LUMAPR.COM

Monthly Generation Performance Report

October 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.

Table of Contents

Executive Summary – October Performance

Overview

The maximum peak demand for October 2024 was approximately 3,130 MW.

San Juan 6 (220 MW) is currently offline and is expected to return to service on February 28, 2025. San Juan 7 (100 MW), AES 1 (254 MW), Aguirre 2 (450 MW) are out of operation and their return date is yet to be determined; Palo Seco 4 (216 MW) is expected to return to service by June 5, 2025

Major Events

In October, the electric system experienced 15 generation events that led to load shedding, with 9 caused by underfrequency due to generation unit trips and 6 caused by generation shortfall.

For October, the hourly reserve levels averaged 743 MW, with 359 hours during the month having less than 750 MW in reserves (equal to 48% of the time.)

The forecast for November 2024 shows fewer reserve levels to the same month last year (November 2023), with 476 MW average reserves forecasted versus 685 MW seen for the same month last year.

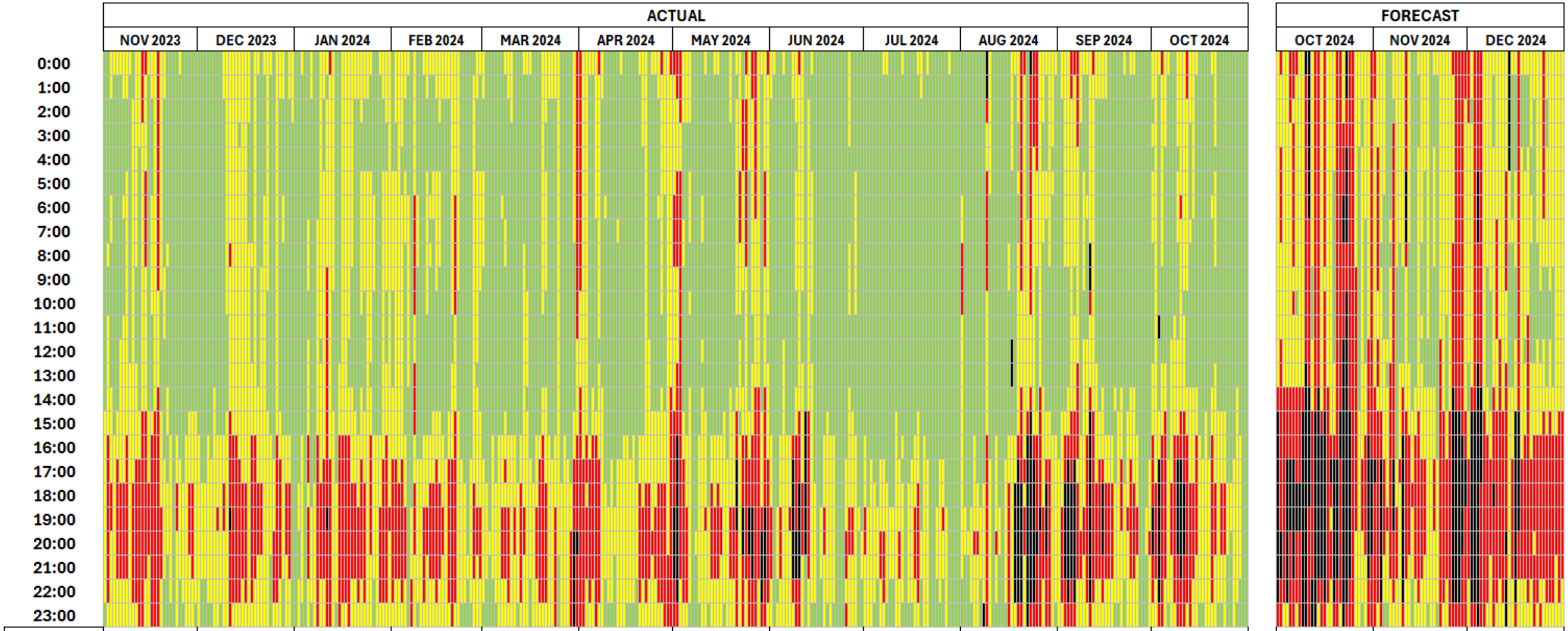
The System Availability for the month of October was 50%.

- Genera – 45%
- AES – 72%
- 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



	NOV 2023	DEC 2023	JAN 2024	FEB 2024	MAR 2024	APR 2024	MAY 2024	JUN 2024	JUL 2024	AUG 2024	SEP 2024	OCT 2024	OCT 2024	NOV 2024	DEC 2024
Average Reserves (MW)	685	710	711	691	777	696	651	857	1006	757	730	743	276	476	428
Hours below 750 MW	389	425	458	401	315	381	443	259	147	374	355	359	712	574	650

