



Monthly Generation Performance Report

June 2023

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 the Puerto Rico Electric Power Authority (PREPA) 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 – June Performance

Overview

The beginning of June was marked by 5 consecutive days of generation shortfalls causing rotating blackouts across the island. Towards the end of June, an additional 150MW was put in services in Palo Seco as part of the Emergency Generation taskforce. Demand is expected to remain high through the month and to frequently reach peaks of 2900MW to 3000MW.

Major Events

In June, the electric system experienced 6 load shed events due to generation shortfall, and 11 generation events that caused underfrequency load shed to prevent a frequency decay.

System Reserves

In June, the hourly reserve levels averaged 623 MW, with 467 hours during the month having less than 750 MW in reserves (equal to 65% of the time.)

The forecast for July 2023 shows higher reserve levels to the same month last year (July 2022), with 1,205 MW average reserves forecasted versus 842 MW seen for the same month last year.

The System Availability for the month of June was 60%.

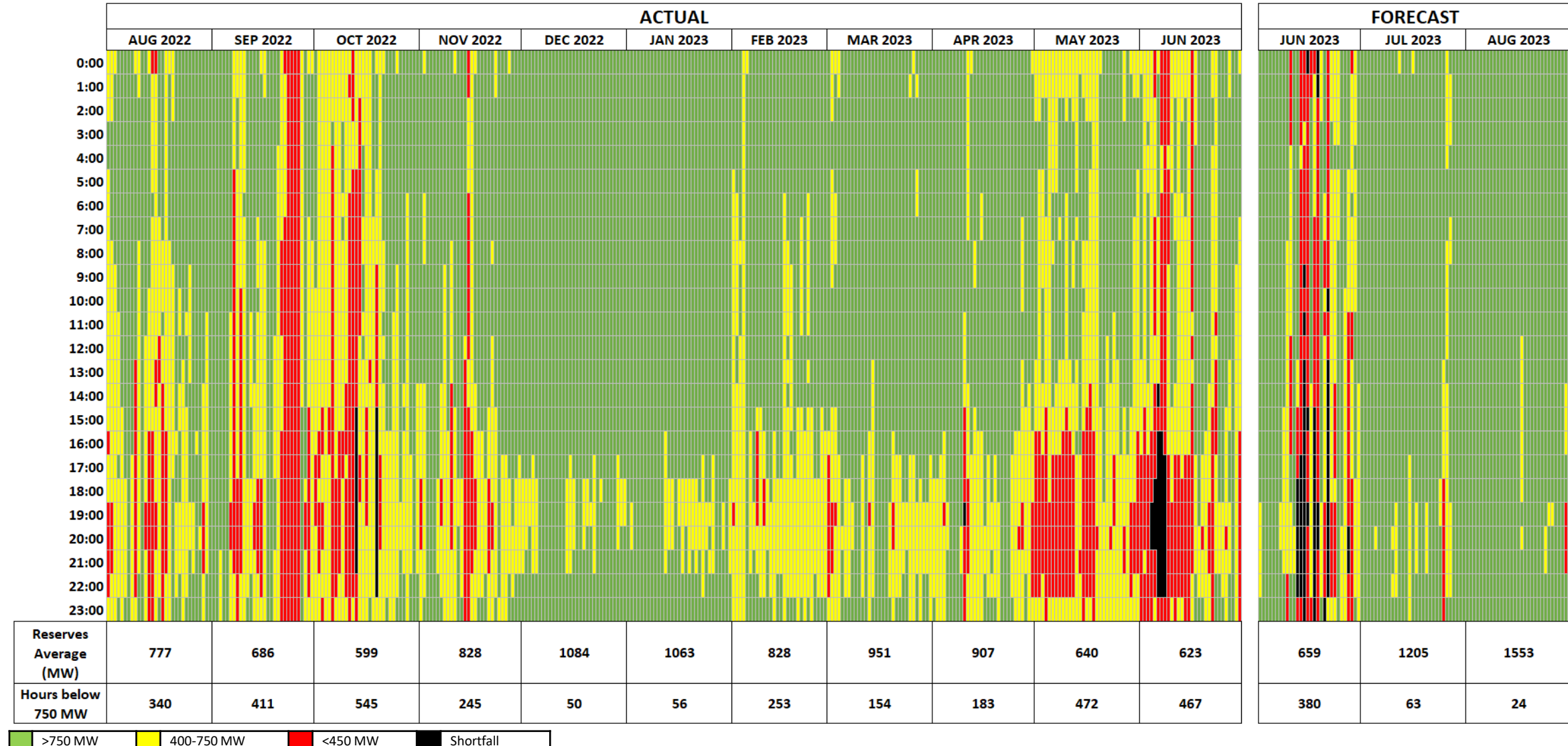
- PREPA – 53%
- AES – 86%
- EcoEléctrica – 99%



