

**THE CURRENT STATUS OF PUERTO RICO'S  
ELECTRIC GRID AND PROPOSALS FOR  
THE FUTURE OPERATION OF THE GRID**

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**HEARING**  
BEFORE THE  
**COMMITTEE ON**  
**ENERGY AND NATURAL RESOURCES**  
**UNITED STATES SENATE**  
ONE HUNDRED FIFTEENTH CONGRESS  
SECOND SESSION

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MAY 8, 2018  
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# **THE CURRENT STATUS OF PUERTO RICO'S ELECTRIC GRID AND PROPOSALS FOR THE FUTURE OPERATION OF THE GRID**

**TUESDAY, MAY 8, 2018**

U.S. SENATE,  
COMMITTEE ON ENERGY AND NATURAL RESOURCES,  
*Washington, DC.*

The Committee met, pursuant to notice, at 10:10 a.m. in Room SD-366, Dirksen Senate Office Building, Hon. Lisa Murkowski, Chairman of the Committee, presiding.

## **OPENING STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA**

The CHAIRMAN. Good morning, everyone. The Committee will come to order.

We are here today to learn more about the work that has been completed, the work that is still underway as we seek to restore electricity to the people of Puerto Rico, and really to discuss this morning, moving forward. So much remains to be accomplished.

We will also take a close look at proposals to reform the island's energy sector, such as the Governor's proposals with regard to the Puerto Rico Electric Power Authority, PREPA, and the Puerto Rico Energy Commission.

At a hearing we held last November on hurricane recovery efforts, I suggested at that time that there are essentially three different tenets, basic tenets, for the restoration and the reconstruction of Puerto Rico's electric grid. I first suggested that we needed to make the grid more resilient to future weather events. I think everybody agrees it makes sense. Number two, in the case of damage from a future storm, bring the timeframe for repairing the grid on par with the rest of the United States. Again, absolutely reasonable. And the final tenet is to bring down the overall cost of electricity compared to pre-storm prices. Moving forward, I think that that is something, again, that we all agree must happen.

Unfortunately, I am not sure that any of those tenets have been fully or adequately addressed. Although I would note that some parts of the grid infrastructure are probably more resilient today but perhaps more resilient by default as they have been replaced with newer materials. Still, as last month's island-wide power outage demonstrated, the grid remains fragile and unstable.

Before we can get to those basic tenets, however, there remains a very primary question that I think needs to be answered, and that is, going forward, who is in charge of the grid? Who is pro-

viding the vision for the future of the grid and who should outside parties be in contact with to help fulfill that vision? Is it the Governor's office, which is promoting legislation to sell off some of PREPA's assets and contract with a third party to operate the transmission and distribution lines? Is it the Financial Oversight and Management Board, which recently certified a new fiscal plan for PREPA that includes a process for privatization? Is it PREPA, which has a relatively new Board of Directors, a new CEO, but could be completely upended by these other plans? Or is it the PREC, which claims responsibility for setting the overall policy direction for the grid yet could be dissolved under the Governor's reorganization plan? Then how do the Department of Energy and the Army Corps of Engineers fit into this hierarchy? And, of course, what about the creditors? There are many, many questions here.

Today's hearing is also an opportunity for officials to provide some clarity to questions that many in Puerto Rico are asking. They are asking, why are we still seeing island-wide blackouts? They are asking where all the federal dollars have gone, how have they been directed. Then, as we enter a new hurricane season, they are asking whether or not the grid is more stable and more resilient. They are asking what efforts are being made to incorporate alternative energy sources so that the island is not dependent on the global price of oil. Then they are also asking what the status of the PREPA privatization proposal is. So there are a lot of questions to be answered.

I would further add a concern about the consolidation of the regulatory agencies in Puerto Rico, particularly the PREC. With Puerto Rico's fiscal issues, attracting capital investment is a struggle, and without a stable regulatory environment, bringing in investors to upgrade the electric grid will be even tougher.

I am hopeful that our witnesses this morning can help us sort through some of these issues and provide a little more clarity, not only to the Committee, but to the people of Puerto Rico and the many, many who are closely following the situation on the ground.

I thank you all for being here as we focus on this very important issue.

I will turn to Senator Heinrich for an opening statement. He is helping Senator Cantwell out this morning, and we appreciate you taking the chair here.

**STATEMENT OF HON. MARTIN HEINRICH,  
U.S. SENATOR FROM NEW MEXICO**

Senator HEINRICH. Happy to do it.

Thank you, Madam Chair, for scheduling this timely hearing to examine the current status of Puerto Rico's grid restoration and proposals for the future operation of its grid. Senator Cantwell asked me to fill in for her at the start, and she will be here later.

Before proceeding, I would like to take a moment to recognize the service of nine Puerto Rican National Guardsmen. They were tragically killed last Wednesday when their C-130 crashed shortly after taking off in Georgia. Our thoughts and prayers are with their families. This is an important reminder of the sacrifices that Puerto Rican American citizens make for this nation each and every day.

Senator Cantwell asked me to acknowledge Senators Nelson and Rubio for leading a letter of a group of our colleagues, requesting this hearing. Senator Nelson has been such a forceful advocate for Puerto Rico, and I understand he was on the island just last Friday.

I thank our distinguished witnesses for sharing their expertise and perspective with us today.

Hurricane Maria struck Puerto Rico on September 20, 2017, causing the largest power outage in our nation's history and the second largest outage the world has ever known. We are still not done with the restoration process, over seven months after the storm.

Today, 98 percent of power customers in Puerto Rico have power, but much more work remains. To put it in perspective, tens of thousands of Americans there are still in the dark, and the threat to their health and well-being is real.

As we approach hurricane season in the coming weeks, we need to ensure that we have learned the lessons of Maria so that we do not repeat those same mistakes.

Congress would like to see federal aid go to help Puerto Rico incorporate microgrids, renewables, distributed generation and dramatically increased resilience into the future grid. I think we can also agree that a starting point is a robust, independent and transparent regulatory structure, something that Puerto Rico has struggled with over the years.

If we do not get this right, we will be in exactly the same place after the next hurricane.

Madam Chair, I understand Senator Cantwell will join us shortly, but I would ask that her statement for the record be included in the record.

The CHAIRMAN. It will absolutely be included.

Senator HEINRICH. Thank you.

[The prepared statement of Senator Cantwell follows:]

Senator Cantwell  
Puerto Rico Grid Hearing  
Opening Statement

May 8, 2018

**Key Messages**

1. 98% of PREPA customers have power despite a recent outage, but there is more to do before hurricane season.
2. Congress must continue to insist that opportunistic hedge funds do not enrich themselves on the backs of suffering Puerto Ricans.
3. The Governor's proposed reforms to the energy regulator remove its independence and weaken its ability to regulate effectively.

**Introduction**

Thank you, Madam Chairman, for scheduling this timely hearing to examine the current status of Puerto Rico's grid restoration and proposals for the future operation of its grid.

Before proceeding, I would first like to take a moment to recognize the service of nine Puerto Rico National Guardsmen. They were tragically killed last Wednesday when their C-130 crashed shortly after taking off in Georgia. Our thoughts and prayers are with their families.

I'd like to thank all of our distinguished witnesses for sharing their expertise and perspective with us today.

And I'd like to thank Senators Nelson and Rubio for leading a letter of a group of our colleagues requesting this hearing. Senator Nelson has been such a forceful advocate for Puerto Rico, and I understand he was on the island just last Friday.

Hurricane Irma struck Puerto Rico on September 6, 2017, and then just two weeks later Hurricane Irma delivered an even stronger blow. The result was the largest power outage in our nation's history. In fact, in terms of number of lost electricity hours, it's the second largest outage the world has ever known.

The loss of life and devastation that followed has been tragic. Seven and a half months later, we are still emerging from the dark.

Today, 98 percent of power customers in Puerto Rico have power, but the system is still fragile and experienced two massive blackouts in the past month alone. Tens of thousands of Puerto Ricans are still struggling with daily life, and hurricane season begins again on June 1st.

And while the vast majority of the island's power infrastructure is as strong as it was before the hurricane, if not better, we must do more.



We must be sure we learn from the mistakes of the past. We need to rebuild smarter. We need a more transparent system. One that is well-managed and incorporates standard business practices. Perhaps most importantly, the iteration of PREPA must be subject to oversight by an independent commission, much like the current Puerto Rico Energy Commission.

Puerto Ricans deserve an electricity system that is as reliable and affordable as their fellow citizens on the mainland. That's why it is critical that the billions of dollars in federal aid go to help Puerto Rico start anew, not enrich opportunistic hedge funds. Unfortunately, a recent run-up in Puerto Rican debt securities, some of which have doubled in value in the past few months, has allowed speculators in Puerto Rican and PREPA debt to profit off of taxpayer funded disaster recovery.

That's shameful.

Disaster recovery funds should also help Puerto Rico incorporate microgrids, renewables, distributed generation, and necessary resiliency into the grid.

An essential first step is to ensure a robust and independent regulator is in place. Otherwise, we will be back in exactly the same place years from now.

Several energy reforms in the Puerto Rico legislature may be contrary to this goal. I look to our witnesses to explain whether the current utility commission, which is represented here today, needs to be overhauled or not.

For example, I'm concerned that pending reforms could overly politicize the makeup of the utility commission. They could undermine just and reasonable rates. They could also allow an umbrella agency to override the commission's independence.

That would be like letting the President appoint five members from his own party to FERC. Then, just in case, authorize his Energy Secretary to override FERC's decisions.

Finally, a proposal to shield privatization transactions from oversight by the energy regulator could facilitate backroom deals beyond the public's watchful eye.

While PREPA's new board and management is a welcome change, I am concerned that not enough has been done to prevent another Whitefish deal.

I understand there is some effort to address these concerns, but more needs to be done. Our fellow citizens in Puerto Rico need to know that we will stand with them at every step along this recovery.

We will not stop our dogged oversight to ensure the federal departments and agencies are giving you what you need, and that the funds are spent responsibly.

Thank you for being here this morning for this important hearing, and I look forward to your testimony.

Senator HEINRICH. I am looking forward to our testimony this morning.

The CHAIRMAN. Thank you, Senator Heinrich.

With that, let us go to our panel. Again, I thank you all for joining us here this morning and for your contributions.

The panel this morning will be led off by Bruce Walker, who is the Assistant Secretary at the Office of Electricity Delivery and Energy Reliability at U.S. DOE. It is good to have you back before the Committee.

We are also joined by Charles Alexander, Jr., who is the Director for the Contingency Operations and Homeland Security at the U.S. Army Corps of Engineers (USACE). We thank you for your work.

Mr. Christian Sobrino Vega is the President of the Government Development Bank and Chairman of the Board of the Fiscal Agency and Financial Advisory Authority for the Government of Puerto Rico. We welcome you.

Mr. Walter Higgins is also known to this Committee. He has come before us before as the CEO for the Puerto Rico Electric Power Authority. We welcome you.

Mr. José Román Morales is the Comisionado Asociado-Presidente Interino. You can tell mi Español is way malo.

[Laughter.]

He is with the Commission on Energy of Puerto Rico. Mr. Morales, welcome.

And Mr. Rodrigo Masses is the President of Puerto Rico Manufacturers Association.

We welcome each of you to the Committee here this morning.

Mr. Walker, if you would like to begin? I would ask you to try to limit your comments to about five minutes. Your full statements will be incorporated as part of the record, and once you have completed your opening remarks, we will have an opportunity to pose our questions.

Mr. Walker, welcome, Assistant Secretary.

**STATEMENT OF HON. BRUCE J. WALKER, ASSISTANT SECRETARY, OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY, U.S. DEPARTMENT OF ENERGY**

Mr. WALKER. Chairman Murkowski, Senator Heinrich and distinguished Members of the Committee, thank you for the opportunity today to discuss the possibilities for the future operation of the electric grid in Puerto Rico. Most importantly, I want to assure this Committee that DOE is committed to providing technical assistance to PREPA as they begin their task of rebuilding and redesigning Puerto Rico's electric grid.

During significant events essential services from energy, critical infrastructure, including water, telecommunications and transportation must be operational to support the safety and health of our residents in Puerto Rico. Accordingly, the energy infrastructure in Puerto Rico must be designed, built, managed and maintained in such a way to ameliorate disruptions when they inevitably occur to facilitate rapid recovery.

This is a continual process of improvement, one that will require PREPA to reassess and adopt solutions and technologies to address changing needs, and DOE and our national labs will remain an ac-

tive partner to provide technical expertise and deploy cutting edge technology to assist PREPA.

DOE has nearly completed its report on energy resilience options and potential solutions for the Puerto Rico grid. This report provides recommendations through PREPA and FEMA that reflect principles of resilience and are intended to inform investments in energy infrastructure.

The recommendations address near-term and potential long-term actions that will require further analysis to make optimal investment decisions.

Several long-term recommendations that require additional analysis include: Number one, power flow to assess power system operations, including generator dynamics and protective relay coordination; number two, production cost and capacity expansion to inform economic dispatch strategies and long-term planning; number three, microgrids, energy storage and system segmentation to identify where clusters of generation and load provide maximum community benefit; and number four, cross sector, critical infrastructure interdependencies. These items are being addressed through the development of a sophisticated modeling effort incorporating the efforts of five national labs. The model will be developed in phases, working with PREPA and when complete will serve as a planning tool as well as an operational tool.

As a planning tool, it will provide contingency analysis and identify interdependencies of critical infrastructure necessary to ensure the health and safety of our residents in Puerto Rico. As an operational tool, it will provide next, worst case analysis in near real time thereby providing system operators situational awareness in order to make sound operating decisions to improve day-to-day operation of the electric grid. The operational capabilities of the model will rely upon near real time data from micro phasor measurement units that PREPA and DOE are planning to deploy shortly in key locations throughout the island.

Furthermore, the modeling effort will provide technical insight into the resiliency objectives allowing for coordination and communication of potential solutions across stakeholder groups. This will help enable PREPA to ensure that the investments being made achieve the desired improvements necessary for a resilient grid.

