



Presentation to the Puerto Rico P3A





LUMA/PREPA Performance Metrics June – July – August 2021

FTI Summary of Notable Metrics Observations

The information contained herein has been prepared by FTI Consulting, Inc. (“FTI”) based upon financial and other data filed by third parties with the Puerto Rico Energy Bureau (“PREB”) or from other public sources FTI deemed to be reliable. Certain assumptions were required to be made to form the opinions contained in this report (the “Report”) due to the manner in which the data was filed. Accordingly, FTI cannot express an opinion or any other form of assurance on, and assumes no responsibility for, the accuracy or correctness of the information or the completeness and achievability of the information and assessments upon which the Report is presented.

LUMA & PREPA Performance Metrics Observations

On September 20th, LUMA submitted its first Quarterly Performance Metrics Report, which includes data collected by LUMA for the first three months since they commenced operation of the T&D System on June 1st. The report includes an update on both T&D metrics and those that involve PREPA Generation using data that LUMA received from PREPA. These observations discuss trends over the initial period as well as a comparison of the Quarterly Performance Metrics Report to (1) PREPA's historical FY 2020 data (“Baseline”) and (2) Benchmarks set by PREB in a May 2021 Order. PREB set its Benchmarks based on a combination of historical performance, industry standards and/or a small group of PREB-defined peer group US utilities.¹

Metric	3-Month Trend	FTI Observation
Customer Service		<ul style="list-style-type: none"> LUMA reported that PREPA’s call center trunking configuration significantly limited the number of lines customers could call, and thus the number of inbound calls under LUMA’s open configuration was significantly higher than LUMA anticipated. Moreover, there were several extraordinary issues during LUMA’s initial commencement month of June that likely drove increased calls, including a cyberattack and a substation fire that caused approximately 800K – 900K customers to lose service for several days. LUMA made process changes to address the higher than anticipated call volume, but the LUMA abandonment rate is still very high and the LUMA Average Speed to Answer (call wait time) is longer than the target PREB Benchmark. <ul style="list-style-type: none"> The percentage of calls answered increased (improved) substantially from 28% to 54%. The average wait time to answer calls decreased (improved) substantially from ~26 minutes to ~9 minutes.
T&D Reliability		<ul style="list-style-type: none"> The initial operating months had significant outages throughout all regions as LUMA worked to transition operations. <ul style="list-style-type: none"> SAIDI- system average interruption duration decreased by 85 minutes (but was still worse than Benchmark & Baseline). SAIFI – system frequency of interruptions slightly increased (but was still better than Benchmark & Baseline). CAIDI – overall customer average interruption time improved, although was still well above (worse than) Benchmark & Baseline). August data reflected the significant lack of PREPA generation resulting in rotating load shedding by LUMA.
Human Resources		<ul style="list-style-type: none"> Absenteeism increased over the 3-month period from 1.1% to 1.9% but is better than the PREB Benchmark of 2.4% and is better than PREPA’s FY 2020 Baseline of 13.1%. The OSHA Total Recordable Incident Rate (TRIR) worsened during the initial period with injuries reported in August being 8, which was up from 3 in June. LUMA’s August TRIR of 2.9% is slightly worse than the PREB Benchmark of 2.3% but better than PREPA’s FY 2020 Baseline of 6.4%. Several OSHA metrics are not yet being reported including Days Away, Restricted, or Transferred (DART) and Severity Rate.
Power Generation		<ul style="list-style-type: none"> Power Plant Unit Availability² worsened by 17% from June to August for the larger base load power plant units . Forced Outage Hours increased by over 20% indicated to 2,410 FOHs (100+ equivalent days) in August vs. June. <ul style="list-style-type: none"> Peaker capacity factors increased from 9.8% to 19% in June. This lack of generation/resource adequacy situation led to island-wide rotating load shedding in August and into September. The lack of base load generation also led to operating the peakers, which are less efficient resulting in increased fuel cost vs. forecast -- 11% and \$74M over projections .

¹The utilities selected by PREB for the “peer group” were: Dominion Energy (SC), Duke Energy Progress (NC), Duke Energy Progress (Fla), Hawaii Electric Light Co, Hawaiian Electric Co, LA Dept. of Water & Power, City of San Antonio, and San Diego Gas & Electric.

² Generation Equivalent Availability is defined by IEEE-762. Summary Availability data is non-weighted to reflect an aggregated view for all units.



LUMA Performance Metrics

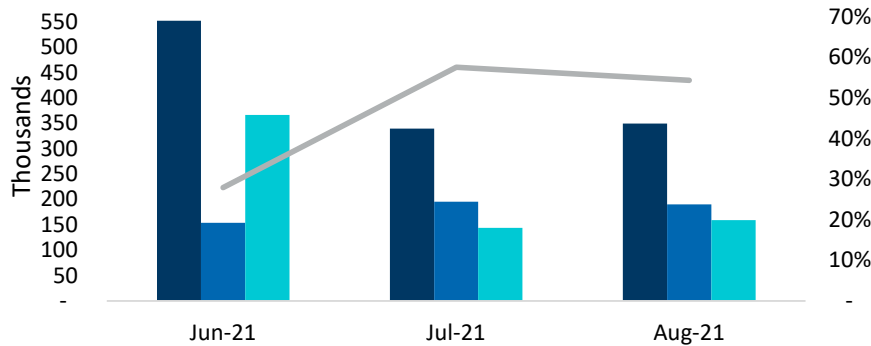
LUMA Performance Metrics

Customer Service Call Centers

LUMA reported that PREPA’s call center phone "trunking" configuration significantly limited the number of lines customers could call. Thus, the number of inbound calls under LUMA’s open configuration was significantly higher than anticipated. Moreover, there were several extraordinary issues during LUMA’s initial commencement month of June that likely drove increased calls, including a cyberattack and a substation fire that caused approximately 800K-900K customers, primarily in the San Juan region, to lose service for several days.¹ LUMA made process changes to address the higher than anticipated call volume, but their abandonment rate is still very high and their Average Speed to Answer is longer than the Benchmark and Baseline.

