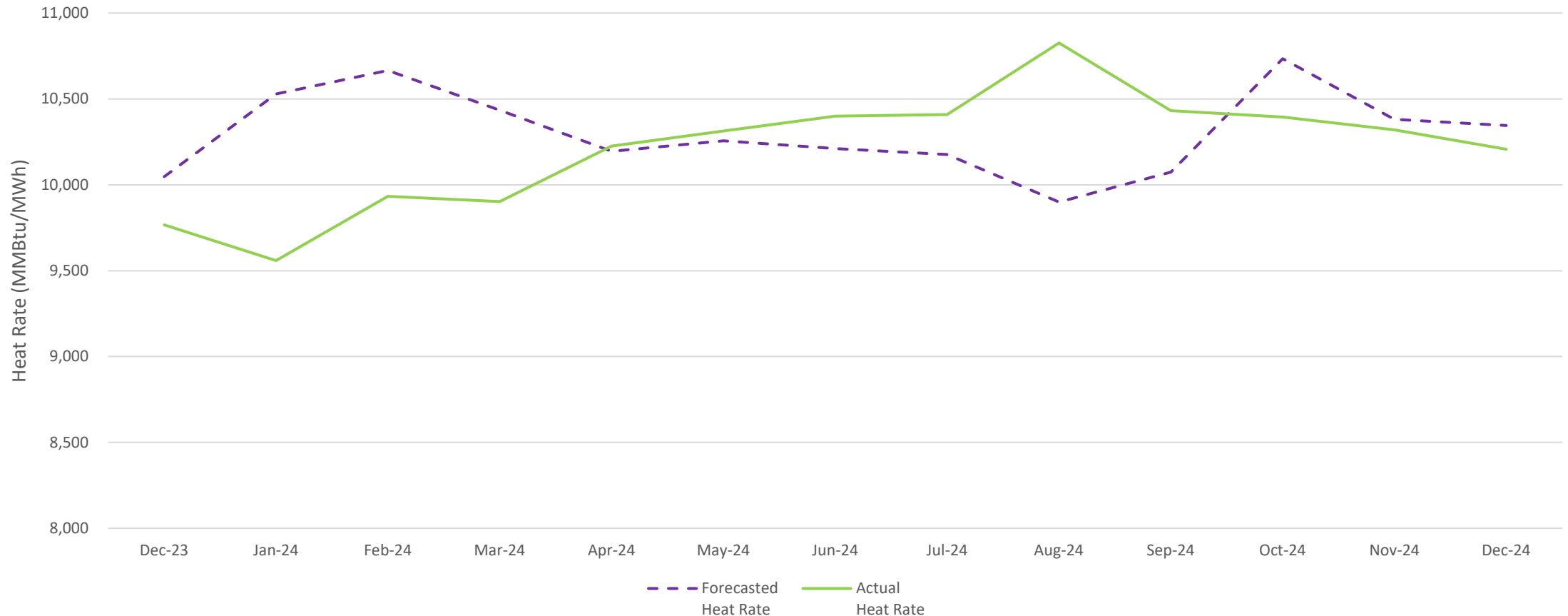
\*Refer to Glossary of Terms on page 25 for a list of definitions and formulas.