System Reserves

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

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

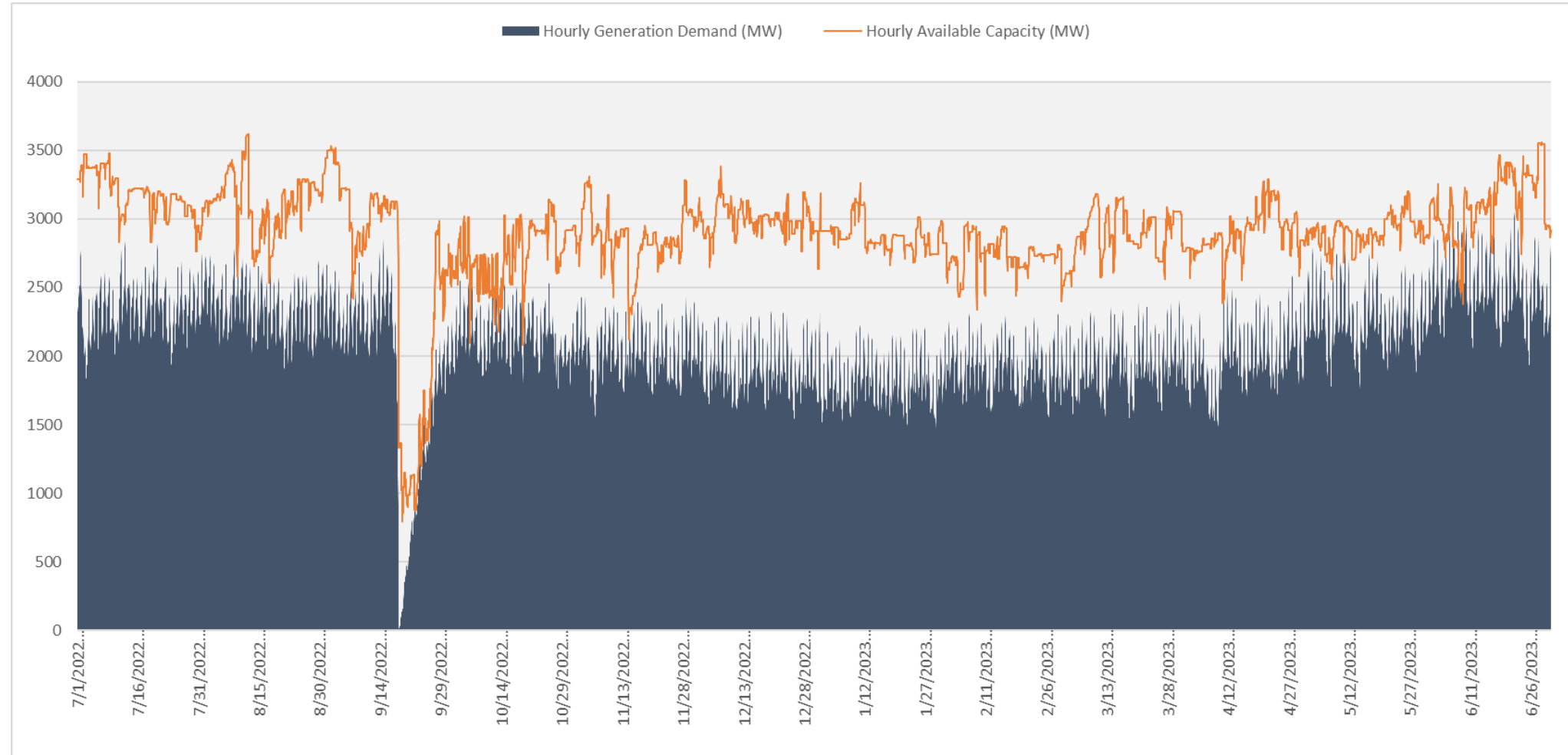


*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

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.



- The dip in availability and generation in September is due to the passing of Hurricane Fiona.