Calls Answered Increased from 28% to 54%

Calls by Center

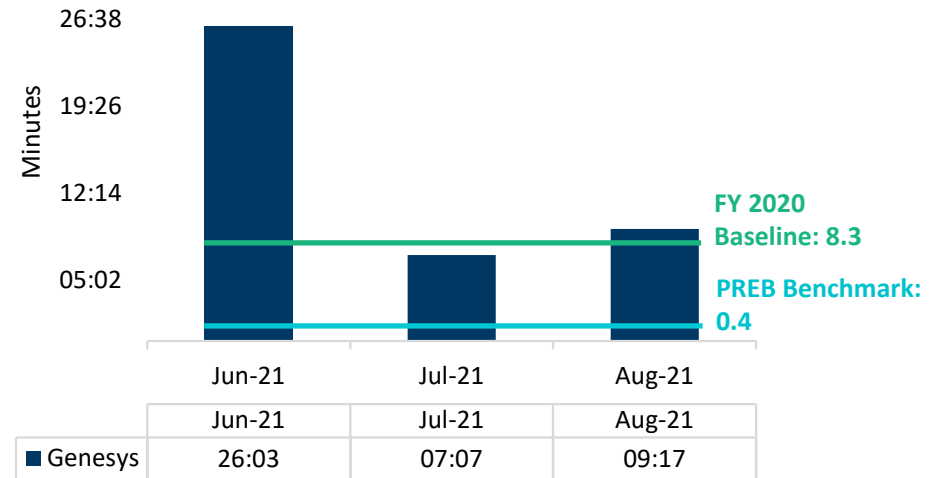


	Jun-21	Jul-21	Aug-21
Number of Calls	552,356	339,888	349,606
Answered	154,055	195,732	190,084
Abandoned	366,483	144,122	159,501
% Answered	28%	58%	54%

■ Number of Calls ■ Answered ■ Abandoned — % Answered

Average Speed to Answer Decreased from 26 to 9 Minutes²

Wait Time



Note: The summation of answered calls and abandoned calls provided in LUMA’s filing does not equal number of calls. FTI will make a request for clarification for this.

Metrics Source: LUMA FY22 Performance Metrics by Area- Customer Service – NEPR-MI-2019-0007 (September 20, 2021)

PREB Benchmark & FY 2020 Baseline Source: PREB Resolution & Order Setting Benchmarks – NEPR-MI-2019-0007 (May 21, 2021)

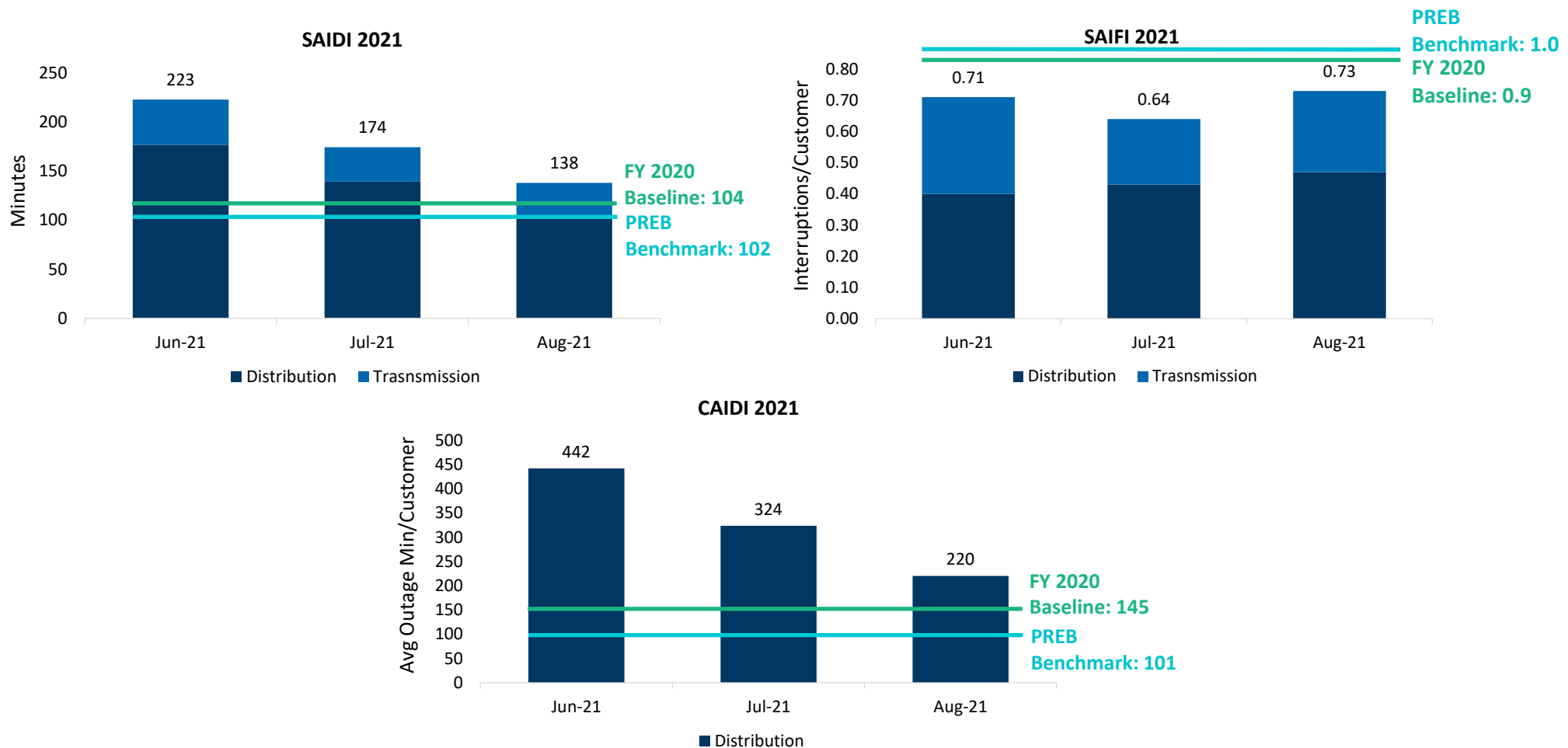
¹ LUMA Motion Submitting Revised Report on June 10 Incident– NEPR-IN-2021-0002 (June 14, 2021)

² Genesys is a 3rd party provider to LUMA of call center services

LUMA Performance Metrics

T&D Reliability: SAIDI, SAIFI, CAIDI¹

The System Average Interruption Duration (SAIDI) improved by 85 minutes over the initial 3 months but was still worse than Benchmark & Baseline. System Average Frequency of Interruptions (SAIFI) slightly increased over the period but was better than both Benchmark & Baseline. The Customer Average Interruption Duration (CAIDI) overall showed significant improvement (but was worse than Benchmark & Baseline for the entire period). FTI is aware of many PREPA generation outages that resulted in rotating load shedding in all regions likely resulting in increased outage frequency in August.