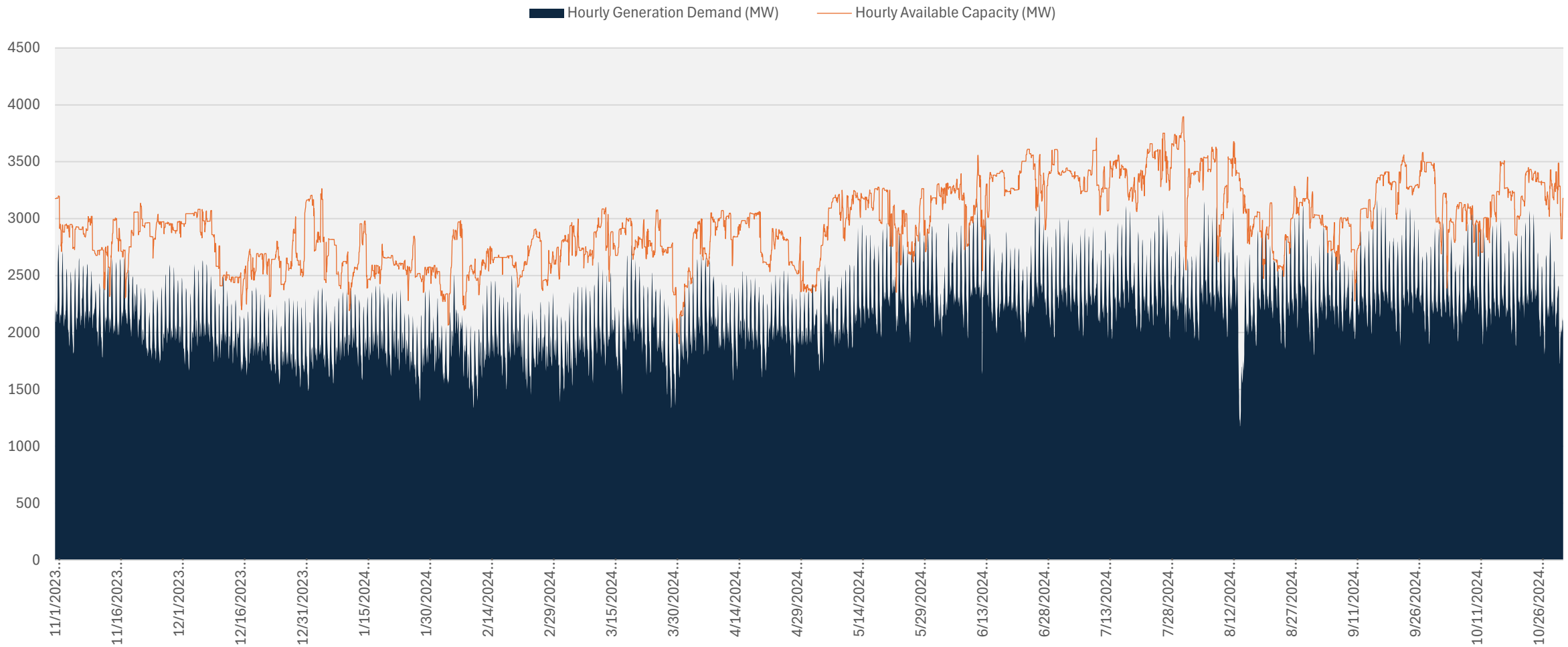
>750 MW | 400-750 MW | <400 MW | Shortfall

*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.

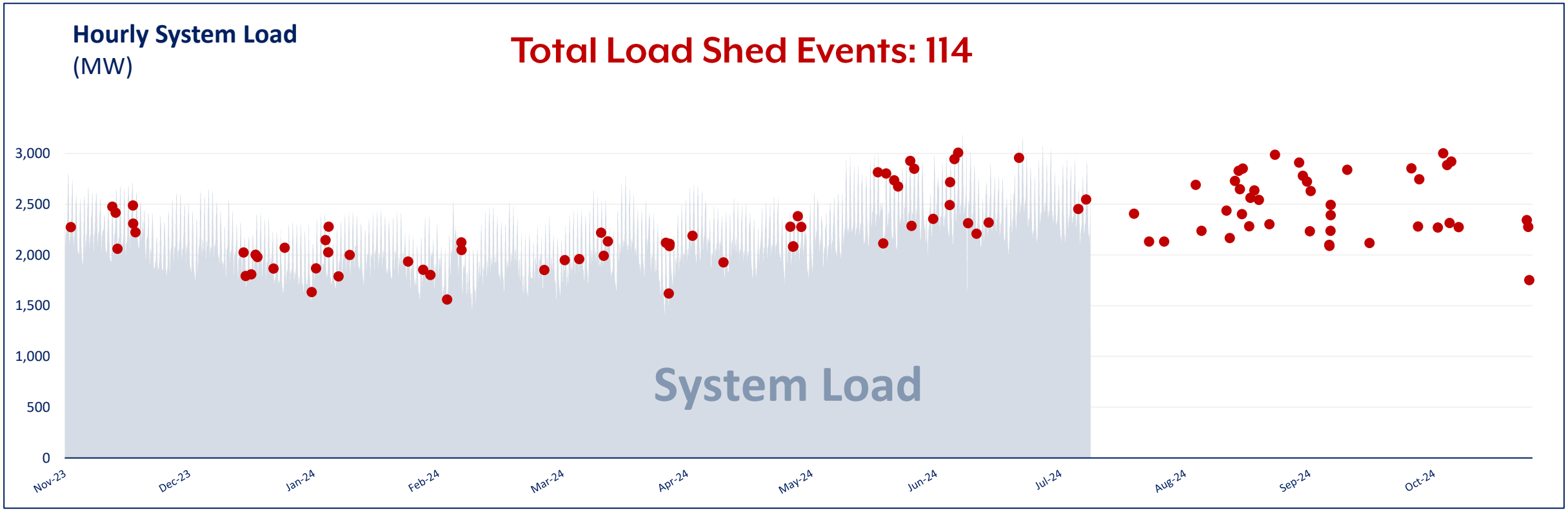


*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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.



