



Monthly Generation Performance Report

November 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

Operations

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

Economics

- Fuel Prices
- Fuel Production Costs

About This Report

- Glossary of Terms
- Plant and Unit List



Executive Summary – November Performance

Overview

The maximum peak demand for November 2024 was approximately 2,788 MW.

San Juan 6 (220 MW) is currently offline and is expected to return to service on March 30, 2025. San Juan 7 (100 MW) is currently offline, and the expected date of return is to be determined. San Juan 9 (100 MW) is offline and is expected to return on December 31, 2024. Aguirre 1 & Aguirre 2 (450 MW each) are currently offline, Aguirre 1 is expected to return on December 25, 2024, and Aguirre 2 is expected to return on December 10, 2024. Palo Seco 4 (216 MW) is expected to return to service by June 5, 2025

Major Events

In November, the electric system experienced 3 generation events that led to load shedding, with 3 caused by underfrequency due to generation unit trips.

For November, the hourly reserve levels averaged 966 MW, with 144 hours during the month having less than 750 MW in reserves (equal to 20% of the time.)

The forecast for December 2024 shows fewer reserve levels to the same month last year (December 2023), with 428 MW average reserves forecasted versus 710 MW seen for the same month last year.

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

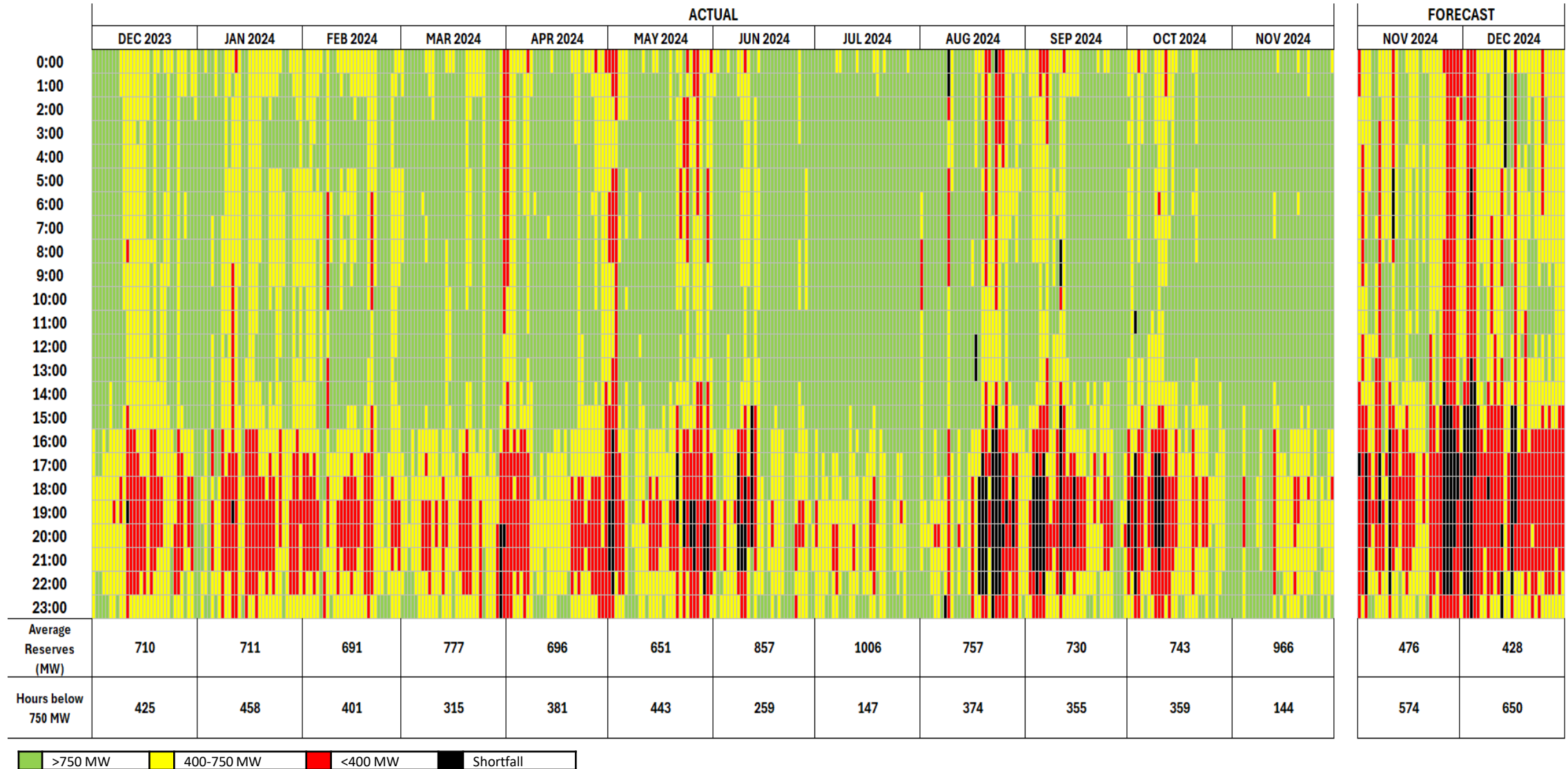
- Genera – 45%
- AES – 69%
- EcoEléctrica – 100%