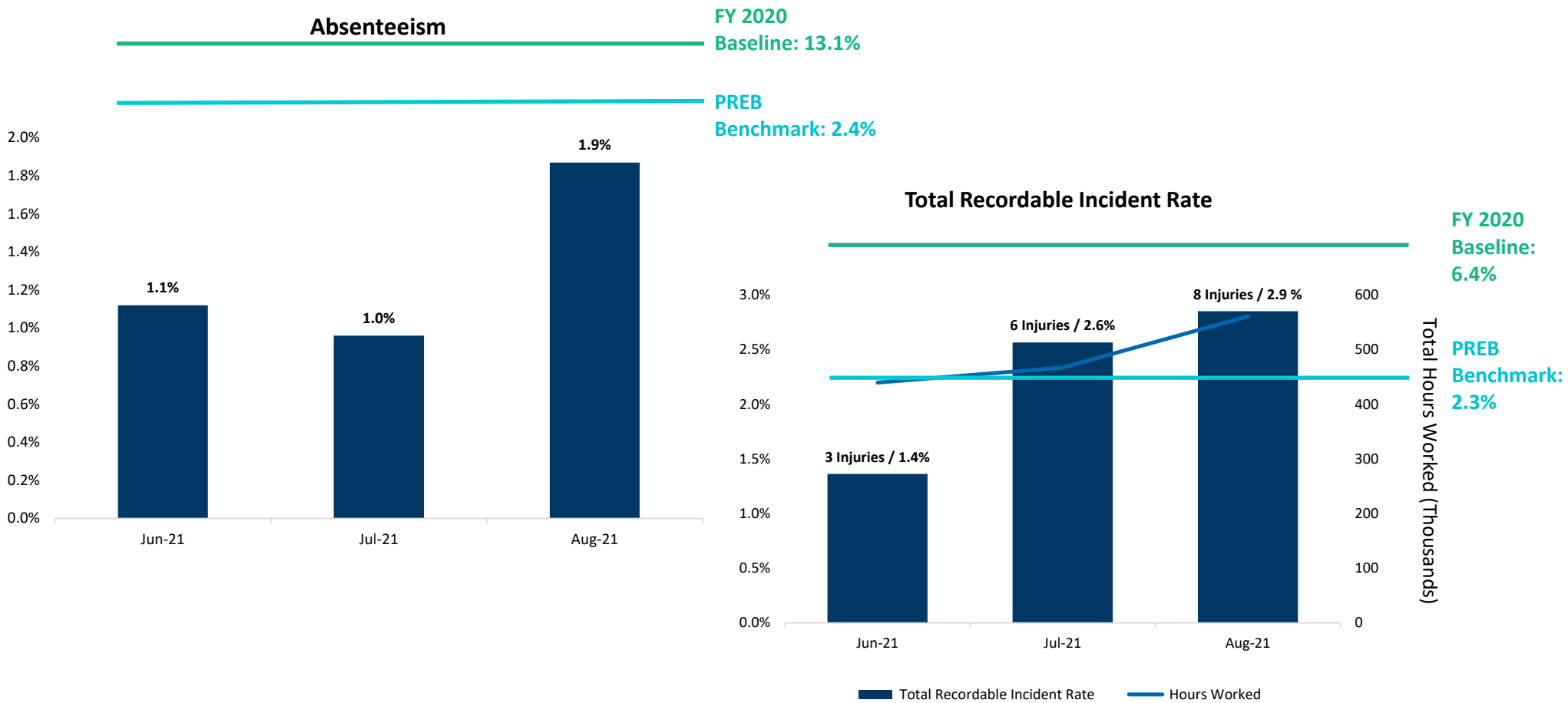
Metric Source: LUMA FY22 Performance Metrics by Area-Transmission-Distribution-19-0007 – NEPR-MI-2019-0007 (September 20, 2021)

PREB Benchmark & FY 2020 Baseline Source: PREB Resolution & Order Setting Benchmarks – NEPR-MI-2019-0007 (May 21, 2021) (FY 2020 PREPA SAIDI and SAIFI data was reported annually but is reflected here as monthly average for comparison purposes)

LUMA Performance Metrics

Human Resources

Absenteeism increased over the 3-month period from 1.1% to 1.9% but is better than the PREB Benchmark of 2.4% and better than PREPA’s FY 2020 Baseline of 13.1%. The OSHA Total Recordable Incident Rate (“TRIR”) worsened during the initial period with injuries reported in August being 8, which was up from 3 in June. LUMA’s August TRIR of 2.9% is slightly worse than the PREB Benchmark of 2.3% but better than PREPA’s FY 2020 Baseline of 6.4%. OSHA Fatalities, DART and Severity Rate were not reported.



Note: Some safety metrics (Fatalities, Severity Rate, and DART Rate) did not appear to be provided by LUMA in their initial filing.
 Metrics Source: LUMA FY22 Performance Metrics by Area- Overall System – NEPR-MI-2019-0007 (September 20, 2021)
 PREB Benchmark & FY 2020 Baseline Source: PREB Resolution & Order Setting Benchmarks – NEPR-MI-2019-0007 (May 21, 2021)