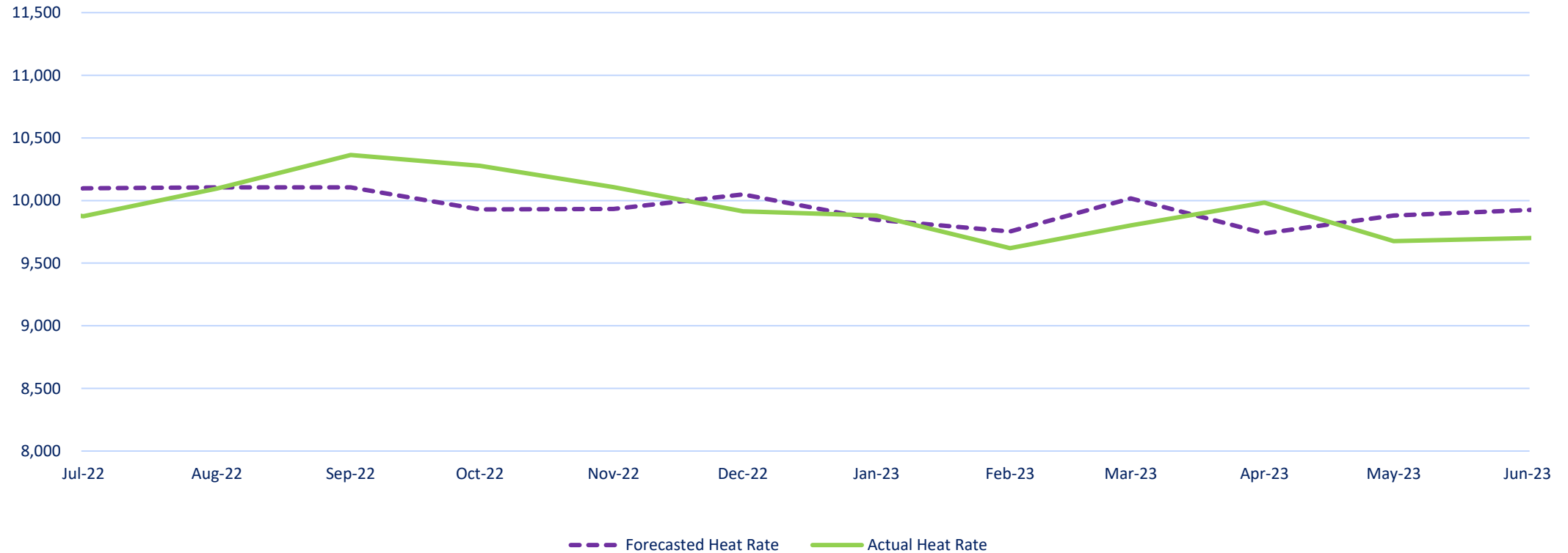


System Heat Rate

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

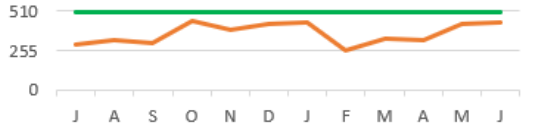

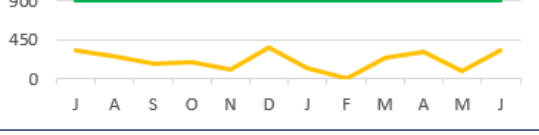
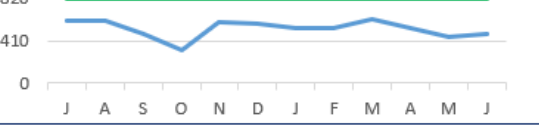





*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

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.



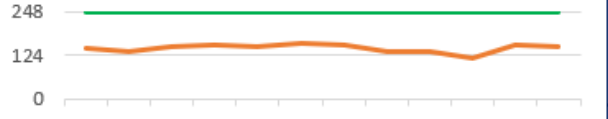



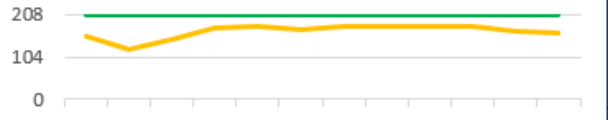

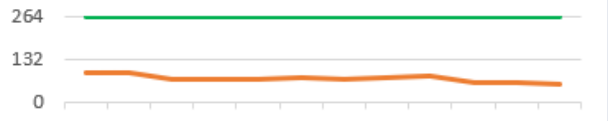



Available Capacity (MW) and Availability Rate (AR)		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
AES Nameplate Cap: 508		MW	298	321	302	452	391	426	438	256	333	323	425	435
		AR	59%	63%	59%	89%	77%	84%	86%	50%	66%	64%	84%	86%
EcoElectrica Nameplate Cap: 550		MW	550	547	395	452	550	550	550	550	315	380	550	544
		AR	100%	99%	72%	82%	100%	100%	100%	100%	57%	69%	100%	99%
PREPA Aguirre Nameplate Cap: 900		MW	327	249	175	180	107	350	128	0	243	307	84	321
		AR	36%	28%	19%	20%	12%	39%	14%	0%	27%	34%	9%	36%
PREPA Costa Sur Nameplate Cap: 820		MW	599	598	477	324	586	568	532	524	616	536	442	479
		AR	73%	73%	58%	40%	71%	69%	65%	64%	75%	65%	54%	58%
PREPA Palo Seco Nameplate Cap: 602		MW	344	321	302	452	391	426	438	256	333	323	425	435
		AR	57%	53%	50%	75%	65%	71%	73%	43%	55%	54%	71%	72%
PREPA San Juan Nameplate Cap: 840		MW	394	454	403	427	385	167	445	662	614	571	571	638
		AR	47%	54%	48%	51%	46%	20%	53%	79%	73%	68%	68%	76%
Total Baseload Nameplate Cap: 4220		MW	2512	2490	2054	2287	2410	2488	2531	2249	2455	2441	2497	2853
		AR	60%	59%	49%	54%	57%	59%	60%	53%	58%	58%	59%	68%

*Refer to Glossary of Terms on page 21 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.