# 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 System Heat Rate



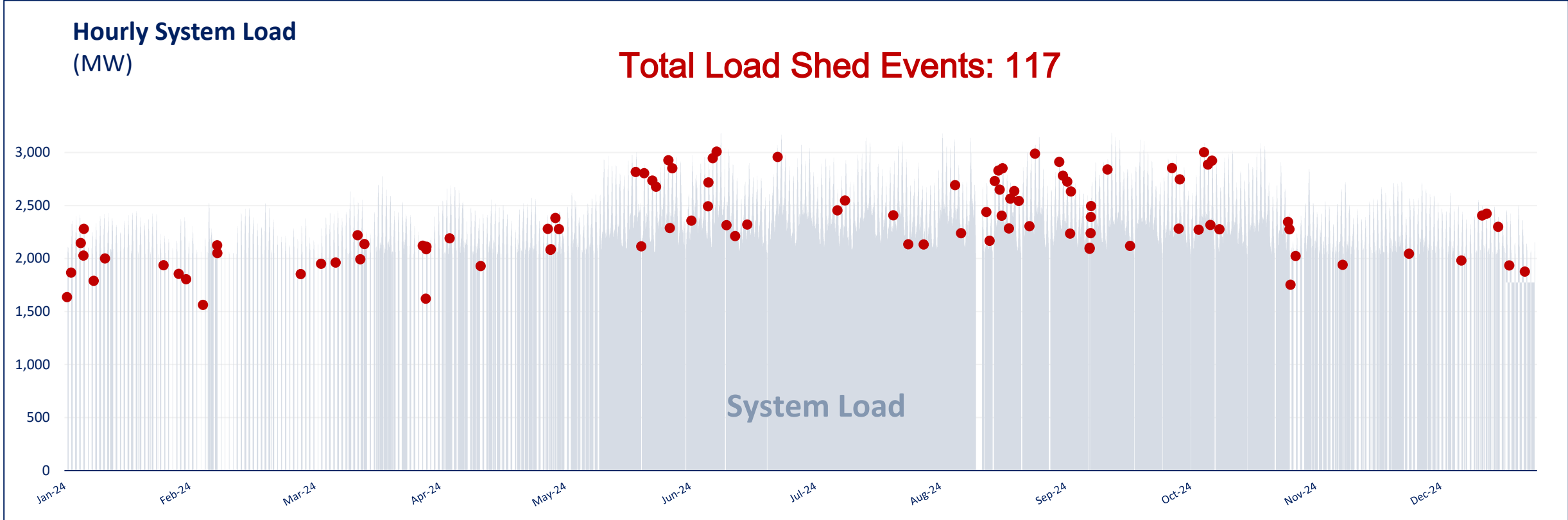
\*Refer to Glossary of Terms on page 25 for a list of definitions and formulas.



# 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 Genera PR, PREPA, and other island generators.



MTD (December 1, 2024 - December 31, 2024)	Total Events	Average Customer Affected	Average Duration (min)
Generation Shortfall Events	1	21,683	13
Unit Performance Load Shed Events	6	64,943	28

Rolling 12 Months (January 1, 2024 - December 31, 2024)	Total Events	Average Customer Affected	Average Duration (min)
Generation Shortfall Events	35	97,946	192
Unit Performance Load Shed Events	82	90,359	29

\*Refer to Glossary of Terms on page 25 for a list of definitions and formulas.

# Operations

## Plant/Units-Level Performance



# 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)		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>AES</b> Nameplate Cap: 508		MW 370	MW 330	MW 463	MW 406	MW 249	MW 257	MW 440	MW 466	MW 371	MW 364	MW 353	MW 484
		AR 73%	AR 65%	AR 91%	AR 80%	AR 49%	AR 51%	AR 87%	AR 92%	AR 73%	AR 72%	AR 69%	AR 95%
<b>EcoElectrica</b> Nameplate Cap: 566		MW 550	MW 547	MW 550	MW 550	MW 543	MW 566	MW 566	MW 252	MW 391	MW 561	MW 566	MW 556
		AR 100%	AR 99%	AR 100%	AR 100%	AR 99%	AR 100%	AR 100%	AR 45%	AR 69%	AR 99%	AR 100%	AR 98%
<b>Genera Aguirre</b> Nameplate Cap: 900		MW 210	MW 368	MW 341	MW 303	MW 505	MW 592	MW 440	MW 314	MW 147	MW 169	MW 220	MW 0
		AR 23%	AR 41%	AR 38%	AR 34%	AR 56%	AR 66%	AR 49%	AR 35%	AR 16%	AR 19%	AR 24%	AR 0%
<b>Genera Costa Sur</b> Nameplate Cap: 990		MW 48	MW 3	MW 105	MW 316	MW 403	MW 533	MW 599	MW 546	MW 643	MW 561	MW 574	MW 525
		AR 5%	AR 0%	AR 11%	AR 32%	AR 41%	AR 54%	AR 60%	AR 55%	AR 65%	AR 57%	AR 58%	AR 53%
<b>Genera Palo Seco</b> Nameplate Cap: 602		MW 0	MW 0	MW 0	MW 0	MW 0	MW 0	MW 27	MW 173	MW 198	MW 193	MW 146	MW 162
		AR 0%	AR 0%	AR 0%	AR 0%	AR 0%	AR 0%	AR 4%	AR 29%	AR 33%	AR 32%	AR 24%	AR 27%
<b>Genera San Juan</b> Nameplate Cap: 840		MW 543	MW 429	MW 425	MW 250	MW 266	MW 330	MW 392	MW 398	MW 375	MW 259	MW 254	MW 205
		AR 65%	AR 51%	AR 51%	AR 30%	AR 32%	AR 39%	AR 47%	AR 47%	AR 45%	AR 31%	AR 30%	AR 24%
<b>Total Baseload</b> Nameplate Cap: 4236		MW 2069	MW 2021	MW 1884	MW 1826	MW 1967	MW 2279	MW 2462	MW 2149	MW 2125	MW 2108	MW 2113	MW 1931
		AR 43%	AR 42%	AR 43%	AR 41%	AR 45%	AR 52%	AR 56%	AR 49%	AR 48%	AR 48%	AR 48%	AR 44%