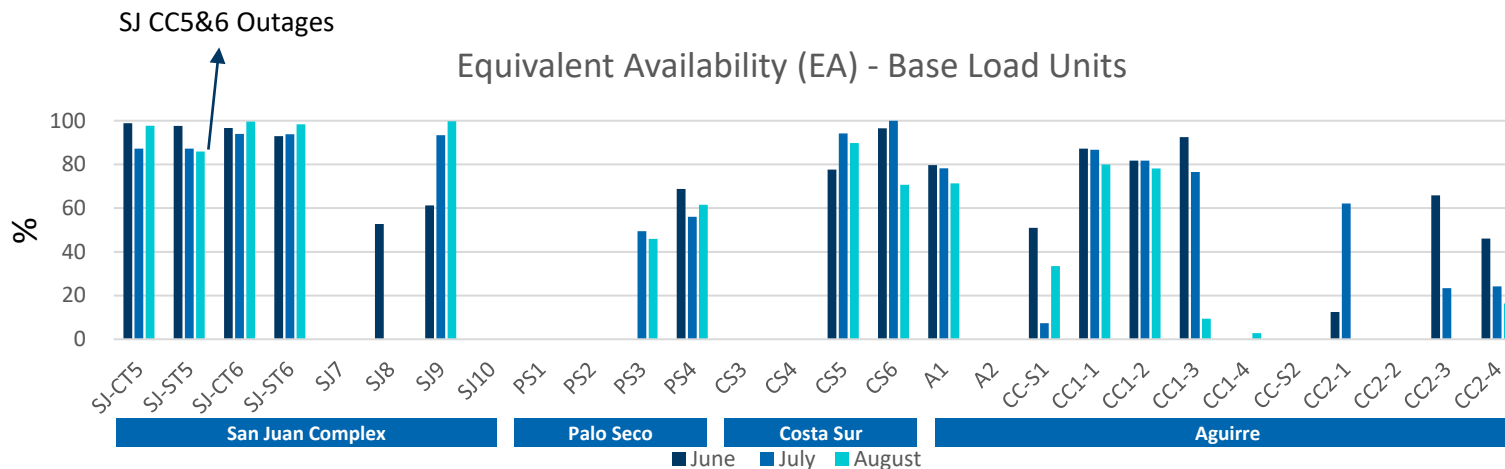


PREPA Power Generation Performance Metrics

PREPA Power Generation Performance Metrics

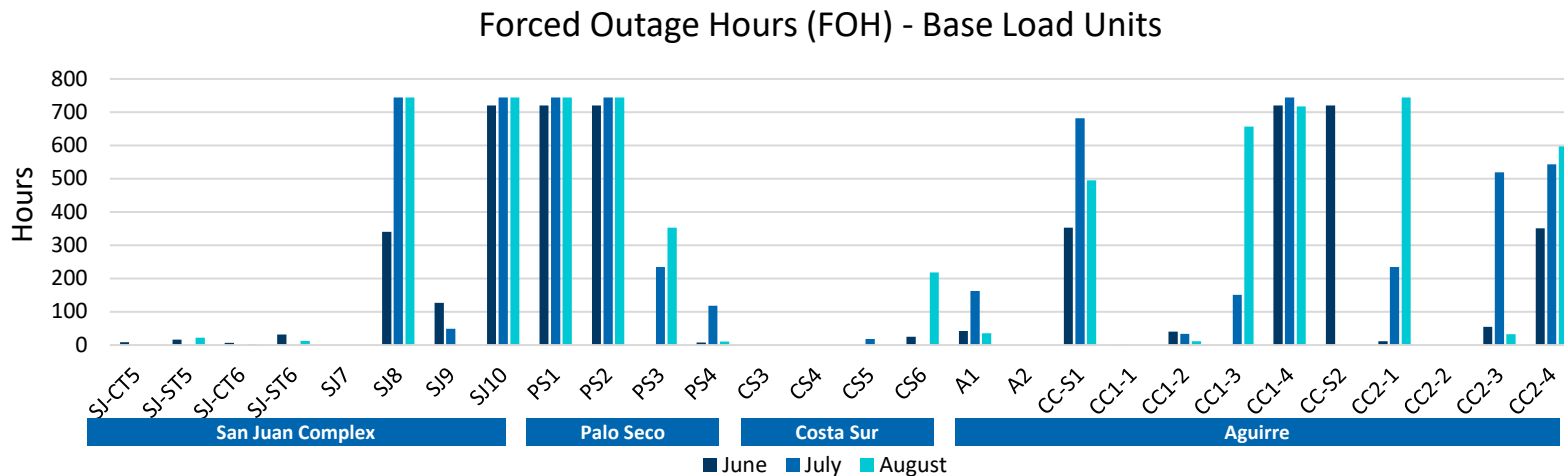
Availability and Forced Outage Hours by Unit – Base Load Units¹

Average Equivalent Availability (non-weighted) worsened by 17% from June to August period for the larger base load power plant units. Forced Outage Hours increased by 37% from 5,013 to 6,882 hours, indicated by 1,869 additional FOHs in August vs. June. This led to island-wide rotating load shedding in August, which has continued into September. The lack of base load generation also led to operating the peakers which are less efficient; resulting in increased fuel cost vs. forecast.

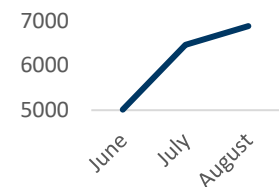


Major Base Load Outages

- June: Outages at SJ CC 5&6 are PREPA's most efficient units and operate on LNG; those outages led to operating SJ 8&9 on oil. Aguirre CC-S2
- July: PS 3, 4, Aguirre CC-S1, CC GT unit 2-3, 2-4
- Aug: PS3, Costa Sur 6, Aguirre CC GT 1-3, GT 2-1, GT 2-4



FOH - Hours



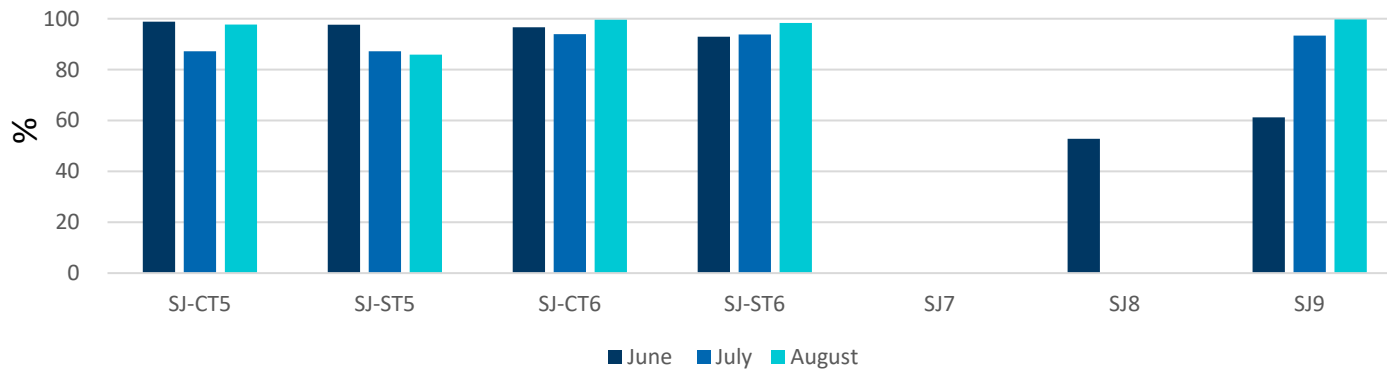
¹ Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

PREPA Power Generation Performance Metrics

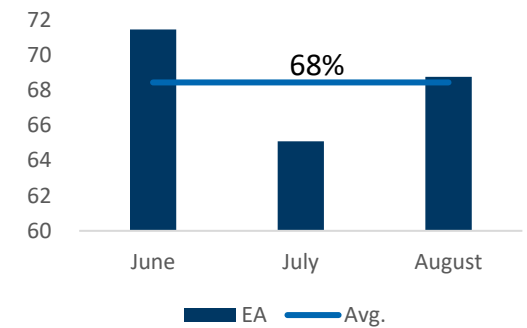
Availability and Forced Outage Hours by Unit – San Juan^{1,2}

Availability averaged 68% and was down in July and August versus June. Outages at SJ CC 5&6, which are PREPA’s most efficient units and operate on LNG, led to operating SJ 8&9 on oil. Forced Outage Hours increased again in July and August and averaged 701 hours for the period, with the highest FOH caused by San Juan 8.