Of course, any version of Puerto Rico's future grid requires the incorporation of cybersecurity. Uncontrolled disruption of our energy infrastructure is not only inherently problematic, but it hampers our ability to respond to other types of emergency events, like hurricanes.

Late last year, DOE awarded over \$20 million to our national laboratories and partners to support critical, early stage research and development through strength and protection of the nation's electric grid from cyber threat.

One of these projects, Dark Net, is a collaboration between four national labs, three universities and several utilities, including the University of Puerto Rico and PREPA. Participants are working to define the requirements for a secure energy delivery system control network that is independent of the public internet, utilizing what is called Dark Fiber. Working with PREPA, DOE will seek to deploy this capability into PREPA's grid as we work together to

strengthen it, capitalizing on the significant amount of fiber optics on the island.

Just three weeks ago, my office issued a \$25 million funding opportunity announcement through our industry partners to develop innovative approaches to advance cyber resilient energy delivery systems. Focused on redesigning our existing system protection infrastructure for the electric and oil and natural gas sectors, the goal is to develop near, real-time solutions that will reduce and potentially eliminate the risks presented by cyberattacks. This funding opportunity was done with an eye toward accelerating R&D efforts with the anticipation that we can incorporate these new solutions into PREPA's grid and then utilize them across North America.

In conclusion, the effects of this past hurricane season, though a disaster in the short-term, now offers a unique opportunity to accelerate cutting edge technology to improve Puerto Rico's grid.

In this case, various forms of technology including microgrids, cyber, modeling, distributed energy resources and strategic utilization of storage are a few of the capabilities we are undertaking to improve the resiliency of the Puerto Rico and U.S. Virgin Islands electric sector.

Thank you and I look forward to your questions.  
[The prepared statement of Mr. Walker follows:]

**Written Testimony of Assistant Secretary Bruce J. Walker**  
**Office of Electricity Delivery and Energy Reliability**  
**U.S. Department of Energy**  
**Before the**  
**United States Senate**  
**Committee on Energy and Natural Resources**  
**May 8, 2018**

Chairman Murkowski, Ranking Member Cantwell, and distinguished Members of the Committee, I appreciate the opportunity today to discuss the status of Puerto Rico's electric grid and proposals for the future operation of the grid.

The U.S. Department of Energy (DOE) is the lead for providing energy-related expertise to the Federal Emergency Management Agency (FEMA), interagency partners, and the Administration as part of DOE's emergency response activities. DOE serves as the coordinating agency for Emergency Support Function #12 - Energy (ESF-12) under the National Response Framework and as the Sector-Specific Agency for Energy under Presidential Policy Directive 21. In addition, DOE is a primary agency for the Infrastructure Systems Recovery Support Function under the National Disaster Recovery Framework. As the lead for ESF-12, DOE is responsible for providing information and analysis about energy disruptions and for helping to facilitate the restoration of damaged energy infrastructure.

**DOE Involvement in Puerto Rico Response and Restoration**

DOE'S Office of Electricity Delivery and Energy Reliability led DOE and ESF-12 response and restoration efforts for Hurricanes Irma and Maria in Puerto Rico. Restoration efforts continue and as of April 30<sup>th</sup>, approximately 98% of customers (1.44 million) were restored and all 78 municipalities are at least partially energized.<sup>1</sup>

Over the course of the 2017 hurricane season, the Department provided numerous personnel to support response and recovery efforts. These included bilingual public information personnel to provide life safety and life sustaining communications, subject matter experts as part of FEMA's Incident Management Assistance Teams, technical advisors in electrical distribution, transmission, generation, energy efficiency, renewable energy, and related topics to advise the United States Army Corps of Engineers (USACE) and personnel to support the National Response Coordination Center, several Regional Response Coordination Centers, and state emergency operations centers.

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<sup>1</sup> <http://status.pr/>

DOE continues to maintain close coordination with FEMA, and two subject matter experts from our Power Marketing Administrations remain deployed to provide technical support to USACE with restoration planning, cost estimates, validation, and quality assurance. DOE also continues to have a responder deployed under the National Disaster Recovery Framework to support FEMA recovery activities and to coordinate with industry about ongoing mutual assistance to support restoration efforts.

#### **DOE Involvement in Puerto Rico Recovery**

Throughout the restoration and recovery efforts, the people of Puerto Rico have shown tremendous strength and perseverance as they restore and rebuild their homes. Leveraging the electric grid to spur economic growth in Puerto Rico's various communities and economic sectors, including health care, manufacturing, tourism, and agriculture, is essential to revitalization. Essential services from energy-enabled critical infrastructure, including waste, water, telecommunications, and transportation, must be operational to support safety and health, and likewise, manufacturing must be functional to support economic vitality.

A strong recovery and revitalization is important to the territory, as well as the Nation. Maintaining and enhancing the affordability and resilience of the electric grid, at fair and reasonable costs, will provide service and value to the region. Yet, no single investment in energy infrastructure at one point in time will achieve resilience. The energy infrastructure of Puerto Rico must be designed, built, managed, and maintained in such a way to withstand likely stresses, ameliorate disruptions when they inevitably occur, recover quickly, and incorporate lessons learned into post-event planning and operations. This is a continual process of improvement, one involving a reassessment and adaptation of solutions and technologies to address changing needs.

And as DOE begins to wind down support for restoration efforts, we have begun to transition to recovery activities to address the long-term resilience and reliability of Puerto Rico's electric grid.

#### *Technical Assistance for Microgrids*

One effort is with several of our National Laboratories, which are employing our Microgrid Design Tool to examine the feasibility of microgrids. This capability will allow the optimal siting of distributed energy resources that could potentially enhance reliability and resilience of the electric system. This ongoing work explores the viability of microgrids to support critical infrastructure, remote communities, and industrial facilities.

Industrial facilities play an instrumental role in restoration and recovery efforts due to their support of local communities and their economic impact on Puerto Rico. The Labs have completed preliminary microgrid assessments for industrial facilities that are on Puerto Rico Industrial Development Company (PRIDCO) sites, provided technical input and reviews for PRIDCO's "Industrial Microgrid Solutions in Puerto Rico" Request for Information, and provided assistance to Puerto Rico Electric Power Authority (PREPA) activities related to

microgrids and distributed energy resources. These microgrids have the potential to offer PREPA further operational efficiency and reliability for Puerto Rico's electric grid.

*Near-Term Grid Modeling Support*

Another DOE effort is through grid modeling to support the rebuilding of a more resilient electric power grid system in Puerto Rico. This endeavor will develop a near real time dynamic model of the Puerto Rico power system that will not only be used as an operational tool but for planning purposes as well. This modeling effort will provide technical insight into the resiliency objectives, allowing for coordination and communication of potential solutions across stakeholder groups. Working in partnership with FEMA and the U.S. Department of Housing and Urban Development (HUD), DOE seeks to facilitate collaboration with PREPA as they plan future investments and determine where financial resources will be most beneficial in strengthening Puerto Rico's grid and increasing its resilience.

*DOE Support for Interagency Efforts*

The multi-Laboratory modeling effort will also inform priorities of immediate concern to better prepare Puerto Rico for the upcoming storm season. This work will define short-term actions that can be taken now and during the upcoming hurricane season, as well as longer-term infrastructure investments that can have lasting effect. The types of issues that will be addressed include models for predictive failure analysis; system characterization and interdependencies, *e.g.*, fuels, generation asset placement, and telecommunications; resilient infrastructure investment scenarios; mobile storage and backup generator placement; and distribution system improvement opportunities.

*Strategizing an Electric Energy Policy and Regulatory Framework*

The Southern States Energy Board (SSEB), in association with DOE, is working in coordination with the governor and legislature of Puerto Rico to establish a reliable, affordable, and sustainable electric energy grid system, and to develop a policy and legal framework to provide a regulatory process for possible privatization efforts. Working in collaboration, SSEB will present Puerto Rico with various options and recommendations for the electricity and other utility sectors.

*DOE Report on Energy Resilience Solutions for the Puerto Rico Grid*

DOE has completed its Report on Energy Resilience Options and Potential Solutions for the Puerto Rico Grid. This report provides recommendations to FEMA and PREPA that reflect principles of resilience and are intended to inform investments in energy infrastructure in Puerto Rico. Recommendations address near-term actions and potential long-term actions that will require further analysis to make optimal investment decisions.

The interdependencies across sectors, assessment of potential alignment, and sequencing of funding across different agency programs that support various sector infrastructures will require significant coordination. The report also notes where the results of analysis are needed to articulate resilience-related, investment-grade suggestions regarding the design and specification of the electricity system in Puerto Rico.

Although some of the additional analysis necessary to support those resilience principles is underway, recommendations that can be acted on today to improve the performance of the system ahead of the 2018 hurricane season are as follows:

1. The Governor and PREPA should immediately ensure that updated, effective mutual aid agreements are primed to quickly provide support during the next event.
2. The Incident Command System should be trained and utilized during a response.
3. The Puerto Rico Energy Commission (PREC) should coordinate a joint study with the Puerto Rico Telecommunications Board to determine and enforce safe loading requirements of distribution poles carrying both electric and telecommunications infrastructure.
4. Electricity transmission towers installed specifically for temporary emergency restoration should be considered for replacement, potentially by monopoles; many of the round monopole structures survived the 2017 storms.
5. The PREC should finalize microgrid regulations, and establish effective and efficient interconnection requirements and wheeling regulations with PREPA. These regulations will allow customers to design their systems to add reliability and resilience to PREPA's system.
6. The Commonwealth Energy Public Policy Office, in coordination with other appropriate Commonwealth agencies, should consider drafting an updated Energy Assurance Plan, which will provide for an Incident Management Team as well as other important components. Besides preparing for the next hurricane season, acting immediately will allow for leveraging the presence of Federal staff in the Joint Field Office and the Federal data collection efforts that have been underway since September. Finally, the SSEB may be able to facilitate peer-to-peer information sharing and lessons learned among Puerto Rico's neighboring governments and utilities.

Several potential DOE recommendations require further analysis prior to finalization. However, the analysis should be conducted, to the extent practical, with the support and engagement of PREPA, and is best suited as follows:

1. Power Flow – assesses power system operations, including generator dynamics and protective relay coordination [used to identify power system needs, evaluate technology options, and help prioritize resilience investments, *e.g.*, transmission enhancements]
2. Production Cost and Capacity Expansion – informs economic dispatch strategies and long-term planning [used to understand how resource investments, system costs, and load are impacted by key policy and technology sensitivities]



3. Microgrids, Energy Storage, and System Segmentation – identifies where clusters of generation and load provide maximum community benefit [used to identify prepositioning of emergency generation, local hardening of infrastructure, and adjustment of emergency procedures]
4. Cross-Sector Infrastructure Interdependencies – characterizes reciprocal relationships within the energy sector, *e.g.*, electricity-petroleum; electricity-liquefied natural gas, as well as cross-sector infrastructure such as telecommunications and/or water [used to investigate supply disruption impacts and identify mitigation approaches]

DOE is committed to working with FEMA, other Federal agencies, the Commonwealth of Puerto Rico, and PREPA to incorporate its near and long-term recommendations into local infrastructure projects. The end goal is a modern and resilient energy system that can serve as the robust engine for Puerto Rico's economic revitalization.

#### **Conclusion**

I am proud of the work we are doing to address the long term restoration and recovery efforts in Puerto Rico and grateful for the hard work of DOE's emergency responders during the 2017 hurricane season. We have made progress, but there is still more to do. Over the next several months, DOE's primary focus in Puerto Rico will continue to be working with our partners to support the mission of strengthening the power grid and critical infrastructure for the island.

Thank you, and I look forward to your questions.

The CHAIRMAN. Thank you, Assistant Secretary.  
Mr. Alexander, welcome.

**STATEMENT OF CHARLES R. ALEXANDER, JR., DIRECTOR,  
CONTINGENCY OPERATIONS AND HOMELAND SECURITY,  
U.S. ARMY CORPS OF ENGINEERS**

Mr. ALEXANDER. Chairman Murkowski and distinguished members of the Committee, thank you for the opportunity to provide an update on the status of Puerto Rico's electric power grid.

The Corps conducts emergency response activities under two basic authorities, the Stafford Act and Public Law 84-99. In response to Hurricanes Irma and Maria, the Corps received 47 mission assignments at \$181 million and 44 Maria-related mission assignments at \$3.4 billion to execute our traditional public works missions. Over \$15 million in flood control/coastal emergency funds were expended under our PL 84-99 authority.

I will now limit my remarks solely to the restoration of Puerto Rico's grid.

On 30 September '17 as assigned by FEMA, USACE assumed lead for federal efforts to repair the power grid. To date, we have received \$2.15 billion for that mission alone. Our task was to scope, coordinate and execute interim repairs to grid segments until a comprehensive restoration of the overall system could be implemented.

The grid consists of 2,400 miles of transmission lines, 30,000 miles of distribution lines, over 300 substations, 16 power generation plants. An estimated 80 percent of the grid was damaged.

USACE is part of the Unified Command Group, or UCG, comprised of USACE, FEMA, PREPA and the island's restoration coordinator. The UCG makes decisions guided by PREPA's restoration master plan priorities. These priorities and decisions are carried out by PREPA, the Corps and our respective contractors.

The road to repairing the grid consists of four main lines of effort: provide temporary emergency power and spot generation for critical facilities; ensure adequate generation at the power plants; reinstall and repair transmission lines; and restore and repair distribution lines, ultimately providing power to the customer.

For temporary emergency power the Corps and its contractors installed 2,180 generators. And as of 7 May, 812 remain in operation. We anticipate the temporary power mission will be extended until 31 July.

We also installed nine microgrids to provide temporary power to communities while grid power was being restored. Currently, four are operational at Arecibo, Culebra, Maunabo and Vieques.

To ensure adequate generation at the power plants, the Corps installed mega generators at the Palo Seco and Yabucoa plants. The Corps will continue to operate and maintain both out through mid-July.

As of 2 May, 79 percent of the transmission line segments, 69 percent of the sub-transmission line segments and 88 percent of the distribution lines have been repaired and energized. As of 7 May, PREPA reports that 98.44 percent, or approximately 1.45 million out of 1.473 million pre-storm customers who are able to re-

ceive electric power, have their service restored, leaving approximately 22,900 customers without power.