System Reserves

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

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

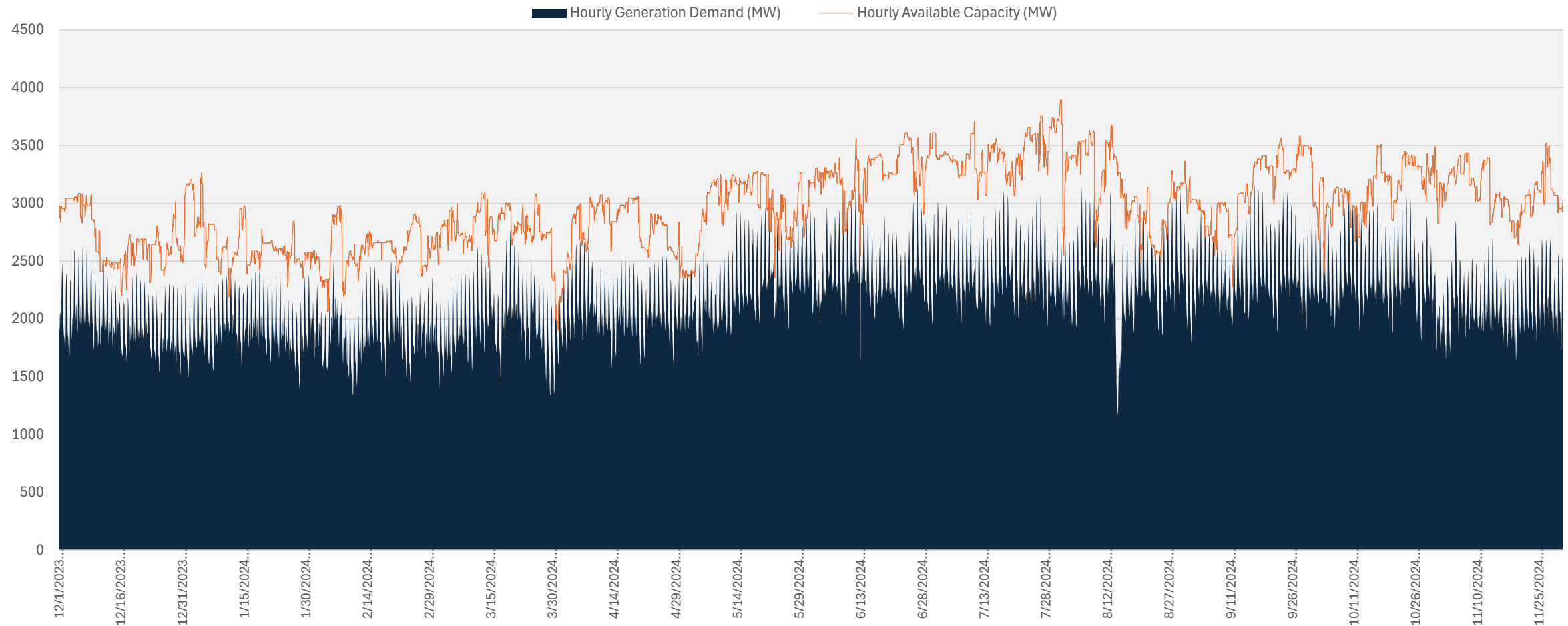


*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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.

