GOVERNMENT OF PUERTO RICO
PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU

IN RE: REVIEW OF THE PUERTO RICO ELECTRIC POWER AUTHORITY INTEGRATED RESOURCE PLAN	CASE NO. CEPR-AP-2018-0001 SUBJECT: MODIFICATION TO IRP

MOTION REQUESTING ORDER TO PREPA CONCERNING ALLEGED GRID MODERNIZATION PLAN

TO THE BUREAU:

NOW COME, the "Not For Profit Entities" represented by appearing counsel and respectfully allege and pray:

1. This Bureau is currently engaged in the evaluation of the latest IRP submitted by PREPA on June 7, 2019.

2. On April 5, 2019 the Energy Bureau ordered PREPA to require in its refiled IRP that the considered scenarios meet the Renewable Energy Portfolio standards set forth in SB 1121 (now Act-17, 2019 New Puerto Rico energy Policy) , namely: a minimum of twenty percent (20%) renewable energy resources by or before 2022; forty percent (40%) by or before 2025; sixty percent (60%) by or before 2040; and one hundred percent (100%) by or before 2050.

3. On October 24 the, 2019 Governor of Puerto Rico, the Honorable Wanda Vázquez and Mr. José Ortiz, Executive Director of PREPA jointly announced a plan they called Grid Modernization (MOD). This plan was presented in a press conference where "slides" were shown (included as Exhibit 1, 10 pages).

4. To the best of our knowledge the Grid Modernization Plan although it obviously impacts the IRP, has not been included in the current IRP process pending before this Bureau, as an amendment or in any other manner.

5. It is obvious that the MOD project includes investments, actions and projects which must be part of the IRP in accordance with Law 57 of 2014. Law 57 is clear that actions, as those presented in the MOD proposal, must be included and considered as part of the IRP.

6. It is equally obvious that neither PREPA, nor the Governor have authority to bypass the IRP and approve the MOD proposal separate from the IRP.

7. If the MOD proposal is implemented by PREPA outside the IRP process, it makes a mockery of the IRP process and the appearing party and the Bureau itself, will be losing their time, resources and efforts participating in an incomplete IRP process. It is of particular importance that the Bureau's authority and jurisdiction be respected.

8. It is proper for the PREB to order PREPA to formally submit the MOD as an amendment the most recently submitted IRP or in the alteration to fully explain why and how the MOD is not a modification of the submitted pending IRP.

WHEREFORE, the appearing parties respectfully request form this Bureau to order PREPA so submit the MOD proposal as an amendment to the IRP or explain why the specific MOD proposal actions do not have to be included in the IRP process.

CERTIFICATE OF SERVICE

We hereby certify that, a copy of the filling was sent via e-mail to the Energy Bureau Clerk and internal legal counsel to: secretaria@energia.pr.gov; wcordero@energia.pr.gov; legal@energia.pr.gov; and sugarte@energia.pr.gov. A hard copy of the foregoing will be filed with the Clerk of the Energy Bureau tomorrow.

In addition, the foregoing filing was sent via e-mail to the approved or pending intervenors (Arctas, Caribe GE, League of Cooperatives and AMANESER 2025, OIPC, EcoEléctrica, Empire Gas, Environmental Defense Fund, Local Environmental Organizations, National, "Non Profits", Progression, SESA-PR, Renew, Shell, Sunrun, Wartsila, Windmar Group) and amicus (ACONER, AES-PR, RMI) at the following e-mail addresses: sierra@arctas.com; tonytorres2366@gmail.com; cfl@mcvpr.com; gnr@mcvpr.com; info@liga.coop; amaneser2020@gmail.com; hrivera@oipc.pr.gov; jrivera@cnslpr.com; carlos.reyes@ecoelectrica.com; ccf@tcmrslaw.com; manuelgabrielfernandez@gmail.com; acarbo@edf.org; pedrosaade5@gmail.com; rmurthv@earthjustice.org; rstgo2@gmail.com; larroyo@earthjustice.org; jluebkemann@earthjustice.org; acasellas@amgprlaw.com; loliver@amgprlaw.com; epo@amgprlaw.com; robert.berezin@weil.com; marcia.goldstein@weil.com; jonathan.polkes@weil.com; gregory.silbert@weil.com; maortiz@lvprlaw.com; rnegron@dnlawpr.com; castrodieppalaw@gmail.com; voxpopulix@gmail.com; paul.demound@shell.com; javier.ruajovet@sunrun.com; escott@ferraiuoli.com; mgrpcorp@gmail.com; aconer.pr@gmail.com; axel.colon@aes.com; rtorbert@rmi.org; kbolanos@diazvaz.law; n-vazquez@aeepr.com

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In San Juan, Puerto Rico, this 26 day of November 2019.