\*Refer to Glossary of Terms on page 25 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 (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)		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	
<b>Genera Aguirre Combined Cycle</b> Nameplate Cap: 592		MW	150	138	127	170	178	201	197	206	216	257	239	246
	AR	25%	23%	21%	29%	30%	34%	33%	35%	37%	43%	40%	42%	
<b>Genera Cambalache</b> Nameplate Cap: 248		MW	152	156	153	155	155	151	151	152	155	152	106	149
	AR	62%	63%	62%	63%	63%	61%	61%	61%	63%	61%	43%	60%	
<b>Genera Mayaguez</b> Nameplate Cap: 220		MW	183	182	176	151	165	153	140	141	140	135	143	138
	AR	83%	83%	80%	69%	75%	69%	64%	64%	64%	61%	65%	63%	
<b>Genera Palo Seco Mobile-Packs</b> Nameplate Cap: 81		MW	3	0	1	71	74	72	70	69	73	73	74	78
	AR	3%	0%	1%	87%	92%	89%	87%	85%	90%	90%	92%	96%	
<b>Palo Seco TM</b> Nameplate Cap: 90		MW	147	143	96	62	80	86	84	87	79	82	90	83
	AR	98%	95%	80%	69%	89%	96%	93%	97%	88%	91%	99%	93%	
<b>San Juan TM</b> Nameplate Cap: 250		MW	201	200	205	245	236	226	224	218	239	212	221	200
	AR	101%	100%	91%	98%	95%	91%	89%	87%	96%	85%	88%	80%	
<b>Other Peakers (Frame 5's)</b> Nameplate Cap: 378		MW	95	101	121	108	102	107	103	97	108	112	126	117
	AR	25%	27%	32%	29%	27%	28%	27%	26%	29%	30%	33%	31%	
<b>Total Peakers</b> Nameplate Cap: 1853		MW	584	577	880	962	991	997	969	969	1010	1023	999	1013
	AR	38%	38%	47%	52%	53%	54%	52%	52%	54%	55%	54%	54%	

\*Refer to Glossary of Terms on page 25 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)		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>AES</b>		9,800	9,800	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620
<b>EcoElectrica</b>		7,957	7,957	7,957	7,957	7,881	7,881	7,881	7,881	7,881	7,881	7,881	7,881
<b>Genera Aguirre</b>		11,207	11,397	11,268	11,117	10,934	10,951	11,220	11,225	11,142	11,177	10,813	-
<b>Genera Costa Sur</b>		11,323	40,045	11,913	10,397	10,703	10,562	10,343	10,854	10,738	10,976	11,075	11,052
<b>Genera Palo Seco</b>		-	-	-	-	-	-	10,264	9,696	9,648	9,296	9,669	9,817
<b>Genera San Juan</b>		8,973	9,432	8,714	8,882	8,796	10,188	10,817	11,016	9,485	9,263	9,486	8,166
<b>Total Baseload</b>		8,968	9,381	9,510	9,564	9,687	9,904	10,007	10,275	9,817	9,761	9,807	11,459

\*Refer to Glossary of Terms on page 25 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)		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>Genera Aguirre Combined Cycle</b>		14,671	14,989	13,867	11,936	11,751	12,482	13,852	11,888	12,289	11,844	12,793	12,276
<b>Genera Cambalache</b>		12,834	12,785	12,872	12,640	12,407	12,756	12,876	12,361	12,343	12,361	13,227	12,818
<b>Genera Mayaguez</b>		10,882	10,945	11,029	11,107	10,882	11,040	10,832	10,908	10,868	10,861	10,898	10,817
<b>Genera Palo Seco (Inc. Mobile Packs)</b>		15,146	16,487	15,205	14,397	13,787	13,445	13,662	12,270	12,669	12,033	12,455	12,532
<b>Palo Seco TM &amp; San Juan TM</b>		-	-	-	11,706	11,137	11,032	10,961	10,983	10,993	11,534	11,255	10,991
<b>Other Peakers</b>		15,064	15,462	14,062	12,730	15,043	14,990	6,912	14,031	14,563	13,000	12,653	8,022
<b>Total Peakers</b>		12,755	12,951	12,710	5,416	6,168	5,087	4,468	6,354	6,246	6,525	4,333	11,395