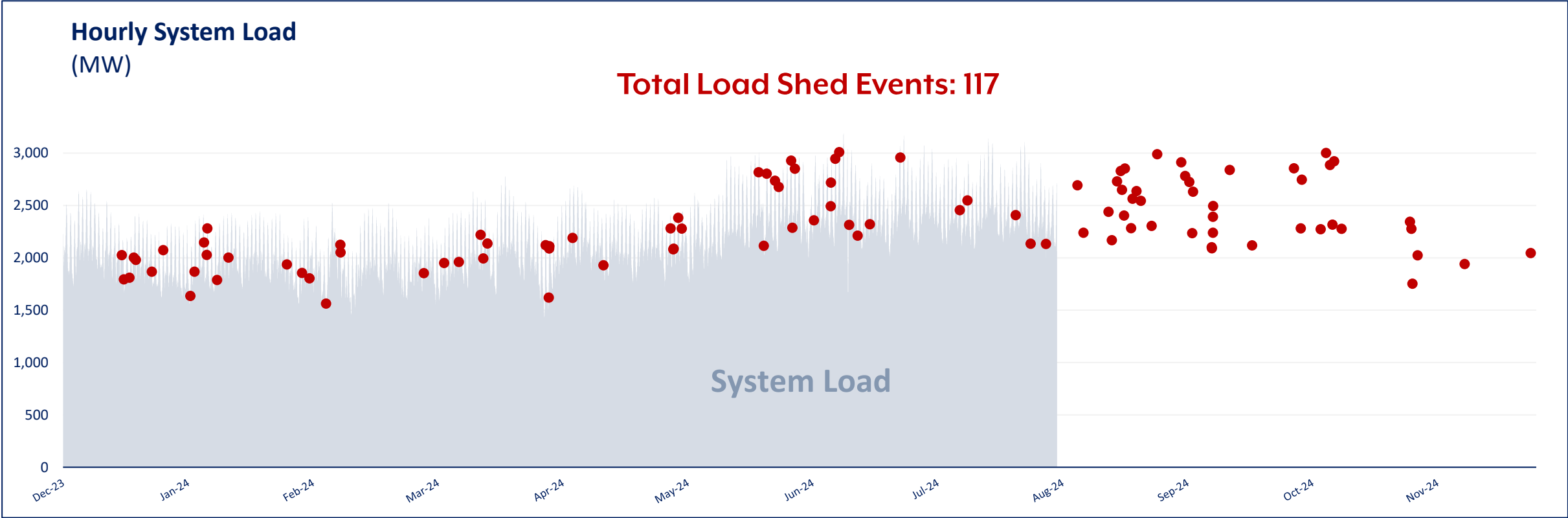


*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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 (November 1, 2024 – November 30, 2024)	Total Events	Average Customers Affected	Average Duration (min)	Rolling 12 Months (December 1, 2023 – November 30, 2024)	Total Events	Average Customers Affected	Average Duration (min)
Generation Shortfall Events	0	0	0	Generation Shortfall Events	34	100,189	197
Unit Performance Load Shed Events	3	175,746	25	Unit Performance Load Shed Events	83	93,650	27

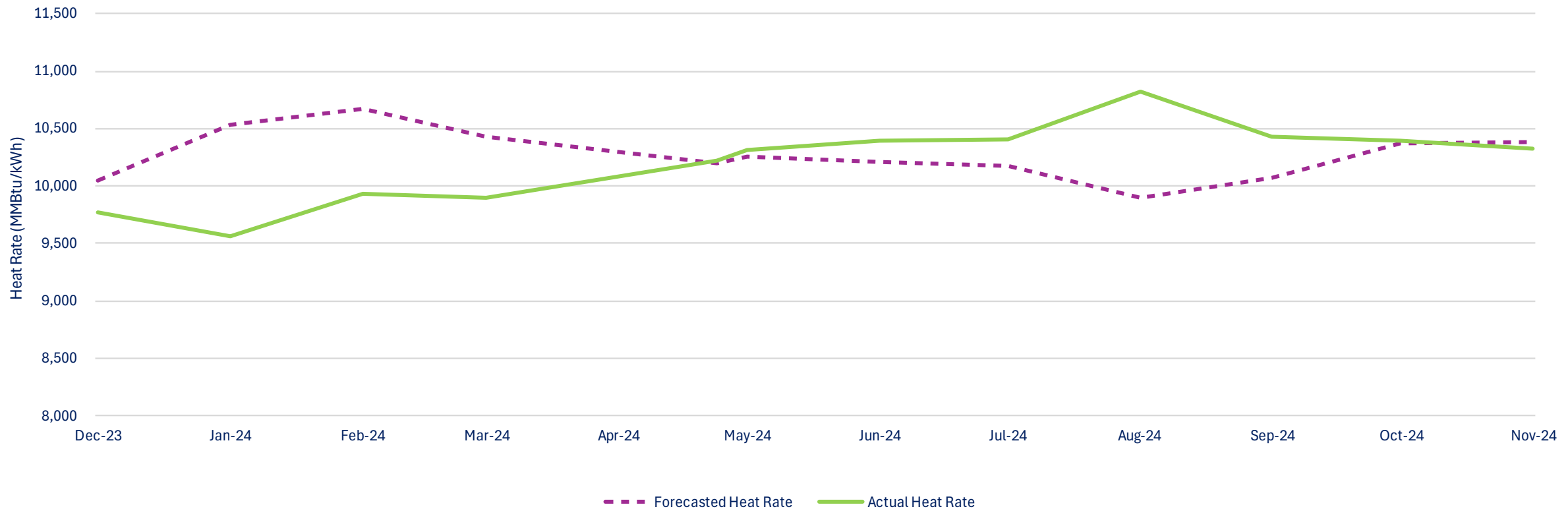
*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

System Heat Rate

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

Target: ▼ Lower heat rates represent higher efficiency.

Forecasted vs Actual Heat Rate

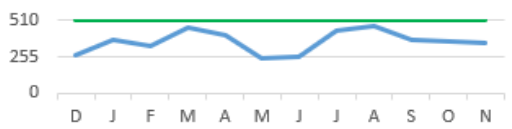
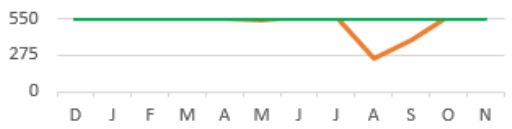
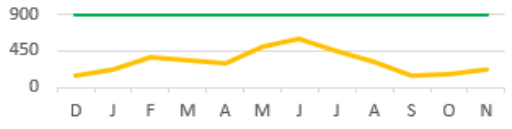
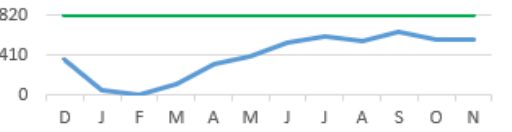

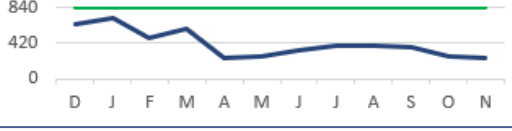
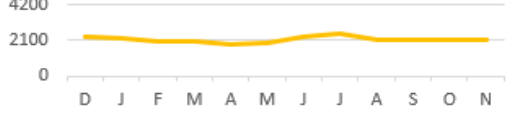