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EXHIBIT 1

Autoridad de Energía Eléctrica

CORE
CENTRAL OFFICE FOR RECOVERY, RECONSTRUCTION AND RESILIENCY

The Grid Modernization of Puerto Rico

Transforming and Upgrading the Energy Sector

Background: The Puerto Rican Grid

Recovery presents an opportunity to transform the electrical grid of Puerto Rico by implementing solutions that are **customer-centric**, **resilient**, and **sustainable.**

WHERE WE WERE?

Hurricane Maria caused the longest power outage in U.S. history – leaving parts of Puerto Rico without electricity for **328 days**. The damage from the Hurricanes of 2017 was exacerbated by decades of underinvestment and deficient maintenance of critical infrastructure.

3.4 million
Residents lost power immediately[1]

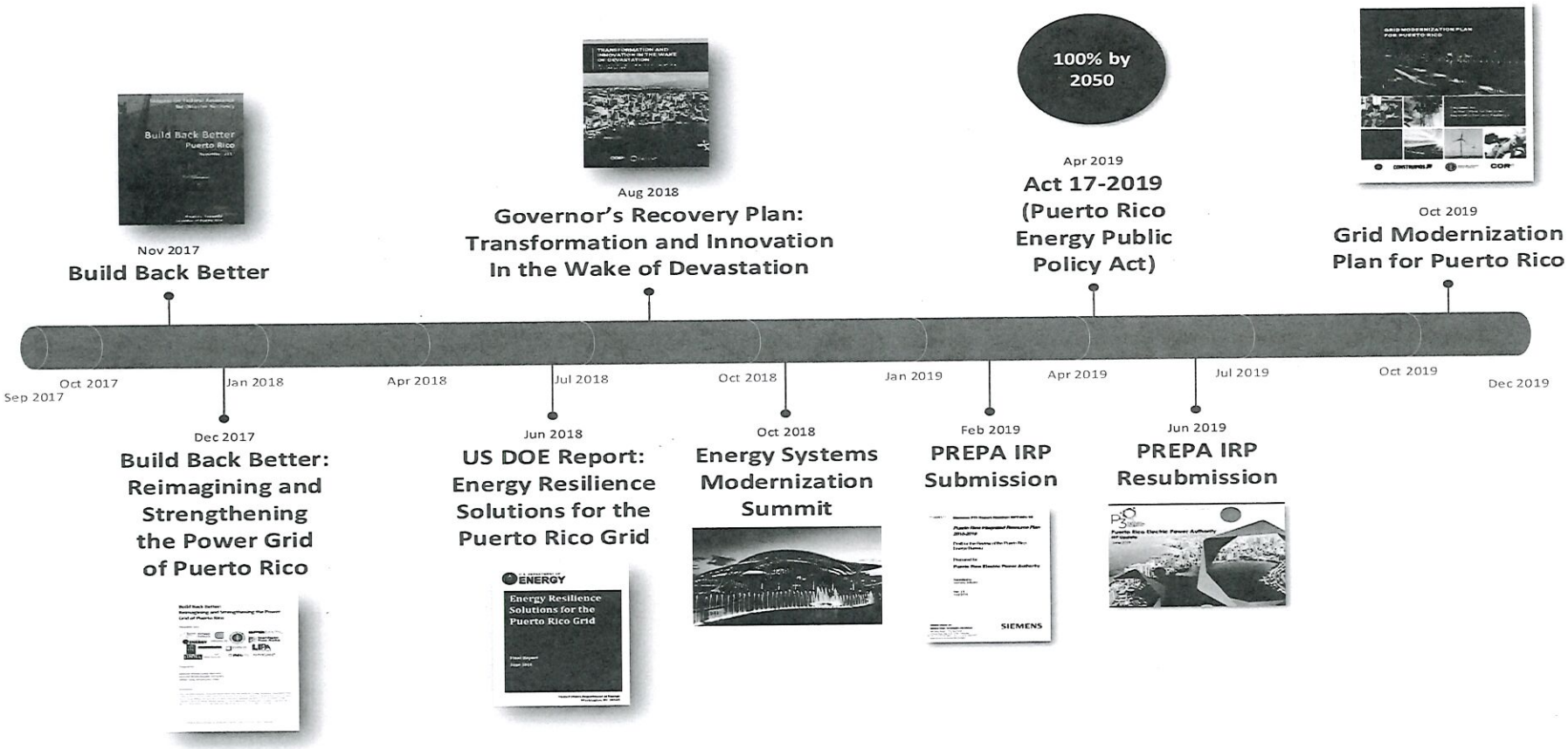
328 days
84 days on average, until power was restored to residents[2]

25%
Of transmission line towers destroyed[3]

WHERE WE ARE GOING?