Due to the shortage of materials required to affect repairs, FEMA authorized USACE to procure, transport and store material, leveraging the purchasing power of the defense logistics agency, USACE procured over \$229 million in material and to date have received over 33 million items. Included in these quantities are over 52,000 telephone poles or power poles, 5,500 miles of conductor wire.

Based on FEMA's guidance in the design of the grid, we purchased a mix of wood, concrete and galvanized steel poles. PREPA's pole standard for distribution of feeder lines prior to Maria, was galvanized steel and these poles were used to repair the grid to the greatest extent possible dependent upon the supplies available at the time. Concrete poles with reinforced steel were used to replace existing broken concrete poles.

All lattice structures used to support transmission lines were aluminum with reinforced galvanized steel plates at critical joints.

The USACE mission assignment from FEMA will end effective midnight 18 May. Our power restoration contractor will continue to work until that date and time. We currently have over 540 USACE personnel and over 1,000 USACE contractors supporting this mission. As the mission assignment ends there will be an orderly transfer of responsibilities and material.

In the days remaining we are committed to maximizing contributions toward restoration. The U.S. Army Corps of Engineers is proud to have had the opportunity to serve the citizens of Puerto Rico.

This concludes my testimony. I look forward to your questions.  
Thank you.

[The prepared statement of Mr. Alexander follows:]

**DEPARTMENT OF THE ARMY CORPS OF ENGINEERS**

**COMPLETE STATEMENT OF**

**CHARLES R. ALEXANDER, JR.**

**DIRECTOR, CONTINGENCY OPERATIONS AND  
HOMELAND SECURITY**

**BEFORE**

**COMMITTEE ON ENERGY AND NATURAL RESOURCES  
UNITED STATES SENATE**

**ON**

**UPDATE ON THE RESTORATION OF PUERTO RICO'S ELECTRIC  
INFRASTRUCTURE**

**MAY 8, 2018**

Madam Chair and distinguished members of the Committee:

I am honored to testify before you today to discuss the authorities and responsibilities of the U.S. Army Corps of Engineers (Corps) during disaster response and recovery operations. I am Ray Alexander, Director of Contingency Operations and Homeland Security, U.S. Army Corps of Engineers (Corps).

The Corps conducts its emergency response and recovery activities under two basic authorities: the Stafford Disaster and Emergency Assistance Act (Stafford Act); and Public Law 84-99 Flood Control and Coastal Emergencies, 33 U.S.C. 701n, as amended (PL 84-99). Under the Stafford Act, we and other Federal agencies support the Federal Emergency Management Agency (FEMA) under the National Response and Recovery Framework. In this capacity, the Corps is the lead Federal agency for Emergency Support Function 3 (Public Works and Engineering), and Recovery Support Function (RSF) – Infrastructure Systems but works under the Federal Coordinating Officer's (FCO) direction. ESF-3 provides temporary emergency power, temporary roofing, debris management, emergency infrastructure assessment, critical public facility restoration, temporary housing, demolition/structural stabilization, and support to FEMA command and control Nodes/ESF3. The Infrastructure Systems RSF works to efficiently facilitate the restoration of infrastructure systems and services to support a viable, sustainable community and improves resilience to and protection from future hazards. Under PL 84-99, we prepare for disasters through planning, coordination, and training with local, state, Federal partners. The Corps can also assist state and local entities in flood fight operations or through implementation of advance measures to prevent/reduce storm incident damages. After the emergency incident, PL 84-99 authorizes the Corps to repair damage to Federal flood infrastructure projects, and work with states/municipalities to rehabilitate and restore eligible non-Federal flood infrastructure to pre-storm conditions.

When disasters occur, Corps teams and other resources are mobilized from across the country to assist the local Corps districts that are responding to the incident. As part of this mission, the Corps has more than 50 specially trained response teams, supported by emergency contracts, to perform the wide range of public works and engineering-related support missions I just described. Additionally, the Corps uses pre-awarded contracts that can be quickly activated for missions such as debris removal, temporary roofing, generator installation, and dredging.

**2017 Hurricane Season** – With regard to hurricane activity, 2017 was an unusually active season. The Corps was, and continues to be, involved in the FEMA-led Federal response and recovery operations in support of multiple events, including Hurricanes Harvey, Irma, and Maria.

**Hurricane Harvey** – On August 25, 2017, Category 4 Hurricane Harvey made landfall along the central Texas coast near Rockport, Texas, between Port Aransas and Port O'Connor and the President approved a Major Disaster Declaration for Texas. Large amounts of rainfall fell across the greater Houston metropolitan area causing record

flooding. FEMA tasked 27 total mission assignments totaling \$126 million to the Corps to assist in Hurricane Harvey response and recovery efforts. Since August 22, 2017, nearly 1,000 Corps personnel have been deployed to support response and recovery efforts.

**Hurricanes Irma and Maria** – Category 5 Hurricane Irma made landfall over the U.S. Virgin Islands on September 6, 2017, while also impacting Puerto Rico with Category 2 winds, 12 foot storm surge and up to 20 inches of rain. Hurricane Irma made landfall in southern Florida/Florida Keys on September 9, 2017. Soon thereafter, Category 5 Hurricane Maria made landfall over Puerto Rico on September 20, 2017, causing major damage to critical infrastructure and homes. FEMA has issued over \$3.6 billion in Mission Assignments for the Corps through ESF-3 to assist in Hurricanes Irma and Maria response and recovery (47 Mission Assignments totaling \$181 million for Hurricane Irma and (42 Mission Assignments totaling \$3.64 billion for Hurricane Maria). Currently, the Corps has over 940 personnel supporting ESF-3 missions deployed in various locations supporting the recovery missions.

Temporary Emergency Power: The Corps and its contractors concluded its temporary emergency power mission assignment in the U.S. Virgin Islands on February 20, 2018; the Corps installed 180 generators during this mission. Fifteen generators remain installed and are managed under a FEMA contract to provide additional stability to critical facilities in the U.S. Virgin Islands.

As of April 30, 2018, the Corps and its contractors have executed 2,178 of 2,187 taskings received for temporary generators in Puerto Rico. Task Force Temporary Emergency Power is currently subsidizing grid power with 826 active generators installed, with total capacity of 290.1 MW. As the power returns to Puerto Rico, the number of active generators will go down. The Corps has completed 514 de-install requests 514, with 11 remaining. Temporary Emergency Power, in coordination with PREPA, installed nine small power plants, or micro grids, to provide temporary power to communities while grid power is being restored. Currently, four micro grids are operational and five have been de-installed as the areas are back on grid power.

Temporary Roofing: In order for the Corps and its contractors to install temporary covering (blue roof), the government and its contractors require validated rights of entry. The Corps has completed its temporary roofing mission assignments in Florida, the U.S. Virgin Islands and Puerto Rico. In Puerto Rico, the Corps and its contractors completed 59,469 blue roof installations and collected over 76,609 rights of entry. The final roof was completed on March 22, 2018 and the mission was complete as of April 3, 2018.

Debris Management: As of April 30, 2018, the Corps has removed approximately 3,918,767 cubic yards of debris in Puerto Rico (approximately 95% complete).

Dam and Levee Safety, Assessments, and Response: In Puerto Rico, Corps Dam and Levee teams inspected 17 priority dam locations and Guajataca Dam was the only site deemed in critical condition. Hurricane Maria caused a significant rise in the water level of the dam, and resulted in flow in the spillway. The spillway structure was compromised and the surrounding area began to erode, posing immediate safety risk to 1,000 residents and severing water supply to approximately 250,000 residents. Corps teams placed over 500 Jersey barriers and over 1,300 "super-sack" sand bags to decrease erosion and allow for temporary repairs of the spillway. Additionally, the Corps teams cleared existing outflow conduits and placed piping and pumps to further reduce the water level in the dam to safe levels and provide water supply. To address residual risk to human health and safety, by direction of FEMA mission assignment, the Corps has contracted for spillway stabilization and water supply line reconnections. The Corps is in the process of contracting for repair of the outlet works gate. Together these interim risk reduction measures will provide a 100-year protection this year. PREPA is considering requesting Corps support under a Project Worksheet (PW) for additional work for spillway and channel reinforcement to provide a 1,000-year protection by the fall of 2019 for the Guajataca Dam. The Corps has no authority for permanent repairs at this non-federal project.

Power Restoration Mission: On September 30, 2017, the U.S. Army Corps of Engineers was given a FEMA Mission Assignment, within the authority of the Stafford Act, to lead planning, coordination, and integration efforts in preparation to execute electrical power grid restoration in Puerto Rico due to impacts caused by Hurricane Maria. Our priority remains the safe and urgent restoration of power to the people of Puerto Rico. As of May 1, 2018, 98.04% (approximately 1,444,186 of the 1.47 million) of pre-storm customers that are able to receive power are energized. The Corps currently has 1,155 personnel on the ground, including 976 contractors, 665 working directly on distribution and transmission lines. The Unified Command Group—comprised of the Corps, the Federal Emergency Management Agency, the Puerto Rico Electric Power Authority, and the Island's Restoration Coordinator continually evaluate the ongoing work in order to restore electricity to remaining pre-storm customers across the island. As the Corps' current Mission Assignment approaches the May 18, 2018 expiration, PREPA is taking on more of the management, coordination, logistics, and external messaging functions for the restoration effort. Throughout the Corps' Grid Restoration Mission Assignment and continuing today, Department of Defense's Defense Logistics Agency has been an essential partner as the acquisition agent for the procurement of over \$240 million of materials required in the restoration the power grid.

The Corps remains fully committed and capable of executing its other Civil Works activities across the Nation despite our heavy involvement in these ongoing response and recovery operations. We also remain ready and poised to assist in future events as they may occur. This concludes my testimony and I look forward to answering any questions you might have. Thank you.

The CHAIRMAN. Thank you, Mr. Alexander.  
Mr. Sobrino Vega.

**STATEMENT OF CHRISTIAN SOBRINO VEGA, PRESIDENT OF  
THE GOVERNMENT DEVELOPMENT BANK, AND CHAIRMAN  
OF THE BOARD OF THE PUERTO RICO FISCAL AGENCY  
AND FINANCIAL ADVISORY AUTHORITY, GOVERNMENT OF  
PUERTO RICO**

Mr. SOBRINO VEGA. Thank you, Committee Chair Murkowski, Ranking Member Cantwell and the rest of the distinguished members of this Committee. Our statement will focus on addressing our strategy for transforming Puerto Rico's energy sector and PREPA itself.

On January 23, Governor Rosselló announced a vision for the transformation of PREPA and the Island's electric system. The envisioned transformation is based on attracting private participation to the sector through a concession of the transmission and distribution system and private ownership and/or operation of the generating capacity. The transformation is desperately needed.

While Hurricanes Irma and Maria left the electric system in shambles and millions of Puerto Ricans without electricity for months, the fragile nature of the Island's electricity infrastructure was painfully evident before the September devastation.

The envisioned transformation is intended to bring to Puerto Rico a consumer-centered model that provides people with options, is sustainable, opened to advanced technology and is resilient to future atmospheric events.

Establishment of an independent regulator and a regulatory structure that creates investor and customer confidence is critical. The transformation is also intended to be an innovative energy model with a commitment to the use of renewable and environmentally friendly resources and with the goal of achieving more than 30 percent renewable energy generation and an aspirational energy cost of approximately \$0.20 per kilowatt-hour. Energy transformation will provide a springboard for the modernization of Puerto Rico, attract new business and create jobs.

The government intends the transformation process to be achieved through a proven model—Puerto Rico's Public-Private Partnership Act. The P3 Act is well understood by potential investors and has been used successfully in recent concessions.

The legal framework is one that promotes a competitive process and assures transparency and fairness while still providing the flexibility necessary to achieve the best results for Puerto Rico.

We also expect that the transaction will be approved by the Title III Court having jurisdiction over PREPA's insolvency proceedings.

In any structure, federal funding provided for permanent system improvements will be necessary to achieve the appropriate levels of resiliency and hardening of the system consistent with federal law. The structure of the transformation will be designed to assure that benefits of federal funding flow to the citizens, just as in any natural disaster.

To make the Island's recovery efforts the most transparent, effective and efficient in history, the Governor created the Central Recovery and Reconstruction Office for Puerto Rico. The Recovery Of-



office is responsible for the development and implementation of a strategic plan for the reconstruction of the island in the short-, medium- and long-term.

In addition, the Recovery Office is intended to provide financial accountability during the transformation process.

But one thing needs to be very clear. The U.S. citizens of Puerto Rico should and must be the principle agents in our recovery. Mechanisms are being instituted to show and provide confidence that we will be good stewards of the U.S. taxpayer funds.

During the transformation process, we anticipate that a new or modified, adequately funded and independent regulator will be established by the Puerto Rico legislature. We expect this regulator will be comprised of five, highly qualified members with staggered six-year terms to mitigate against political interference. They may only be removed for just cause consistent with Puerto Rico case law developed in that process. This regulator will be free from regulatory conflicts and structured to support the steps leading to sector transformation. We expect this commission to be supported by a staff with utility regulation expertise and that the ratepayer advocate will exist separately from the regulator to provide an independent voice for consumers.

After the transformation has been completed with a successful transaction, the new regulatory structure will protect consumers and implement Puerto Rico's energy sector policy. It must do that while creating investor confidence and attracting private capital.

Transformation of the energy sector is a vital part of Puerto Rico's economic recovery. The Government's economists inform us that empirical analysis from Argentina and other countries indicates that a one percent increase in investment will increase gross domestic product per capita by 0.3 percent, implying that consistent investment results in considerable increase in GNP levels over time.

In the recently-certified fiscal plan for PREPA, the Oversight Board projected that the energy reforms would increase growth by 0.30 percent starting in Fiscal Year 2020. As a result, electric sector reform is one of the lynchpins of the future of Puerto Rico.

And with these words, I will submit our testimony and look forward to answering your questions.