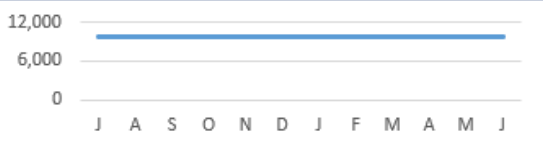
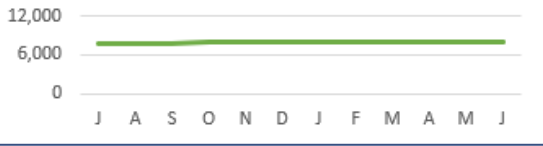
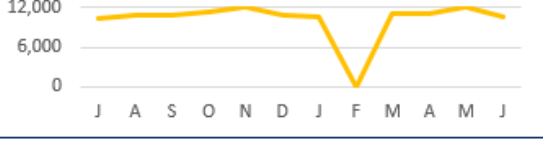


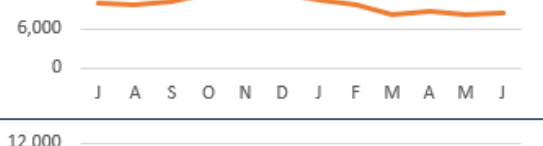

Available Capacity (MW) and Availability Rate (AR)		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
PREPA Aguirre Combined Cycle		MW	201	236	171	202	166	65	0	81	95	137	190	193
Nameplate Cap: 592		AR	34%	40%	29%	34%	28%	11%	0%	14%	16%	23%	32%	33%
PREPA Cambalache		MW	143	134	146	152	146	156	151	136	136	113	155	146
Nameplate Cap: 248		AR	58%	54%	59%	62%	59%	63%	61%	55%	55%	46%	63%	59%
PREPA Mayaguez		MW	38	38	37	37	29	37	38	38	33	40	37	35
Nameplate Cap: 220		AR	17%	17%	17%	17%	13%	17%	17%	17%	15%	18%	17%	16%
PREPA Palo Seco (Inc. Mobile-Pack)		MW	153	122	148	175	177	170	177	177	178	178	165	162
Nameplate Cap: 207		AR	74%	59%	71%	84%	85%	82%	85%	86%	86%	86%	80%	78%
Other Peakers		MW	91	89	68	68	71	73	69	76	78	59	57	55
Nameplate Cap: 264		AR	34%	34%	26%	26%	27%	28%	26%	29%	30%	22%	22%	21%
Total Peakers		MW	626	618	569	634	589	501	435	508	520	527	604	591
Nameplate Cap: 1531		AR	41%	40%	37%	41%	38%	33%	28%	33%	34%	34%	39%	39%

*Refer to Glossary of Terms on page 21 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.


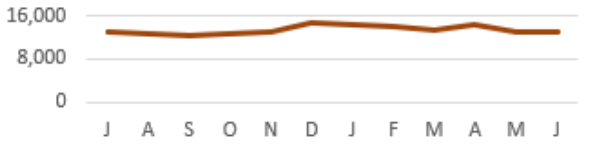
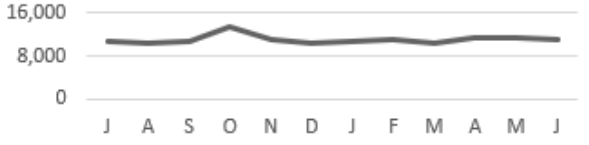



Heat Rate (MMBtu/MWh)		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
AES		9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800	9,800
EcoElectrica		7,683	7,683	7,683	7,932	7,932	7,932	7,932	7,945	7,945	7,945	7,945	7,945
PREPA Aguirre		10,366	10,847	10,935	11,486	12,016	10,957	10,699	-	11,230	11,075	12,205	10,741
PREPA Costa Sur		10,447	10,620	10,749	10,724	10,736	10,845	10,909	11,408	10,995	11,249	11,281	11,095
PREPA Palo Seco		9,738	10,249	9,865	10,960	9,876	10,131	10,483	10,363	10,223	10,229	10,614	10,474
PREPA San Juan		10,102	9,662	10,271	11,417	11,404	11,603	10,559	9,869	8,345	8,751	8,308	8,566
Total Baseload		9,633	9,712	9,846	10,156	10,049	9,982	9,931	9,866	9,761	9,860	9,662	9,626

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Heat Rate – Peaker Units

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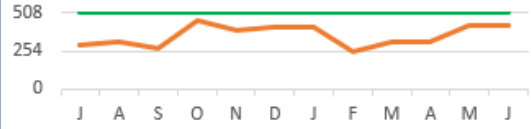

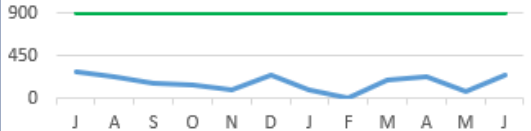
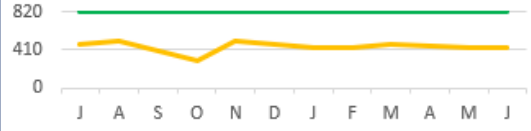
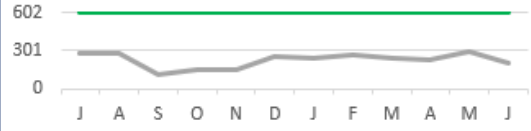