The Electrical Grid Modernization (GridMod) Plan will rebuild damaged facilities to higher standards, improve quality of life, and increase reliability in energy services. The GridMod Plan will result in a decentralized and flexible grid that will be **affordable to maintain**, lead to **reduced costs for consumers**, and provide **greener and more sustainable solutions.**

1 https://www.cnn.com/2018/08/14/us/puerto-rico-power-restored/index.html
2 https://www.forbes.com/sites/pikeresearch/2019/03/18/is-puerto-rico-providing-a-blueprint-to-reinvent-the-overall-us-power-grid/#2e7c108613d7
3 https://recovery.pr/tpbackend_prod/api/document/download/566 (page 41)


Build Back Better
Puerto Rico
Nov 2017
Build Back Better
Aug 2018
Governor's Recovery Plan: Transformation and Innovation In the Wake of Devastation
100% by 2050
Apr 2019
Act 17-2019 (Puerto Rico Energy Public Policy Act)
Oct 2019
Grid Modernization Plan for Puerto Rico
Sep 2017
Oct 2017
Jan 2018
Apr 2018
Jul 2018
Oct 2018
Jan 2019
Apr 2019
Jul 2019
Oct 2019
Dec 2019
Dec 2017
Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico
Jun 2018
US DOE Report: Energy Resilience Solutions for the Puerto Rico Grid
ENERGY
Energy Resilience Solutions for the Puerto Rico Grid
Oct 2018
Energy Systems Modernization Summit
Feb 2019
PREPA IRP Submission
SIEMENS
Jun 2019
PREPA IRP Resubmission

Goals: The GridMod Plan

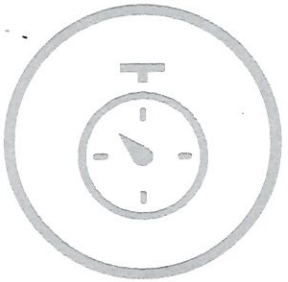
A **customer-centric**, **resilient**, and **sustainable** electrical grid is key to the economic growth of Puerto Rico. The GridMod Plan is guided by 3 basic principles to "Build Back Better" from the devastation of the 2017 Hurricanes.

Customer-Centric

- Improve affordability for residents and businesses
- Transform the customer service system and increase customer engagement with the utility
- Allow users to both produce and consume energy

Resilient

- Reinforce the electrical grid to withstand future extreme weather
- Invest in emergency preparedness
- Decentralize the grid to reduce and isolate outages
- Increase capacity to meet peak demand



Sustainable

- Develop an energy ecosystem that spurs job and business growth, improving stability for utilities, the energy sector, and the overall economy
- Increase the use of Liquified Natural Gas (LNG) to transition away from legacy fossil fuels
- Position Puerto Rico as a leader in green energy for the United States with a vision of100% renewable generation by 2050

Deep-Dive: Customer-Centricity

The GridMod plan is designed to prioritize and empower the residents and businesses of Puerto Rico by providing affordable, flexible, and efficient energy solutions.

The GridMod Plan provides the following benefits to customers:

Affordability

- **Decrease overall operating costs to customers and the Government of Puerto Rico.** With a system that is more reliable, affordable, and easier to maintain

Flexibility

- **Increase the number of options for electricity**. A mix of sources will be available through gradual transition from traditional to renewable
- **Modernize customer systems for customers to best address their energy needs** and increase overall customer engagement
- **Opportunity to become prosumers,** consuming power as needed and contributing excess energy back into the grid through use of renewables

Efficiency

- **Increase LNG generation**. LNG is 50% more efficient than older, oil-fired generation and significantly reduces emissions
- **Implement a smarter grid** that will use advanced analytics to distribute energy where and when it is needed most
- **Use smart meters** and advanced software to reduce theft & billing errors while reducing cost.

Deep-Dive: Resilient

Through a focus on infrastructure, technology, and capacity for clean energy – the GridMod Plan will enable the Puerto Rican energy grid to be more resilient to the potential impacts of weather and cyber threats, and it will posture the electrical grid to more quickly return to service in the event of future disasters.