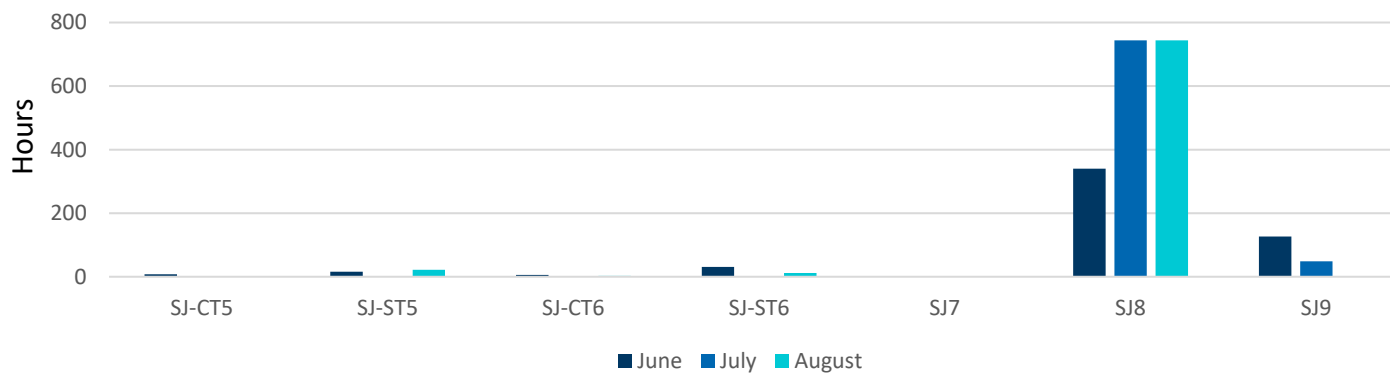
Equivalent Availability (EA) - San Juan



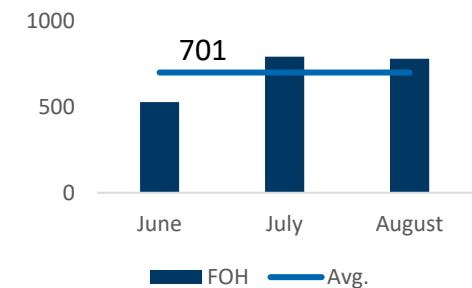
Availability (EA) - %



Forced Outage Hours (FOH) - San Juan



FOH - Hours



¹ Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

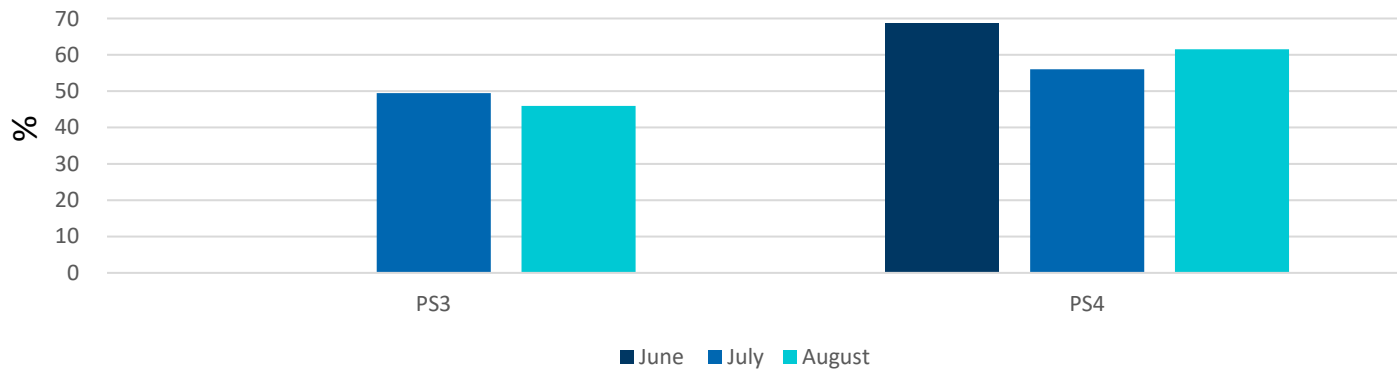
² Long term Out-of-Service units not shown, including San Juan 1-4, 10.

PREPA Power Generation Performance Metrics

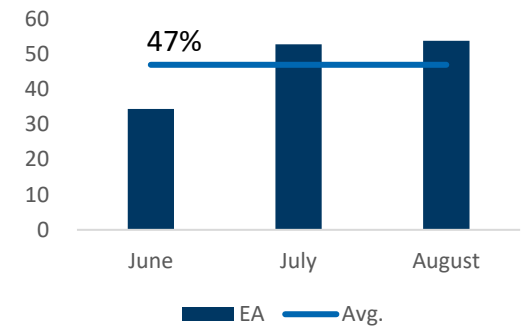
Availability and Forced Outage Hours by Unit – Palo Seco^{1,2}

Availability averaged 47% and increased in July and August compared to June. PS3 was on planned outage for June with forced outage losses in July and August. PS4 experienced forced outage losses in July.

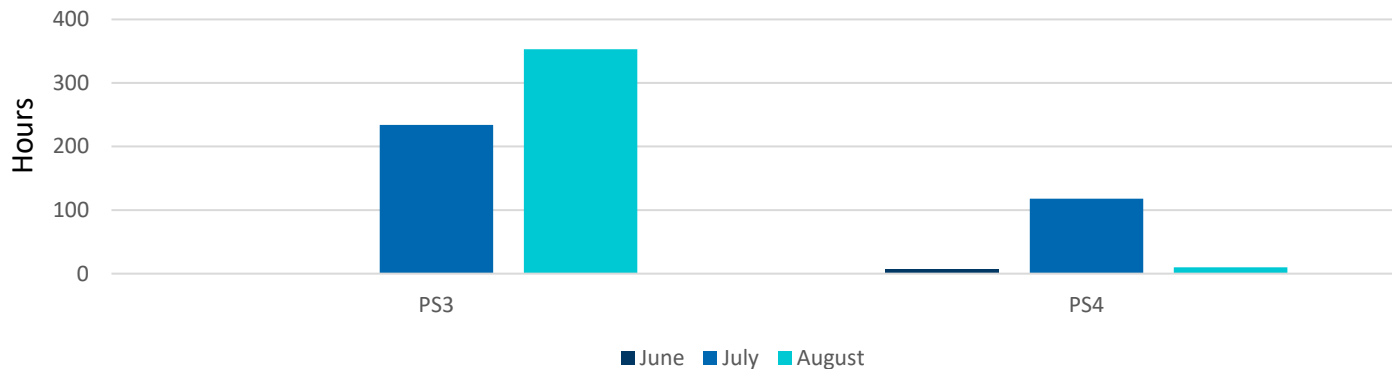
Equivalent Availability (EA) – Palo Seco



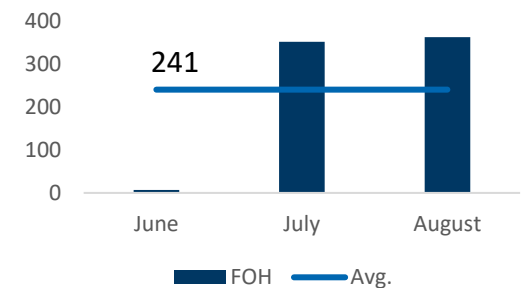
Availability (EA) - %



Forced Outage Hours (FOH) - Palo Seco



FOH - Hours



¹ Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

² Long term Out-of-Service units not shown, including Palo Seco 1 and 2.

