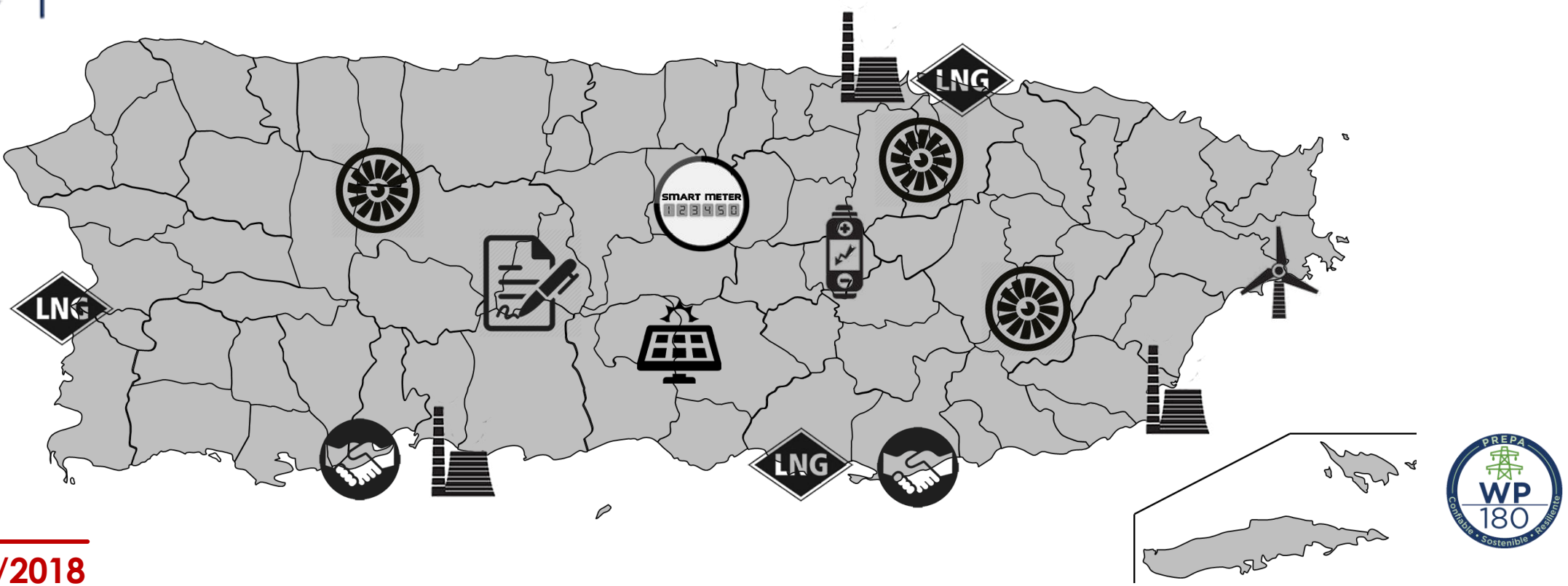
PREPA



DRAFT 11/19/2018

A new Puerto Rico electric system for a sustainable future

REDACTED

Concession & Generation plan done in parallel. Customer rates reduced & CO_2 reduced 49% in 10 years.

Initiatives presented are potential projects under current consideration. Inclusion herein should not be viewed as a guarantee of execution. Savings calculated as a rough estimate of impact, reflected as an "overnight" result. Estimates include many assumptions all of which materially impact results. Realized rate impacts will vary, and may not be fully additive as various units are commissioned and retire.

- **Generation** – Incorporate DER and renewables and right-size the generation fleet with significant CO_2 reductions
- **T&D Design Basis** - Withstand extreme Cat 4 storms with sufficient margins to ensure high survivability for Cat 5
  - Upgrade/relocate the 230 kV transmission system
- **Hardening** – Defense in Depth to reinforce substations, upgrade poles and conductors; microgrids for critical infrastructure and remote communities
- **Modernization** – Distribution and substation automation, network communications, and modern control systems technology to operate DERs and encourage development
- **Standardization** – Standardize voltages, incorporate DOE standards on hardening and resiliency

Rebuild Recommendations - $20B-$24B* (Generation and T&D)

* Total expected generation and grid investment to be finalized subject to discussions with COR3. Estimates include many assumptions all of which materially impact results.

DRAFT 11/19/2018

Generation Plan results in savings to customers

Electric generation optimizations, funded in-part with Federal support, and including dual fuel/LNG conversions, new efficient units, and renewables such as wind, solar, and battery-storage will yield a resilient, sustainable, and economic grid for Puerto Rico.

