



# Monthly Generation Performance Report

September 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 – September Performance

## Overview

The maximum peak demand for September 2024 was approximately 3,166 MW.

San Juan 6 (220 MW) is currently offline and is expected to return to service on February 28, 2025; San Juan 9 (100 MW) will be returning to service on October 5, 2024; Aguirre 2 (450 MW) has been out of service since August and its return date is yet to be determined; and Palo Seco 4 (216 MW) is expected to return to service by June 5, 2025

## Major Events

In September, the electric system experienced 12 generation events that led to load shedding, with 5 caused by underfrequency due to generation unit trips and 7 caused by generation shortfall.

For September, the hourly reserve levels averaged 730 MW, with 355 hours during the month having less than 750 MW in reserves (equal to 49% of the time.)

The forecast for October 2024 shows fewer reserve levels to the same month last year (October 2023), with 276 MW average reserves forecasted versus 643 MW seen for the same month last year.

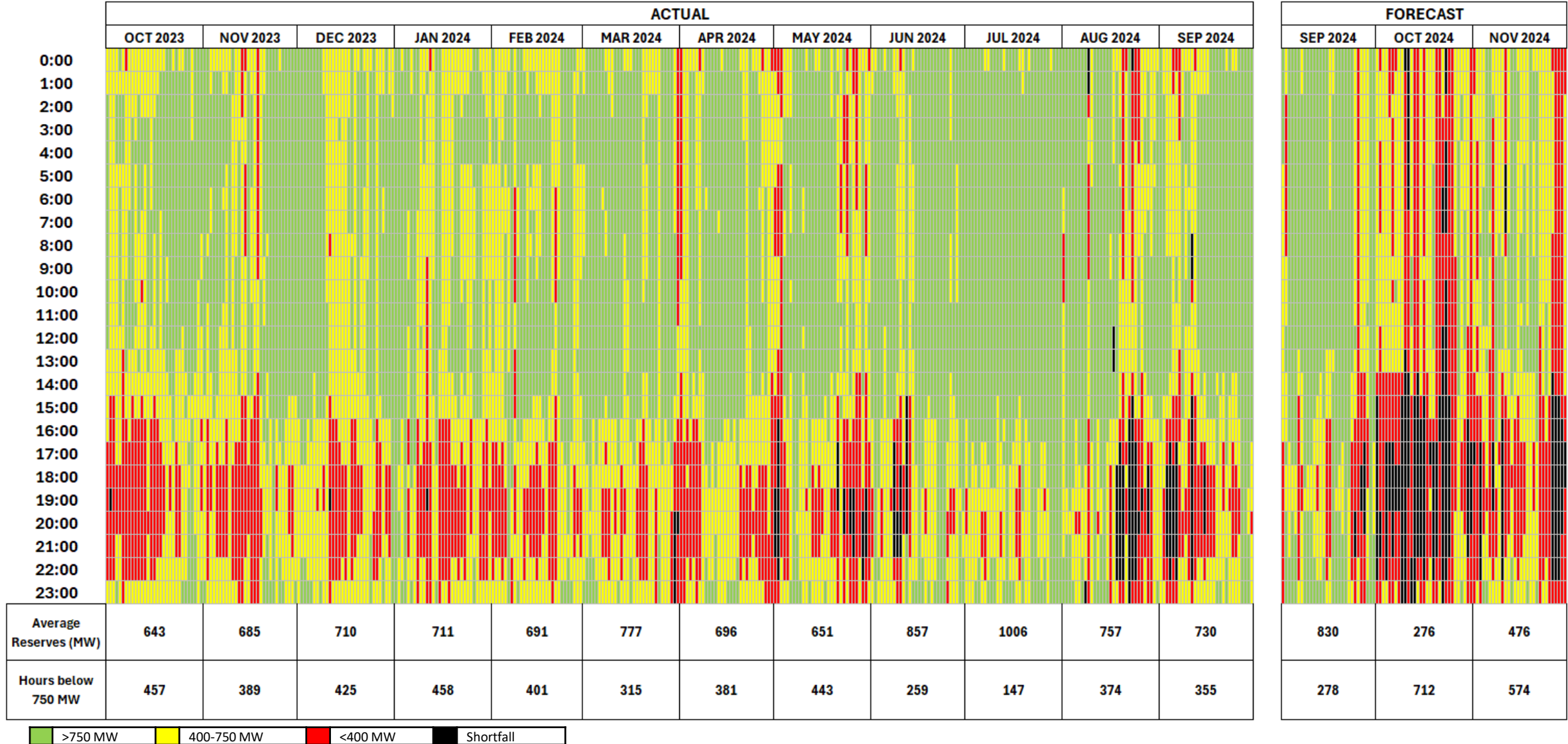
The System Availability for the month of September was 50%.