MTD (October 1, 2024 – October 31, 2024)	Total Events	Average Customers Affected	Average Duration (min)
Generation Shortfall Events	6	96,085	148
Unit Performance Load Shed Events	9	63,314	19

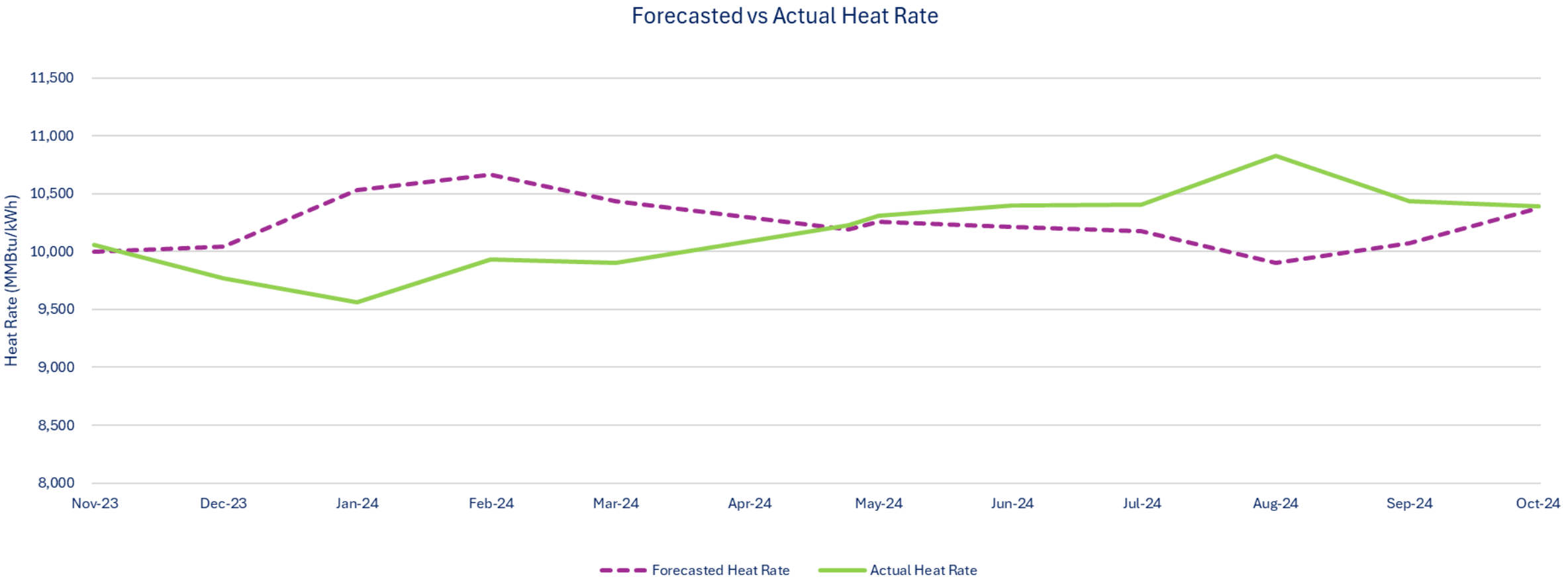
Rolling 12 Months (November 1, 2023 – October 31, 2024)	Total Events	Average Customers Affected	Average Duration (min)
Generation Shortfall Events	35	99,500	193
Unit Performance Load Shed Events	79	91,113	25

*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.

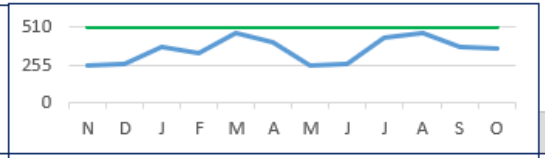
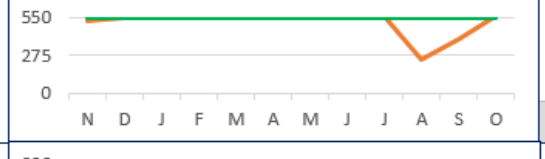
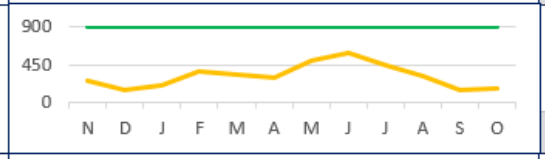
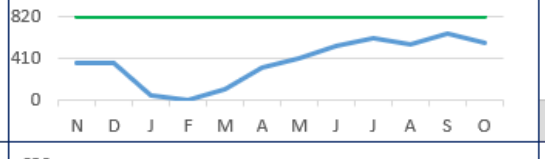
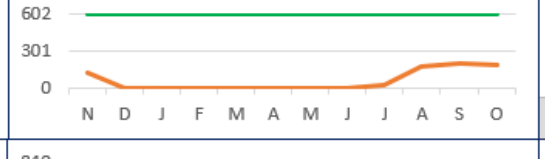
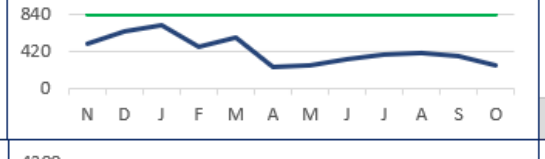
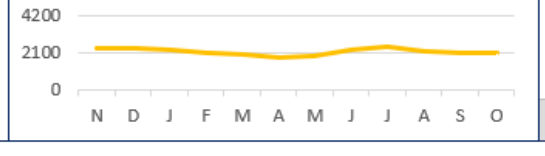


