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Apr 13, 2021

12:05 AM



Generation Team Operations Dispatch Assessment November, 2020

- Draft Work Product - For Discussion Purposes Only -

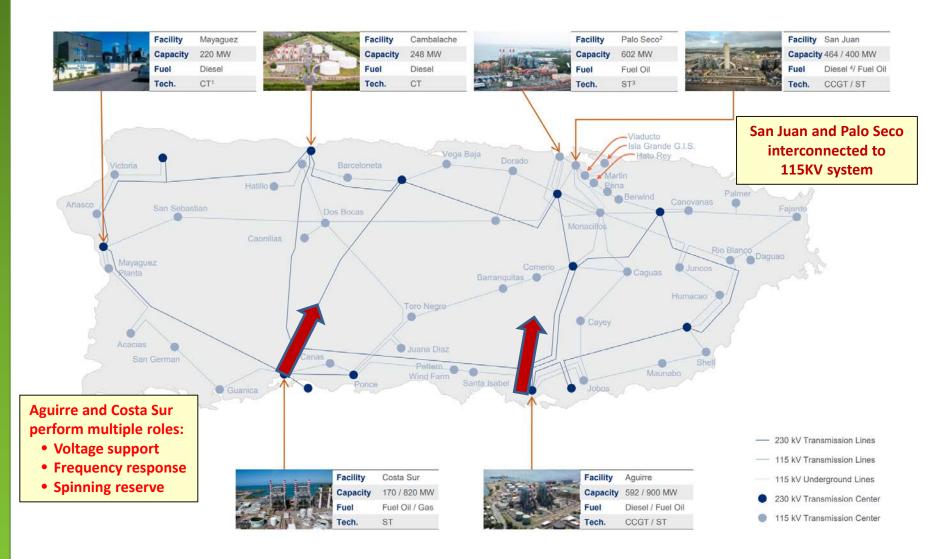
I. Background on Bulk Power System Operational Constraints

Summary of PREPA generation dilemma

- Staff insight cannot overcome the impact of a "run to failure" operating and budgeting philosophy
- Pending cost benefit justification, reliability of several of these plants could be improved with modest investment and could operate reasonably well for next 5-7 years or until replacement capacity is on-line.

• Poor situational awareness at the plants and between control center will increase load shedding events until plant reliability, AGC and communications capabilities are improved

RFI-LUMA-21-0004-210405-PREB-005d Attachment 2 Legacy PREPA owned generation overview



Note: Does not show hydro facilities, peakers, or third party-owned assets (EcoElectrica, AES, and renewables).

Combustion turbine ("CT"). 1. 1

2. The Puerto Rico Public-Private Partnerships Authority issued an RFQ on July 12, 2019 for a ~300 MW combined cycle generator to interconnect to the Palo Seco substation.

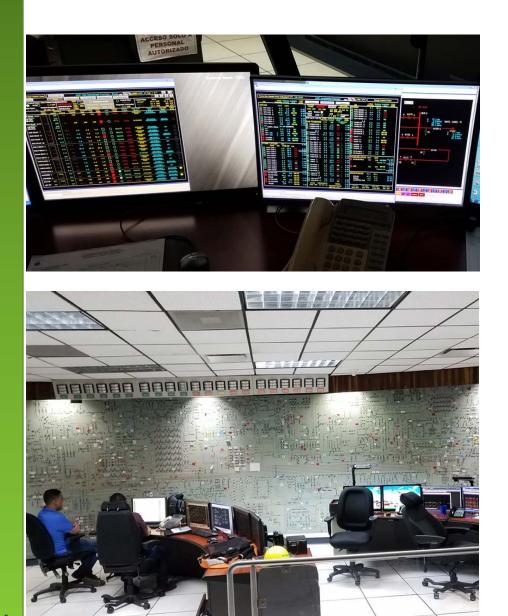
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Steam turbine ("ST"). 3.

Diesel-burning units expected to be converted to burn natural gas in near term. 4.

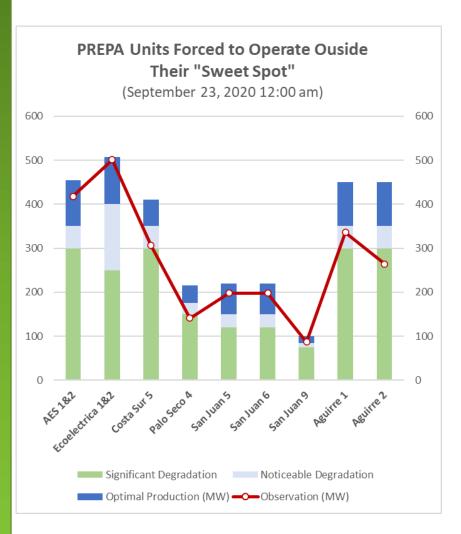
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System Perspective – Typical Day (September 23, 2020 11:30 am)



- Lower in north, higher in south

System Perspective – Typical Day (September 23, 2020 12:00)"



Consequence of forcing System Operations to be sub-optimal

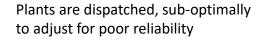
All estimates are preliminary; still awaiting actual data

- could offset ~300 MW of carbon emission limitations on existing thermal

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- would increase effective reserve margins from 3.3% up to 13% (100 MW to 400 MW) during summer peak season

Cycle of low effective availability and PREB-005d Attachment 2 Page 8 of 8 impacts on system conditions



Lack of preventative maintenance further degrades reliability and further increases risk from a single event

Potential near-term retirement complicates cost/benefit analysis to justify plant work

Increased O&M costs and revenue reduction from load shedding impacts budget

> Increased solar penetration will cause more frequent ramping which will further degrade plant condition and increase reliability risks

Increased plant availability or new dispatchable capacity will support improved system reliability and quality

> Use of load shedding as only contingency management option angers customers and increases SAIDI/SAIFI

Solar curtailments can increase as grid reliability deteriorates anagement option angers d increases SAIDI/SAIFI No contingen options degra

No contingency management options degrades already poor power quality and impact of any frequency trips to customers

Sub-optimal dispatch further reduces available capacity which

further increases risks and causes

optimal (and increases emissions)

dispatch to be even more sub-

Sub-optimal operating requirements further degrades plant EQ condition, increases maintenance costs and makes plants less reliable