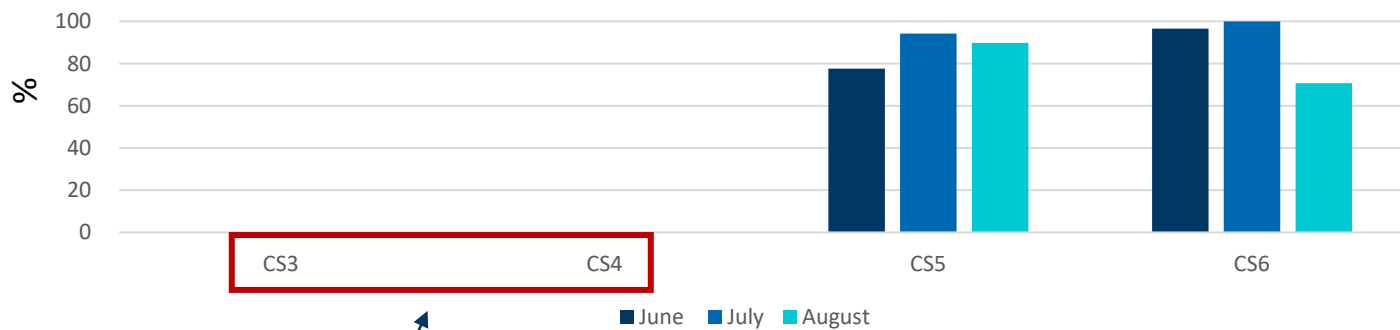
PREPA Power Generation Performance Metrics

Availability and Forced Outage Hours by Unit – Costa Sur¹

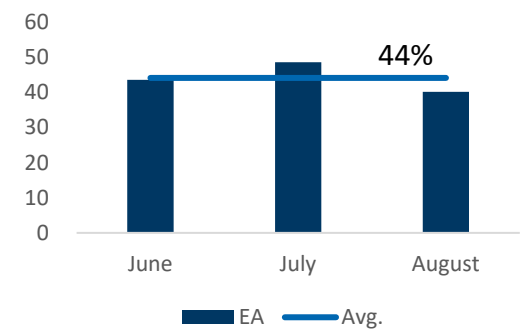
Availability was low due to planned outages Units 3 and 4 resulting in an average of 44%.

- CS6 experienced forced outage losses in August. CS6 is a natural gas fired base load large unit that is difficult to replace.

Equivalent Availability (EA) – Costa Sur

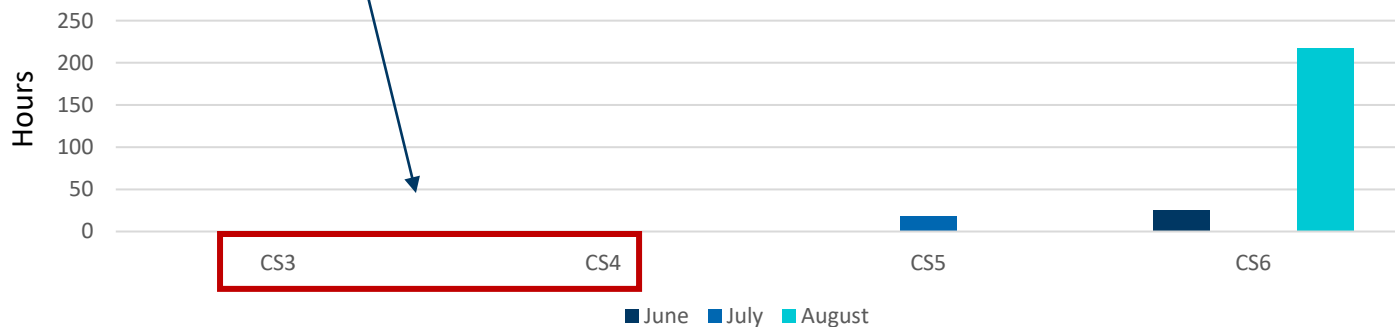


Availability (EA) - %

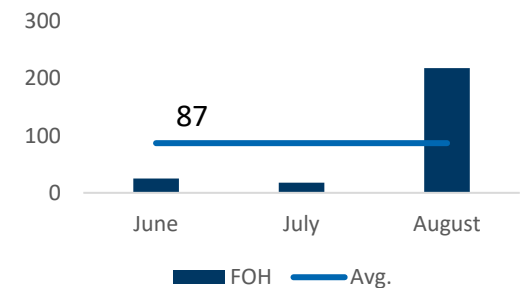


Units 3 and 4 were reported to be on Planned Outage for the 3-month period

Forced Outage Hours (FOH) - Costa Sur



FOH - Hours



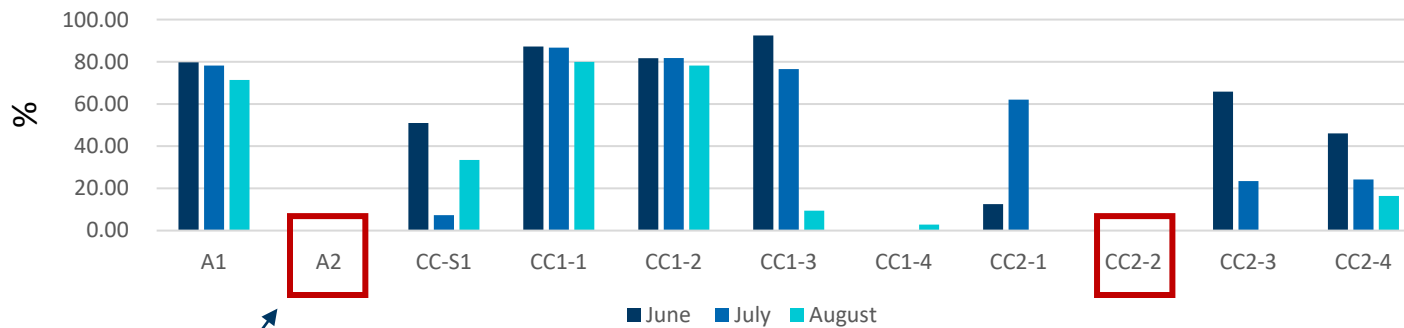
¹Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