\*Refer to Glossary of Terms on page 25 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		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>AES</b> Nameplate Cap: 508		MW 355	MW 320	MW 452	MW 412	MW 249	MW 251	MW 437	MW 449	MW 357	MW 365	MW 348	MW 481
	CF 70%	CF 63%	CF 89%	CF 81%	CF 49%	CF 49%	CF 86%	CF 88%	CF 70%	CF 72%	CF 68%	CF 95%	
<b>EcoElectrica</b> Nameplate Cap: 566		MW 412	MW 405	MW 398	MW 412	MW 399	MW 415	MW 412	MW 235	MW 292	MW 404	MW 391	MW 378
	CF 75%	CF 74%	CF 72%	CF 75%	CF 71%	CF 73%	CF 73%	CF 42%	CF 52%	CF 71%	CF 69%	CF 67%	
<b>Genera Aguirre</b> Nameplate Cap: 900		MW 134	MW 284	MW 243	MW 221	MW 418	MW 466	MW 346	MW 237	MW 125	MW 148	MW 198	MW 0
	CF 15%	CF 32%	CF 27%	CF 25%	CF 46%	CF 52%	CF 38%	CF 26%	CF 14%	CF 16%	CF 22%	CF 0%	
<b>Genera Costa Sur</b> Nameplate Cap: 990		MW 37	MW 1	MW 101	MW 270	MW 358	MW 486	MW 482	MW 435	MW 543	MW 495	MW 492	MW 432
	CF 4%	CF 0%	CF 10%	CF 27%	CF 36%	CF 49%	CF 49%	CF 44%	CF 55%	CF 50%	CF 50%	CF 44%	
<b>Genera Palo Seco</b> Nameplate Cap: 602		MW 0	MW 0	MW 0	MW 0	MW 0	MW 0	MW 28	MW 139	MW 150	MW 150	MW 121	MW 121
	CF 0%	CF 0%	CF 0%	CF 0%	CF 0%	CF 0%	CF 5%	CF 23%	CF 25%	CF 25%	CF 20%	CF 20%	
<b>Genera San Juan</b> Nameplate Cap: 840		MW 473	MW 380	MW 380	MW 227	MW 254	MW 306	MW 343	MW 302	MW 330	MW 229	MW 211	MW 180
	CF 56%	CF 45%	CF 45%	CF 27%	CF 30%	CF 36%	CF 41%	CF 36%	CF 39%	CF 27%	CF 25%	CF 21%	
<b>Total Baseload</b> Nameplate Cap: 4406		MW 1763	MW 1735	MW 1573	MW 1542	MW 1679	MW 1924	MW 2047	MW 1798	MW 1797	MW 1790	MW 1761	MW 1593
	CF 37%	CF 36%	CF 36%	CF 35%	CF 38%	CF 44%	CF 46%	CF 41%	CF 41%	CF 41%	CF 40%	CF 36%	