- Genera – 49%
- AES – 73%
- EcoEléctrica – 69%

# 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

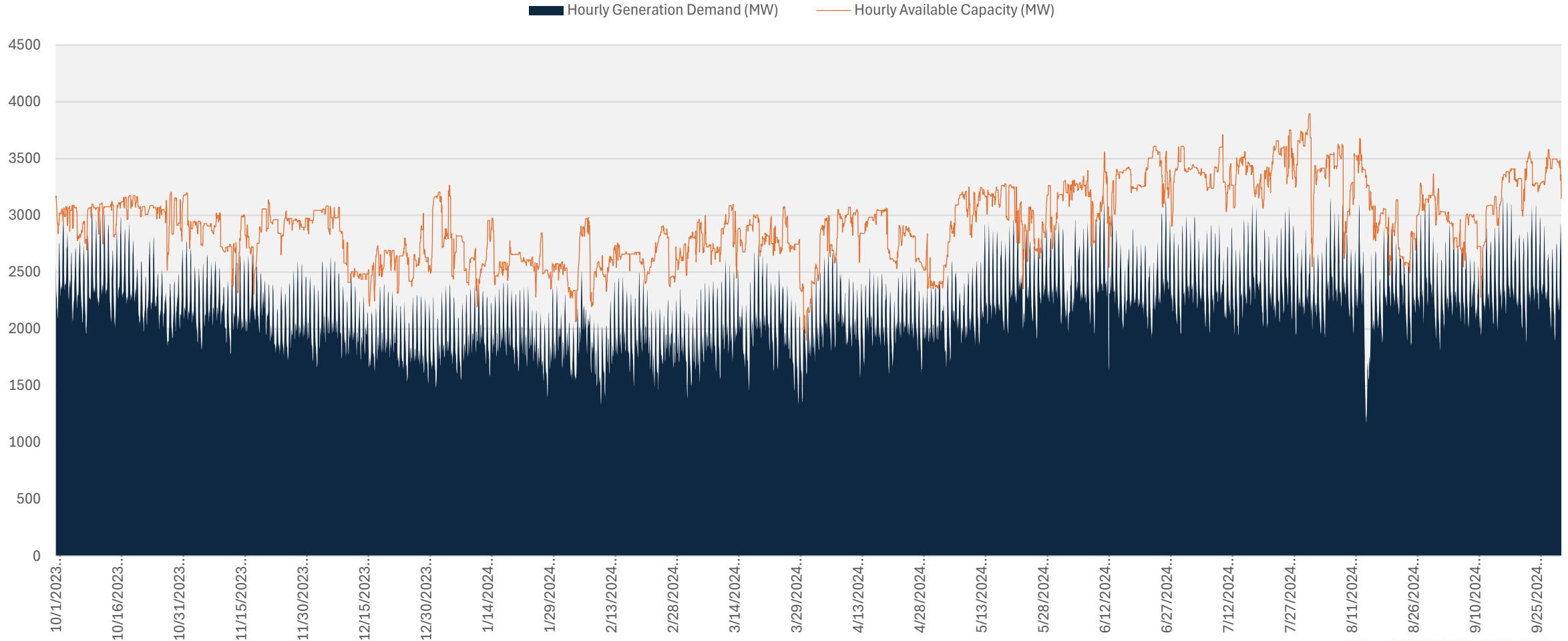


\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

# 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.

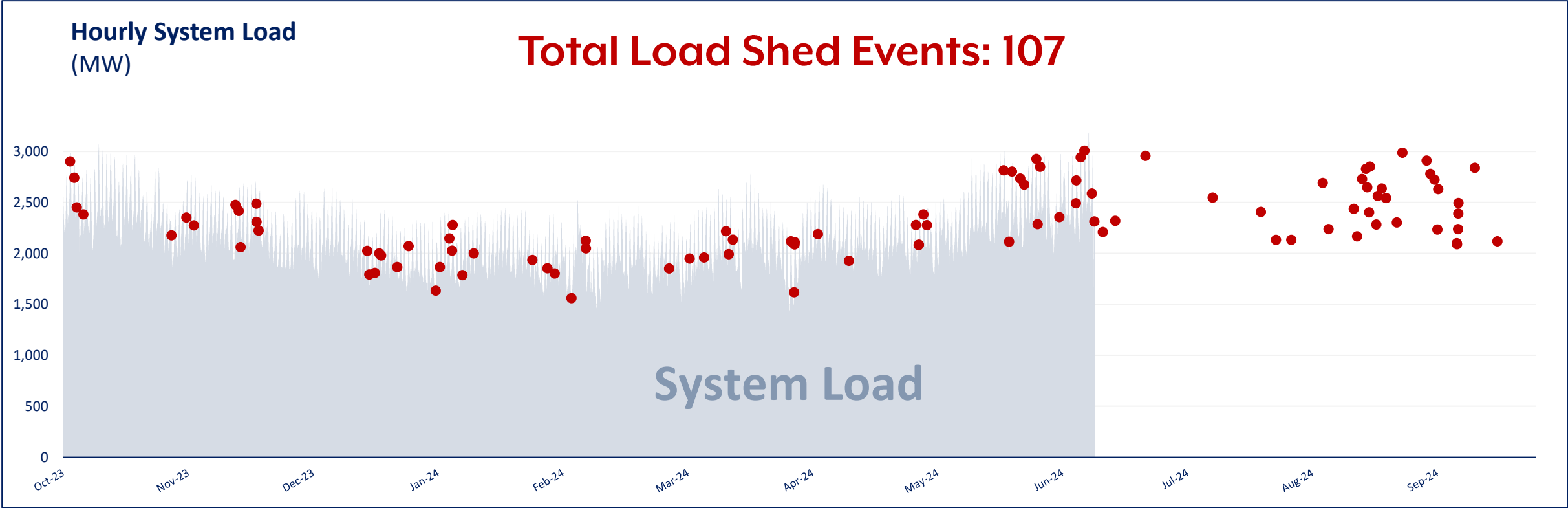


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# Load Shed Events

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.