REDACTED

	Retail Rate
Current Rate[1]	REDACTED
San Juan LNG	
Costa Sur Reliability	
PPOA Renegotiation	
Mayaguez LNG	
Smartmeter	
Peaker Generation	
Palo Seco CC	
North CC	
East CC	
Renewables	
Hydro Rehab	
Jones Act	
Total Reduction[2]	
Potential Rate	

[1] Rates shown are high-level projections and do not include monthly variations from factors such as fuel adjustment charges.

[2] Initiatives presented are potential projects under current consideration. Inclusion herein should not be viewed as a guarantee of execution. Savings calculated as a rough estimate of impact, reflected as an "overnight" result. Estimates include many assumptions all of which materially impact results. Realized rate impacts will vary, and may not be fully additive as various units are commissioned and retire.

Order	Unit/Project[1]	Capex $ MM	VOM $/MWh	Dispatch $ / MWh	Construction Cost $/kW	Incremental Annual Fixed Cost $ MM	Annual Savings $ MM[2]	Rate Impact Cents	New Rate
1	SJ 5&6 Fuel Conversion								
2	Costa Sur Reliability								
3	PPOA Renegotiation								
4	Mayaguez LNG								
5	Smartmeters[5]								
6	Peaker Generation (LNG)								
7	Palo Seco CC								
8	North CC								
9	East CC								
10	1.5 GW Solar/Wind + 1.0 GW Storage								
11	Hydro Power Rehabilitation								
12	Jones Act Waiver @ $1.00 / MMBtu								

REDACTED

Total:

[1] Initiative-specific notes and assumptions provided on following slide.
[2] Annual savings baselined on current operations
[3] Includes estimated $20 million of value related to ancillary support
[4] Savings reflect approximately 1,000 MW effective renewable generation and storage (9-10 hours) funded with federal support. Actual renewable generation and storage capacities and their associated funding sources and structures may materially affect actual rate impacts.
[5] Smartmeter CapEx consistent with initial T&D CapEx estimates for AMI and Smart lighting infrastructure initiatives

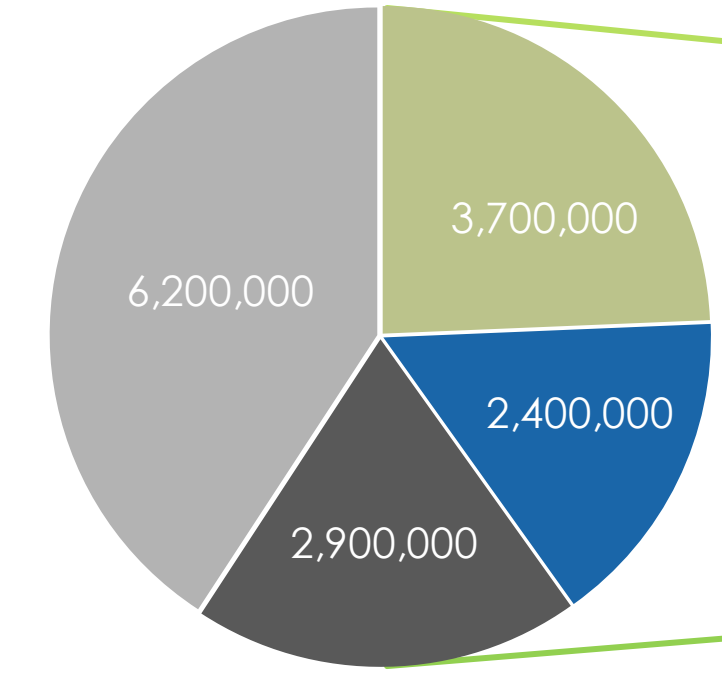
Capital includes Federal and Private Funding

AEE_1296

REDACTED

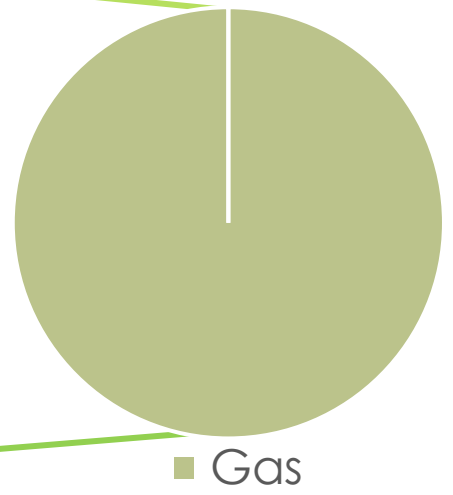
REDACTED

Tons of CO2 Produced 2017: 15,200,000 Tons Per Year



Increased renewable energy production coupled with natural gas-fired generation will improve air quality and reduce greenhouse gas emissions.