\*Refer to Glossary of Terms on page 25 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, 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											
		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>Genera Aguirre Combined Cycle</b>		MW 49	MW 42	MW 31	MW 79	MW 101	MW 75	MW 48	MW 114	MW 120	MW 149	MW 58	MW 85
Nameplate Cap: 592		CF 8%	CF 7%	CF 5%	CF 13%	CF 17%	CF 13%	CF 8%	CF 19%	CF 20%	CF 25%	CF 10%	CF 14%
<b>Genera Cambalache</b>		MW 31	MW 35	MW 24	MW 57	MW 71	MW 37	MW 27	MW 67	MW 74	MW 68	MW 19	MW 42
Nameplate Cap: 247.5		CF 13%	CF 14%	CF 10%	CF 23%	CF 29%	CF 15%	CF 11%	CF 27%	CF 30%	CF 27%	CF 8%	CF 17%
<b>Genera Mayaguez</b>		MW 77	MW 72	MW 56	MW 79	MW 90	MW 66	MW 49	MW 69	MW 68	MW 66	MW 45	MW 57
Nameplate Cap: 220		CF 35%	CF 33%	CF 25%	CF 36%	CF 41%	CF 30%	CF 22%	CF 31%	CF 31%	CF 30%	CF 20%	CF 26%
<b>Genera Palo Seco Mobile-Packs</b>		MW 1	MW 0	MW 1	MW 4	MW 12	MW 10	MW 2	MW 22	MW 18	MW 19	MW 7	MW 10
Nameplate Cap: 81		CF 1%	CF 0%	CF 1%	CF 5%	CF 14%	CF 12%	CF 3%	CF 27%	CF 23%	CF 23%	CF 8%	CF 12%
<b>Palo Seco TM</b>		MW 151	MW 143	MW 96	MW 66	MW 82	MW 85	MW 60	MW 80	MW 77	MW 80	MW 79	MW 71
Nameplate Cap: 90		CF 101%	CF 95%	CF 80%	CF 74%	CF 91%	CF 94%	CF 66%	CF 89%	CF 85%	CF 89%	CF 87%	CF 79%
<b>San Juan TM</b>		MW 201	MW 201	MW 189	MW 241	MW 222	MW 203	MW 179	MW 180	MW 217	MW 193	MW 170	MW 179
Nameplate Cap: 250		CF 101%	CF 101%	CF 84%	CF 96%	CF 89%	CF 81%	CF 71%	CF 72%	CF 87%	CF 77%	CF 68%	CF 72%
<b>Other Peakers (Frame 5's)</b>		MW 20	MW 21	MW 22	MW 26	MW 42	MW 18	MW 15	MW 29	MW 32	MW 33	MW 8	MW 13
Nameplate Cap: 378		CF 5%	CF 6%	CF 6%	CF 7%	CF 11%	CF 5%	CF 4%	CF 8%	CF 8%	CF 9%	CF 2%	CF 4%
<b>Total Peakers</b>		MW 178	MW 171	MW 418	MW 552	MW 620	MW 494	MW 379	MW 561	MW 605	MW 608	MW 385	MW 459
Nameplate Cap: 1859		CF 12%	CF 11%	CF 22%	CF 30%	CF 33%	CF 27%	CF 20%	CF 30%	CF 33%	CF 33%	CF 21%	CF 25%

\*Refer to Glossary of Terms on page 25 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.

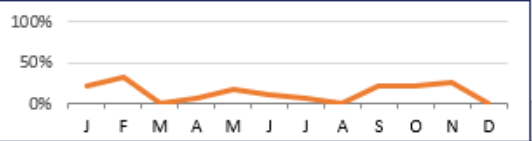
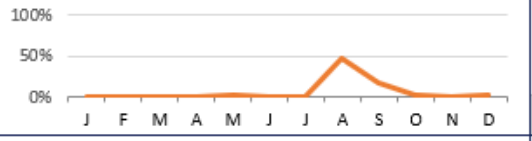
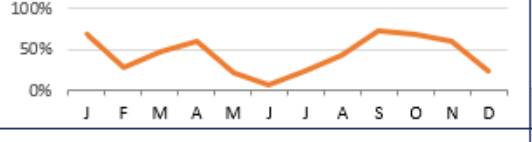
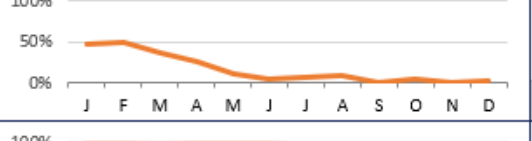

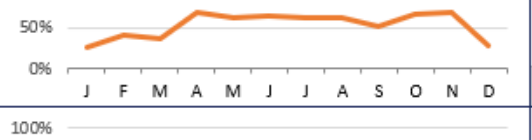
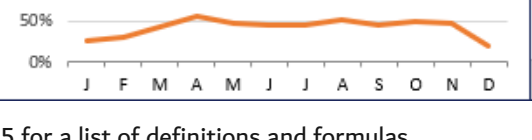
	Planned Outage Hours (JAN 2024 - DEC 2024)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
<b>AES</b>		1608	908		
<b>EcoElectrica</b>		432	253		
<b>Genera Aguirre</b>		1704	0		
<b>Genera Costa Sur</b>		1872	0		
<b>Genera Palo Seco</b>		3600	935		
<b>Genera San Juan</b>		10104	748		
<b>Total Baseload</b>		19320	3113		

\*Refer to Glossary of Terms on page 25 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.