MTD (September 1, 2024 – September 30, 2024)	Total Events	Average Customers Affected	Average Duration (min)	Rolling 12 Months (October 1, 2023 – September 30, 2024)	Total Events	Average Customers Affected	Average Duration (min)
Generation Shortfall Events	7	64,116	210	Generation Shortfall Events	32	100,812	190
Unit Performance Load Shed Events	5	116,013	18	Unit Performance Load Shed Events	75	94,838	25

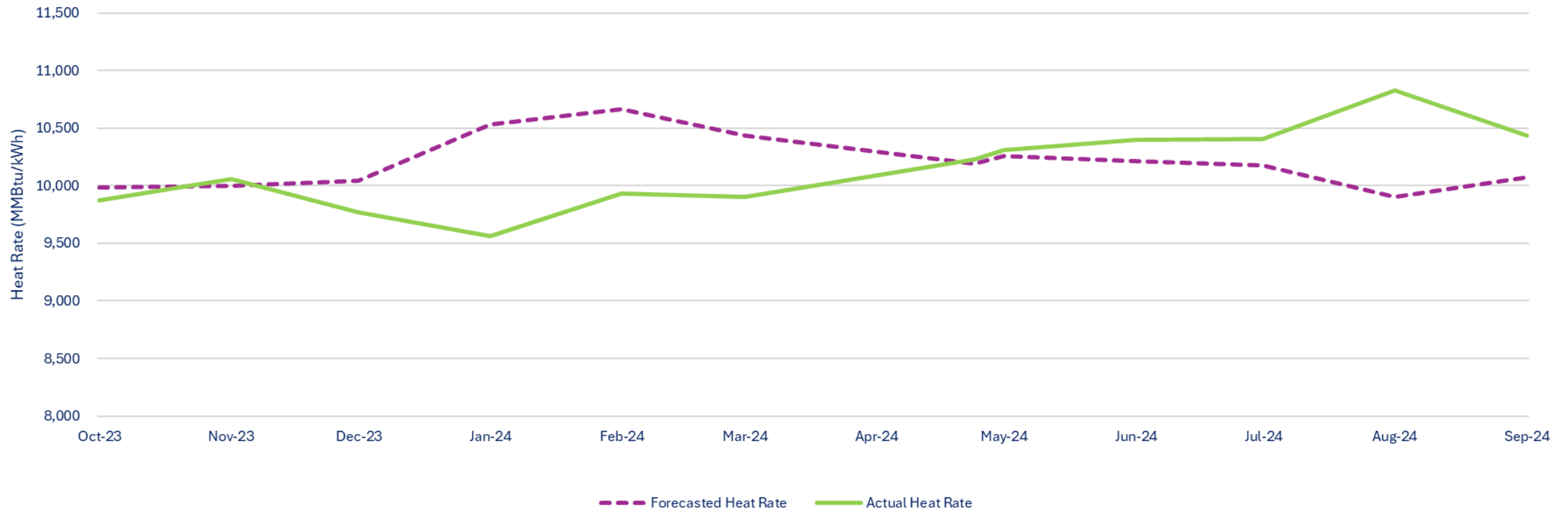
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# System Heat Rate

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



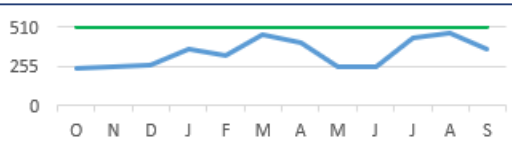
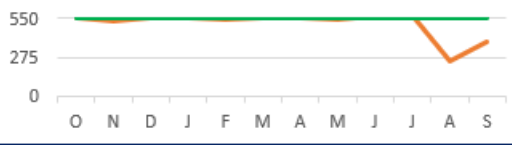
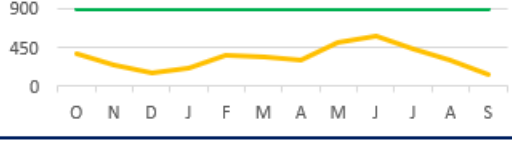
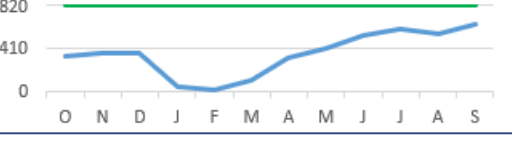
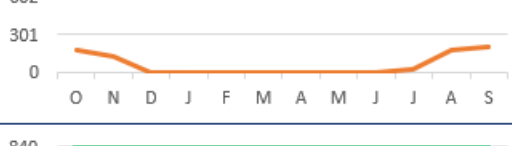
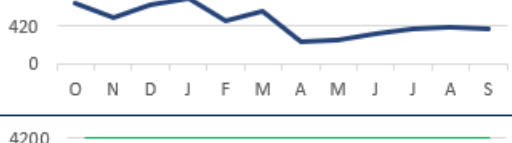
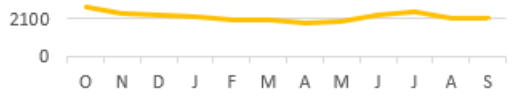
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# Available Capacity – Baseload Units

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.

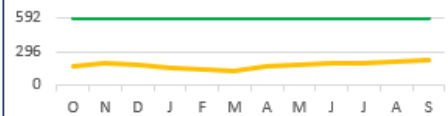
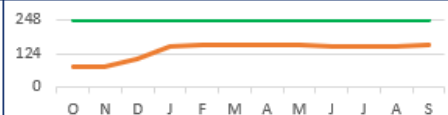

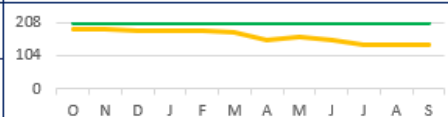
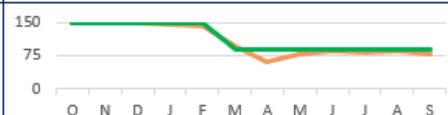
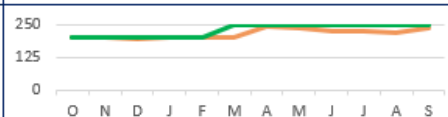