*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

Available Capacity – Baseload Units

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

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

Available Capacity (MW) and Availability Rate (AR)		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	
AES Nameplate Cap: 508		MW	263	370	330	463	406	249	257	440	466	371	364	353
	AR	52%	73%	65%	91%	80%	49%	51%	87%	92%	73%	72%	69%	
EcoElectrica Nameplate Cap: 566		MW	550	550	547	550	550	543	566	566	252	391	561	566
	AR	100%	100%	99%	100%	100%	99%	103%	103%	46%	69%	99%	100%	
Genera Aguirre Nameplate Cap: 900		MW	152	210	368	341	303	505	592	440	314	147	169	220
	AR	17%	23%	41%	38%	34%	56%	66%	49%	35%	16%	19%	24%	
Genera Costa Sur Nameplate Cap: 820		MW	366	48	3	105	316	403	533	599	546	643	561	574
	AR	45%	6%	0%	13%	39%	49%	65%	73%	67%	78%	68%	70%	
Genera Palo Seco Nameplate Cap: 602		MW	0	0	0	0	0	0	27	173	198	193	146	
	AR	0%	0%	0%	0%	0%	0%	0%	4%	29%	33%	32%	24%	
Genera San Juan Nameplate Cap: 840		MW	652	723	478	585	250	266	337	392	398	375	259	254
	AR	78%	86%	57%	70%	30%	32%	40%	47%	47%	45%	31%	30%	
Total Baseload Nameplate Cap: 4220		MW	2329	2249	2070	2043	1826	1967	2285	2462	2149	2125	2108	2113
	AR	51%	49%	45%	48%	43%	47%	54%	58%	51%	50%	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.


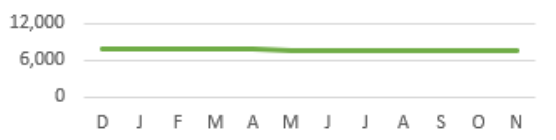
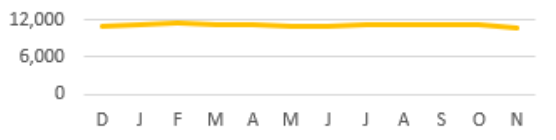


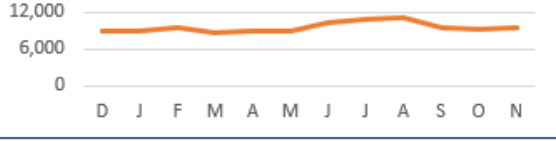



*Refer to Glossary of Terms on page 22 for a list of definitions and formulas.

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.

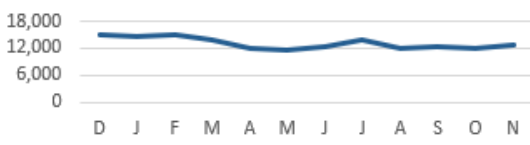


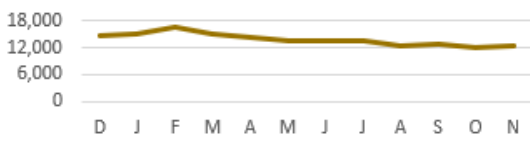
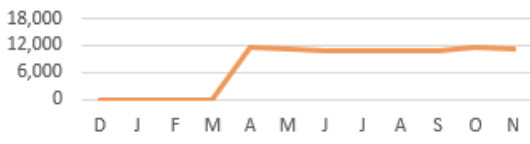


Heat Rate (MMBtu/MWh)		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
AES		9,800	9,800	9,800	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620	10,620
EcoElectrica		7,945	7,957	7,957	7,957	7,957	7,881	7,881	7,881	7,881	7,881	7,881	7,881
Genera Aguirre		11,034	11,207	11,397	11,268	11,117	10,934	10,951	11,220	11,225	11,142	11,177	10,813
Genera Costa Sur		10,838	11,323	40,045	11,913	10,397	10,703	10,562	10,343	10,854	10,738	10,976	11,075
Genera Palo Seco		-	-	-	-	-	-	-	10,264	9,696	9,648	9,296	9,669
Genera San Juan		8,956	8,973	9,432	8,714	8,882	8,796	10,188	10,817	11,016	9,485	9,263	9,486
Total Baseload		9,267	8,968	9,381	9,510	9,564	9,687	9,904	10,007	10,275	9,817	9,761	9,807

*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.

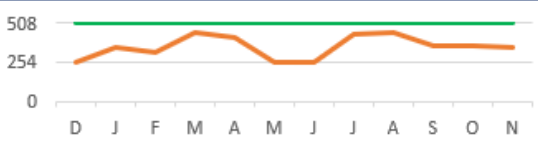
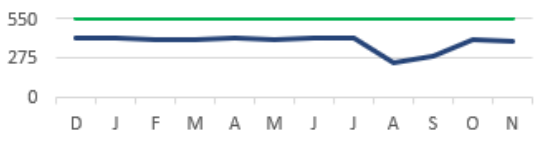
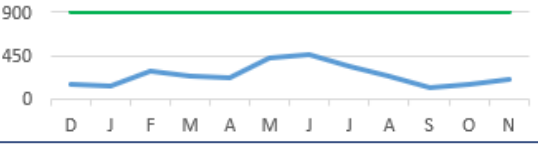
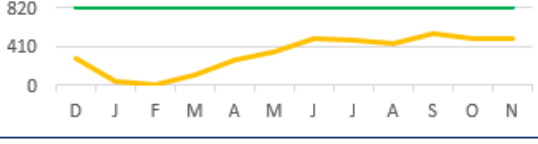