Hardening the grid

- **Repair and harden infrastructure** to better withstand weather events
- **Reinforce substations** to withstand flooding and high-winds
- **Establish a Management Program** to oversee maintenance
- **Install mitigation technology**, such as automated switching devices and microprocessor relays

Reducing vulnerabilities

- **Decentralize the grid** with 8 Islandable Microgrids and Distributed Energy Resource technology
- **Secure the grid** with modern cybersecurity systems and physical security measures
- **Underground** lines that are high-risk or serve critical loads
- **Distribute response facilities** in geographically disbursed areas

Optimizing Capacity

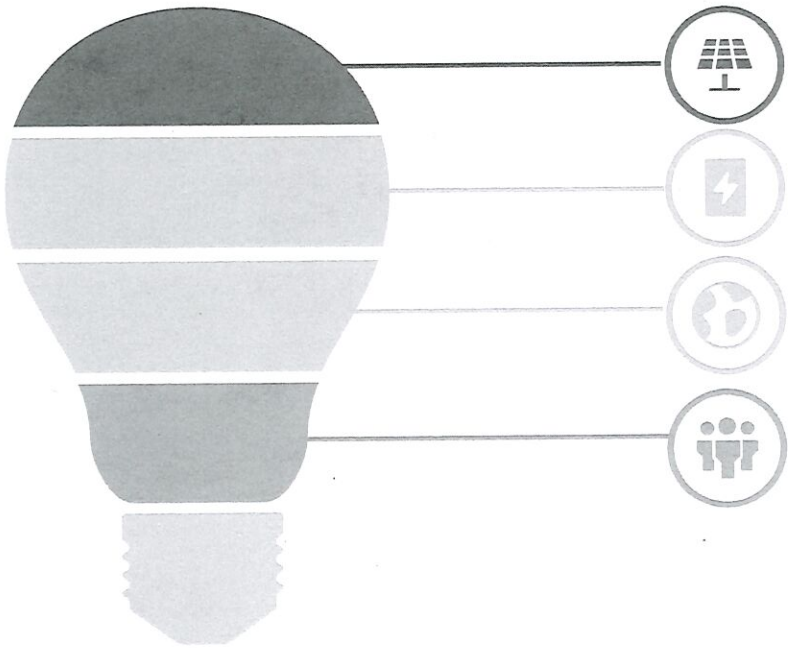
- **Focus on LNG** over legacy fuels that are more costly, inefficient, and toxic to the environment
- **Prepare grid** to support increased use of solar, battery, and LNG
- **Reduce restoration** time and costs with modernized infrastructure

Smartening the Grid

- **Upgrade control systems** with smart grid diagnostic centers and digital sensors
- **Pilot emerging technology** at the Technology & Innovation Center
- **Streamline operations** with systems integration and automation of services
- **Leverage information systems** with IT geospatial capabilities and advanced monitoring solutions

Deep-Dive: Sustainable

The GridMod Plan promotes sustainable development and combats climate change by preparing the electrical grid to integrate renewables, change the fuel mix, and develop a power grid that can be maintained in the long-term.



INTEGRATING SOLAR

Prepare the grid to integrate solar technology at the maximum rate possible

LEVERAGING STORAGE CAPACITY

Install 600 to 900 MW of battery energy storage to extend utility of solar power

REDUCING EMISSIONS

Shift from legacy fuels to LNG for cheaper, cleaner, and more efficient energy to supplement long-term plans to increase renewables

EMPOWERING COMMUNITIES

Develop the social and economic policies that create an energy ecosystem benefiting businesses and communities

Roll-out Timeline

The GridMod Plan will be implemented in three phases over the subsequent 10-years. While 10-years is an aggressive timeline – it is critical to rebuild quickly to prepare the island with a resilient grid in the event of future disasters.

Wave 1

Foundation [Years 1-4]:

Focus on:

- Codes & Standards
- Hardening of Transmission, Substations & Distribution
- Repairing and Hardening of Critical Infrastructure & Assets
- Communications
- AMI or "Smart Meters"
- Cybersecurity Framework
- Emergency Preparedness

Wave 2

Standardization [Years 5-7]:

Focus on:

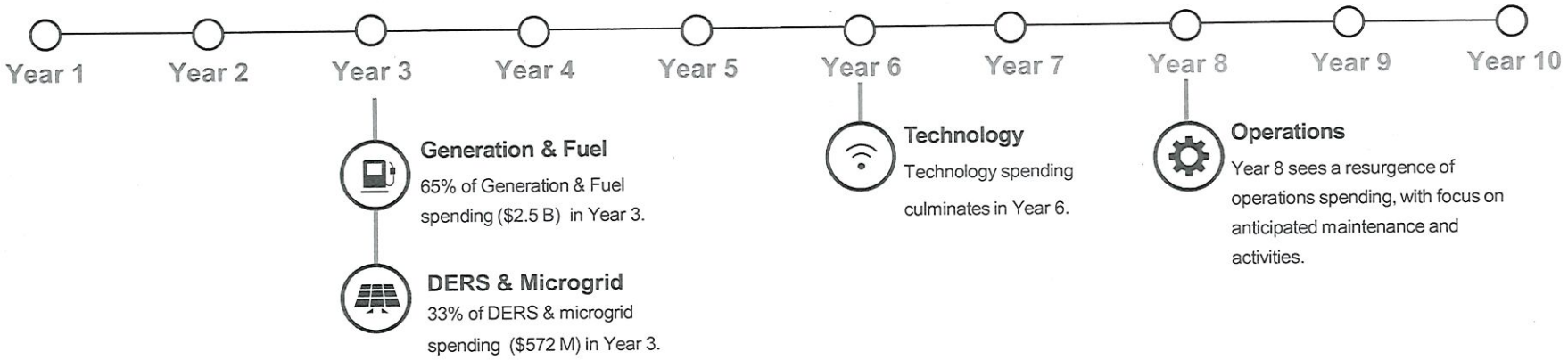
- Evolution to a "Flexible" Grid
- Decentralizing Generation with Supporting Fuel Infrastructure
- Integrating Renewable and Battery Storage
- Targeted Voltage Conversion
- Fault-Isolation and Distribution Automation
- Selective Undergrounding

Wave 3

Transformation [Years 7-10]:

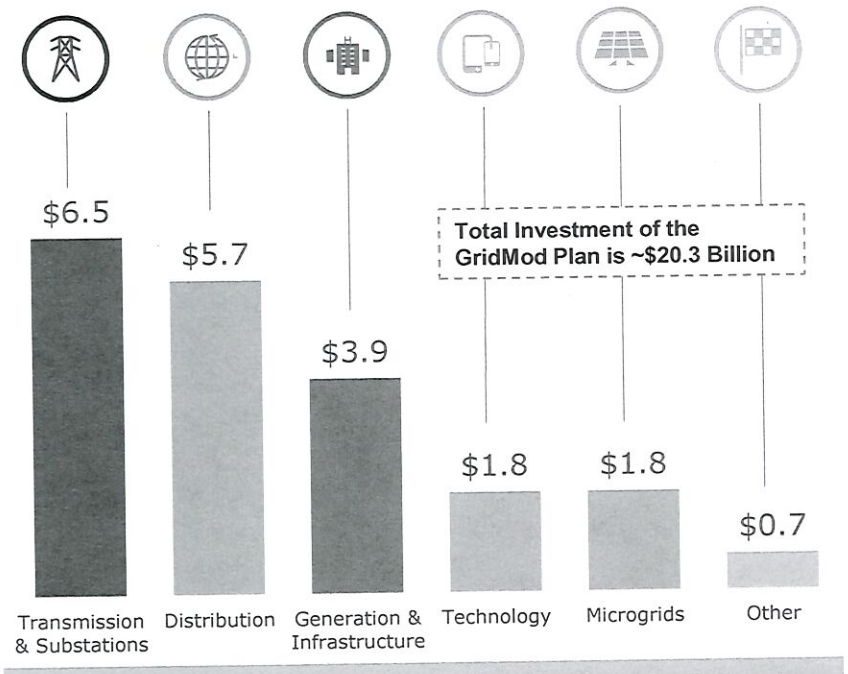
Focus on:

- Islandable Grids
- Customer Systems and Technology
- Two-Way Power Flow Operations
- Grid Awareness, Analytics & Intelligence
- Emergency Operations Center
- Security Operations Center



Cost Breakdown by Category

The costs associated with the GridMod Plan are distributed across 6 categories and total an investment strategy of $20.3 billion.



Total Spending by Category over the Next 10 Years [In Billions]

1 Transmission & Substations

Harden the transmission grid; reinforce or relocate existing high and medium voltage substations

2 Distribution

Strengthen poles and lines to reduce outages; relocate equipment; automate and relocate inaccessible lines

3 Generation & Infrastructure

Increase clean energy; reinforce current generation plants; improve reliability

4 Technology

Automate grid capabilities; upgrade customer systems

5 Microgrids

Add value and reduce costs through Distributed Energy Resource programs

6 Other

Implement security (*physical and cyber*), systems operations, emergency preparedness, and operational efficiency

The Investment Plan

The GridMod Plan will require a coordinated investment across the Government of Puerto Rico, Federal programs, and private investments.

INVESTMENT STRATEGY

$20.3 B

Total Investment

$2 B

Average per Year

60%

of investments are in Transmission & Distribution (T&D)

T&D