*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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)			Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
AES		MW	249	263	370	330	463	406	249	257	440	466	371	364
Nameplate Cap: 508		AR	49%	52%	73%	65%	91%	80%	49%	51%	87%	92%	73%	72%
EcoElectrica		MW	531	550	550	547	550	550	543	566	566	252	391	561
Nameplate Cap: 566		AR	97%	100%	100%	99%	100%	100%	99%	103%	103%	45%	69%	99%
Genera Aguirre		MW	257	152	210	368	341	303	505	592	440	314	147	169
Nameplate Cap: 900		AR	29%	17%	23%	41%	38%	34%	56%	66%	49%	35%	16%	19%
Genera Costa Sur		MW	363	366	48	3	105	316	403	533	599	546	643	561
Nameplate Cap: 820		AR	44%	45%	6%	0%	13%	39%	49%	65%	73%	67%	78%	68%
Genera Palo Seco		MW	121	0	0	0	0	0	0	0	27	173	198	193
Nameplate Cap: 602		AR	20%	0%	0%	0%	0%	0%	0%	0%	4%	29%	33%	32%
Genera San Juan		MW	510	652	723	478	585	250	266	337	392	398	375	259
Nameplate Cap: 840		AR	61%	78%	86%	57%	70%	30%	32%	40%	47%	47%	45%	31%
Total Baseload		MW	2384	2329	2249	2070	2043	1826	1967	2285	2462	2149	2125	2108
Nameplate Cap: 4220		AR	52%	51%	49%	45%	48%	43%	47%	54%	58%	51%	50%	50%

*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)

		Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Genera Aguirre Combined Cycle Nameplate Cap: 592	MW	191	185	150	138	127	170	178	201	197	206	216	257
	AR	32%	31%	25%	23%	21%	29%	30%	34%	33%	35%	37%	43%
Genera Cambalache Nameplate Cap: 248	MW	76	104	152	156	153	155	155	151	151	152	155	152
	AR	31%	42%	62%	63%	62%	63%	63%	61%	61%	61%	63%	61%
Genera Mayaguez Nameplate Cap: 220	MW	19	26	24	33	50	37	42	53	52	46	54	51
	AR	9%	12%	11%	15%	23%	17%	19%	24%	23%	21%	25%	23%
Genera Palo Seco (Inc. Mobile-Pack) Nameplate Cap: 207	MW	186	182	183	182	176	151	165	153	140	141	140	135
	AR	90%	88%	89%	88%	85%	73%	80%	74%	68%	68%	68%	65%
Palo Seco TM Nameplate Cap: 90	MW	151	150	147	143	96	62	80	86	84	87	79	82
	AR	100%	100%	98%	95%	107%	69%	89%	96%	93%	97%	88%	91%
San Juan TM Nameplate Cap: 250	MW	202	196	201	200	205	245	236	226	224	218	239	212
	AR	101%	98%	101%	100%	82%	98%	95%	91%	89%	87%	96%	85%
Other Peakers Nameplate Cap: 264	MW	62	61	71	68	71	71	60	54	52	51	54	61
	AR	24%	23%	27%	26%	27%	27%	23%	21%	20%	19%	20%	23%
Total Peakers Nameplate Cap: 1871	MW	535	557	581	577	879	891	917	924	899	900	937	950
	AR	35%	36%	38%	38%	47%	48%	49%	49%	48%	48%	50%	51%

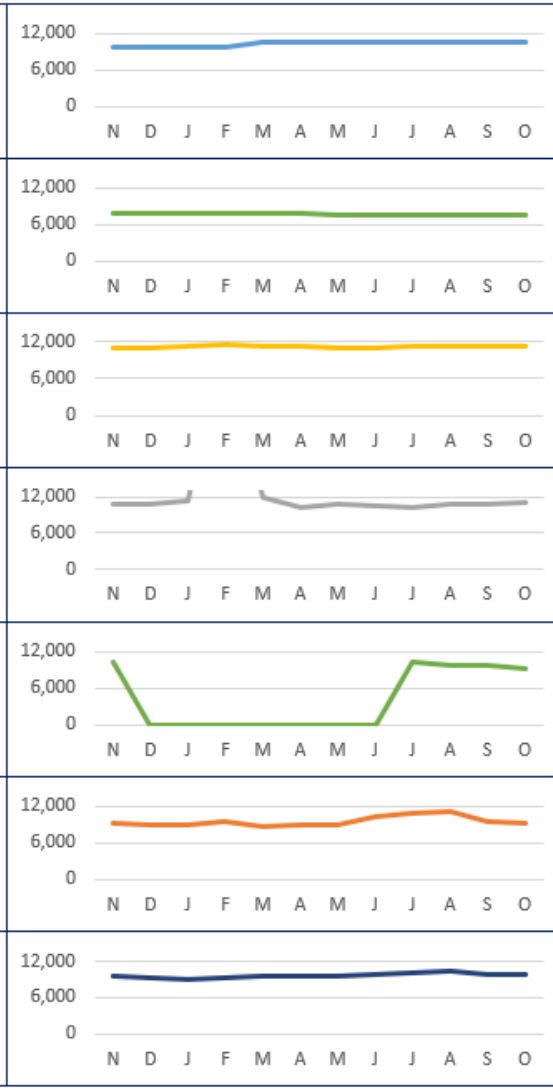
*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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)	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
AES	9,800	9,800	9,800	9,800	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620
EcoElectrica	7,945	7,945	7,957	7,957	7,957	7,957	7,881	7,881	7,881	7,881	7,881	7,881
Genera Aguirre	11,008	11,034	11,207	11,397	11,268	11,117	10,934	10,951	11,220	11,225	11,142	11,177
Genera Costa Sur	10,857	10,838	11,323	40,045	11,913	10,397	10,703	10,562	10,343	10,854	10,738	10,976
Genera Palo Seco	10,254	-	-	-	-	-	-	-	10,264	9,696	9,648	9,296
Genera San Juan	9,317	8,956	8,973	9,432	8,714	8,882	8,796	10,188	10,817	11,016	9,485	9,263
Total Baseload	9,477	9,267	8,968	9,381	9,510	9,564	9,687	9,904	10,007	10,275	9,817	9,761