Tons of CO2 Produced 2028: 7,700,000 Tons Per Year



Gas Diesel Coal Bunker

CO_2 reduced 49% in 10 years

AEE_1298

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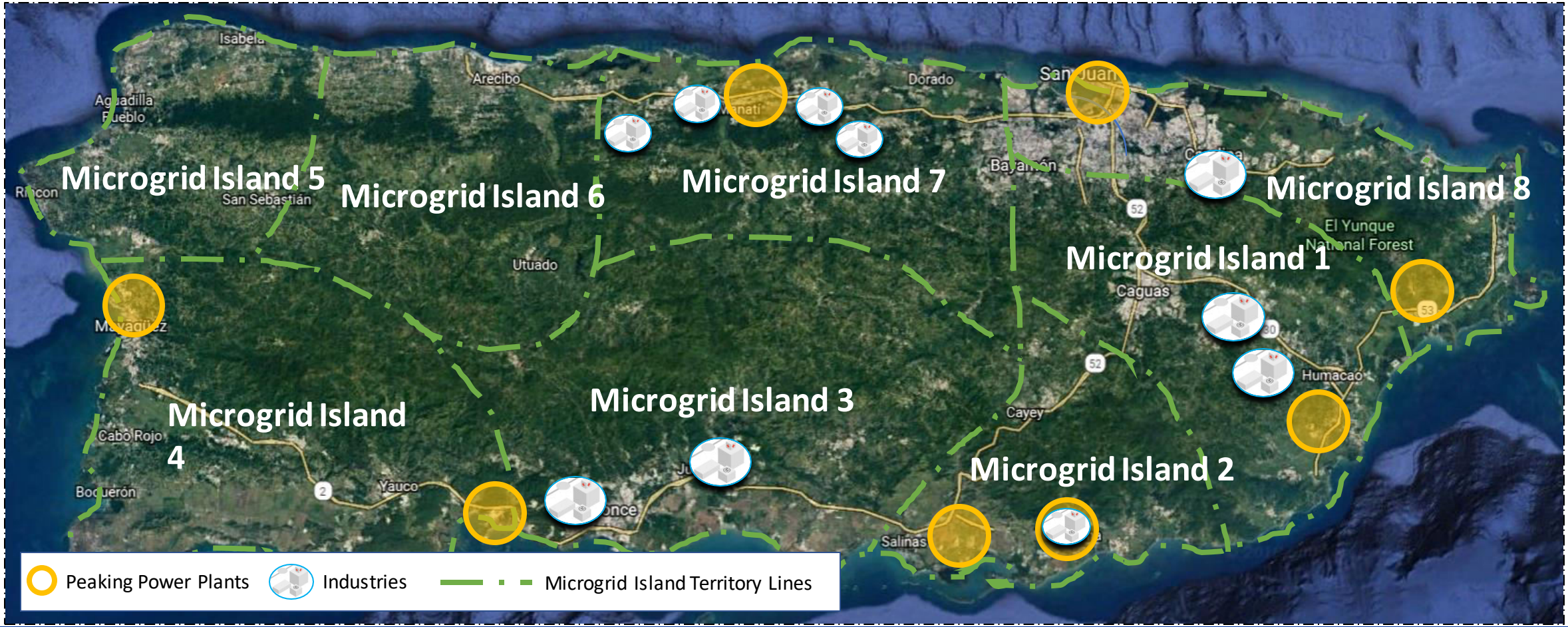
REDACTED

Total expected T&D grid investment to be finalized subject to discussions with COR3. Estimates include many assumptions all of which materially impact results.



Natural microgrids formed upon existing peaking units to support major load centers in case of emergency

AEE_1300

Initiatives presented are potential projects under current consideration. Inclusion herein should not be viewed as a guarantee of execution. Savings calculated as a rough estimate of impact, reflected as an "overnight" result. Estimates include many assumptions all of which materially impact results. Realized rate impacts will vary, and may not be fully additive as various units are commissioned and retire.