[The prepared statement of Mr. Sobrino Vega follows:]

CHRISTIAN SOBRINO VEGA, PRESIDENT OF THE GOVERNMENT DEVELOPMENT  
BANK AND CHAIRMAN OF THE BOARD OF THE PUERTO RICO FISCAL AGENCY  
AND FINANCIAL AUTHORITY, GOVERNMENT OF PUERTO RICO

**Written Statement of Christian Sobrino Vega**  
**May 8, 2018**

This statement is submitted on behalf of Mr. Christian Sobrino Vega, President of the Government Development Bank and Chairman of the Board of the Puerto Rico Fiscal Agency and Financial Advisory Authority (known by its Spanish acronym, AAFAF). Mr. Sobrino also acts as the Chief Advisor for Economic Development to the Governor of Puerto Rico, is the Governor's designee on the Financial Oversight and Management Board for Puerto Rico, and is AAFAF's representative on the Governing Board of the Puerto Rico Electric Power Authority (PREPA). Mr. Sobrino's statement addresses the transformation of Puerto Rico's energy sector and the future of Puerto Rico's electric system.

***Overview of Puerto Rico's Vision for the Future of Electric System***

On January 23, 2018, Governor Rosselló announced a vision for the transformation of PREPA and the Island's electric system to a modern, reliable, and resilient system that can provide electricity at affordable rates to customers. The envisioned transformation is based on attracting private participation to the sector through a concession of the transmission and distribution system and private ownership and/or operation of the generating capacity. The transformation is desperately needed.

While Hurricanes Irma and Maria left the electric system in shambles and millions of Puerto Ricans without electricity for months, the fragile nature of the Island's electricity infrastructure was painfully evident before the September devastation. PREPA's infrastructure was practically abandoned in the last decade and the generation assets are on average approximately 28 years older than the industry average in the mainland United States. As a result, the people of Puerto Rico have been shouldering unacceptably high electricity costs for unreliable electric service for years.

The envisioned transformation is intended to bring to Puerto Rico a consumer-centered and innovative model that provides people with options, is sustainable, uses advanced technology, and is resilient to the ravages of nature. Establishment of an independent regulator and a regulatory structure that creates investor and customer confidence is critical. The transformation is also intended to be an innovative energy model, with a commitment to the use of renewable and environmentally-friendly resources and with the goal of achieving more than 30% renewable energy generation and an energy cost of less than 20 cents per kilowatt hour. With an efficient, reliable, and modern electric power system, Puerto Rico will attract new industries and businesses that create jobs, which will add value to our society, as well as allow for greater competition in energy generation on the Island. Energy transformation will provide a springboard for the modernization of Puerto Rico.

***Process to Achieve Energy Sector Transformation***

Governor Rosselló has set forth a three-phase plan for the transformation of the electric sector. The first phase will define the framework for the transformation through legislation. The second

phase will involve marketing, receiving offers from interested parties, and evaluating the technical, economic, and financial capabilities of offerors. In the final phase, the terms of awarding and hiring the selected parties that meet the requirements for the transformation and modernization of our energy system will be negotiated, finalized, and approved.

The Government intends the transformation process to be achieved through a proven model – Puerto Rico’s Public-Private Partnership Act (PPP Act). The PPP Act is well-understood by potential investors and has been used successfully in the Luis Muñoz Marín International Airport concession, the concession of certain toll roads, and multiple other infrastructure projects in Puerto Rico. The legal framework is one that promotes a competitive process and assures transparency and fairness while still providing the flexibility necessary to achieve the best results for Puerto Rico. I also expect that the transaction will be approved by the Title III Court having jurisdiction over PREPA in its pending insolvency proceeding.

The assumed “base case” for the contemplated transformation involves (i) private ownership and/or operation of all generation assets and a development of greenfield generation projects with a focus on a diversified fuel mix and clean energy and (ii) a private operator of the transmission and distribution system through a concession model, which leaves the ownership of the assets in public hands under the operation of a private operator. I anticipate this “base case” will be subjected to a market test in order to determine the extent of investor interest and whether higher values and/or better transaction terms can be achieved by using an alternative structure. I anticipate the timeline to run the competitive process for the transformation will be at least 12 to 18 months.

In any structure, federal funding provided for permanent system improvements will be necessary to achieve the appropriate levels of resiliency and hardening of the system consistent with the purposes of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. The structure of the transformation will be designed to assure that benefits of federal funding flow to the citizens – just as in any natural disaster.

In a joint effort with the federal government to make the Island’s recovery efforts the most transparent, effective, and efficient in U.S. history, the Governor created the Central Recovery and Reconstruction Office of Puerto Rico (CRRO) within the Public Private Partnership Authority. The CRRO is responsible for the development and implementation of a strategic plan for the reconstruction of Puerto Rico in the short, medium, and long term. In addition, the CRRO is intended to provide financial accountability during the transformation process. The CRRO has the power to approve audit policies and establish its own governmental ethics processes to govern all projects related to the reconstruction.

#### ***Role of Independent Regulation***

Independent regulation is essential to the transformation and modernization of Puerto Rico’s electric sector, just as it is on the mainland. An independent regulatory framework is necessary to support the desired power sector transformation, create investor confidence, and implement stable and accepted modes of regulation and economically-efficient rates. The current regulator

and regulatory structure, which were designed to regulate a public monopoly, cannot achieve those objectives without modification.

During the transformation process, I anticipate that a new or modified, adequately funded, and independent regulator will be established by the Puerto Rico legislature. I expect this regulator will be comprised of highly-qualified members with staggered terms to mitigate against political interference. This regulator will be free from regulatory conflicts and structured to support the steps leading to sector transformation. I expect this commission to be supported by a staff with utility regulation expertise, and that the ratepayer advocate will exist separately from the regulator to provide an independent voice for consumers.

After the transformation has been completed with a successful transaction, the new regulatory structure will protect consumers and implement Puerto Rico's energy sector public policy. It must do that while creating investor confidence and attracting private capital. To accomplish those goals, the new regulatory structure, while being tailored to the situation in Puerto Rico, should also incorporate known structures and established standards used by other economically-developed jurisdictions to both protect customers and regulate viable private sectors.

#### ***Importance of Energy Transformation to Puerto Rico's Economic Recovery***

Transformation of the energy sector is a vital part of Puerto Rico's economic recovery. Certain statistics suggest that electric bills for similar amounts of electricity in Puerto Rico can be twice the mainland numbers. The high cost of electricity in Puerto Rico is punishing for our citizens and a major inhibitor to attracting businesses to the Island. It is our belief that the improvement of the power grid will have a strong positive impact on long-term economic growth. The Government's economists inform us that empirical analysis from Argentina and other countries indicates that a 1% increase in investment will increase gross domestic product per capita by 0.3%, implying that consistent investment results in considerable increases in GNP levels over time. In the recently-certified fiscal plan for PREPA, the Oversight Board projected that the energy reforms would increase growth by 0.30% starting in FY2020. As a result, electric sector reform is one of the lynchpins of the future of Puerto Rico.

The CHAIRMAN. Thank you, sir.  
Mr. Higgins, welcome.

**STATEMENT OF WALTER M. HIGGINS, CHIEF EXECUTIVE  
OFFICER, PUERTO RICO ELECTRIC POWER AUTHORITY**

Mr. HIGGINS. Thank you, Chair Murkowski, Senator Heinrich. Thank you very much for inviting me today.

I'm now in my sixth week in Puerto Rico. Delighted to be there.

I want to start by thanking the Congress, the Federal Government, especially the FEMA, the U.S. DOE, the U.S. Army Corps of Engineers and, more recently, the HUD for all the things that are going on that are helping Puerto Ricans and Puerto Rico's electric utility to become better and to be restored.

There are many, many initiatives that are underway or soon to be underway and we look forward to how those will help to shape the grid in the future.

I'd also like to recognize the many public and private utilities that came to Puerto Rico after the storm and helped us, hundreds and hundreds of people, to get as many people as possible restored to power.

You heard Mr. Alexander say that as of last night 98.44 percent of the people of Puerto Rico have power available to their premises. That's good, but it's not nearly good enough because there are still 23,000 people that do not have power available to their premise. And we now have about 1,900 field workers in the field in Puerto Rico working on resolving that problem.

In addition, we also know that there are some places that may be just too hard to get to in any reasonable time. We have activities underway currently to find alternate solutions for those people. Perhaps they might be microgrids, at a minimum, a solar generator, a solar battery and an emergency generator. Those kinds of activities are underway, actively, trying to figure out who it is we will not be able to get to.

One thing that we're very sensitive to at this moment is the impending hurricane season that starts in less than three weeks. We are updating our emergency plans, both island-wide as well as inside PREPA. We will hold an emergency drill inside PREPA a few weeks from now and then right after that, there will be an island-wide emergency drill to make sure that the island is ready. And then whatever lessons we learn from that, we will hold another drill in June so that we will have practiced and practiced and practiced to be ready as possible for the next season.

We're now moving from the planning and execution of restoration to what's called recovery, and we have lots and lots of things to do thanks to the federal dollars that are going to be made available and the idea that we can do better than we have done in the past.

Yesterday we announced the adoption of a national standard, the RUS, Rural Utilities Service, standard for all future construction in Puerto Rico of the grid. That's an important step for us.

The system was designed to American Society of Civil Engineering standards in the past, but this national standard will help to facilitate bringing people into the island, getting parts on a faster basis, making things familiar to everybody, everywhere, making it easier to model, easier to restore, easier to adopt new technology

because everything we do, new from now on and eventually to be rebuilt, will be done to an accepted national standard. And the RUS standard is a good one.

Two things really stand out as needing to be fixed, and they've been alluded to in one way or another. The grid did not withstand the hurricane. It simply didn't withstand it. The grid has to be able to do better, and it has to be restorable faster.

Much, if not most, of the grid was designed many, many years ago, more than 20 years ago and sadly, it has not been maintained the way it needed to be maintained. You don't just build a transmission tower and walk away and hope everything is fine. You have to go back on a regular basis, make sure that the guy wires that hold the towers up, that everything is still there and still intact. That needs to be done.

Second, our generation does not perform as well as possible. That's certainly been hurting us recently. Most of the generation that's active and capable in Puerto Rico is on the south side of the island. Most of the load is on the north side of the island. Sadly, the interconnection is what got damaged so badly during the hurricane.

So, anytime, like happened recently, there is an incident that affects the grid, the transmission system, the generation can quickly get out of balance and a blackout can and unfortunately did ensue.

So we believe that with the right technology, such as Secretary Walker talked about, with the right amount of maintenance, with a new view of how to build the grid back using resilient, renewable, distributed and more efficient resources, Puerto Rico's grid can be the grid that the customers need.

Thank you for your attention today. I appreciate being invited.  
[The prepared statement of Mr. Higgins follows:]

WALTER M. HIGGINS, CHIEF EXECUTIVE OFFICER, PUERTO RICO ELECTRIC POWER AUTHORITY

Written Statement of Walter M. Higgins  
May 8, 2018

### ***Introduction***

This written statement is submitted on behalf of Mr. Walter M. Higgins. Mr. Higgins serves as the Chief Executive Officer of the Puerto Rico Electric Power Authority (PREPA). He has held that position since March 20, 2018. Mr. Higgins' statement addresses the current status of operations at PREPA, the general status of its electric grid, the progress made in the restoration process, and certain issues related to the restructuring/reorganization of PREPA's resources.

### ***Status of Current Operations and General Status of the Grid***

Based on the most recent available information, the current status of line restoration is as follows: Over 98.25% of all customers now have power available to their premises. Overall progress on transmission line restoration is 80%, calculated as completed line segments divided by total line segments. Specifically, 15 of the 17 230 kV lines are restored, and 67 of 86 of the 115 kV lines are restored. 74% of the towers, poles, conductors, and insulators have been repaired. To date, over 52,000 power poles, 10,000 transformers, and 29 million feet of new power cables have been delivered to the Island, representing approximately 95% of the supplies required for the line restoration effort.

Based on the most recent available information, the status of PREPA's generation operations is as follows: The average daily peak demand is currently approximately 2100 MW. PREPA operates 15 available generating units with the capability of producing 3250 MW. PREPA has 12 generating units out of service for repairs or other operating factors and 4 generating units out of service for economic reasons.

With respect to the restoration of distribution facilities and based on the most current available information, PREPA's current load is 90% of comparable 2017 levels. At this point, 96% of PREPA's 342 distribution substations and 53 of 56 transmission centers are energized. In addition, PREPA has restored approximately 87% of the linkages between substation Communication Remote Units (CRUs) and the central customer billing system.

### ***Liquidity and Business Continuity Plan***

With respect to PREPA's cash flow, PREPA received a loan from the Government of Puerto Rico in February 2018. Since it received the loan, PREPA has consistently collected slightly more than \$50 million of accounts receivable per week, and it projects collections to remain near that level through the end of PREPA's fiscal year on June 30, 2018. PREPA currently believes that these weekly collections, coupled with the loan, will permit PREPA to continue to operate under current conditions without the assistance of additional financing through the end of the current fiscal year and into Fiscal Year 2019. It is worth noting that the continuity of restoration and mitigation/hardening work on the grid is dependent on the continuing receipt of federal funding, which is being closely coordinated with FEMA. Moreover, current liquidity at PREPA - including the \$300 million loan from the Government of Puerto Rico - amounts to a reserve of less than two

months of necessary operating expenses, which in my view is low for a company of this magnitude that is now entering another hurricane season. PREPA and the Puerto Rico Fiscal Agency and Financial Advisory Authority are exploring various options to address potential liquidity needs.

Our team is also working towards updating its business continuity plan in coordination with the Puerto Rico State Agency for Emergency and Disaster Management and FEMA. PREPA is evaluating the challenges faced and lessons learned during 2017 to: (a) identify additional steps and actions that will reduce risk and allow for faster recovery periods; and (b) improve coordination and resource alignment with other federal, state, and municipal entities. Synchronizing local and federal continuity plans will leverage the risk mitigation and recovery capabilities of the relevant emergency entities to ensure a calibrated and resilient response if/when needed.