*Refer to Glossary of Terms on page 22 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)	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Genera Aguirre Combined Cycle	14,969	14,921	14,671	14,989	13,867	11,936	11,751	12,482	13,852	11,888	12,289	11,844
Genera Cambalache	12,435	13,231	12,834	12,785	12,872	12,640	12,407	12,756	12,876	12,361	12,343	12,361
Genera Mayaguez	10,801	11,013	10,882	10,945	11,029	11,107	10,882	11,040	10,832	10,908	10,868	10,861
Genera Palo Seco (Inc. Mobile Pack)	15,981	14,925	15,146	16,487	15,205	14,397	13,787	13,445	13,662	12,270	12,669	12,033
Palo Seco TM & San Juan TM	-	-	-	-	-	11,706	11,137	11,032	10,961	10,983	10,993	11,534
Other Peakers	14,893	14,771	15,064	15,462	14,062	12,730	15,043	14,990	6,912	14,031	14,563	13,000
Total Peakers	13,962	13,195	12,755	12,951	12,710	5,416	6,168	5,087	4,468	6,354	6,246	6,525

*Refer to Glossary of Terms on page 22 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			Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
AES	MW		248	253	355	320	452	412	249	251	437	449	357	365
Nameplate Cap: 508	CF		49%	50%	70%	63%	89%	81%	49%	49%	86%	88%	70%	72%
EcoElectrica	MW		403	410	412	405	398	412	399	415	412	235	292	404
Nameplate Cap: 566	CF		73%	75%	75%	74%	72%	75%	73%	75%	75%	42%	52%	71%
Genera Aguirre	MW		190	156	134	284	243	221	418	466	346	237	125	148
Nameplate Cap: 900	CF		21%	17%	15%	32%	27%	25%	46%	52%	38%	26%	14%	16%
Genera Costa Sur	MW		304	291	37	1	101	270	358	486	482	435	543	495
Nameplate Cap: 820	CF		37%	35%	5%	0%	12%	33%	44%	59%	59%	53%	66%	60%
Genera Palo Seco	MW		105	0	0	0	0	0	0	0	28	139	150	150
Nameplate Cap: 602	CF		18%	0%	0%	0%	0%	0%	0%	0%	5%	23%	25%	25%
Genera San Juan	MW		417	397	473	380	380	227	254	306	343	302	330	229
Nameplate Cap: 840	CF		50%	47%	56%	45%	45%	27%	30%	36%	41%	36%	39%	27%
Total Baseload	MW		2024	1858	1763	1735	1573	1542	1679	1924	2047	1798	1797	1790
Nameplate Cap: 4370	CF		44%	41%	39%	38%	37%	37%	40%	46%	49%	43%	43%	42%