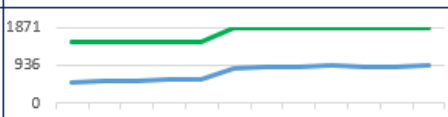
Available Capacity (MW) and Availability Rate (AR)		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	
<b>AES</b> Nameplate Cap: 508		MW	243	249	263	370	330	463	406	249	257	440	466	371
		AR	48%	49%	52%	73%	65%	91%	80%	49%	51%	87%	92%	73%
<b>EcoElectrica</b> Nameplate Cap: 566		MW	550	531	550	550	547	550	550	543	566	566	252	391
		AR	100%	97%	100%	100%	99%	100%	100%	99%	103%	100%	45%	69%
<b>Genera Aguirre</b> Nameplate Cap: 900		MW	373	257	152	210	368	341	303	505	592	440	314	147
		AR	41%	29%	17%	23%	41%	38%	34%	56%	66%	49%	35%	16%
<b>Genera Costa Sur</b> Nameplate Cap: 820		MW	333	363	366	48	3	105	316	403	533	599	546	643
		AR	41%	44%	45%	6%	0%	13%	39%	49%	65%	73%	67%	78%
<b>Genera Palo Seco</b> Nameplate Cap: 602		MW	171	121	0	0	0	0	0	0	0	27	173	198
		AR	28%	20%	0%	0%	0%	0%	0%	0%	0%	4%	29%	33%
<b>Genera San Juan</b> Nameplate Cap: 840		MW	679	510	652	723	478	585	250	266	337	392	398	386
		AR	81%	61%	78%	86%	57%	70%	30%	32%	40%	47%	47%	46%
<b>Total Baseload</b> Nameplate Cap: 4220		MW	2697	2384	2329	2249	2070	2043	1826	1967	2285	2462	2149	2136
		AR	59%	52%	51%	49%	45%	48%	43%	47%	54%	58%	51%	51%

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# 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)		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
<b>Genera Aguirre Combined Cvcle</b> Nameplate Cap: 592		MW 172	191	185	150	138	127	170	178	201	197	206	216
	AR 29%	32%	31%	25%	23%	21%	29%	30%	34%	33%	35%	37%	
<b>Genera Cambalache</b> Nameplate Cap: 248		MW 74	76	104	152	156	153	155	155	151	151	152	155
	AR 30%	31%	42%	62%	63%	62%	63%	63%	61%	61%	61%	63%	
<b>Genera Mayaguez</b> Nameplate Cap: 220		MW 32	19	26	24	33	50	37	42	53	52	46	54
	AR 14%	9%	12%	11%	15%	23%	17%	19%	24%	23%	21%	25%	
<b>Genera Palo Seco (Inc. Mobile-Pack)</b> Nameplate Cap: 207		MW 188	186	182	183	182	176	151	165	153	140	141	140
	AR 91%	90%	88%	89%	88%	85%	73%	80%	74%	68%	68%	67%	
<b>Palo Seco TM</b> Nameplate Cap: 90		MW 148	151	150	147	143	96	62	80	86	84	87	79
	AR 99%	100%	100%	98%	95%	107%	69%	89%	96%	93%	97%	88%	
<b>San Juan TM</b> Nameplate Cap: 250		MW 199	202	196	201	200	205	245	236	226	224	218	239
	AR 100%	101%	98%	101%	100%	82%	98%	95%	91%	89%	87%	96%	
<b>Other Peakers</b> Nameplate Cap: 264		MW 59	62	61	71	68	71	71	60	54	52	51	56
	AR 22%	24%	23%	27%	26%	27%	27%	23%	21%	20%	19%	21%	
<b>Total Peakers</b> Nameplate Cap: 1871		MW 524	535	557	581	577	879	891	917	924	899	900	939
	AR 34%	35%	36%	38%	38%	47%	48%	49%	49%	48%	48%	50%	


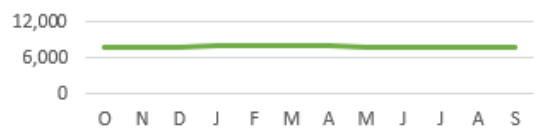



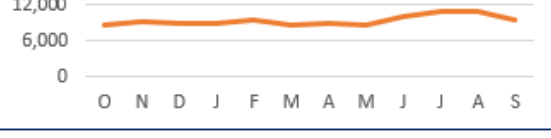



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# Heat Rate – Baseload Units

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.

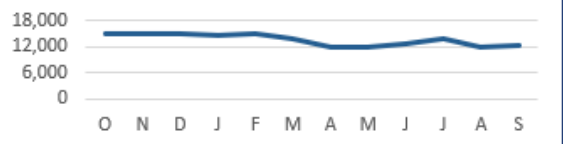


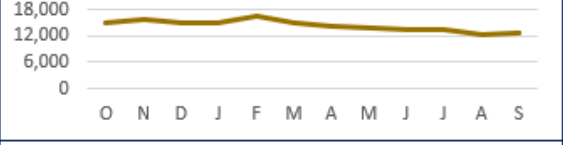

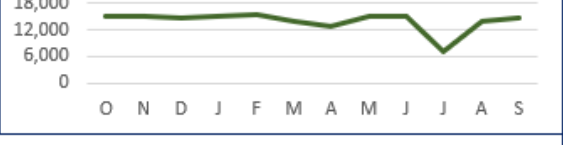

Heat Rate (MMBtu/MWh)		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
<b>AES</b>		9,800	9,800	9,800	9,800	9,800	10,620	10,620	10,620	10,620	10,620	10,620	10,620
<b>EcoElectrica</b>		7,945	7,945	7,945	7,957	7,957	7,957	7,957	7,881	7,881	7,881	7,881	7,881
<b>Genera Aguirre</b>		10,734	11,008	11,034	11,207	11,397	11,268	11,117	10,934	10,951	11,220	11,225	11,142
<b>Genera Costa Sur</b>		10,887	10,857	10,838	11,323	40,045	11,913	10,397	10,703	10,562	10,343	10,854	10,738
<b>Genera Palo Seco</b>		10,463	10,254	-	-	-	-	-	-	-	10,264	9,696	9,648
<b>Genera San Juan</b>		8,574	9,317	8,956	8,973	9,432	8,714	8,882	8,796	10,188	10,817	11,016	9,485
<b>Total Baseload</b>		9,365	9,477	9,267	8,968	9,381	9,510	9,564	9,687	9,904	10,007	10,275	9,817

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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.