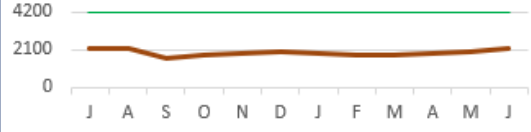
Heat Rate (MMBtu/MWh)		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
PREPA Aguirre Combined Cycle		11,602	12,169	13,170	12,150	13,145	15,978	-	15,272	13,680	15,461	15,437	15,129
PREPA Cambalache		13,001	12,530	12,481	12,646	13,185	14,794	14,509	13,971	13,264	14,206	12,887	13,005
PREPA Mayaguez		10,552	10,406	10,728	13,418	10,919	10,413	10,816	10,934	10,355	11,417	11,234	11,046
PREPA Palo Seco (Inc. Mobile Pack)		19,157	15,922	12,234	11,818	11,481	11,719	11,341	11,719	11,964	11,499	11,908	12,143
Other Peakers		13,496	15,487	14,860	15,750	14,053	15,681	16,101	17,324	15,391	14,898	14,497	13,642
Total Peakers		11,936	12,319	12,421	12,587	12,438	12,628	12,332	13,085	12,746	13,479	13,499	13,220

*Refer to Glossary of Terms on page 21 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		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
AES		MW	296	318	266	452	390	414	414	253	314	317	426	425
Nameplate Cap: 508		CF	58%	63%	52%	89%	77%	82%	82%	50%	62%	62%	84%	84%
EcoElectrica		MW	433	428	309	373	416	411	380	404	261	326	421	430
Nameplate Cap: 550		CF	79%	78%	56%	68%	76%	75%	69%	73%	47%	59%	77%	78%
PREPA Aguirre		MW	281	231	155	145	83	250	87	0	191	233	74	245
Nameplate Cap: 900		CF	31%	26%	17%	16%	9%	28%	10%	0%	21%	26%	8%	27%
PREPA Costa Sur		MW	473	498	400	299	503	471	441	429	473	456	431	437
Nameplate Cap: 820		CF	58%	61%	49%	37%	61%	57%	54%	52%	58%	56%	53%	53%
PREPA Palo Seco		MW	277	275	114	149	152	258	239	261	241	231	295	207
Nameplate Cap: 602		CF	46%	46%	19%	25%	25%	43%	40%	43%	40%	38%	49%	34%
PREPA San Juan		MW	374	419	353	404	365	141	293	432	363	324	371	417
Nameplate Cap: 840		CF	45%	50%	42%	48%	43%	17%	35%	51%	43%	39%	44%	50%
Total Baseload		MW	2134	2169	1597	1822	1910	1945	1854	1778	1842	1886	2019	2161
Nameplate Cap: 4220		CF	51%	51%	38%	43%	45%	46%	44%	42%	44%	45%	48%	51%

*Refer to Glossary of Terms on page 21 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		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
PREPA Aguirre Combined Cycle Nameplate Cap: 592		MW	100	113	80	149	76	5	0	23	28	34	103	89
	CF	17%	19%	14%	25%	13%	1%	0%	4%	5%	6%	17%	15%	
PREPA Cambalache Nameplate Cap: 247.5		MW	16	35	63	53	22	10	7	18	21	19	44	44
	CF	6%	14%	25%	21%	9%	4%	3%	7%	8%	8%	18%	18%	
PREPA Mayaguez Nameplate Cap: 220		MW	26	29	53	46	51	18	8	23	17	26	55	56
	CF	12%	13%	24%	21%	23%	8%	4%	10%	8%	12%	25%	26%	
PREPA Palo Seco (Inc. Mobile-Pack) Nameplate Cap: 207		MW	7	7	39	62	21	4	8	17	17	16	37	40
	CF	3%	3%	19%	30%	10%	2%	4%	8%	8%	7%	18%	19%	
Other Peakers (PREPA) Nameplate Cap: 264		MW	3	12	14	23	16	2	1	2	7	3	10	11
	CF	1%	5%	5%	9%	6%	1%	0%	1%	3%	1%	4%	4%	
Total Peakers Nameplate Cap: 1530.5		MW	151	196	249	332	186	39	24	83	90	98	248	241
	CF	10%	13%	16%	22%	12%	3%	2%	5%	6%	6%	16%	16%	

*Refer to Glossary of Terms on page 21 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 (JUL 2022 - JUN 2023)	Planned Outage Hours	Completed Outage Hours	Notes for In-Progress Planned Outages	Expected Return-to- Service Date
AES		1872	1323		
EcoElectrica		1248	1142		
PREPA Aguirre		1080	2543		
PREPA Costa Sur		2184	0		
PREPA Palo Seco		0	72		
PREPA San Juan		3768	3602	San Juan 9 - Out since 2/19/23 (Environmental Maintenance)	San Juan 9 - 6/15/23
Total Baseload		10152	8681		

*Refer to Glossary of Terms on page 21 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.