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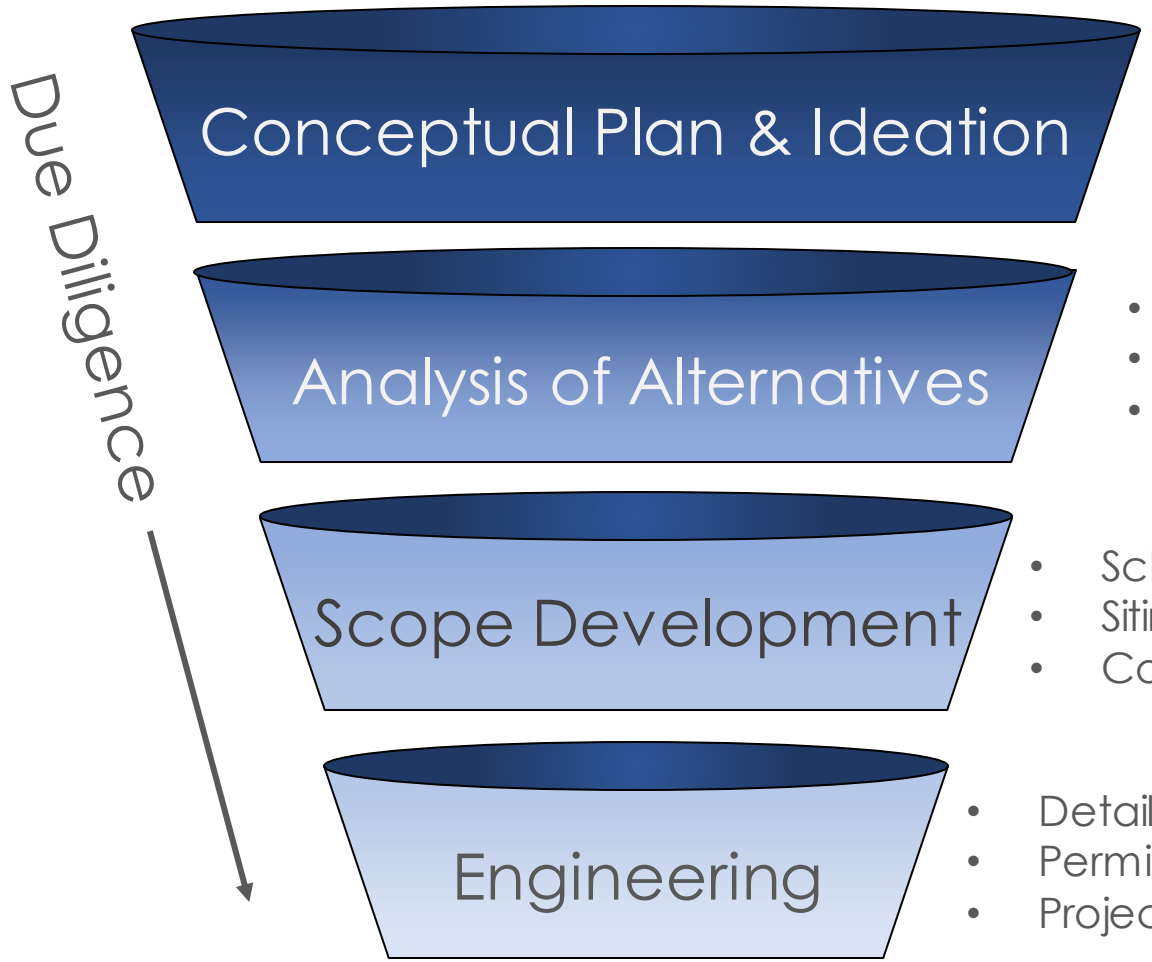
REDACTED

Next Steps

Total expected T&D grid investment to be finalized subject to discussions with COR3. Estimates include many assumptions all of which materially impact results.

Appendix

Notes and supporting data



- High-level Screening
- Feasibility Analysis
- Order-of-Magnitude Estimates

- Production Cost Modeling
- Financing Analysis
- Timeline & Risk Analysis

- Schedule & Requirements Development
- Siting and Interconnections
- Contract Development

- Detailed Design
- Permitting
- Project Planning & Critical Path

Grid and Generation Initiatives Process

AEE_1303

Initiatives presented are potential projects under current consideration. Inclusion herein should not be viewed as a guarantee of execution. Savings calculated as a rough estimate of impact, reflected as an "overnight" result. Estimates include many assumptions all of which materially impact results. Realized rate impacts will vary, and may not be fully additive as various units are commissioned and retire.

Parameter	Value	Notes
Avg Demand MW		
Annual Hours		
Avg Annual Load MWh		
Diesel Fuel Price		
NG Fuel Price (Long-Term)		
Costa Sur NG (Contracted)		
Short Term Fuel Adder Assumption		
Peaker Fuel Adder Assumption		
Capital Rate of Return		
Amortization period		
Current Electricity Rate		
Retail Rate Adjustment		
Jones Act Waiver Impact		
CC Power Plant Capital Cost		
Peaker Power Plant Capital Cost		
Solar Capital Cost		
Wind Capital Cost		
Battery Storage Capital Cost		

REDACTED

Appendix

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REDACTED

[1] Hydro currently operating at 20%; 60% represents incremental amount to achieve 80% capacity factor
[2] Applied capacity factors and displacement costs are PREPA engineering estimates.

Appendix

Order	Unit/Project	Notes
1	SJ 5&6 Fuel Conversion	
2	Costa Sur Reliability	
3	PPOA Renegotiation	
4	Mayaguez LNG	
5	Smartmeters	
6	Peaker Generation	
7	Palo Seco CC	
8	North CC	
9	East CC	
10	1.5 GW Solar/Wind + 1.0 GW Storage	
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12	Jones Act Waiver @ $1.00 / MMBtu	

REDACTED

Appendix

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