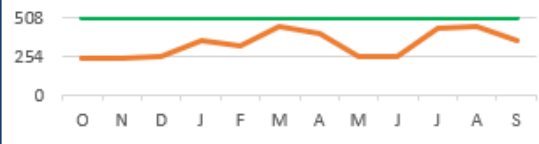
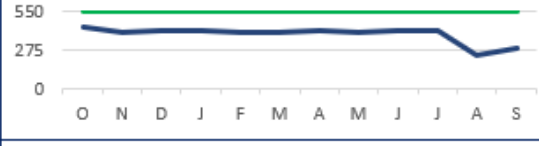
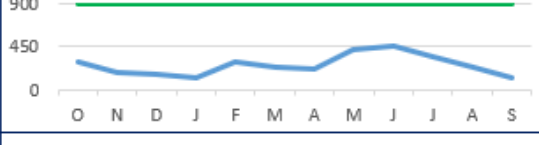
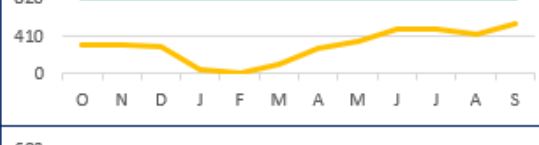
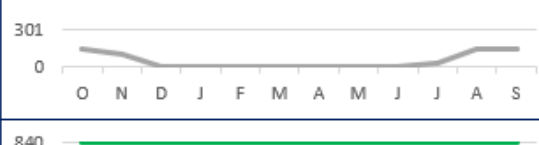
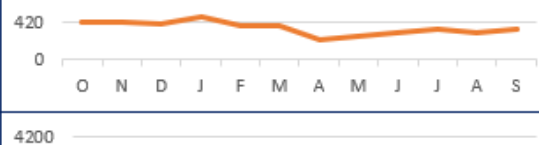
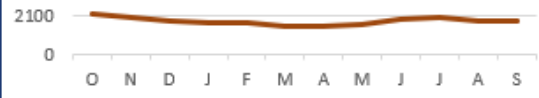
Heat Rate (MMBtu/MWh)		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
<b>Genera Aguirre Combined Cycle</b>		14,811	14,969	14,921	14,671	14,989	13,867	11,936	11,751	12,482	13,852	11,888	12,289
<b>Genera Cambalache</b>		12,341	12,435	13,231	12,834	12,785	12,872	12,640	12,407	12,756	12,876	12,361	12,343
<b>Genera Mayaguez</b>		10,942	10,801	11,013	10,882	10,945	11,029	11,107	10,882	11,040	10,832	10,908	10,868
<b>Genera Palo Seco (Inc. Mobile Pack)</b>		15,072	15,981	14,925	15,146	16,487	15,205	14,397	13,787	13,445	13,662	12,270	12,669
<b>Palo Seco TM &amp; San Juan TM</b>		-	-	-	-	-	-	11,706	11,137	11,032	10,961	10,983	10,993
<b>Other Peakers</b>		15,086	14,893	14,771	15,064	15,462	14,062	12,730	15,043	14,990	6,912	14,031	14,563
<b>Total Peakers</b>		13,731	13,962	13,195	12,755	12,951	12,710	5,416	6,168	5,087	4,468	6,354	6,246

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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.



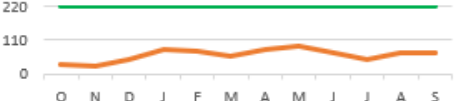





Average Generation (MW) and Capacity Factor		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	
<b>AES</b>  Nameplate Cap: 508		MW	242	248	253	355	320	452	412	249	251	437	449	357
	CF	48%	49%	50%	70%	63%	89%	81%	49%	49%	86%	88%	70%	
<b>EcoElectrica</b>  Nameplate Cap: 566		MW	435	403	410	412	405	398	412	399	415	412	235	292
	CF	79%	73%	75%	75%	74%	72%	75%	73%	75%	73%	42%	52%	
<b>Genera Aguirre</b>  Nameplate Cap: 900		MW	289	190	156	134	284	243	221	418	466	346	237	125
	CF	32%	21%	17%	15%	32%	27%	25%	46%	52%	38%	26%	14%	
<b>Genera Costa Sur</b>  Nameplate Cap: 820		MW	314	304	291	37	1	101	270	358	486	482	435	543
	CF	38%	37%	35%	5%	0%	12%	33%	44%	59%	59%	53%	66%	
<b>Genera Palo Seco</b>  Nameplate Cap: 602		MW	147	105	0	0	0	0	0	0	0	28	139	150
	CF	24%	18%	0%	0%	0%	0%	0%	0%	0%	5%	23%	25%	
<b>Genera San Juan</b>  Nameplate Cap: 840		MW	425	417	397	473	380	380	227	254	306	343	302	330
	CF	51%	50%	47%	56%	45%	45%	27%	30%	36%	41%	36%	39%	
<b>Total Baseload</b>  Nameplate Cap: 4370		MW	2204	2024	1858	1763	1735	1573	1542	1679	1924	2047	1798	1797
	CF	48%	44%	41%	39%	38%	37%	37%	40%	46%	49%	43%	43%	