*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

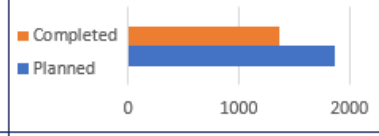
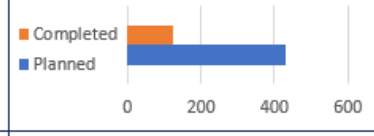
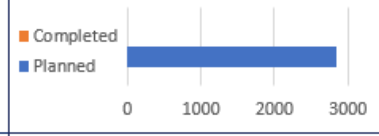
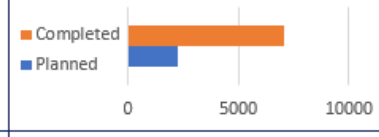
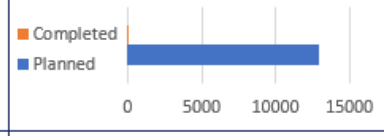
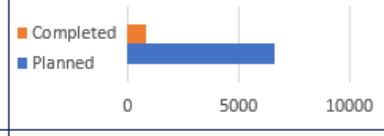
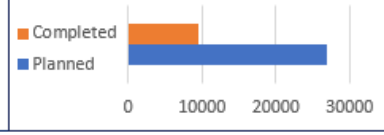
		Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Genera Aguirre Combined Cycle Nameplate Cap: 592	MW	75	47	49	42	31	79	101	75	48	114	120	149
	CF	13%	8%	8%	7%	5%	13%	17%	13%	8%	19%	20%	25%
Genera Cambalache Nameplate Cap: 247.5	MW	30	18	31	35	24	57	71	37	27	67	74	68
	CF	12%	7%	13%	14%	10%	23%	29%	15%	11%	27%	30%	27%
Genera Mayaguez Nameplate Cap: 220	MW	23	50	77	72	56	79	90	66	49	69	68	66
	CF	10%	23%	35%	33%	25%	36%	41%	30%	22%	31%	31%	30%
Genera Palo Seco (Inc. Mobile-Pack) Nameplate Cap: 207	MW	9	10	9	13	15	14	32	21	10	37	37	40
	CF	5%	5%	4%	6%	7%	7%	15%	10%	5%	18%	18%	19%
Palo Seco TM Nameplate Cap: 150	MW	154	154	151	143	96	66	82	85	60	80	77	80
	CF	103%	103%	101%	95%	106%	74%	91%	94%	66%	89%	85%	89%
San Juan TM Nameplate Cap: 200	MW	202	196	201	201	189	241	222	203	179	180	217	193
	CF	101%	98%	101%	101%	76%	96%	89%	81%	71%	72%	87%	77%
Other Peakers (Genera) Nameplate Cap: 264	MW	23	7	12	9	7	16	22	6	7	14	13	12
	CF	9%	3%	5%	3%	3%	6%	8%	2%	3%	5%	5%	5%
Total Peakers Nameplate Cap: 1530.5	MW	161	131	178	171	418	552	620	494	379	561	605	608
	CF	11%	9%	12%	11%	22%	30%	33%	26%	20%	30%	32%	33%

*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.

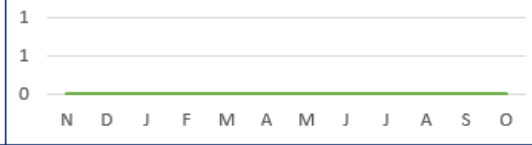
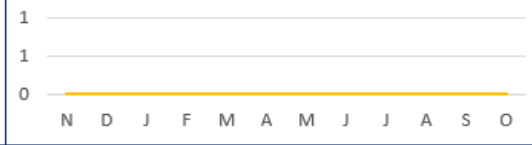
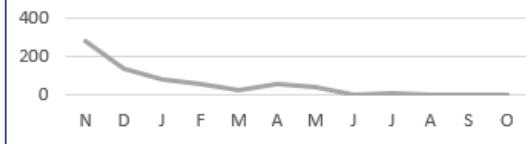
Planned Outage Hours (NOV 2023 - OCT 2024)		Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to-Service Date
AES		1872	1374		
EcoElectrica		432	123		
Genera Aguirre		2832	0		
Genera Costa Sur		2256	7034		
Genera Palo Seco		12936	96		
Genera San Juan		6624	852		
Total Baseload		26952	9478		

*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	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
AES		288	264	0	0	0	0	24	120	11	0	0	0
EcoElectrica		0	0	0	0	0	0	0	0	0	0	0	0
Genera Aguirre		0	0	0	0	0	0	0	0	0	0	0	0
Genera Costa Sur		283	139	84	53	24	56	43	0	9	0	0	0
Genera Palo Seco		0	0	0	0	0	0	0	0	0	0	0	0
Genera San Juan		136	551	34	48	105	0	30	0	19	0	72	114
Total Baseload		707	954	118	101	129	56	98	120	38	0	72	114

*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		Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
AES	Hrs	24	218	265	432	0	92	166	47	88	0	279	327
	%	3%	19%	18%	31%	0%	6%	16%	5%	6%	0%	19%	22%
EcoElectrica	Hrs	35	0	0	7	0	0	48	0	0	964	28	28
	%	2%	0%	0%	0%	0%	0%	2%	0%	0%	43%	1%	1%
Genera Aguirre	Hrs	862	898	1014	370	686	799	250	81	337	609	1026	1032
	%	60%	60%	68%	27%	46%	55%	17%	6%	23%	41%	71%	69%
Genera Costa Sur	Hrs	720	720	1391	1356	1021	720	290	134	172	233	0	102
	%	74%	67%	119%	128%	115%	156%	85%	24%	18%	19%	0%	18%
Genera Palo Seco	Hrs	2278	2854	2854	2662	2806	2782	2638	2782	2751	2445	2159	2278
	%	79%	96%	96%	96%	94%	97%	89%	97%	92%	84%	75%	77%
Genera San Juan	Hrs	2193	1589	1521	2198	1964	3897	3714	3809	3609	3946	2206	3087
	%	39%	31%	26%	41%	35%	68%	63%	66%	62%	66%	39%	54%
Total Baseload	Hrs	6112	6279	7044	7025	6477	8290	7106	6853	6958	8197	5697	6855
	%	23%	23%	25%	27%	41%	55%	45%	45%	45%	52%	38%	44%

*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

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

*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.