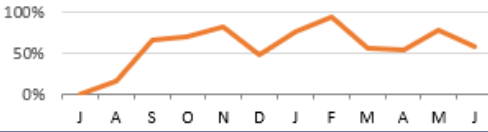
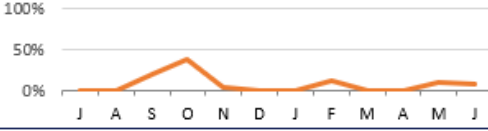
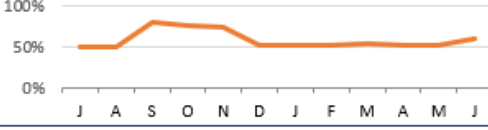
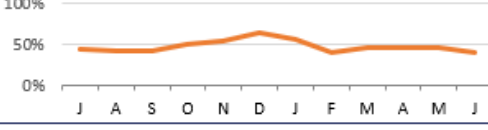
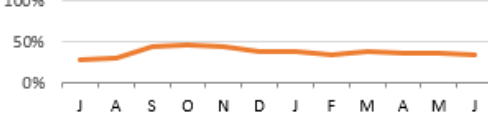
Maintenance Outage Hours		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
AES		0	0	0	0	0	0	0	24	0	0	0	0
EcoElectrica		0	0	0	3	0	0	0	0	24	0	0	0
PREPA Aguirre		0	43	0	0	0	0	0	0	44	0	0	0
PREPA Costa Sur		0	37	0	0	0	90	0	0	0	0	0	35
PREPA Palo Seco		21	9	71	18	0	0	0	0	0	0	0	0
PREPA San Juan		98	15	0	19	137	421	0	2	39	37	0	0
Total Baseload		119	104	71	40	137	511	0	26	107	37	0	35

*Refer to Glossary of Terms on page 21 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.


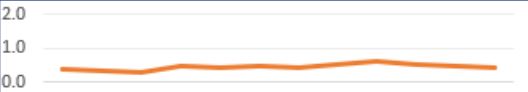





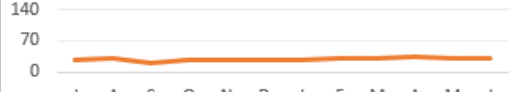
Forced Outage Hours and Outage Rate			Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
AES		Hrs	0	281	543	36	175	178	173	0	384	249	0	25
		%	0%	21%	38%	2%	12%	12%	12%	0%	27%	17%	0%	2%
EcoElectrica		Hrs	0	7	118	211	0	4	0	0	30	5	0	13
		%	0%	0%	5%	10%	0%	0%	0%	0%	2%	0%	0%	1%
PREPA Aguirre		Hrs	0	130	899	1055	1180	720	815	720	768	778	1166	823
		%	0%	16%	67%	71%	82%	48%	75%	94%	56%	54%	78%	57%
PREPA Costa Sur		Hrs	0	2	268	553	46	0	0	153	0	0	139	116
		%	0%	0%	19%	37%	3%	0%	0%	11%	0%	0%	9%	8%
PREPA Palo Seco		Hrs	1492	1507	2198	2250	2120	1572	1537	1395	1598	1498	1525	1751
		%	50%	51%	80%	77%	74%	53%	52%	52%	54%	52%	51%	61%
PREPA San Juan		Hrs	2574	2530	2432	3000	3071	2930	3174	2063	2449	2342	2421	2196
		%	44%	43%	42%	51%	55%	64%	55%	40%	46%	47%	45%	40%
Total Baseload		Hrs	4066	4455	6458	7105	6592	5405	5699	4330	5228	4872	5251	4923
		%	29%	30%	43%	46%	44%	38%	38%	34%	37%	35%	35%	33%

*Refer to Glossary of Terms on page 21 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			Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
AES Ilumina		MW	4	4	3	4	4	3	4	4	4	4	4	4
Nameplate Cap: 20	J A S O N D J F M A M J	CF	21%	21%	16%	19%	18%	17%	19%	21%	22%	22%	21%	21%
Windmar Cantera Martinó		MW	0.4	0.4	0.3	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.4
Nameplate Cap: 2.1	J A S O N D J F M A M J	CF	20%	17%	15%	22%	21%	23%	22%	26%	29%	24%	24%	21%
San Fermín		MW	1	2	1	2	2	2	2	3	3	3	3	3
Nameplate Cap: 20	J A S O N D J F M A M J	CF	7%	10%	6%	8%	10%	12%	11%	13%	14%	14%	13%	14%
Horizon Energy		MW	2	3	2	2	2	2	2	2	3	3	3	3
Nameplate Cap: 10	J A S O N D J F M A M J	CF	25%	27%	17%	23%	22%	23%	24%	25%	28%	28%	28%	26%
Oriana Energy		MW	10	10	8	9	9	9	10	11	10	11	11	11
Nameplate Cap: 45	J A S O N D J F M A M J	CF	23%	23%	17%	19%	20%	20%	21%	24%	23%	25%	25%	24%
Windmar Coto Laurel		MW	2	2	1	2	2	2	2	2	2	2	2	2
Nameplate Cap: 10	J A S O N D J F M A M J	CF	21%	21%	14%	21%	20%	22%	20%	22%	22%	20%	21%	21%
Fonroche Humacao		MW	7	8	5	7	7	7	7	8	8	9	8	9
Nameplate Cap: 40	J A S O N D J F M A M J	CF	19%	20%	14%	18%	17%	18%	18%	21%	19%	22%	21%	22%
Total Solar		MW	28	30	21	26	26	27	28	31	31	33	32	32
Nameplate Cap: 147	J A S O N D J F M A M J	CF	19%	20%	14%	18%	18%	18%	19%	21%	21%	22%	22%	22%

*Refer to Glossary of Terms on page 21 for a list of definitions and formulas.