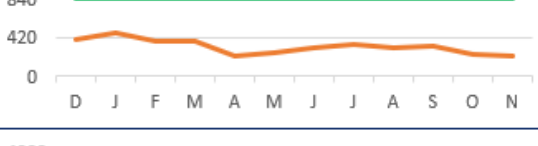
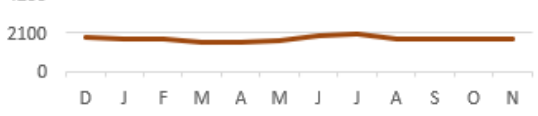
Heat Rate (MMBtu/MWh)		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
Genera Aguirre Combined Cycle		14,921	14,671	14,989	13,867	11,936	11,751	12,482	13,852	11,888	12,289	11,844	12,793
Genera Cambalache		13,231	12,834	12,785	12,872	12,640	12,407	12,756	12,876	12,361	12,343	12,361	13,227
Genera Mayaguez		11,013	10,882	10,945	11,029	11,107	10,882	11,040	10,832	10,908	10,868	10,861	10,898
Genera Palo Seco (Inc. Mobile Pack)		14,925	15,146	16,487	15,205	14,397	13,787	13,445	13,662	12,270	12,669	12,033	12,455
Palo Seco TM & San Juan TM		-	-	-	-	11,706	11,137	11,032	10,961	10,983	10,993	11,534	11,255
Other Peakers		14,771	15,064	15,462	14,062	12,730	15,043	14,990	6,912	14,031	14,563	13,000	12,653
Total Peakers		13,195	12,755	12,951	12,710	5,416	6,168	5,087	4,468	6,354	6,246	6,525	4,333

*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		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	
AES Nameplate Cap: 508		MW	253	355	320	452	412	249	251	437	449	357	365	348
	CF	50%	70%	63%	89%	81%	49%	49%	86%	88%	70%	72%	68%	
EcoElectrica Nameplate Cap: 566		MW	410	412	405	398	412	399	415	412	235	292	404	391
	CF	75%	75%	74%	72%	75%	73%	75%	75%	43%	52%	71%	69%	
Genera Aguirre Nameplate Cap: 900		MW	156	134	284	243	221	418	466	346	237	125	148	198
	CF	17%	15%	32%	27%	25%	46%	52%	38%	26%	14%	16%	22%	
Genera Costa Sur Nameplate Cap: 820		MW	291	37	1	101	270	358	486	482	435	543	495	492
	CF	35%	5%	0%	12%	33%	44%	59%	59%	53%	66%	60%	60%	
Genera Palo Seco Nameplate Cap: 602		MW	0	0	0	0	0	0	0	28	139	150	150	121
	CF	0%	0%	0%	0%	0%	0%	0%	5%	23%	25%	25%	20%	
Genera San Juan Nameplate Cap: 840		MW	397	473	380	380	227	254	306	343	302	330	229	211
	CF	47%	56%	45%	45%	27%	30%	36%	41%	36%	39%	27%	25%	
Total Baseload Nameplate Cap: 4370		MW	1858	1763	1735	1573	1542	1679	1924	2047	1798	1797	1790	1761
	CF	41%	39%	38%	37%	37%	40%	46%	49%	43%	43%	42%	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		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	
Genera Aguirre Combined Cycle Nameplate Cap: 592		MW	47	49	42	31	79	101	75	48	114	120	149	58
	CF	8%	8%	7%	5%	13%	17%	13%	8%	19%	20%	25%	10%	
Genera Cambalache Nameplate Cap: 247.5		MW	18	31	35	24	57	71	37	27	67	74	68	19
	CF	7%	13%	14%	10%	23%	29%	15%	11%	27%	30%	27%	8%	
Genera Mayaguez Nameplate Cap: 220		MW	50	77	72	56	79	90	66	49	69	68	66	45
	CF	23%	35%	33%	25%	36%	41%	30%	22%	31%	31%	30%	20%	
Genera Palo Seco (Inc. Mobile-Pack) Nameplate Cap: 207		MW	10	9	13	15	14	32	21	10	37	37	40	12
	CF	5%	4%	6%	7%	7%	15%	10%	5%	18%	18%	19%	6%	
Palo Seco TM Nameplate Cap: 150		MW	154	151	143	96	66	82	85	60	80	77	80	79
	CF	103%	101%	95%	106%	74%	91%	94%	66%	89%	85%	89%	87%	
San Juan TM Nameplate Cap: 200		MW	196	201	201	189	241	222	203	179	180	217	193	170
	CF	98%	101%	101%	76%	96%	89%	81%	71%	72%	87%	77%	68%	
Other Peakers (Genera) Nameplate Cap: 264		MW	7	12	9	7	16	22	6	7	14	13	12	3
	CF	3%	5%	3%	3%	6%	8%	2%	3%	5%	5%	5%	1%	
Total Peakers Nameplate Cap: 1530.5		MW	131	178	171	418	552	620	494	379	561	605	608	385
	CF	9%	12%	11%	22%	30%	33%	26%	20%	30%	32%	33%	21%	



*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 (DEC 2023 - NOV 2024)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
AES		1608	1004		
EcoElectrica		432	139		
Genera Aguirre		2448	0		
Genera Costa Sur		1872	7807		
Genera Palo Seco		12552	96		
Genera San Juan		7680	915		
Total Baseload		26592	9961		

*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.