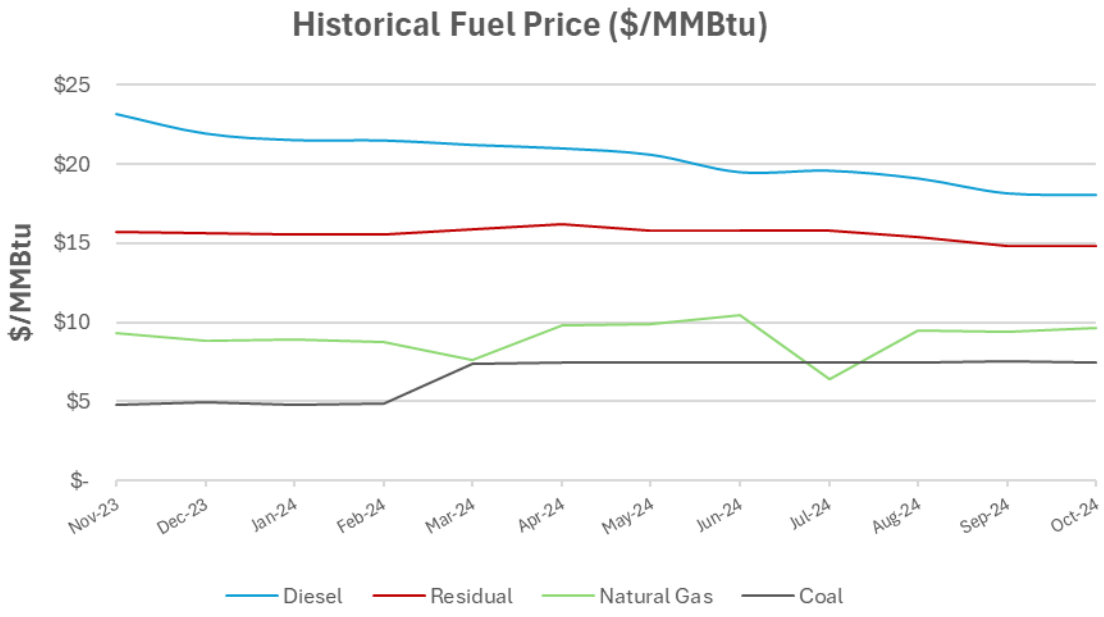
Target: ▲ A higher Capacity Factor represents a better utilization of the maximum capacity the project is able to produce.

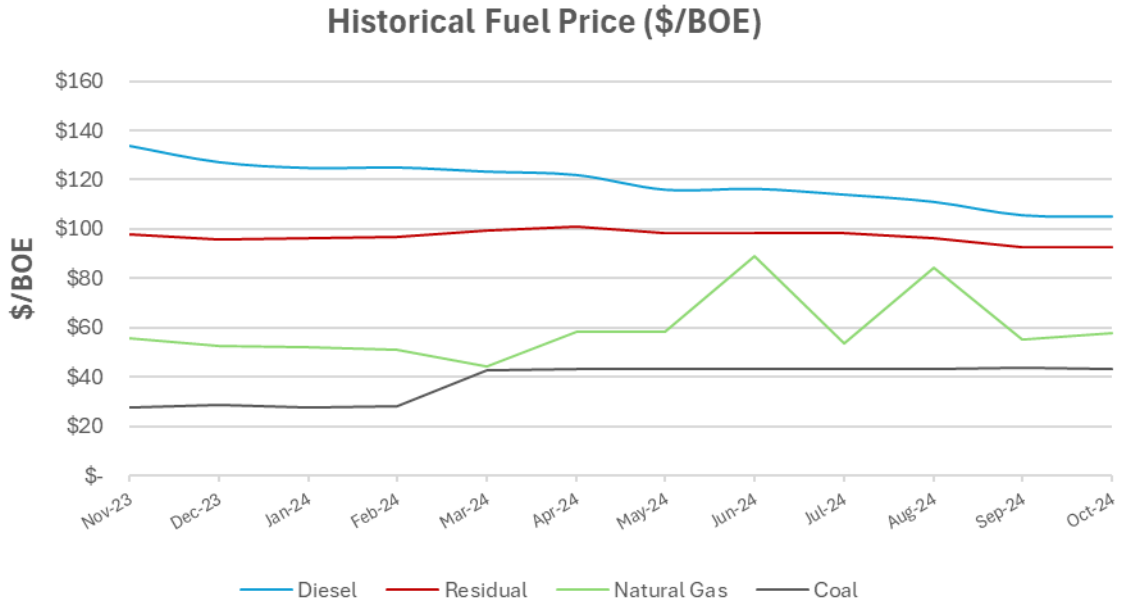
Average Production (MW) and Capacity Factor		Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Pattern Santa Isabel Nameplate Cap: 95	MW	12	12	17	10	13	12	12	16	22	18	12	6
	CF	17%	15%	22%	13%	14%	13%	13%	17%	23%	18%	13%	6%
Punta Lima Nameplate Cap: 26	MW	3	4	6	4	5	6	3	5	9	6	3	2
	CF	11%	17%	25%	14%	20%	25%	12%	20%	33%	23%	12%	8%
Landfill Gas Fajardo Nameplate Cap: 2.4	MW	0.3	0.5	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.10	0.8
	CF	11%	22%	10%	0%	0%	5%	5%	0%	4%	2%	4%	33%
Landfill Gas Toa Baja Nameplate Cap: 2.4	MW	1.2	1.1	1.0	1.0	1.0	1.1	0.9	0.8	1.2	0.5	0.4	0.02
	CF	49%	46%	42%	43%	41%	47%	36%	33%	48%	21%	15%	1%
Total Wind and Landfill Nameplate Cap: 80	MW	17	17	24	14	20	20	16	22	32	24	16	8
	CF	16%	17%	23%	14%	16%	16%	13%	18%	25%	19%	13%	7%

*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.