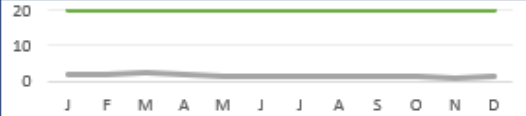





Forced Outage Hours and Outage Rate			Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>AES</b>		Hrs	308	445	0	92	168	93	88	0	316	327	365	0
		%	21%	32%	0%	6%	17%	11%	6%	0%	22%	22%	25%	0%
<b>EcoElectrica</b>		Hrs	0	7	0	0	65	0	0	1048	344	28	0	56
		%	0%	0%	0%	0%	3%	0%	0%	47%	18%	1%	0%	2%
<b>Genera Aguirre</b>		Hrs	1024	395	697	866	324	101	361	632	1061	1032	881	336
		%	69%	28%	47%	60%	22%	7%	24%	42%	74%	69%	61%	23%
<b>Genera Costa Sur</b>		Hrs	1391	1373	1094	720	338	149	201	263	0	102	0	73
		%	47%	49%	37%	26%	11%	5%	7%	9%	0%	3%	0%	2%
<b>Genera Palo Seco</b>		Hrs	2854	2662	2806	2782	2638	2782	2758	2246	2159	2278	2178	1084
		%	100%	100%	97%	100%	100%	100%	94%	77%	75%	77%	76%	36%
<b>Genera San Juan</b>		Hrs	1561	2221	2013	3908	3718	3702	3673	3703	2957	3836	3875	1594
		%	26%	42%	36%	68%	63%	65%	63%	62%	52%	67%	70%	27%
<b>Total Baseload</b>		Hrs	7869	8248	6610	8368	7251	6827	7082	7892	6837	7604	7298	3143
		%	27%	30%	42%	55%	46%	45%	45%	51%	45%	49%	48%	20%

\*Refer to Glossary of Terms on page 25 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		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>AES Ilumina</b>		MW	4	3	4	4	4	4	4	4	4	3	3
<b>Nameplate Cap: 20</b>		CF	19%	17%	21%	20%	20%	19%	19%	19%	18%	15%	15%
<b>Windmar Cantera Martinó</b>		MW	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.3
<b>Nameplate Cap: 2.1</b>		CF	21%	18%	25%	22%	20%	19%	14%	14%	13%	11%	13%
<b>San Fermín</b>		MW	2	2	2	2	1	1	1	2	1	1	1
<b>Nameplate Cap: 20</b>		CF	10%	9%	12%	10%	7%	7%	7%	8%	7%	5%	5%
<b>Horizon Energy</b>		MW	2	2	3	3	3	3	3	3	2	2	2
<b>Nameplate Cap: 10</b>		CF	25%	22%	27%	26%	27%	26%	27%	26%	24%	23%	22%
<b>Oriana Energy</b>		MW	10	10	10	11	10	11	10	11	10	9	8
<b>Nameplate Cap: 45</b>		CF	22%	21%	23%	24%	23%	24%	22%	24%	23%	21%	17%
<b>Windmar Coto Laurel</b>		MW	2	2	2	2	2	1	1	2	1	1	2
<b>Nameplate Cap: 10</b>		CF	16%	16%	19%	19%	18%	15%	14%	16%	10%	14%	17%
<b>Fonroche Humacao</b>		MW	7	7	9	8	8	7	7	9	8	6	6
<b>Nameplate Cap: 40</b>		CF	16%	17%	21%	19%	20%	18%	18%	21%	20%	14%	14%
<b>Total Solar</b>		MW	27	26	31	29	29	27	27	29	27	24	22
<b>Nameplate Cap: 147</b>		CF	18%	17%	21%	20%	19%	19%	18%	20%	19%	16%	15%

\*Refer to Glossary of Terms on page 25 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		Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>Pattern Santa Isabel</b>		17	10	13	12	12	16	22	18	12	6	7	9
<b>Nameplate Cap: 95</b>	J F M A M J J A S O N D	CF 22%	13%	14%	13%	13%	17%	23%	18%	13%	6%	7%	10%
<b>Punta Lima</b>		6	4	5	6	3	5	9	6	3	2	3	5
<b>Nameplate Cap: 26</b>	J F M A M J J A S O N D	CF 25%	14%	20%	25%	12%	20%	33%	23%	12%	8%	11%	18%
<b>Landfill Gas Fajardo</b>		0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.8	0.47	0.5
<b>Nameplate Cap: 2.4</b>	J F M A M J J A S O N D	CF 10%	0%	0%	5%	5%	0%	4%	2%	4%	33%	19%	21%
<b>Landfill Gas Toa Baja</b>		1.0	1.0	1.0	1.1	0.9	0.8	1.2	0.5	0.4	0.0	0.5	0.66
<b>Nameplate Cap: 2.4</b>	J F M A M J J A S O N D	CF 42%	43%	41%	47%	36%	33%	48%	21%	15%	1%	21%	27%
<b>Total Wind and Landfill</b>		24	14	20	20	16	22	32	24	16	8	10	15
<b>Nameplate Cap: 80</b>	J F M A M J J A S O N D	CF 23%	14%	16%	16%	13%	18%	25%	19%	13%	7%	8%	12%

\*Refer to Glossary of Terms on page 25 for a list of definitions and formulas.