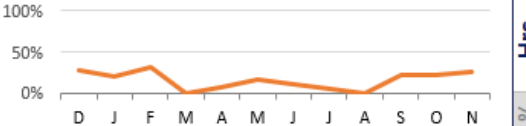

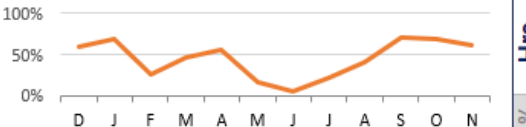
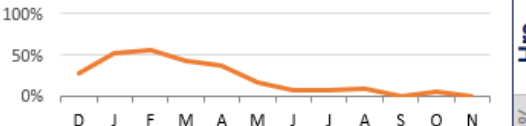
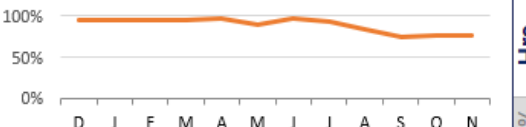
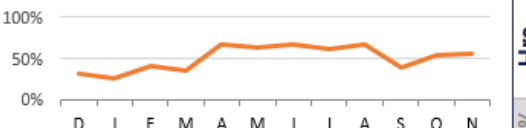
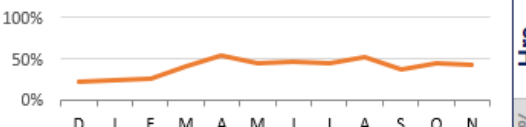
Maintenance Outage Hours		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
AES		264	0	0	0	0	24	120	24	0	0	0	0
EcoElectrica		0	0	0	0	0	0	0	0	0	0	0	0
Genera Aguirre		0	0	0	0	0	0	0	0	0	0	0	0
Genera Costa Sur		139	84	53	24	67	43	0	16	0	0	0	0
Genera Palo Seco		0	0	0	0	0	0	0	0	0	0	0	0
Genera San Juan		570	40	48	105	0	37	0	19	0	72	131	92
Total Baseload		973	124	101	129	67	104	120	59	0	72	131	92

*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.



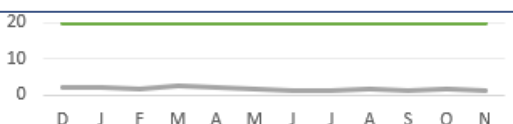
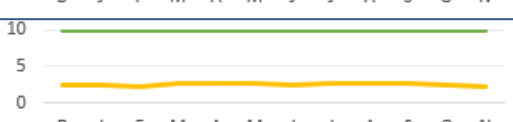
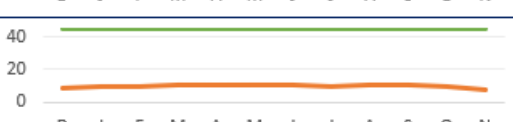
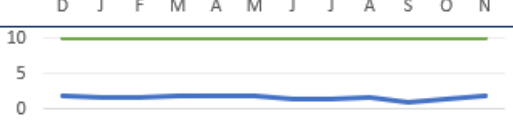
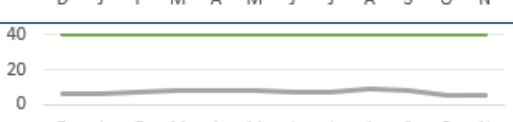
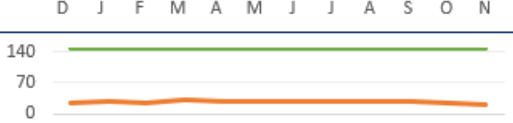
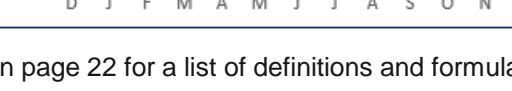
Forced Outage Hours and Outage Rate		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	
AES		Hrs	311	308	445	0	92	168	93	88	0	316	327	365
		%	28%	21%	32%	0%	6%	17%	11%	6%	0%	22%	22%	25%
EcoElectrica		Hrs	0	0	7	0	0	48	0	0	964	28	28	0
		%	0%	0%	0%	0%	0%	2%	0%	0%	43%	1%	1%	0%
Genera Aguirre		Hrs	898	1014	370	686	799	250	81	337	609	1026	1032	881
		%	60%	68%	27%	46%	55%	17%	6%	23%	41%	71%	69%	61%
Genera Costa Sur		Hrs	720	1391	1356	1021	720	290	134	172	233	0	102	0
		%	28%	52%	55%	43%	38%	16%	7%	7%	9%	0%	5%	0%
Genera Palo Seco		Hrs	2854	2854	2662	2806	2782	2638	2782	2751	2445	2159	2278	2178
		%	96%	96%	96%	94%	97%	89%	97%	92%	84%	75%	77%	76%
Genera San Juan		Hrs	1589	1521	2198	1964	3897	3714	3809	3609	3946	2206	3087	3132
		%	31%	26%	41%	35%	68%	63%	66%	62%	66%	39%	54%	56%
Total Baseload		Hrs	6372	7087	7039	6477	8290	7108	6899	6957	8197	5735	6855	6555
		%	23%	24%	26%	41%	55%	45%	46%	45%	52%	38%	44%	43%