### ***Restoration Challenges and Successes***

It would be difficult to understand the challenges PREPA has faced during the restoration process without first recognizing the unprecedented level of devastation caused by the onslaught of hurricanes Irma and Maria. The path of Irma primarily affected the northern portion of the Island, while the route of Maria nearly cut the Island in half from the southeast corner to the northwest corner. Hurricane Maria was the strongest hurricane to impact Puerto Rico since 1928 and is reported to have had sustained winds of up to 155 miles per hour and up to 40 inches or more of rain in some regions. The devastation was considerable with transmission towers toppled, power poles snapped in half or knocked over, and some substations flooded. PREPA's infrastructure was fragile prior to the hurricanes due to the poor maintenance of the power grid on Puerto Rico. These circumstances led to total system failure and a resulting blackout that I believe was longer and deeper than ever experienced elsewhere in the United States.

In the aftermath of the hurricanes, the most challenging predicament faced by the restoration effort has been the delivery of materials to the Island, especially materials needed to repair the transmission and distribution system. By December 30, 2017, approximately 3.5 months after the passing of Maria, only 14,000 power poles (27% of requirement), 2 transformers and 1.75 million feet of new power cables (6% of requirement) had been delivered to the Island. Materials shortages resulted, in part, from the active hurricane season in the United States. In addition, PREPA's system specifications have certain unique elements. As a result, time was required to fabricate some components. Moreover, the logistics of getting the large quantity of replacement parts to the Island also proved to be challenging. There were often times when restoration crews were working at a less than an efficient level simply because there were not enough materials on the Island to allow continued restoration efforts.

Another challenge was the loss of fiber optic and remote communication networks that provide the backbone for managing the operations of the power grid and compiling information from operations. The loss of this vital real-time and daily information inhibited PREPA's ability to monitor system operations and maintain a high level of customer service.

I believe PREPA and its employees, with exceptional assistance from a multitude of Federal and Puerto Rico agencies and many public and private utilities from all over the United States, met the



challenges presented by the hurricanes during the restoration process. PREPA has worked closely with these partners to ensure that power was, and continues to be, restored as quickly as possible, in material compliance with the laws of both Puerto Rico and the United States.

For the power grid, the key initial steps in the restoration process focused on reestablishing the capabilities of the system to its status prior to the storms. Unfortunately, the pre-storm PREPA power system did not meet power grid standards that are applied on the Mainland. This fact provides context for what can be described as a benefit of the restoration process. PREPA, with the support and guidance of FEMA and the United States Department of Energy, is working to harden the power grid and deploy the proper equipment and processes to meet power grid compliance standards. This initiative will continue to be deployed over the coming years and is expected to improve the reliability and efficiency of the system. In addition, the replacement of insulators, conductors and transformers decreases the age, and potential obsolescence, of this type of equipment on the grid. Moreover, the restoration has led to the installation of replacement communications equipment across the communication network. Since the advances in telecommunications equipment over the past years have been material, the installation will likely provide greater flexibility in deploying improved data management systems at the receipt points on the system. All of these facts benefit the people of Puerto Rico going forward and will be a positive factor in the transformation of the Puerto Rico energy grid.

To date, PREPA has submitted requests for reimbursement through project worksheets in the amount of \$1.6 billion, \$997 million of which has been obligated or advanced by FEMA. PREPA is in the process of preparing additional project worksheets in the amount of \$193 million. The restoration will continue until all of PREPA's customers receive electricity and are billing and paying on a regular basis.

***PREPA's Operations During the Transformation Period and Support of the Energy Sector's Transformation***

In January, Governor Rosselló announced a transformation of Puerto Rico's energy sector that is expected to take at least 12–18 months. The transformation envisions possibly engaging a private operator for the Island's transmission and distribution system through an effective mechanism (e.g., long term concession agreement) which is compliant with federal funding requirements and complimentary to the anticipated and planned reconstruction and hardening of that system following last year's storms. This transformation also contemplates a private ownership or operation of existing PREPA assets as well as development of greenfield generation projects. It is my understanding that these transactional approaches will be market tested.

PREPA will continue to operate during the transformation period and is focused on driving additional cost-saving initiatives and operational efficiencies. In order to initiate, advance and manage necessary reforms to PREPA's current business model, its Governing Board, with assistance from the Government of Puerto Rico, has implemented several organization changes. In 2017, the Governing Board created the Project Management Office (PMO), and named Fernando Padilla as PMO Director, to develop clear and specific policy rationales for project prioritization and implementation and to oversee engagement of external and internal stakeholders to ensure transparency in meeting transformational schedules. Also in 2017, the Governing Board

named the Transformation Advisory Council (TAC), and selected eleven energy industry and utility industry leaders to serve as TAC members, to provide PREPA with advice on developing a long-term vision and transformation execution plan for the Island's power system. PREPA also retained Todd W. Filsinger of Filsinger Energy Partners as Chief Financial Advisor (CFA) to develop and support ongoing financial and operational restructuring efforts, advance the transformation process, assume responsibility for budget and expense approvals, direct implementation of the Fiscal Plan and transformation process for PREPA, and to interact with the Oversight Board and other stakeholders. Mr. Filsinger has been active in the energy sector for over 25 years and is recognized globally as a leader and turn-around specialist in the energy sector, involved with major industry restructurings such as Calpine and Energy Future Holdings. And, as I stated previously, I assumed the role of CEO on March 20, 2018, with more than 40 years of top management experience, including: Sierra Pacific Resources (SPR) (now known as NVEnergy); AGL Resources and Atlanta Gas Light Company, notably the first deregulated natural gas utility in the United States; Louisville Gas and Electric Company; and Portland General Electric Company. As I understand it, I am the first non-political appointee ever selected to serve as the utility's chief executive.

The Governor also established the Office of Contract Procurement and Compliance (OCPC) through Executive Order 2017-66 in November 2017. The OCPC's mission is to ensure compliant and efficient PREPA procurement necessary to support recovery, restoration of power, and rebuilding of energy grid. Prior to final action, all qualifying PREPA procurements of over \$500,000 are reviewed and approved by OCPC, which provides independent review with recognized national and local technical experts to confirm that contracts and procurement are compliant with local and federal laws and regulations. The OCPC has also implemented procurement process controls and procedures to mitigate compliance risk, limit potential de-obligation risk, and enhance accountability and implement process enhancements, including automation and integration, monitoring and reporting to increase transparency, accountability and effectiveness.

Under the direction of its Governing Board and with these organizational improvements in place, PREPA will undertake or complete the following tasks in the near and medium term:

1. Complete the restoration of power to its customer base;
2. Ensure funding for continued operations, including billing all customers and securing external financing;
3. Provide all necessary assistance for the undertaking of the envisioned sector transformation, including mitigation efforts;
4. Prepare a revised and updated integrated resource plan;
5. Update projected maintenance expenditures; and
6. Implement the multiple projects and reforms contemplated by our operating plan.

PREPA is also focused on improving its cash flow through procurement process enhancements, cash distribution controls, collection of all insurance proceeds, maximizing federal funding for disaster recovery and mitigation, improving account maintenance and billing quality, and improving fleet and inventory management. PREPA's management is also emphasizing employee

productivity, customer service quality, and long-term power system infrastructure improvements through status quo operational initiatives and energy sector transformation.

PREPA has initiated a team-based Performance Improvement Initiative, known as WP180, focused on evaluating PREPA's operational and contractual business practices with the goal of identifying opportunities to increase operating efficiency and reduce costs. WP180 focuses broadly on areas of PREPA's operations including transmission/distribution, generation, administrative, customer relations, and human resources. WP180 also addresses PREPA's principal cost centers such as fuel and purchased power. The WP180 process has already identified and executed on near-term operational improvements to save money. For example, beginning in January 2018, PREPA shifted its dispatch to an economic dispatch saving millions in fuel costs. Another example is that beginning in late February 2018, PREPA increased LNG consumption at the Costa Sur plant to lower overall fuel costs.

Other potential cost reductions identified by PREPA in its fiscal plan include: behind the meter revenue recovery, public lighting outsourcing, reduction of non-technical losses, capacity and renewable PPAs. PREPA believes that it can save approximately \$100 million in non-fuel-and power purchase expenses and another approximately \$200 million in projected fuel and power purchase expenses, which it will seek to implement as part of the WP180 initiative.

In conclusion, while we acknowledge that there is much work to be done to prepare for the transformation of Puerto Rico's energy sector, PREPA believes it has made important strides during historically challenging circumstances, and it has made, and will continue perfecting, significant organizational changes to position the utility to play a pivotal role in, and ensure the future success of, Puerto Rico's energy sector transformation.

The CHAIRMAN. Thank you, Mr. Higgins.  
Mr. Román Morales.

**STATEMENT OF JOSÉ ROMÁN MORALES, ACTING CHAIRMAN,  
PUERTO RICO ENERGY COMMISSION**

Mr. ROMÁN MORALES. Thank you, Chairman Murkowski and members of the Committee. Thank you for inviting me to appear and for your interest in Puerto Rico's plans to transform its grid.

The Commission has continued to carry out its statutory duties. However, the need to restore electric service fast and effectively while simultaneously seeking a sustainable development, the Commission promulgated draft rules for the development of microgrids and is about to publish the final version of the same.

The Commission has also issued new integrated resource planning rules and is preparing to guide PREPA's 2018 IRP process. The Commonwealth is currently at a decisive moment for the development of Puerto Rico's electrical system. The clear mandate of I57 to transform it into an efficient, cost-effective and resilient electric system today becomes more important than ever. So it is of utmost importance that these decisions are made based on a rigorous analysis of the needs of the country within an orderly and objective planning process.

The Commission ordered PREPA to file the IRP by October 2018. We have initiated a proceeding to set new rates for Fiscal Year 2019 to reflect PREPA's new cost structure. The hurricanes have drastically affected PREPA's costs, revenues and expectations of future sales, making it unlikely that the rates in effect today satisfy the statutory just and reasonable standard.

There are many decision-makers involved in Puerto Rico's electric industry. There's PREPA, the FOMB, the Commonwealth Legislature, the Governor, the Commission, the Federal Government. Among all of these players, there should be just one common goal and that is performance for the consumer.

In order for the term privatization to be useful, it needs more clarity, otherwise people will confuse ideologies with solutions. There are four distinct concepts that sometimes get confused and combined. They are market structure, asset ownership, operational responsibility and business ownership. So when someone speaks of privatization it is not clear what at least they propose to privatize: assets, operational responsibility or the business. And it is not clear whether they want Puerto Rico's historically monopolistic market to remain monopolistic or to convert it into competitive market.

Instead of privatization, I will better describe it as a restructuring. There is more to transformation than just a change of ownership. Too often people talk about privatization and market structures when what they really want to do is escape the costs of the past, address only their own needs and leave the resulting problems to others. That approach will not solve Puerto Rico's problems.

To produce the performance Puerto Rico needs, we must follow a logical sequence of steps.

First, describe the mix of products and services that customers need. Describe the qualities of those products and services in terms of reliability, timeliness, innovation, ease of use and resilience.

Identify the market structures that will provide those products and services most cost effectively. Identify the companies that can most, that can provide those services cost effectively. For those services that will remain under a monopoly market structure, develop the necessary regulatory procedures for them to proceed on principles.

And for those products and services to be provided on the competitive market structure, create the regulatory principles and procedures.

There are many decision-makers and stakeholders involved in Puerto Rico's electric industry, all with ideas, plans and proposals to address Puerto Rico's situation. All ideas, all paths to performance should be on the table, but all ideas should compete in a merit-based, fact-based, transparent process.

We must find the best paths to performance. The integrated resource plan approval process will determine the correct mix of resources that is most cost effective from centralized to decentralized generation from the impact of demand response programs and energy efficiency to address the consumption, the highest consumption that occurs during the evening, in order to allow highest penetration of renewables.

The Commission is ready and able to assist the Commonwealth, the FOMB and Congress to define the new regulatory frameworks and market structures for the benefit of the people of Puerto Rico.

Chairman Murkowski and members of the Committee, thank you very much for this opportunity to testify and I look forward to your questions.

[The prepared statement of Mr. Román Morales follows:]

**Testimony of José Román Morales, PE  
Acting Chairman, Puerto Rico Energy Commission**

**Before the  
U.S. Senate Committee on Energy and Natural Resources**

**May 8, 2018**

Chairman Murkowski, Ranking Member Cantwell and Members of the Committee:

My name is José Román Morales. I am the Acting Chairman of the Puerto Rico Energy Commission. Thank you for inviting me to appear and for your interest in Puerto Rico's plans to transform its grid. My testimony makes four main points:

1. In the immediate future, the Commission continues to carry out its vital duties under Act 57.
2. However, the Commission continues to face unnecessary, avoidable obstacles in carrying out its statutory duties
3. Looking forward into the longer term, the Commission seeks to define the contours of Puerto Rico's energy market privatization, competitive structure, and infrastructure needs.
4. The Commission continues to be at the disposal of the Commonwealth Legislature to assist in its efforts to define a new regulatory infrastructure and new market structure models.

**I. The Commission continues to carry out its vital duties under Act 57.**

The Commission has continued to carry out its statutory duties. As mentioned on my previous testimony, the Commission started an investigation for resilient solutions for the grid. Such investigation led to the rulemaking process to promote the development of microgrids.

**a. Microgrid rules.**

On October 27, 2017, the Commission began an investigation with regards to the state of Puerto Rico's electrical system as result of Hurricane María's landfall on the Island

("October 27 Resolution").<sup>1</sup> As a result of the damages to the electrical system and considering the critical role of the electric service in the economic development of the Island and the day to day lives of its citizens, the restoration of electric service was one of the main objectives in the short term.

Nevertheless, it is insufficient to merely identify strategies that allow for the restoration of electric service in the shortest possible amount of time, rather, it is also necessary that those strategies promote the development of a resilient, modern and agile electric system. Aware of the need to restore electric service fast and effectively while simultaneously seeking its sustainable development in the long term, through Resolution and Order issued on November 10, 2017 ("November 10 Resolution"),<sup>2</sup> the Commission identified the installation of distributed generation, energy storage and microgrid systems as available alternatives consistent with these objectives. The Commission promulgated Draft Rules for the development of Microgrids on January 4<sup>th</sup>, 2018 and is about to publish the final version of the same. The regulation process incorporated input and comments from a vast number of parties from the electric sector, both from the Island and from the mainland US.