PREPA Power Generation Performance Metrics

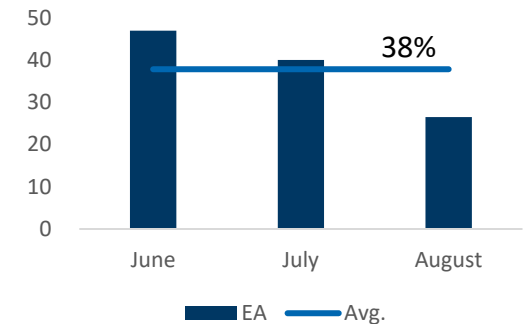
Availability and Forced Outage Hours by Unit – Aguirre^{1,2}

Availability was low partly due to planned outages for units A2 (oil fired steam) and Combing Cycle 2-2, at just 38% average. Forced outage hours were substantial and totaled 7,929 and included losses due to units CC-S1, CC1-3, CC1-4, CC2-1, CC2-3, CC2-4.

Equivalent Availability (EA) - Aguirre

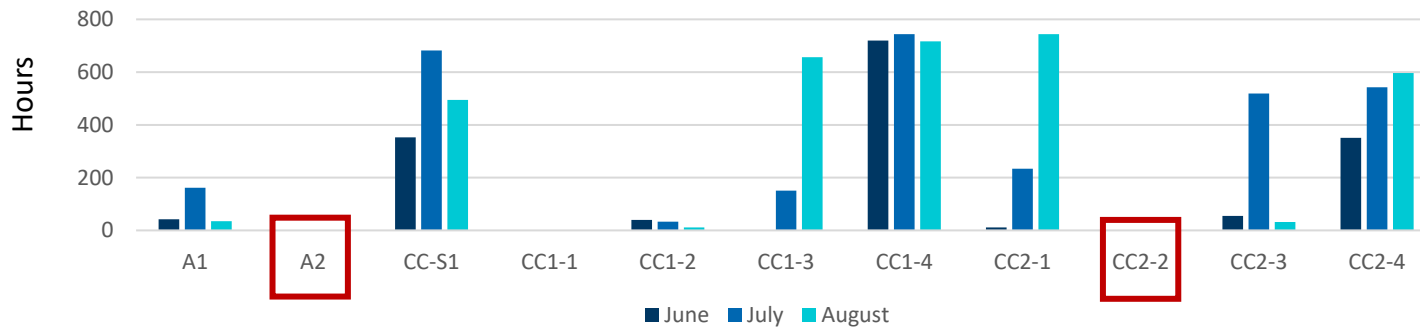


Availability (EA) - %

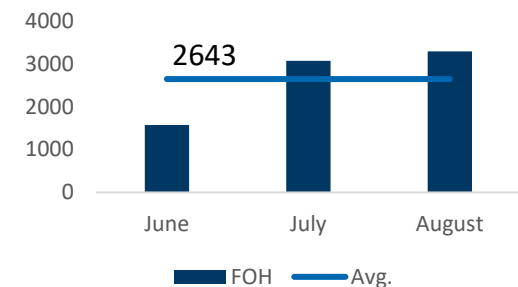


Aguirre 2 and CC gas turbine 2-2 were reported to be on Planned Outage for the 3-month period

Forced Outage Hours (FOH) - Aguirre



FOH - Hours



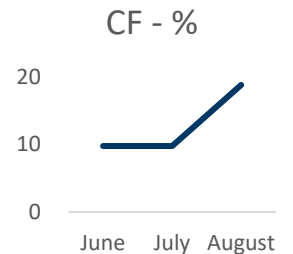
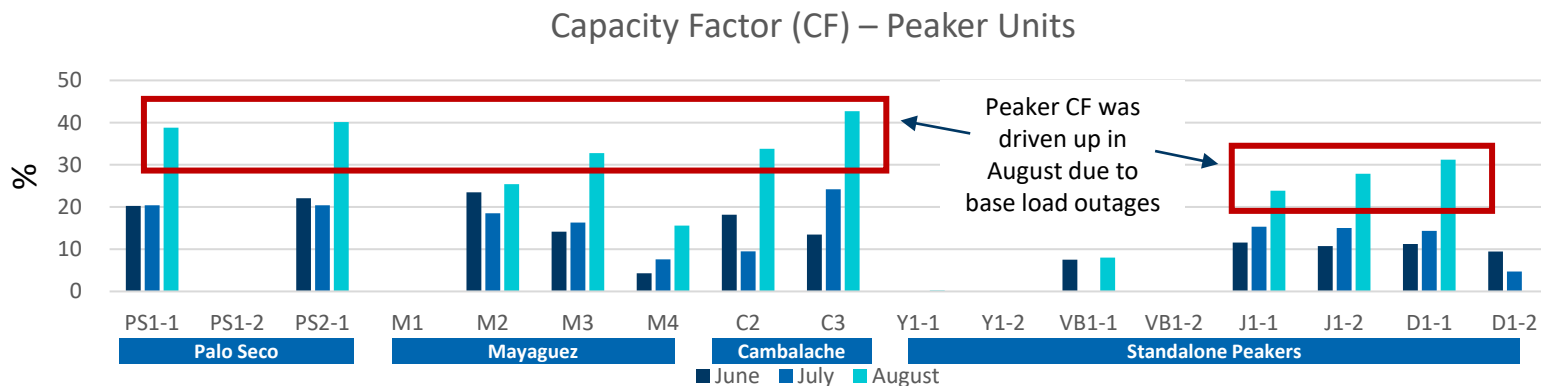
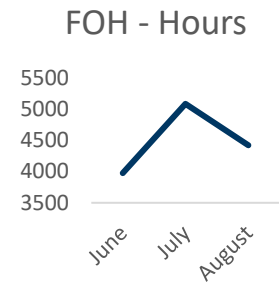
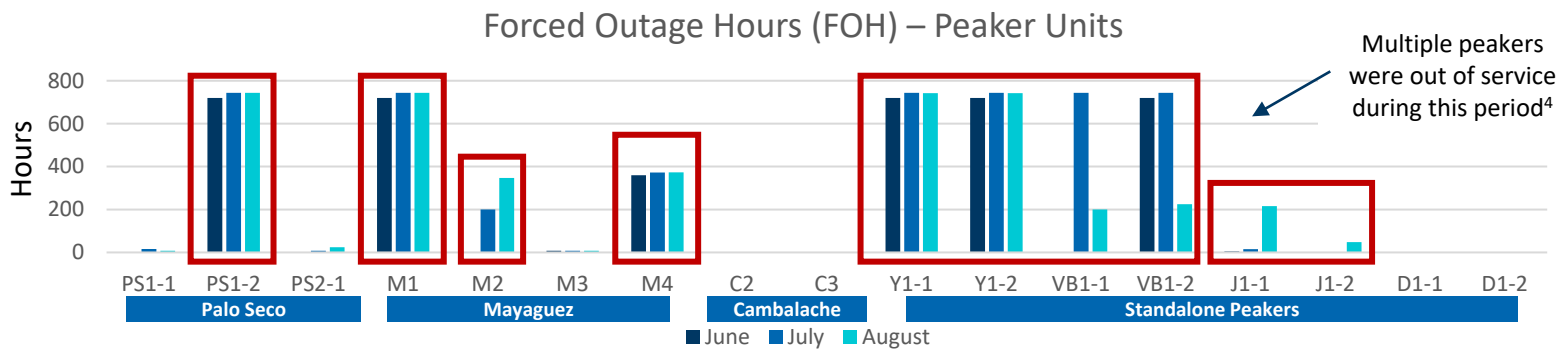
¹ Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