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

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

Renewables Capacity Factor – Wind and Landfill

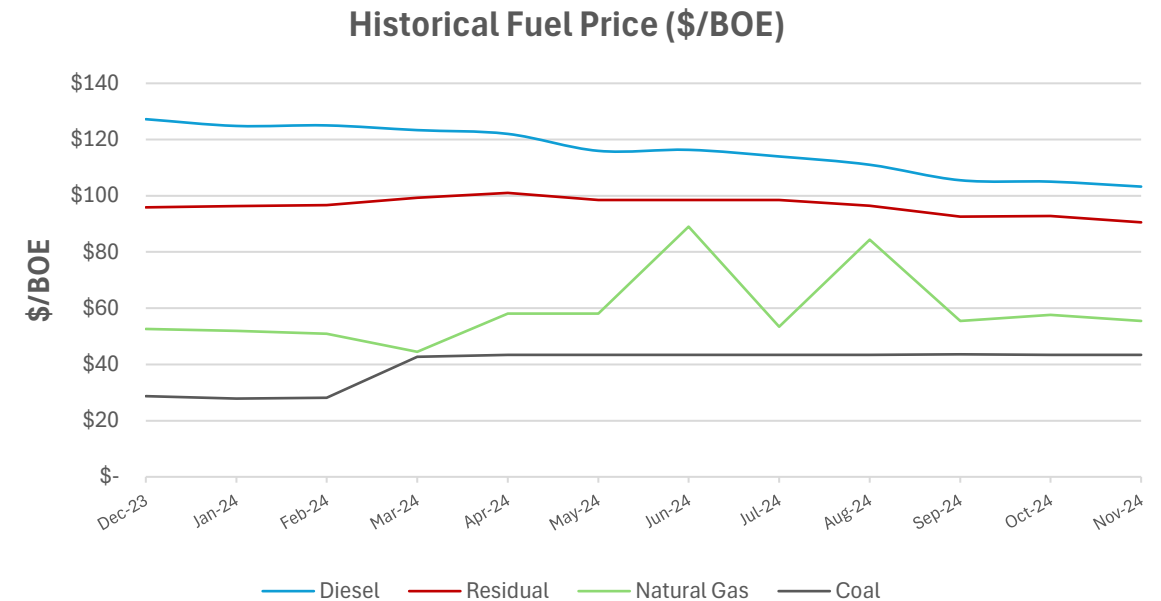
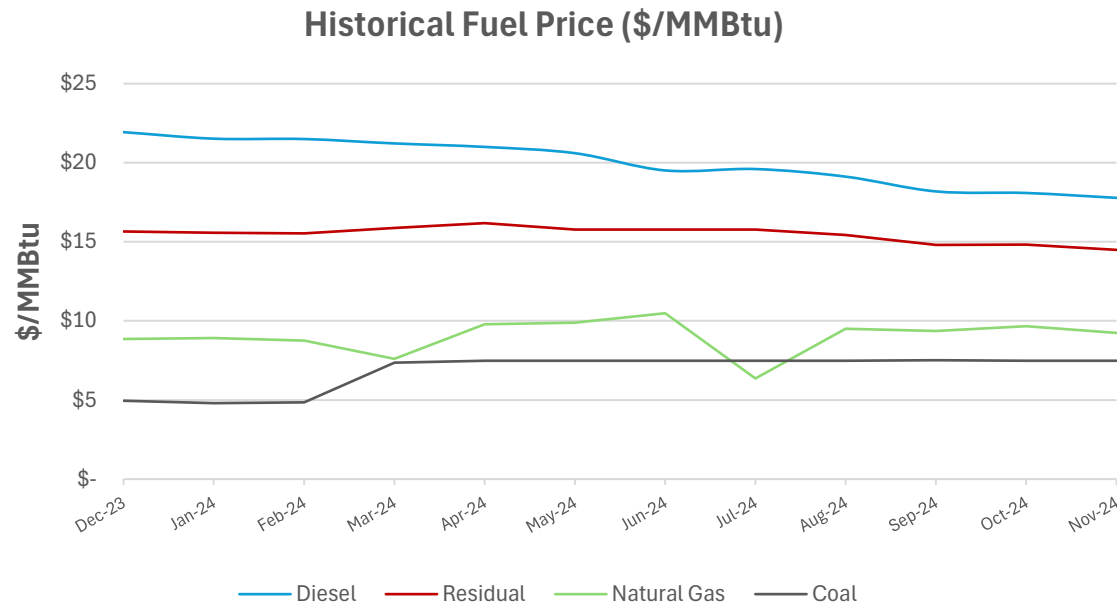
The Capacity Factor measures the actual production of electricity over the theoretical maximum output (nameplate capacity). For Renewable projects, the Capacity Factor is expected to be lower due to the solar and wind cycles.