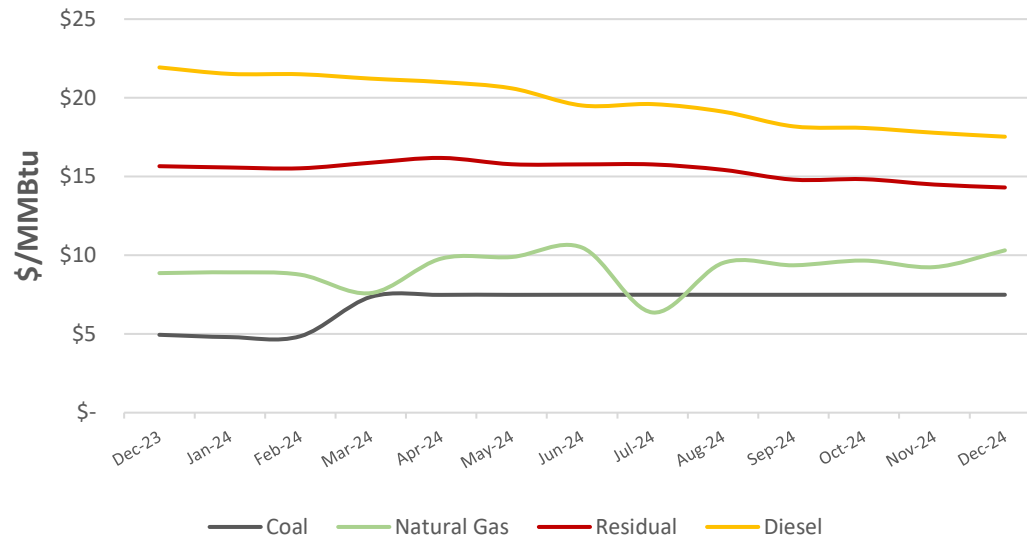
# Economics



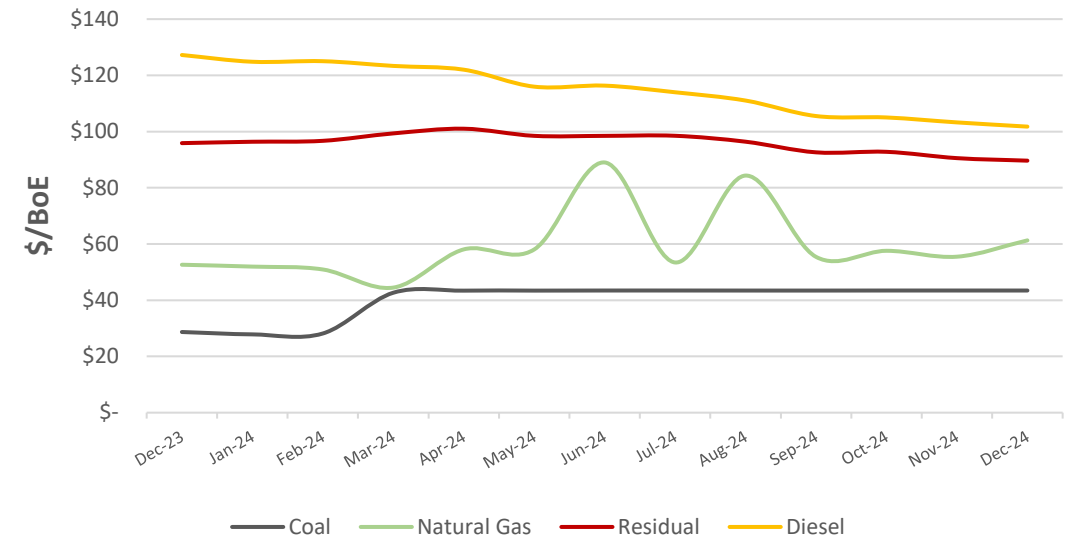
# Fuel Prices

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.