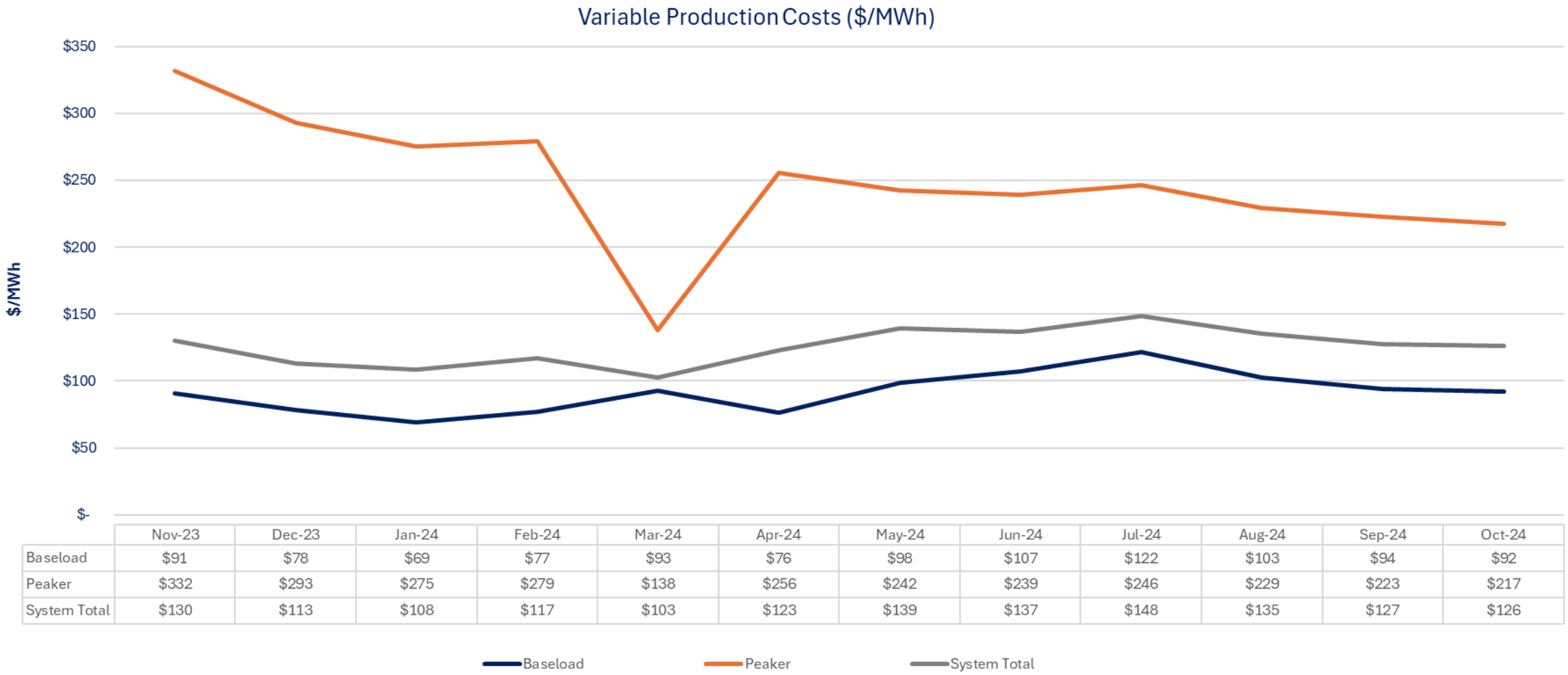


$/MMBtu	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Diesel	23.15	21.93	21.52	21.50	21.22	21.00	20.60	19.51	19.60	19.12	18.19	18.09
Residual	15.70	15.66	15.57	15.52	15.88	16.18	15.78	15.77	15.77	15.43	14.80	14.83
Natural Gas	9.30	8.87	8.91	8.77	7.59	9.79	9.89	10.49	6.36	9.51	9.36	9.66
Coal	4.80	4.95	4.80	4.85	7.35	7.48	7.48	7.49	7.49	7.49	7.51	7.49
$/BOE												
Diesel	133.88	127.24	124.84	125.03	123.35	122.01	115.98	116.34	113.98	111.03	105.52	105.02
Residual	98.09	95.89	96.38	96.71	99.35	101.02	98.48	98.47	98.50	96.40	92.61	92.79
Natural Gas	55.73	52.63	51.96	50.94	44.49	58.08	58.06	89.01	53.43	84.35	55.42	57.58
Coal	27.86	28.69	27.85	28.16	42.66	43.41	43.42	43.45	43.45	43.44	43.59	43.45

*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.



	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Baseload	$91	$78	$69	$77	$93	$76	$98	$107	$122	$103	$94	$92
Peaker	$332	$293	$275	$279	$138	$256	$242	$239	$246	$229	$223	$217
System Total	$130	$113	$108	$117	$103	$123	$139	$137	$148	$135	$127	$126

*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	
Aguirre CC	I-1	X	X	X		X	
	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	
	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						