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		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	
Pattern Santa Isabel	<div>74 37 0</div> <div>D J F M A M J J A S O N</div>	MW	12	17	10	13	12	12	16	22	18	12	6	7
Nameplate Cap: 95	<div>D J F M A M J J A S O N</div>	CF	15%	22%	13%	14%	13%	13%	17%	23%	18%	13%	6%	7%
Punta Lima	<div>26 13 0</div> <div>D J F M A M J J A S O N</div>	MW	4	6	4	5	6	3	5	9	6	3	2	3
Nameplate Cap: 26	<div>D J F M A M J J A S O N</div>	CF	17%	25%	14%	20%	25%	12%	20%	33%	23%	12%	8%	11%
Landfill Gas Fajardo	<div>2.4 1.2 0.0</div> <div>D J F M A M J J A S O N</div>	MW	0.5	0.2	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.80	0.5
Nameplate Cap: 2.4	<div>D J F M A M J J A S O N</div>	CF	22%	10%	0%	0%	5%	5%	0%	4%	2%	4%	33%	19%
Landfill Gas Toa Baja	<div>2.4 1.2 0.0</div> <div>D J F M A M J J A S O N</div>	MW	1.1	1.0	1.0	1.0	1.1	0.9	0.8	1.2	0.5	0.4	0.0	0.51
Nameplate Cap: 2.4	<div>D J F M A M J J A S O N</div>	CF	46%	42%	43%	41%	47%	36%	33%	48%	21%	15%	1%	21%
Total Wind and Landfill	<div>80 40 0</div> <div>D J F M A M J J A S O N</div>	MW	17	24	14	20	20	16	22	32	24	16	8	10
Nameplate Cap: 80	<div>D J F M A M J J A S O N</div>	CF	17%	23%	14%	16%	16%	13%	18%	25%	19%	13%	7%	8%

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.

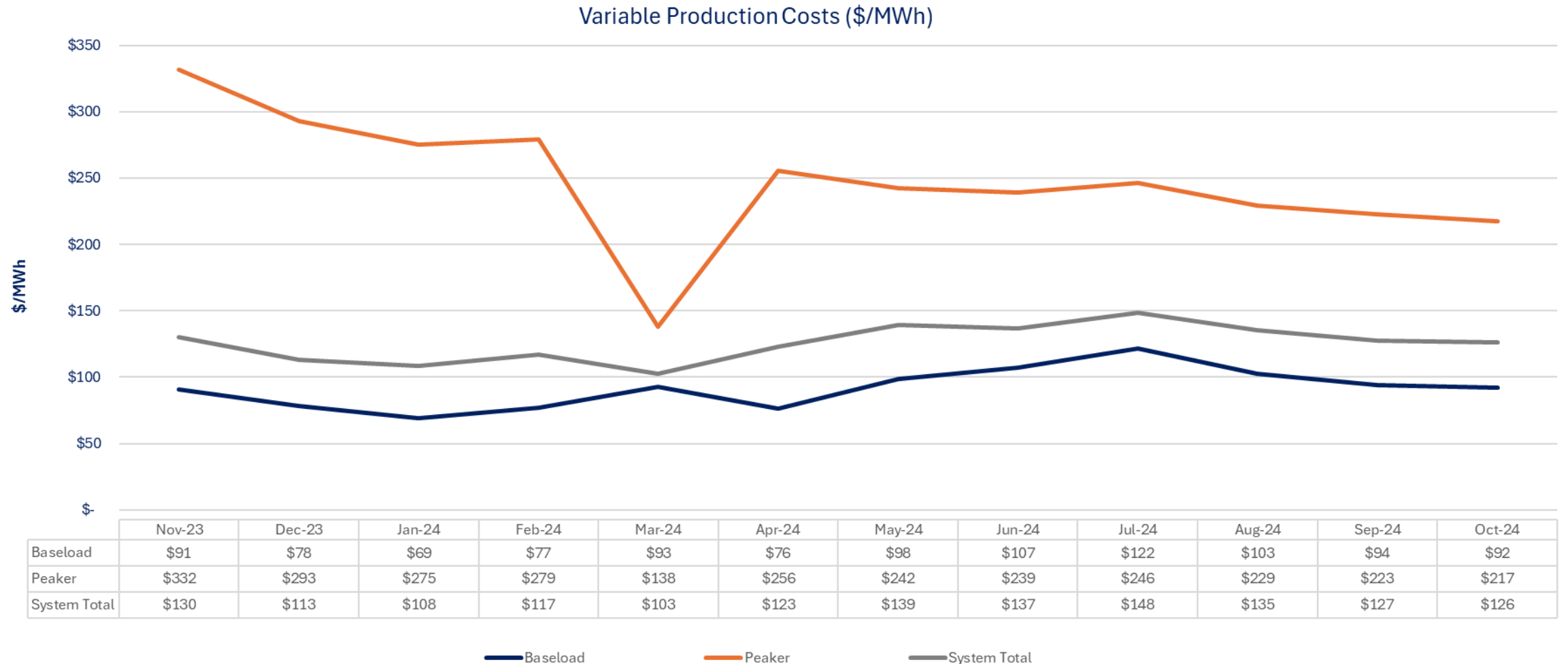


\$/MMBtu		Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24
Diesel		21.93	21.52	21.50	21.22	21.00	20.60	19.51	19.60	19.12	18.19	18.09	17.78
Residual		15.66	15.57	15.52	15.88	16.18	15.78	15.77	15.77	15.43	14.80	14.83	14.49
Natural Gas		8.87	8.91	8.77	7.59	9.79	9.89	10.49	6.36	9.51	9.36	9.66	9.25
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
\$/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
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
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
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
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

*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 Martínó						X
San Fermín						X
Horizon Energy						X
Oriana Energy						X
Coto Laurel						X
Humacao						X

WIND AND LANDFILL PROJECTS

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

HYDRO PLANTS

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