- b. The Commission has issued new IRP rules, and is preparing to guide PREPA's 2018 IRP.

The Commonwealth is currently at a decisive moment for the development of Puerto Rico's electrical system. The clear mandate of Act 57 to transform it into an efficient, cost-effective and resilient electricity system today becomes more important than ever. The development of new technologies, the introduction of microgrid systems, as well as the decrease in the cost of energy storage systems, have changed the reality of the country's energy market, and in turn introduces new opportunities and alternatives in the transformation process. Likewise, the ravages of Hurricanes Irma and María have forced us to make vital decisions about what the Island's energy future should be, so it is of utmost importance that these decisions are made based on a rigorous analysis of the needs of the country within an orderly and objective planning process.

As a result of the above, it became necessary to update the regulations applicable to the preparation of the integrated resource plans (IRP) of the Puerto Rico Electric Power Authority ("PREPA"). In accordance with the requirements of Act 57, PREPA must submit for approval a plan "that considers all reasonable resources to meet the demand for electrical services during a twenty-year period, including those related to the energy supply, whether existing, traditional and/or new resources, and those related to energy demand, such as conservation and energy efficiency, response to demand or "demand response", and localized generation by the client. "

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<sup>1</sup> Case Num. CEPR-IN-2017-0002, In Re: Energy Commission Investigation Regarding the State of the Puerto Rico Electric System after the Passing of Hurricane María.

<sup>2</sup> Id.

Based on the experience gained in the first evaluation and approval procedure of the IRP, the recent changes in the reality of the Puerto Rico energy system and in order to establish an adequate and useful process for long-term resource planning, the Commission developed the new rules. The rules seek to provide the Authority with a clear framework for the preparation of future IRPs in such a way as to achieve a rapid and effective transformation for the benefit of the people of Puerto Rico.

Moreover, as part of the IRP, several load forecasts will be studied in detail, as well as current generation and demand resources so that a reliable, resilient, efficient electrical system can be developed. In addition, the rules address aspects related to the establishment of performance inducement metrics and the implementation of energy efficiency and demand response programs.

The Commission ordered PREPA on March 15, 2018 to file an updated IRP for review by October 2018.

- c. We have initiated a proceeding to set new rates for FY2019, to reflect PREPA's new cost structure.

For the first time in PREPA's 77-year history, PREPA's rates were set by an objective, professional regulator based on evidence and testimony produced under oath. Those rates were scheduled to enter into effect on FY2017. The 2017 Rate Order also established procedures for determining rates applicable to FY2018, as well as procedures for subsequent "three-year rate cases" and "one-year budget examinations."

The 2017 hurricanes have drastically affected PREPA's costs, revenues and expectations of future sales, making it unlikely that the rates in effect today satisfy the statutory "just and reasonable" standard. The Commission therefore initiated the proceeding to set new rates for the period July 1, 2018 through June 30, 2019 ("FY2019 Rates"). These new rates must:

1. Recover the reasonable cost of providing service during FY2019.
2. Begin recovery of costs that were approved for recovery by the 2017 Rate Order and incurred by PREPA, but have not yet been recovered from PREPA's customers.
3. Reflect reasonable expectations for federal funding to support hurricane recovery efforts.
4. Reflect all feasible efforts to reduce costs, consistent with the long-term objective of reliable, high-quality service.
5. Address the unique challenges regarding debt service



6. Be based on a revenue requirement that complies with any overall expenditure cap established by the Federal Oversight and Management Board ("FOMB").

**II. However, the Commission continues to face unnecessary, avoidable obstacles in carrying out its statutory duties.**

In my last appearance before this distinguished Committee I expressed the Commission's need for jurisdictional certainty and sufficient resources.

The Commission is financially self-sustainable as its income is derived from electric rates, which PREPA collects and then disburses directly to the Commission. It is financially independent from the Commonwealth Government. Nevertheless, it requires approval from the Governor's Office for procurement of external consultants, outside counsel and personnel. The Commission is still waiting—ten months after the beginning of FY18—for approval on personnel and external consultants needed for FY18. In addition, PREPA has not made its statutory regulatory payment for the second half of FY18, straining the Commission's resources.

In addition, FOMB claims in its documents to support independent, strong regulation of monopoly electric services. But its actions are undermining regulation by giving PREPA an excuse to avoid the Commission's orders—PREPA gives as its reason that the Commission's powers are preempted by the FOMB. But PREPA deeply misunderstands what the Congress provided. Congress did not give FOMB authority to singlehandedly establish Puerto Rico's energy policies, but rather commanded FOMB to work with Commonwealth entities to achieve the fiscal and financial accountability expected from any government entity. The powers Congress gave to FOMB are fiscal, not substantive. Yet, whether intentionally or inadvertently, FOMB has freed PREPA from regulatory control, delaying the implementation of operational and substantive reforms ordered by the Commission which, had they been undertaken, would have placed PREPA on the path of fiscal responsibility and assisted FOMB on its duties as they related to PREPA.

FOMB continues its practice, which I summarized in my last appearance, of ignoring every Commission effort to cooperate in the adoption of a set of procedures that would allow the Commission and FOMB to support each other's work. The most recent effort by the Commission was the draft protocols attached to my testimony, which have been shared with FOMB. It is a balanced document, addressing each major area of the Commission's Act 57 authority and describing ways for the FOMB and Commission to mesh their work in that area. FOMB has consistently rejected our offers for cooperation. Instead FOMB argues that it can "substitute" for the Commission, and has provided as much in the certified PREPA Fiscal Plan. Congress did not grant FOMB that authority.

The result has been an unwarranted and unnecessary delay in the implementation of measures to achieve financial and operational responsibility. The Commission's 2016 IRP Order and 2017 Rate Order represent significant steps to getting PREPA back on track towards financial and operational responsibility and providing Puerto Rico's citizens with

reliable, cost-effective energy service. These measures are in-line and consistent with FOMB stated goals for PREPA. Had FOMB agreed to work with the Commission, instead of against it, PREPA's transformation would be one year ahead of schedule. Instead, Puerto Rico still finds itself in square one.

I ask Congress to assist Puerto Rico's energy evolution by reminding FOMB of the limits of its authority, and of its obligation to act as much as possible in concert with, rather than in conflict with, Commonwealth law. I also ask Congress to make clear to FOMB that the scope of its authority does not extend to substantive regulatory matters for which it has no expertise and that it should not interfere with the Commission's jurisdiction.

### III. Defining the contours of Puerto Rico's energy market privatization, competitive structure, and infrastructure needs

There are many decision-makers involved in Puerto Rico's electric industry—PREPA, the FOMB, the Legislature, the Governor, the Commission, the Federal Government. Among all these players, there should be a common goal: **performance for the consumer**. But the term "privatization," to be useful, needs more clarity. Otherwise people will confuse ideologies with solutions. There are distinct concepts that sometimes get confused and combined.

**1. Market structure:** This term describes the level of competitiveness of a market, in terms of the factors that affect competitiveness. Those factors include: number and types of buyers and sellers, their shares of the market, nature of the product or service being bought and sold, the geographic boundaries of the market, and ease of entry and exit into the market (including the presence or absence of entry barriers). Market structures range from perfect competition to complete monopoly. Within that range are structures like duopoly (two sellers), oligopoly (a few sellers), and monopolistic competition.

Analysis of market structure can be applied to each of the next three topics--asset ownership, operational responsibility and business ownership.

**2. Asset ownership:** This term means what it says: The physical assets are owned by a particular company. Asset ownership is different from market structure. In a monopoly market structure, the assets could be owed by a government entity or by a private company. Similarly, in a competitive market, various assets could be owned by the government or a by a private company. For example, the PR government, through PREPA or some other entity, could continue to own one or more of the generation, transmission or distribution assets, but contract out responsibility for maintenance, operation, and/or other activities to private companies. Involving private parties does not necessarily mean that the private companies operate as well as own the facilities. One advantage of the government maintaining ownership is that if the private party's performance is unsatisfactory, the government cancel the contract (or let it expire), then transfer performance responsibility to another party.

**3. Operational responsibility:** The assets are owned by X, but responsibility for operation is contracted by X to Y. For example, on most of the U.S. mainland, the

transmission network is owned by investor-owned (for-profit) utilities, but complete responsibility for design, planning, operation and even billing lies with non-profit "regional transmission operators."

**4. Business ownership:** Business ownership refers to which entity keeps the profits from the business. Usually, business ownership follows form asset ownership--but not necessarily. One could imagine a baseball stadium, where the assets are owned by the City, but the business of operating it (grounds keeping, scheduling, renting out hot dog stands, etc.) has been awarded by the city, in the form of a franchise or concession, to a private company, where the profits then are split between the City and the private company.

So, when someone speaks of "privatization" it is not clear what it is they propose to privatize: Assets, operational responsibility, or the business. And is not clear whether they want Puerto Rico's historically monopolistic market to remain monopolistic or to convert it into a competitive market. Instead of "privatization" a better description of the transformative process to take place is "restructuring". There is more to this transformation than a change of ownership. Too often people talk about "privatizing," and "new market structures," when what they really want to do is escape the costs of the past, address only their own needs, and leave the resulting problems to others. That approach will not solve Puerto Rico's problems.

To produce the performance Puerto Rico needs, we must follow a logical sequence of steps:

1. Describe the mix of products and services that customers need, taking into account all types of customers: residential, large and small commercial, large and small manufacturing, tourism, government, agricultural.
2. Describe the qualities of those products and services, in terms of reliability, timeliness, innovation, ease of use.
3. Identify the market structures (i.e., monopoly, competition) that will provide those products and services most cost-effectively.
4. Identify the types of companies that can most cost-effectively provide those products and services (e.g., local companies, mainland companies, pure play companies, traditional utilities, independent companies)
5. For the products and services to be provided by a monopoly market structure, create the regulatory principles and procedures for the following:
  - a. How to choose the best monopoly provider (which need not necessarily be PREPA)
  - b. Deciding whether the monopoly providers can or should be government companies, investor-owned companies or both.

- c. How to regulate the monopoly provider, in terms of price and quality
- d. How long the monopoly provider should have the privilege of serving, before we offer the privilege to others
- 6. For the products and services to be provided by a competitive market structure, create the regulatory principles and procedures for the following:
  - a. Moving the assets and data from the current provider (PREPA) to the new competitors.
  - b. Establishing licensing requirements to ensure that the new competitors compete fairly and treat customers well.
  - c. Addressing any "stranded costs" on the books of PREPA--which must be paid for as part of any transition to competition.
  - d. Decide whether the eligible competitors can be only private companies or also government companies.
  - e. Educate consumers about how to choose their suppliers.
  - f. Create rules that prevent consumer fraud.
  - g. Create rules that prevent "cream-skimming" by sellers.
  - h. Create rules that prevent some customers from escaping their fair responsibility for past costs.

If we do not follow that logical sequence of steps, it will be "every man for himself." No car gets to its destination safely if every passenger is grabbing the steering wheel and headed in a different direction.

**IV. The Commission continues to be at the disposal of the Commonwealth Legislature to assist in its efforts to define a new regulatory infrastructure and new market structure models.**

On a typical scenario, when a State decides to restructure its utility, it delegates the responsibility to the Regulatory Entity to carry out the process, to make recommendations to the state legislature if needed and establish the regulatory framework. Puerto Rico is not going through a typical scenario. There are many decision-makers and stakeholders involved in Puerto Rico's electric industry—PREPA, the FOMB, the Legislature, the Governor, the Commission, the entrepreneurs, the think tanks, etc. All with ideas, plans and proposals to address Puerto Rico's situation.

All ideas—all paths to performance—should be on the table. All ideas should compete in a merit based, fact based, transparent process. The process that best fits the description is the IRP approval by the Commission. We must find the best paths to performance.

The IRP approval process will determine the correct mix of resources that is most cost effective. The right mix product and services, from centralized generation to decentralized, from the impact of demand response programs to energy efficiency, to address the highest consumption that occurs at night for higher penetration of renewable energy sources.

The Commission is ready and able to assist the Commonwealth, FOMB, and Congress to define the new regulatory frameworks and market structures for the benefit of the people of Puerto Rico.

### **Conclusion**

In this testimony, I have sought to explain the Commission's work and plans for transforming our electric industry. The need for an independent entity, free of politics and focused on merits, with the single-minded goal of bringing cost-effectiveness and competitive rigor to the Commonwealth's most important infrastructural industry, could never be greater.

Chairman Murkowski, Ranking Member Cantwell and Members of the Committee, thank you for this opportunity to testify. I look forward to your questions.

## Appendix A

### Commission-FOMB Cooperation: Essential Protocols

This document describes procedures by which the Commission and FOMB can coordinate their decisions affecting PREPA. The bold headings identify each subject or action over which the Commission has authority under Commonwealth law. The italicized material has two purposes. First, it describes, where relevant and necessary, the policy reasons for the Commission's obligations, so that FOMB—which is not experienced in utility regulation—understands why Puerto Rico's welfare depends on the Commission carrying out its duties. Second, it presents a proposed procedure by which the two agencies would make decisions.

Underlying each of the draft ideas are the following legal or policy principles:

- a. The Commission has been, since 2014, the statutory agency responsible for ensuring that PREPA's performance serves the Commonwealth's public interest, as that public interest is defined by Act 57-2014 and other statutes. The Commission, or any successor, will continue in that role after FOMB exits Puerto Rico.
- b. PROMESA does not make FOMB Puerto Rico's utility regulator. FOMB does not have authority to mandate or authorize substantive electricity actions that are within the Commission's jurisdiction but have not been approved by the Commission. For a detailed explanation, see the Commission's Policy Statement issued January 23, 2018 and the Complaint against FOMB and PREPA filed with the federal Court on March 4, 2018.
- c. The preemption provision of PROMESA § 4 signals "conflict preemption," not "occupation of the field" preemption. See the Policy Statement. At the same time, PROMESA requires FOMB to act consistently with Commonwealth law. The combination of these two PROMESA features yields this result: FOMB's directives to PREPA, when taken within FOMB's PROMESA authority, preempt the Commission only when it is not possible to design those directives consistently with Commonwealth law, as applied by the Commission.
- d. PREPA, supported by AFFAF, routinely disobeys or ignores Commission orders, usually citing as a reason FOMB's presence and its asserted powers. FOMB has not directed PREPA to obey the Commission's orders; nor has FOMB issued any orders that would achieve what the Commission must achieve under Act 57. The result, well-known to FOMB, is that PREPA is acting as an unregulated monopoly, contrary to the letter of Act 57 and the intent of PROMESA.
- e. There is no benefit, only harm, from a series of lawsuits in which FOMB challenges Commission actions, the Commission challenges FOMB actions, PREPA resists Commission orders and/or the Commission sues PREPA for failure to heed Commission orders.