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# 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			Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
<b>Genera Aguirre Combined Cycle</b> Nameplate Cap: 592		MW	74	75	47	49	42	31	79	101	75	48	114	120
		CF	13%	13%	8%	8%	7%	5%	13%	17%	13%	8%	19%	20%
<b>Genera Cambalache</b> Nameplate Cap: 247.5		MW	32	30	18	31	35	24	57	71	37	27	67	74
		CF	13%	12%	7%	13%	14%	10%	23%	29%	15%	11%	27%	30%
<b>Genera Mayaguez</b> Nameplate Cap: 220		MW	32	23	50	77	72	56	79	90	66	49	69	68
		CF	14%	10%	23%	35%	33%	25%	36%	41%	30%	22%	31%	31%
<b>Genera Palo Seco (Inc. Mobile-Pack)</b> Nameplate Cap: 207		MW	26	9	10	9	13	15	14	32	21	10	37	37
		CF	13%	5%	5%	4%	6%	7%	7%	15%	10%	5%	18%	18%
<b>Palo Seco TM</b> Nameplate Cap: 150		MW	150	154	154	151	143	96	66	82	85	60	80	77
		CF	100%	103%	103%	101%	95%	106%	74%	91%	94%	66%	89%	85%
<b>San Juan TM</b> Nameplate Cap: 200		MW	201	202	196	201	201	189	241	222	203	179	180	217
		CF	100%	101%	98%	101%	101%	76%	96%	89%	81%	71%	72%	87%
<b>Other Peakers (Genera)</b> Nameplate Cap: 264		MW	15	23	7	12	9	7	16	22	6	7	14	13
		CF	6%	9%	3%	5%	3%	3%	6%	8%	2%	3%	5%	5%
<b>Total Peakers</b> Nameplate Cap: 1530.5		MW	180	161	131	178	171	418	552	620	494	379	561	605
		CF	12%	11%	9%	12%	11%	22%	30%	33%	26%	20%	30%	32%



\*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 (OCT 2023 - SEP 2024)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
AES		1872	1566		
EcoElectrica		432	123		
Genera Aguirre		2832	0		
Genera Costa Sur		2424	6203		
Genera Palo Seco		12936	96		
Genera San Juan		6456	799		
Total Baseload		26952	8786		


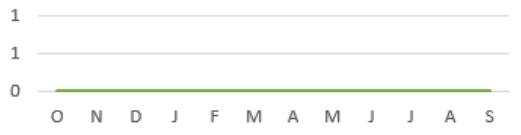
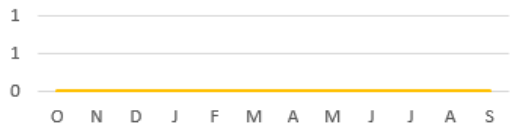
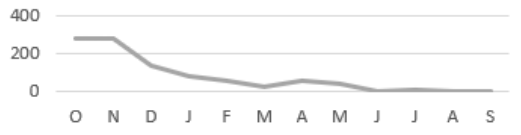



\*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.



# 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		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
<b>AES</b>		398	288	264	0	0	0	0	24	120	11	0	0
<b>EcoElectrica</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Genera Aguirre</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Genera Costa Sur</b>		282	283	139	84	53	24	56	43	0	9	0	0
<b>Genera Palo Seco</b>		0	0	0	0	0	0	0	0	0	0	0	0
<b>Genera San Juan</b>		37	136	551	34	48	105	0	30	0	19	0	72
<b>Total Baseload</b>		717	707	954	118	101	129	56	98	120	38	0	72

\*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.

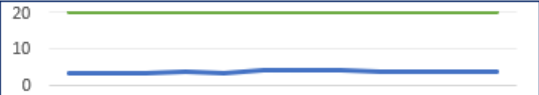

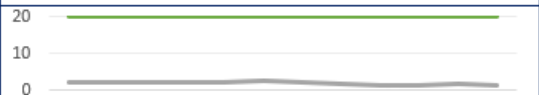
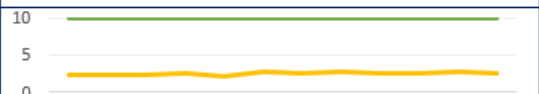

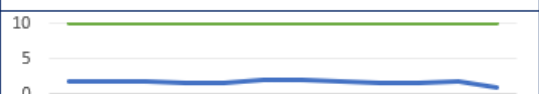


Forced Outage Hours and Outage Rate			Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
AES		Hrs	48	24	218	265	432	0	92	166	47	88	0	279
		%	5%	3%	19%	18%	31%	0%	6%	16%	5%	6%	0%	19%
EcoElectrica		Hrs	0	35	0	0	7	0	0	48	0	0	964	28
		%	0%	2%	0%	0%	0%	0%	0%	2%	0%	0%	43%	1%
Genera Aguirre		Hrs	743	862	898	1014	370	686	799	250	81	337	609	1026
		%	50%	60%	60%	68%	27%	46%	55%	17%	6%	23%	41%	71%
Genera Costa Sur		Hrs	743	720	720	1391	1356	1021	720	290	134	172	233	0
		%	66%	74%	67%	119%	128%	115%	152%	85%	24%	18%	19%	0%
Genera Palo Seco		Hrs	2241	2278	2854	2854	2662	2806	2782	2638	2782	2751	2445	2159
		%	75%	79%	96%	96%	96%	94%	97%	89%	97%	92%	84%	75%
Genera San Juan		Hrs	2281	2193	1589	1521	2198	1964	3897	3714	3809	3609	3946	2206
		%	39%	39%	30%	26%	41%	35%	68%	63%	66%	62%	66%	39%
Total Baseload		Hrs	6620	6587	6594	7776	8170	6477	838	8294	6940	6806	8197	5697
		%	24%	25%	25%	28%	32%	41%	6%	53%	46%	44%	52%	38%