² Long term Out-of-Service units not shown, including Aguirre CC2 steam turbine.

PREPA Power Generation Performance Metrics

Forced Outage Hours and Capacity Factor by Unit – Peaker Units^{1,2,3}

While overall unit Availability decreased from June to August for the peakers and Forced Outage Hours increased, the peakers were called upon to pick up the load due to base load unit outages; indicated by a capacity factor increase of 93%, from 9.8% in June to 18.8% in August. The peaker CF increase also drove increased fuel consumption of #2 diesel and therefore higher associated fuel spend.



¹ Generation metrics are defined by IEEE-762-2006; Standard Definitions for Reporting Electric Generating Unit Reliability, Availability and Productivity.

² For the peaker units with intermittent operation, FOH and CF are better indicators of unit performance versus consider of Availability alone.

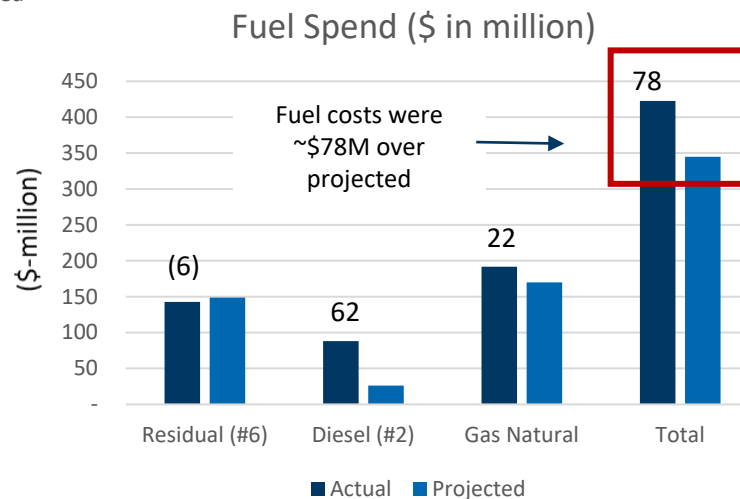
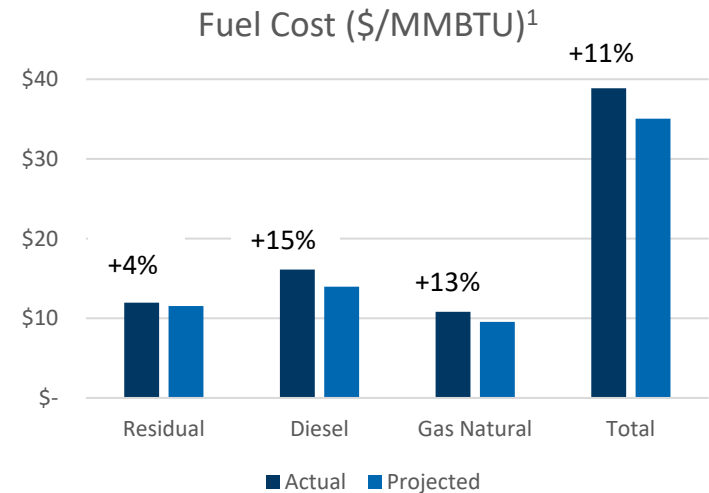
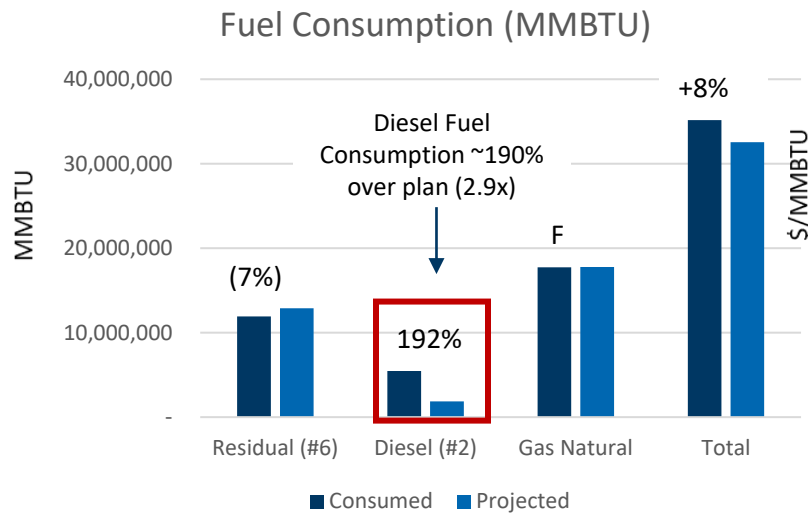
³ Long term Out-of-Service units not shown, including: Cambalache Unit 1, Palo Seco Units 2-2, 3-1, 3-2.

⁴ Multiple outages during this period included: Palo Seco 1-2, Mayaguez 1, 2, 4, Yabucoa 1, 2, Vega Baja 1, 2, Jobos 1, 2.

PREPA Power Generation Performance Metrics

Fuel Burn for the 3-month period of June through August

- **Fuel Consumption:** Residual fuel and natural gas consumption were below/at plan, yet overall fuel consumption was 8% over plan due to diesel consumption of 2.9x versus projection.
- **Fuel Cost (rate):** All actual fuel costs were over projection (11%), while diesel was the highest over plan at >15%.
- **Fuel Spend (net \$):** Total fuel spend was \$78M over projected plan, driven by natural gas (\$22M) and diesel (\$62M).



¹ Liquid fuel costs (residual and diesel) are shown converted from \$/BBL to \$/MMBTU. Conversions used are 6.3 MMBTU/BBL for residual fuel and 5.8 MMBTU/BBL for diesel fuel based on PREPA reported data.



Experts with Impact™