- f. There is, for each area listed below, some solution that makes the best use of the Commission's and FOMB's powers, so as to end PREPA's practice of noncompliance.

With this document, the Commission intends to display the type of thoughtfulness and advance thinking that are necessary to serve its constituents. With reciprocation by FOMB, the public will be served.

The document addresses the following seven subject areas:

- 1. Spending, cost recovery and rate-setting*
- 2. Contracts*
- 3. Customer relations*
- 4. Supply and demand resources*
- 5. Internal PREPA operations*
- 6. Finance*
- 7. Market structure transformation*

## **1. Spending, cost recovery and rate-setting**

### **1.1. Approve budgets**

#### **1.1.1. Purpose**

*1.1.1.1. In a nonprofit utility, all costs, once incurred, must be reflected in rates. But for rates to be just and reasonable, they must reflect only prudent costs. The Commission thus can ensure just and reasonable rates only by preventing imprudent costs before they are incurred. The only way to do so is by establishing advance caps on spending, through procedures that (a) review and approve (or modify) budgets before they go into effect and (b) audit PREPA to ensure that its spending does not exceed the approved budgets.*

*1.1.1.2. Separate from establishing caps on spending is ensuring sufficient spending. Approving budgets, then setting rates consistent with those budgets, ensures that sufficient funds are available to (a) carry out PREPA's obligation to serve, as that obligation is defined by an approved Integrated Resource Plan (IRP) and other projects ordered or approved by the Commission or mandated by Commonwealth law; and (b) comply with obligations to bondholders.*

#### **1.1.2. Procedure**

*1.1.2.1. (a) PREPA submits its annual budget simultaneously to the Commission and FOMB, under a schedule that the Commission and FOMB develop jointly in consultation with PREPA. The proposed budget would conform to advance guidelines prepared jointly by the Commission and FOMB. There should be separate budgets for (i) capital projects and (ii) operations and maintenance.*

*(b) The Commission would hold an official proceeding under Act 57 to review, modify as necessary, then approve a budget. FOMB can participate in this proceeding to avoid duplicative or serial processes. The Commission would play this role because (a) it has that duty under Act 57 and (b) it has the technical expertise and administrative procedures that ensure a rigorous and efficient investigation. Rigor is especially important given PREPA's history of undisciplined spending and inadequate recordkeeping, as detailed in the Commission's Rate Order of January 10, 2017.*

*1.1.2.2 The total budget approved by the Commission must be consistent with any FOMB-approved Fiscal Plan (assuming such FOMB-approved Plan does not contain details outside the FOMB's authority to mandate—as explained in the Commission's Policy Statement). "Consistent" means that PREPA can simultaneously operate within the budget and carry out all Fiscal Plan activities. "Consistent" means the budget does not leave PREPA with insufficient funds to carry out the Plan; nor does the budget include projects not within the Fiscal Plan,*



*unless such projects are required by a Commission-approved IRP (which the Fiscal Plan must accommodate anyway, per PROMESA's requirement that the Fiscal Plan be consistent with Commonwealth law).*

*1.1.2.3 For this joint effort to work, (a) FOMB will need to direct PREPA and AFFAF to drop its appeal of the Commission's Jan. 2017 Rate Order establishing Commission review of PREPA's budgets, which is pending in federal court due to AFFAF's Notice of Removal (which FOMB authorized). The Notice of Removal implicitly misinterprets PROMESA section 4 as establishing "occupation of the field" preemption, whereas section 4 establishes only "conflict" preemption. There is no conflict today; and if the Commission and FOMB work out a coordinated procedure schedule for budget review, there will be no conflict. It is illogical for FOMB to assert conflict when it has not participated in coordination efforts aimed at avoiding conflict.*

*1.1.2.4. The FOMB has authority to modify a Commission-approved budget, to the extent required for consistency with an FOMB-approved Fiscal Plan. The FOMB does not have authority to approve a budget, or a Fiscal Plan, that is inconsistent with a Commission-approved IRP.*

*1.1.2.5. If PREPA refuses or fails to comply with a Commission-approved budget, the FOMB and the Commission shall execute one or more joint strategies to produce compliance, using both Commonwealth law and PROMESA. FOMB and the Commission should design those strategies now, then ensure that PREPA understands them. Such design and notice will, we hope, make these strategies unnecessary.*

## **1.2. Establish revenue requirement**

*1.2.1. The Commission will establish PREPA's revenue requirement, as required by Act 57, according to its normal procedures. The revenue requirement in total must be consistent with the approved budgets and thus with any FOMB-approved Fiscal Plan. For example, if the Fiscal Plan calls for a particular level of payments for debt service, the Commission-set revenue requirement must include a line item for that debt service. It is possible, however, that some or all of the debt service associated with existing debt will be addressed outside of the normal revenue requirement through a special charge, similar to that approved by the Commission in its Resolution of June 21, 2016.*

*1.2.2. **Questions** for the Commission and FOMB to address together, to avoid inconsistencies among the revenue requirement, the Fiscal Plan and any approved budgets.*

*1.2.2.1. Given the Judge's CTO Order, does PROMESA allow FOMB's Fiscal Plan to specify individual projects, and costs for those projects? What is the appropriate level of detail for an FOMB-approved PREPA Fiscal Plan?*

*1.2.2.2. If an FOMB Fiscal Plan mandates or approves specific projects, should that FOMB Fiscal Plan have project cost caps? If not, what is the means of ensuring project budget compliance?*

*1.2.2.3. What are the best procedures for ensuring that the Fiscal Plan does not include projects the Commission deems inconsistent with an approved IRP, given that PROMESA sec. 503(b)(1)(D) renders such projects ineligible for Critical Project status?*

*1.2.2.4. Where the FOMB Fiscal Plan identifies a particular project and cost level, the Commission has the legal authority, for rate purposes, and in advance of spending, to reduce the allowable cost of a particular item from the FOMB-approved level if the Commission finds a lower cost is reasonable. By what procedure do we ensure that PREPA understands this point, so that PREPA does not lobby FOMB—which lacks the Commission's expertise and its procedures for truth-seeking—for an excessive project budget and then assert that the Commission is preempted from requiring a lower budget? Under preemption precedent a lower Commission budget for a given project does not cause a conflict with FOMB because PREPA can comply simultaneously with a low budget and a higher budget; by not exceeding the lower ceiling it is not violating the higher ceiling. A difference is not a conflict; a conflict exists only if compliance with both orders is impossible. (We recognize that this reasoning does not work in the other direction; the Commission cannot authorize PREPA to spend more money than a Fiscal Plan has allowed—again assuming the FOMB requirements in the Fiscal Plan do not exceed FOMB's PROMESA authority.)*

### **1.3. Establish revenue allocation and rate design**

*1.3.1. The Commission would establish revenue allocation and rate designs in PREPA rate cases.*

*1.3.2. There is no FOMB authority to establish or modify revenue allocation or rate designs.*

*1.3.3. **Question:** Revenue allocation involves allocating costs among customer groups. To protect and promote economic development, the Commission has statutory authority to under-allocate fixed costs to commercial and industrial customers (thus necessarily over-allocating costs to residential customers). How may, or should, or must, the Commission take into account FOMB policies on economic development when the Commission makes revenue allocation decisions?*

*1.3.4. **Question:** PREPA's revenue projections are based on assumed elasticities of demand. Those elasticities vary by customer class. Revenue therefore may vary depending on cost allocation. What procedures are necessary to ensure that revenue projections in an FOMB-approved Fiscal Plan are consistent with revenue allocation and rate designs established by the Commission?*

#### **1.4. Establish procedure for updating revenue requirement and rates**

*There are no incremental issues here relative to those raised in other sections under spending, cost recovery and rate-setting.*

## **2. Contracts**

### **2.1. Substance**

*2.1.1. Consistent with the Commission's obligation to prevent imprudent costs before they are incurred, the Commission will review and approve contracts. Act 57 imposes that duty. Also, Act 57 as well as the Commission IRP Order impose an obligation that PREPA competitively bid specific generation-related projects as a means of securing the best cost for these projects. The Commission's duties include overseeing that process. Act 4-2016 has some variations on this point for public-private partnership projects but the Commission duty to prevent imprudent costs remains.*

*2.1.2. A conflict could arise if the FOMB and the Commission have different views about any feature of a contract—its purpose, its cost, its allocation of risk, the appropriate counter-party, the process of selecting the counter-party, or the manner of implementation. However, such difference of opinion would create a preemptive conflict only if FOMB **ordered** PREPA **not** to execute a particular contract, while the Commission **ordered PREPA to** execute that contract, assuming FOMB was acting within the limited scope of its authority (e.g., its reason for rejecting a contract was fiscal rather than substantive, as explained in the Commission's Policy Statement).*

*A difference of opinion also would arise if FOMB **ordered** PREPA to enter a particular contract, while the Commission ordered PREPA **not** to enter that contract. But that difference of opinion would not trigger preemption because, as explained in the Commission's Policy Statement, FOMB has no authority to order PREPA to enter particular contracts where the effect is to determine substantive electricity policies.*

*2.1.4. FOMB's policy on contracts says that to the extent FOMB says so, contracts must be the "result of a competitive and transparent procurement and tender process...." If FOMB says a particular contract need not be the result of a competitive bidding process, that statement does not prevent the Commission from requiring a competitive process. The situation would represent a difference of opinion but not a conflict,*

*because PREPA will be able to comply simultaneously with the FOMB and the Commission orders. There would be a conflict only in the unlikely case that the FOMB mandated that there **not** be a competitive procurement. Such a mandate would be beyond the FOMB's statutory authority. The Commission with its continuing expertise is in the better position to determine when conditions justify a waiver of or adjustment to competitive bidding.*

## **2.2. Procedures**

*2.2.1. PREPA would submit each proposed contract to the Commission and the FOMB simultaneously. On receiving the contract, FOMB and the Commission would determine a review schedule.*

*2.2.2. Per that schedule, each agency would act, giving its reasons. Before actions become formally issued, informal collaboration between the two entities would be useful. For example, the Commission would assess the contract and its associated scope of work in terms of prudent practices, consistency with the approved budget and consistency with the IRP (where the IRP is relevant).*

*2.2.3. Commission and FOMB should identify now the scheduling plan, and also the criteria each will apply, so that each entity's scrutiny is supportive of the other's.*

*2.2.5 In addressing contracts, the Commission will consider the resource needs identified in the IRP, as informed by the Commonwealth's situation. The IRP, for example, provides a list of specific transmission projects related to expansion. Any proposal for a transmission project deviating from this list must be accompanied by a justification of its necessity and cost-effectiveness.*

*2.2.6. PREPA needs to notify the Commission of all contracts, even those under the stated cap, so we can keep an eye out for patterns, like contracts just slightly under the approval cap amount.*

## **3. Customer relations**

3.1. Approve bill format.

3.2. Establish customer complaint procedures.

3.3. Design and implement customer education.

*There is no FOMB authority in this area; therefore no potential for conflict and therefore no need for protocol.*

#### ***4. Supply and demand resources***

##### **4.1. Establish and enforce reliability parameters**

- 4.1.1. Establish customer- and system-level reliability standards (including whether NERC standards apply).
- 4.1.2. Establish and enforce planning reserve margin level (target and operational).
- 4.1.3. Determine equivalent load carrying capability for renewable resources.

*The FOMB has no authority in the reliability space; therefore, there is no potential for Commission-FOMB conflict.*

##### **4.2. Create IRP**

- 4.2.1. Establish load forecast and capacity requirements for the forecast period.
- 4.2.2. Determine composition of optimal future resource portfolio, subject to load and resource balance, renewable portfolio standard requirements, resource costs and availabilities, and other statutory considerations. Resource portfolio includes generation retirement schedule and additions of appropriate types of future resources (generation, T&D, storage, and other) in appropriate sizes and at appropriate locations.
- 4.2.3. Establish framework for determining need and value of ancillary services.
- 4.2.4. Establish framework for determining need and value of resource flexibility.
- 4.2.5. Determine need for additional major transmission projects.
- 4.2.6. Approve near-term IRP action plans.

*Under Act 57, the Commission will carry out all six of these steps.*

*The Fiscal Plan must carry out, and therefore be consistent with, the IRP; not the other way around. See PROMESA Section 503(b)(1)(D). There is no authority in FOMB to impose an IRP or any particular mix of resources. The FOMB can of course inform the Commission of its views on industry structure and resource mix, and recommend scenarios to be evaluated. But the statutory authority to approve the resulting resources, and the rates necessary to pay for such resources, lies exclusively with the Commission.*

**4.3. Establish RFPs and competitive bidding procedures for power supply, energy efficiency and demand resources**

*There is no statutory FOMB role in establishing RFPs or competitive bidding procedures. Those are internal PREPA operations over which the Commission has statutory authority.*

**4.4. Approve sites for power supply resources**

*FOMB has no authority in this area. While the Commission does not have direct authority over siting, it can approve or deny projects based on cost, which is itself affected by siting.*

**5. Internal PREPA operations**

- 5.1. Establish performance metrics, reporting procedure and enforcement methods.
- 5.2. Appoint independent monitors to oversee restoration contracting and work.
- 5.3. Establish standards for, and approve, restoration plan.
- 5.4. Establish standards for, and approve, maintenance plan.
- 5.5. Establish power plant efficiency standards.
- 5.6. Establish criteria for, and approve, hiring of contractors.
- 5.7. Approve disaster preparation and restoration plan (for future events).
- 5.8. Approve plans for workforce recruitment, development and compensation.