Renewables Capacity Factor – Wind and Landfill

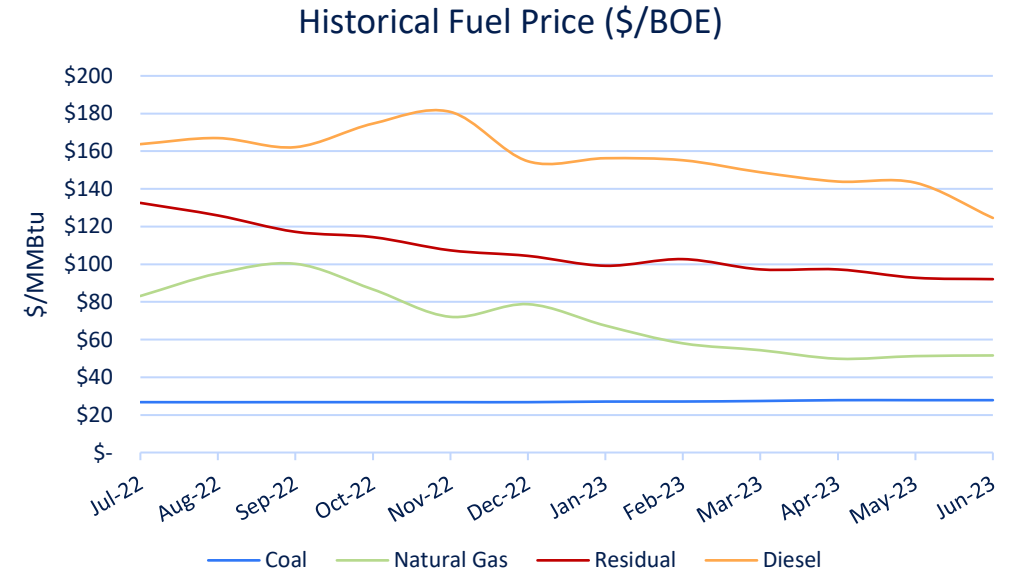
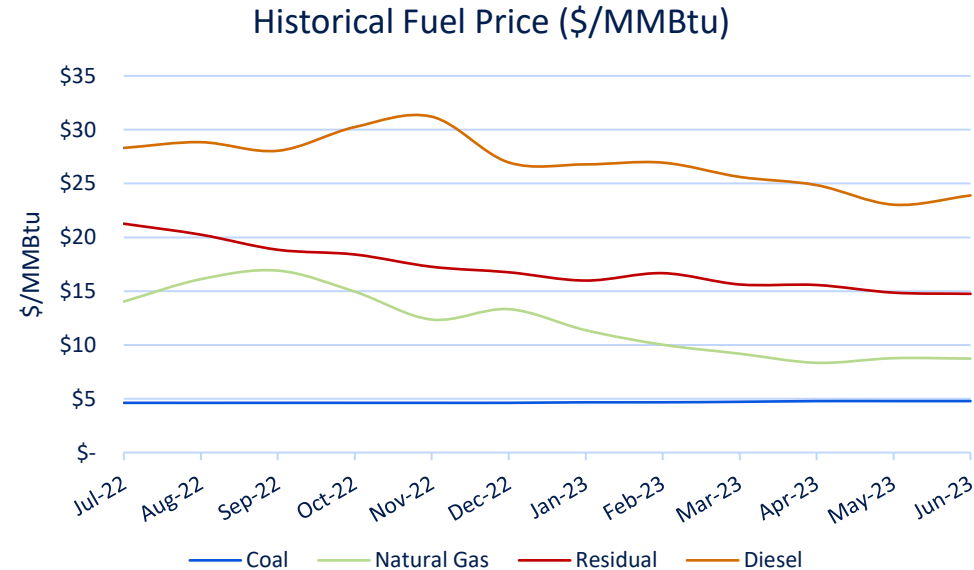
The Capacity Factor measures the actual production of electricity over the theoretical maximum output (nameplate capacity). For Renewable projects, the Capacity Factor is expected to be lower due to the solar and wind cycles.

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		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	
Pattern Santa Isabel Nameplate Cap: 75		MW	26	18	7	10	10	11	14	18	14	13	11	12
	CF	35%	25%	9%	13%	13%	14%	19%	24%	19%	18%	15%	15%	
Landfill Gas Fajardo Nameplate Cap: 2.4		MW	0.3	0.6	0.4	0.1	0.2	0.4	0.3	0.5	0.5	0.4	0.7	0.5
	CF	14%	25%	16%	6%	9%	18%	12%	20%	22%	15%	28%	22%	
Landfill Gas Toa Baja Nameplate Cap: 2.4		MW	0.8	1.5	0.7	0.9	0.6	0.5	0.6	0.8	0.6	0.8	0.6	0.9
	CF	33%	62%	31%	36%	26%	21%	24%	32%	27%	32%	24%	39%	
Total Wind and Landfill Nameplate Cap: 80		MW	27	20	8	11	11	12	15	19	15	14	12	13
	CF	34%	26%	10%	14%	14%	14%	19%	24%	19%	18%	15%	16%	

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.