\*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			Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
AES Ilumina		MW	3	3	3	4	3	4	4	4	4	4	4	4
		CF	17%	17%	17%	19%	17%	21%	20%	20%	19%	19%	19%	19%
Windmar Cantera Martínó		MW	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.3
		CF	19%	19%	21%	21%	18%	25%	22%	20%	19%	14%	14%	13%
San Fermín		MW	2	2	2	2	2	2	2	1	1	1	2	1
		CF	11%	10%	10%	10%	9%	12%	10%	7%	7%	7%	8%	7%
Horizon Energy		MW	2	2	2	2	2	3	3	3	3	3	3	3
		CF	24%	24%	24%	25%	22%	27%	26%	27%	26%	26%	27%	26%
Oriana Energy		MW	10	9	9	10	10	10	11	10	11	10	11	10
		CF	21%	20%	20%	22%	21%	23%	24%	23%	24%	22%	24%	23%
Windmar Coto Laurel		MW	2	2	2	2	2	2	2	2	1	1	2	1
		CF	18%	17%	17%	16%	16%	19%	19%	18%	15%	14%	16%	10%
Fonroche Humacao		MW	6	6	6	7	7	9	8	8	7	7	9	8
		CF	16%	15%	16%	16%	17%	21%	19%	20%	18%	18%	21%	20%
Total Solar		MW	26	25	25	27	26	31	29	29	27	27	29	27
		CF	18%	17%	17%	18%	17%	21%	20%	19%	19%	18%	20%	19%

\*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.

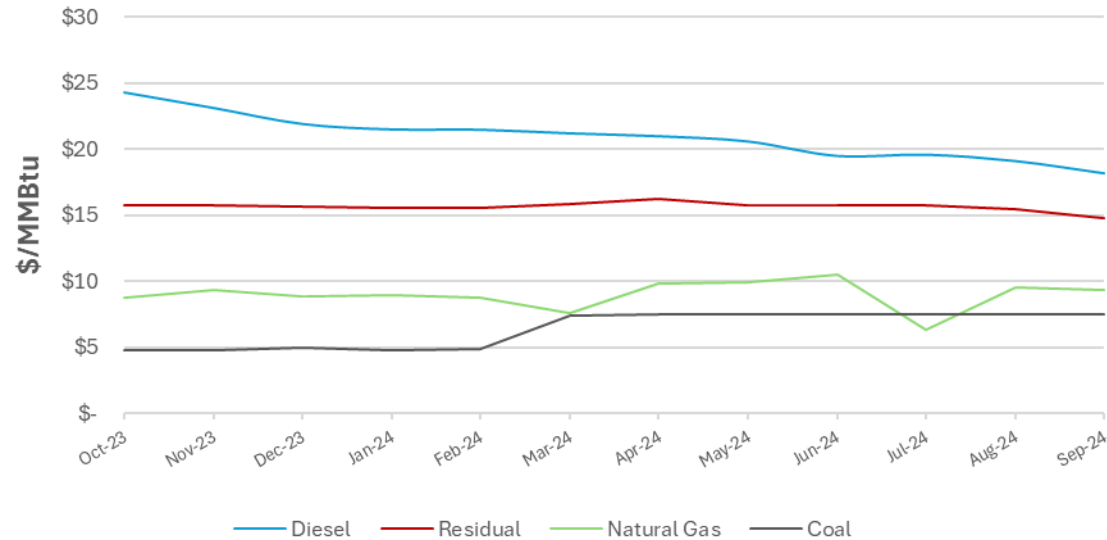
Average Production (MW) and Capacity Factor			Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Pattern Santa Isabel Nameplate Cap: 95		MW	5	12	12	17	10	13	12	12	16	22	18	12
		CF	6%	17%	15%	22%	13%	14%	13%	13%	17%	23%	18%	13%
Punta Lima Nameplate Cap: 26		MW	1	3	4	6	4	5	6	3	5	9	6	3
		CF	4%	11%	17%	25%	14%	20%	25%	12%	20%	33%	23%	12%
Landfill Gas Fajardo Nameplate Cap: 2.4		MW	0.6	0.3	0.5	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.04	0.1
		CF	24%	11%	22%	10%	0%	0%	5%	5%	0%	4%	2%	4%
Landfill Gas Toa Baja Nameplate Cap: 2.4		MW	1.3	1.2	1.1	1.0	1.0	1.0	1.1	0.9	0.8	1.2	0.5	0.4
		CF	55%	49%	46%	42%	43%	41%	47%	36%	33%	48%	21%	15%
Total Wind and Landfill Nameplate Cap: 80		MW	8	17	17	24	14	20	20	16	22	32	24	16
		CF	7%	16%	17%	23%	14%	16%	16%	13%	18%	25%	19%	13%

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

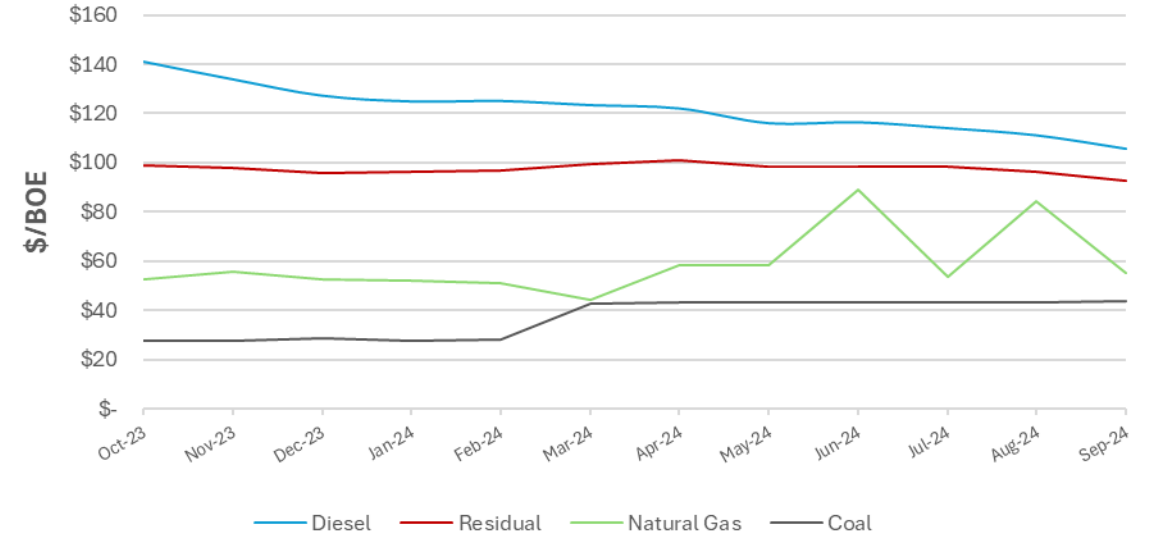
# Fuel Prices

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.