### Historical Fuel Price (\$/MMBtu)



### Historical Fuel Price (\$/BoE)



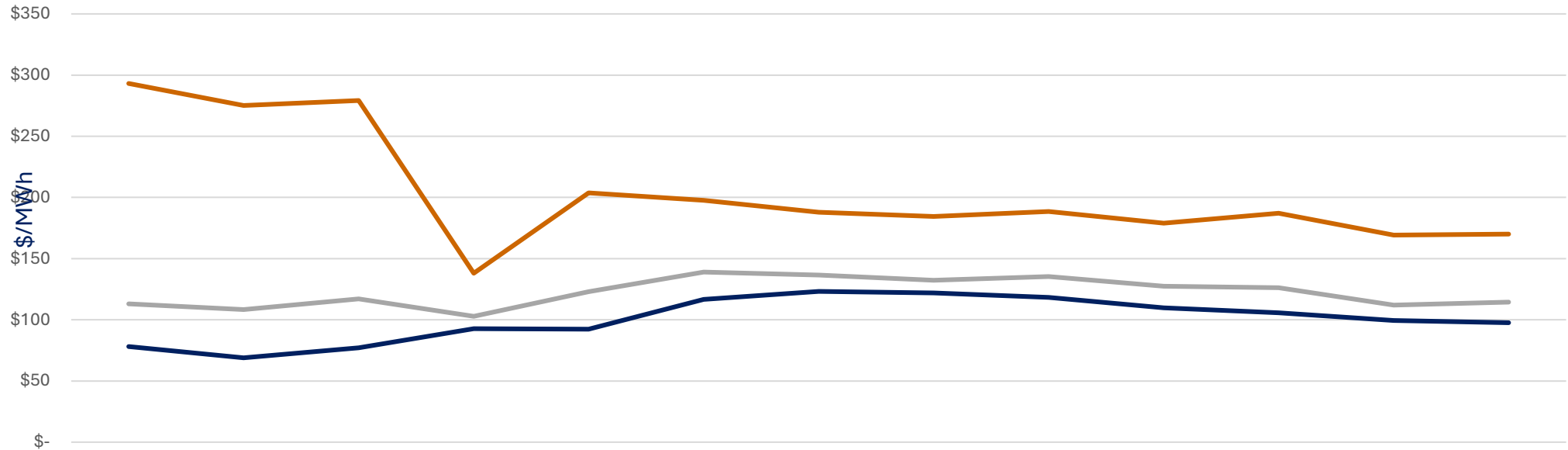
	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
<b>\$/MMBtu</b>													
Diesel	21.93	21.52	21.50	21.22	21.00	20.60	19.51	19.60	19.12	18.19	18.09	17.78	17.53
Residual	15.66	15.57	15.52	15.88	16.18	15.78	15.77	15.77	15.43	14.80	14.83	14.49	14.30
Natural Gas	8.87	8.91	8.77	7.59	9.79	9.89	10.49	6.36	9.51	9.36	9.66	9.25	10.31
Coal	4.95	4.80	4.85	7.35	7.48	7.48	7.49	7.49	7.49	7.51	7.49	7.49	7.49
<b>\$/BoE</b>													
Diesel	127.24	124.84	125.03	123.35	122.01	115.98	116.34	113.98	111.03	105.52	105.02	103.26	101.76
Residual	95.89	96.38	96.71	99.35	101.02	98.48	98.47	98.50	96.40	92.61	92.79	90.55	89.65
Natural Gas	52.63	51.96	50.94	44.49	58.08	58.06	89.01	53.43	84.35	55.42	57.58	55.49	61.29
Coal	28.69	27.85	28.16	42.66	43.41	43.42	43.45	43.45	43.44	43.59	43.45	43.45	43.45

\*Refer to Glossary of Terms on page 25 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.

## Fuel Costs



	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24
Base Load	\$78	\$69	\$77	\$93	\$92	\$117	\$123	\$122	\$118	\$110	\$106	\$99	\$98
Peaker	\$293	\$275	\$279	\$138	\$204	\$198	\$188	\$185	\$189	\$179	\$187	\$169	\$170
System Total	\$113	\$108	\$117	\$103	\$123	\$139	\$137	\$132	\$135	\$127	\$126	\$112	\$114

— Base Load — Peaker — System Total

\*Refer to Glossary of Terms on page 25 for a list of definitions and formulas.

# Appendix





# 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



La gente primero.  
La seguridad siempre.