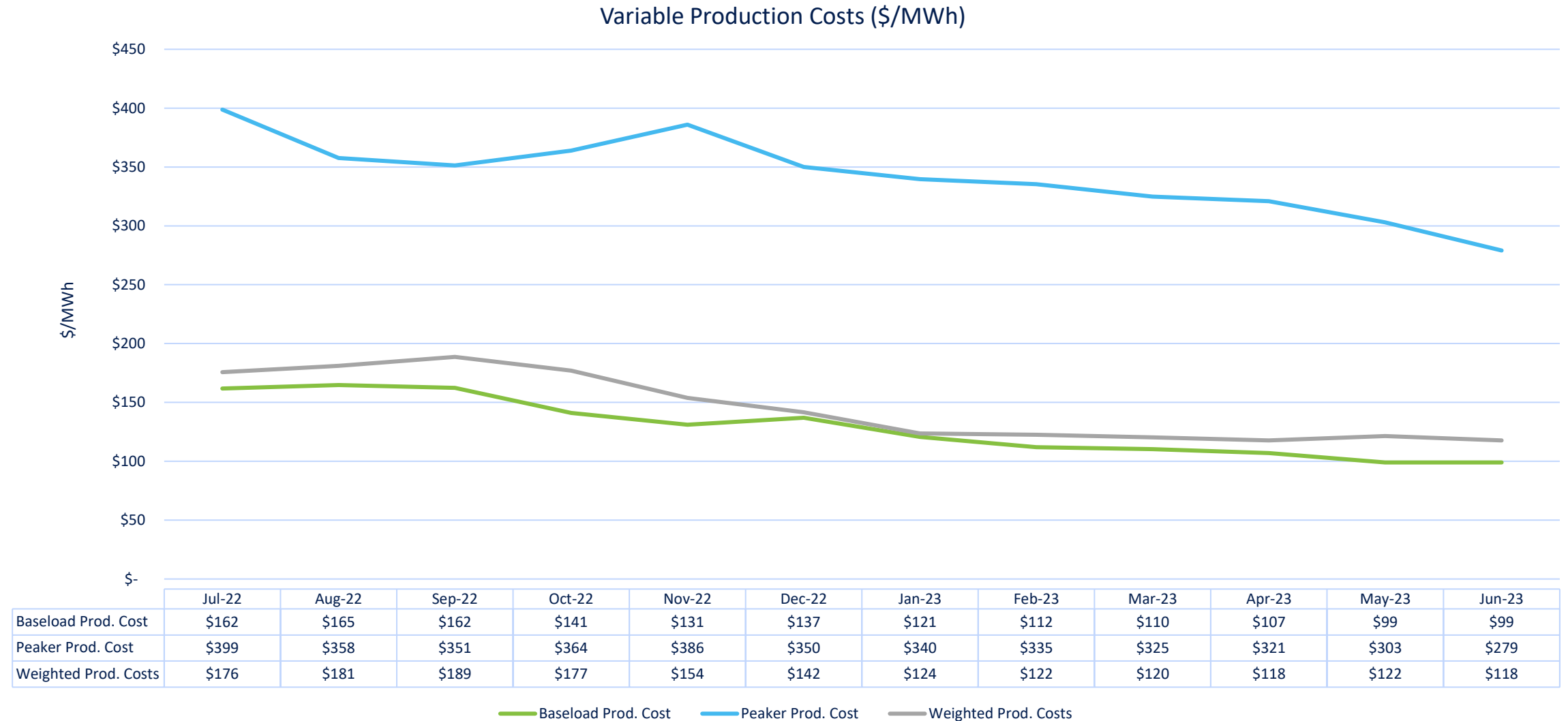


\$/MMBtu		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Diesel		28.30	28.83	28.03	30.23	31.20	26.95	26.77	26.93	25.60	24.84	23.02	23.88
Residual		21.27	20.25	18.84	18.41	17.26	16.75	15.98	16.67	15.62	15.57	14.86	14.75
Natural Gas		14.02	16.10	16.90	14.94	12.35	13.32	11.36	10.02	9.19	8.34	8.77	8.73
Coal		4.62	4.62	4.63	4.63	4.63	4.62	4.68	4.68	4.73	4.80	4.80	4.80
\$/BOE		Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
Diesel		163.78	167.00	162.18	174.68	180.89	154.70	156.31	155.24	148.87	143.93	143.30	124.61
Residual		132.64	125.96	117.24	114.41	107.37	104.42	99.14	102.69	97.22	97.19	92.75	92.01
Natural Gas		83.18	95.16	100.24	86.67	72.11	78.82	67.47	58.05	54.41	49.88	51.27	51.62
Coal		26.83	26.81	26.83	26.83	26.83	26.83	27.14	27.16	27.43	27.86	27.86	27.86

*Refer to Glossary of Terms on page 21 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 21 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

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

Plant	Units	System Reserves	System Availability	System Heat Rate	All Metrics for Baseload Units	All Metrics for Peaker Units	Renewables Capacity Factor
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	
	1-1	X	X	X		X	
	1-2	X	X	X		X	
Palo Seco (Inc. Mobile-Pack)	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	
Aguirre CC	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	

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
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						