## Historical Fuel Price (\$/MMBtu)



## Historical Fuel Price (\$/BOE)

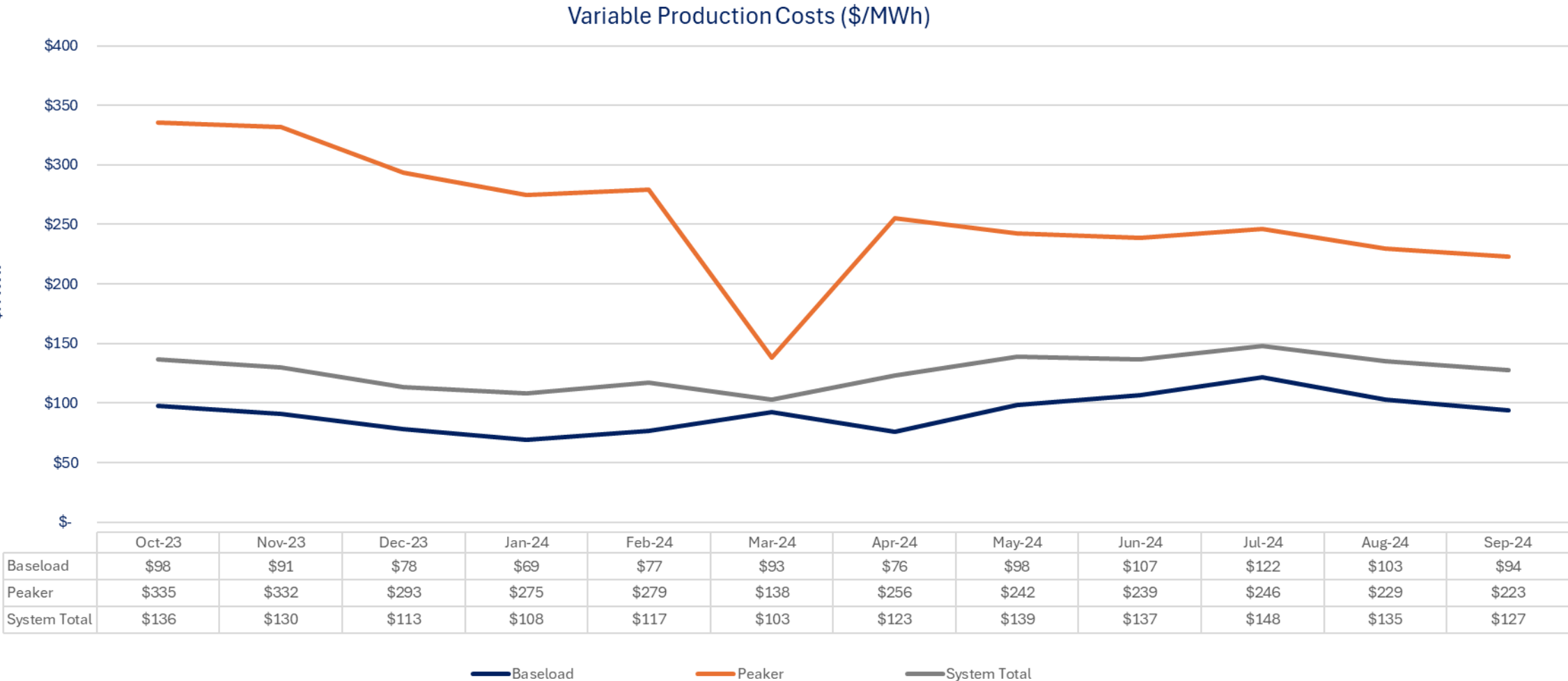


\$/MMBtu		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Diesel		24.33	23.15	21.93	21.52	21.50	21.22	21.00	20.60	19.51	19.60	19.12	18.19
Residual		15.77	15.70	15.66	15.57	15.52	15.88	16.18	15.78	15.77	15.77	15.43	14.80
Natural Gas		8.77	9.30	8.87	8.91	8.77	7.59	9.79	9.89	10.49	6.36	9.51	9.36
Coal		4.80	4.80	4.95	4.80	4.85	7.35	7.48	7.48	7.49	7.49	7.49	7.51
\$/BOE		Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24
Diesel		141.06	133.88	127.24	124.84	125.03	123.35	122.01	115.98	116.34	113.98	111.03	105.52
Residual		98.75	98.09	95.89	96.38	96.71	99.35	101.02	98.48	98.47	98.50	96.40	92.61
Natural Gas		52.63	55.73	52.63	51.96	50.94	44.49	58.08	58.06	89.01	53.43	84.35	55.42
Coal		27.86	27.86	28.69	27.85	28.16	42.66	43.41	43.42	43.45	43.45	43.44	43.59

\*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.



\*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		

## PEAKER UNITS

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	

## PEAKER 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	
	I-2	X	X	X		X	
	I-3	X	X	X		X	
	I-4	X	X	X		X	
Aguirre CC	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	
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	

# 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
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						