*Other than contracting, FOMB has no authority over these areas. Therefore there is no possibility of conflict, provided the Commission's decisions in these areas are consistent with the Fiscal Plan.*

**6. Finance**

- 6.1. Approve financing plans.
- 6.2. Approve issuance of debt.
- 6.3. Approve restructuring of debt.

*Under Section 6.3(n) of Act 57, the Commission has obligation to "oversee PREPA's debt issues." But its approvals must be consistent with FOMB decisions about debt restructuring and with any appropriate FOMB-approved Fiscal Plan.*

*The Commission must reflect the FOMB's debt restructuring decisions in its decisions on revenue requirement.*

**Question:** *For the Commission's review of debt issuances, what is appropriate information-sharing and sequencing between Commission and FOMB?*

## **7. Market structure transformation**

- 7.1. Determine current and future market structures (monopoly vs. competition) for various products and services.
- 7.2. Appoint provider(s) of monopoly services.
- 7.3. Implement competition for competitive services.
- 7.4. Approve any transfer of PREPA assets or business functions.
- 7.5. Determine appropriateness, and terms and conditions, of "wheeling."
- 7.6. Distributed generation, community solar and microgrids by third-parties to end-use customers: Determine interconnection terms, compensation, payments for transportation, locational choices and other parameters .
- 7.7. Determine net-metering terms.
- 7.8. Establish remaining plans for distribution system.
- 7.9. Determine energy efficiency policy and providers.

*The FOMB has no authority over these decisions. Decisions by the Commission, or by any successor agency or by the Legislature, decisions must be consistent with an FOMB-approved Fiscal Plan. But that Fiscal Plan does not restructure markets; its focus is debt and solvency, all as explained in the Policy Statement.*



Appendix B: Testimony Before Commonwealth's Senate  
Regarding PREPA's Privatization Bill

April 4<sup>th</sup>, 2018

VIA EMAIL:  
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Hon. Larry Seilhamer Rodríguez  
Chairman  
Energy Committee  
Commonwealth's Senate

**PUERTO RICO ENERGY COMMISSION TESTIMONY REGARDING SENATE BILL PS 860**

Dear Chairman:

Appears before this legislative committee the Puerto Rico Energy Commission ("Commission"), presenting its comments on PS 860. We are thankful, once more, for the opportunity to speak on this congressional effort.

One of the key drivers of the energy reform, and of the energy market in general, are the Puerto Rico Electric Power Authority's ("PREPA") customers. In order to uphold the electric power consumer's interests, Act 57-2014, as amended, known as the Puerto Rico Energy Transformation and RELIEF Act, conferred on the Commission, as part of its functions and obligations, the task of guaranteeing PREPA's transformation to the benefit of its customers, ensuring a reliable and efficient electric service, at the least cost possible.

Before commencing the discussion on PS 860, it is imperative that we provide an explanation of the Commission's main responsibilities as the regulatory body for the energy sector, as well as a general background on the ratemaking process for electric service, the process to approve an Integrated Resource Plan, and the process of privatization or restructuring of the industry.

**I. The Regulator's Purpose**

The purpose of regulation is to extract the best performance from regulated entities, i.e., to induce the regulated entity's performance in such a way that it produces benefits in the public interest. Regulation must produce results that are comparable to those that would be produced by effective competition: reasonable costs and high-quality services. The goal is the same regardless of whether the task is to regulate a monopoly provider or fashioning competitive markets.



Effective regulators visualize the products and services that best serve customers, and then they design and oversee the market structures with the highest probability of producing that mix of products and services cost-effectively. The regulator's intent in doing so is to be able to define which are the desired results and thus define compliance standards, assign consequences for compliance or failure to comply with such standards, and induce the regulated entity's performance as the ultimate goal. In this manner, regulators align private or individual interests with the public interest.

The regulator's main focus must be to induce economic efficiency in the regulated entity. Economic efficiency means that we allocate costs to those who cause costs and allocate benefits to those who produce them. Economic efficiency is the first priority; allocating the benefits of efficiency is the second. In both regulation and competition, rewards, as well as sanctions, must be based on merit, not on incumbency or political considerations.

## **II. Revenue Requirement and Rates**

In order to fulfill the responsibility to transform the energy industry, the Commission has as one of its main tasks ensuring that rates for electric consumption are just and reasonable. We deem it important to illustrate the process employed to determine a utility's rates and revenue requirement, by which just and reasonable rates are ensured, as required by law.

A just and reasonable rate is determined through a complex rate review process, composed of various elements, including: establishing a revenue requirement, undertaking a cost of service study, assigning revenue amongst the causers of said costs, and designing the rate. The chief element in the evaluation of a utility's rates across the United States is to determine its revenue requirement. A utility's revenue requirement is the amount of dollars it needs in one year to cover the costs and expenditures necessary to serve its customers. In the case of PREPA, several aspects are taken into consideration in order to calculate its revenue requirement. First, the Commission examines operational costs, maintenance costs, fuel purchase, labor, capital costs (i.e. principal and interest on PREPA's debt), among others. Second, the Commission takes into consideration the amount of revenue that PREPA should receive from customers' payment for service provision, as well as the deposits to open new accounts, payments required for bill objection procedures by customers, interest, among others. Another important aspect in determining the revenue requirement is the assumption that there will be delinquent payments and that a certain amount of the services provided by PREPA will not be paid, which is considered as an uncollectable expense. In the case of private utilities, an appropriate profit margin is also determined, and it is part of the revenue requirement.

Determining the revenue requirement is the initial step and the basis for later determining customers' rates. To complete the revenue requirement, the regulator analyzes the prudence of the costs and expenditures associated with it. More specifically, the regulator verifies if the incurred expense was the correct one at the moment it was incurred or if it was excessive. This process is known as "cost disallowance".

Now then, in the case of private utilities in the United States and around the world, these have stockholders who absorb imprudent costs incurred by the utility. In other words, these imprudent costs are not recovered through the tariff. On the contrary, in the case of PREPA, as it is a public, non-profit utility, and the fact that it does not have investors, all costs related to providing service must be recovered from customers, including imprudent costs. Consequently, it is imperative to ensure that PREPA's operation, or that of any public utility, be an efficient one.

Said rate review process, where the costs incurred by PREPA or any privately-owned utility are analyzed in detail, is essential to guarantee the continuity and stability of said utilities' operation, and to ensure customers' well-being so that an unjust and unnecessary general rate increase does not occur.

The result of the rate review process guarantees that PREPA or any privately-owned utility can obtain sufficient revenue in order for their operation to not be affected, and so that they are able to meet all of their economic obligations (i.e., payroll, fuel payments, maintenance, capital costs, debt repayment, etc.).

Another aspect closely linked to rates is resource planning.

### III. Integrated Resource Planning

An integrated resource plan (IRP) is the culmination of the process. The *process* "evaluates the merits of using different kinds of energy resources to meet forecasted future demand for electricity with the goal of meeting demand reliably and cost effectively."<sup>1</sup> The *plan* is the path to provide electric service at the least cost for the duration of the planning horizon, which is generally twenty years. What is meant by "least cost" is that, through the evaluation of the planning period, the necessary investment results in a revenue requirement that provides the least cost possible, while also meeting the goal of providing an efficient service. In other words, the IRP is the plan that will provide the lowest possible rate.

In order to create this path, the utility must first evaluate whether its resources are sufficient to meet its obligations. The utility's *resources* include supply-side generation (utility-owned or acquired from an independent energy producer), the transmission and distribution infrastructure, energy efficiency programs, demand-response programs, and customer-owned or -located resources, such as distributed generation. The utility's obligation is to reliably meet the customer's needs, both in terms of consumption<sup>2</sup> and load.<sup>3</sup> Through the

<sup>1</sup> *Kentucky Coal Association, Inc. v. Tennessee Valley Authority*, 68 F. Supp. 3d 703, 707 (2015).

<sup>2</sup> "Consumption" in this context means the amount of electricity required by customers over the course of a given time period within the public utility's service territory. It is measured in gigawatt hours (GWh). Regulation on the Integrated Resource Plan for the Puerto Rico Electric Power Authority (IRP Regulation), § 1.08 (B) (13).

<sup>3</sup> "Load" (also called "demand") means the amount of electricity required by customers at a given hour of the year, as measured in megawatts (MW). IRP Regulation, § 1.08 (B) (14).

use of historical information, the utility creates consumption and load forecasts. Next, it determines which resources, both existing and future, are necessary to meet the forecasted loads and consumption. When evaluating these resources, the utility must consider certain parameters, such as limitations in the operations of generating plants (due to physical limitations or environmental regulation), as well as other public policy goals, such as the obligation to be interconnected with renewable energy generating sources.

Taken together, this plan and this process have the following objective: to inform regulating entities of the infrastructure needs and their associated costs, before such needs become emergencies and before those costs are incurred. Integrated resource planning allows the utility to present the forecasts of its needs and costs to the scrutiny of regulating entities, stakeholders, consumers, and the public. It takes uncertainties into account through the production of alternative plans in order to later evaluate the robustness of those plans—that is, their ability to be successful under multiple possible future scenarios. It allows regulating entities to evaluate, guide and, where necessary, direct the utility's decisional procedures.

In order for it to be effective, this planning process must occur in a public and transparent manner. Thus, those who would be affected by the decisions and those with the expertise and the perspectives that allow them to contribute to the decisions, may have full opportunity to share their concerns and contribute their knowledge.

An IRP is a living document. It should reflect the best knowledge available at the moment of its creation and the best possible decisions in light of said information. It must take into account risk and uncertainty. Although an IRP addresses long-term needs, it should also guide short-term actions. As new information emerges—such as information on new technologies and new customer needs—the plan must evolve. Consequently, our IRP Regulation requires a three-party process—one in which PREPA (or its successor), the Commission, and the public reevaluate the existing plan, incorporate new information, and develop a new action plan. Periodic reconsideration, revision, and reinvention are essential for a robust planning process.

The Commission's priority is cost-effectiveness—providing for Puerto Rico's energy needs at the least feasible cost. The actions PREPA (or its successor) and its customers undertake, will affect the costs for decades to come. For example, the construction of new generating units or infrastructure requires long delivery periods, thus making uncertainty inevitable. Therefore, each decision must be based on the best information available at the moment in which such decision is made. This fact supports a robust IRP—flexible enough to allow for realities that differ from expectations. In this way, the best possible effort is made to avoid overwhelming PREPA and its customers with unnecessary costs when lesser-cost alternatives are available.

In sum, the goal of integrated resource planning is to replace old and costly plants with lesser-cost options: more efficient plants, renewable resources, energy efficiency, demand-response, and distributed generation technologies—some of which allow customers to manage their own costs. Many of these alternatives reduce environmental harm, while protecting consumers from the volatility of fuel prices. An integrated resource planning that

is appropriately designed and continuously executed will promote the legislative intent of evolving the energy sector towards one less dependent on imported fossil fuels and more on our own resources, and to efficiently meet energy demand.

#### **IV. Privatization, Competition, or Restructuring of the Industry**

All ideas, all forms that lead to improving the electric system's performance must be considered. However, the concept of "privatization" must be clarified. Otherwise people will confuse ideologies with solutions. There are certain concepts which tend to be confused and combined often. These are:

1. Market structure: This term describes the level of competitiveness of a market, in terms of the factors that affect competitiveness. These factors include: the number and types buyers and sellers, their participation in the market, the nature of the product or service that is being bought and sold, the geographic limits of the market and the ease of entry and exit to/from the market (including the presence or absence of entry barriers). Market structures range from perfect competition to complete monopoly. Within that range there are structures such as a duopoly (two sellers), oligopoly (a few sellers), and monopoly competition (multiple sellers, but with each seller differentiating itself in a way that allows it to maintain prices above competitive levels; a common example is a law firm with a distinctive personality of unique value).

Market structure analysis can be applied to each of the following three subjects: asset ownership, operational responsibility, and business ownership.

2. Asset ownership: This term means what it says: the physical assets are owned by a particular company. Ownership of assets is different from the market structure. In a monopoly market structure, assets could be owned by a government entity or a private company. Likewise, in a competitive market, the government could own several assets, just as a private company could. For example, the government, through PREPA or any other entity, could remain in ownership of one or more of the generation, transmission or distribution assets, but outsourced the responsibility for maintenance, operation and/or other activities to private companies. Getting private companies involved does not necessarily mean that private companies will own the facilities. One of the advantages of the government maintaining ownership is that, if a private party's performance is unsatisfactory, the government may cancel the contract (or allow it to expire) and then transfer responsibility for performance to another party.

3. Operational responsibility: The assets are owned by X, but responsibility for their operation is contracted out by X to Y. For example, in most of the United States, the transmission network is owned by for-profit entities, but the responsibility for the design, planning, functioning, and even billing, falls completely on the "regional transmission operator", a non-profit entity.

4. Business ownership: Business ownership refers to which entity receives the benefits of the business. An example of this might be a baseball stadium, where the owner of the asset

is the government, but the business of operating it (field maintenance, programming, food stall rental, etc.) has been granted by the government, in the form of a franchise or concession, to a private company, where profits are divided thus between the government and the private company.

## **V. Analysis of PS 860**

### **a. Comments regarding statutory language**

In the vast majority of jurisdictions in the world, the regulatory body is charged with undertaking rate review, the orderly planning of resources, and the transformation or restructuring of the energy system. The reason is obvious: as we established in Part I of this testimony, the regulator is the body tasked with extracting the best performance while protecting the public interest. We expose several concerns with regard to the provisions of PS 860, below.

**1. An environment for the creation of abusive rates:** PS 860 removes the Energy Commission from the process of establishing and reviewing the rates to be charged by the new actors in the energy market and the impact that the participation of these new actors will have on the electric system. At the same time, it opens the door to abusive, unjust, and unreasonable rates.

According to PS 860, the rates applicable to any regulated service, in this case the purchase and sale of energy, shall be established in the Public-Private Alliance (PPA) Contract. Once the terms of such Alliance Contract are established, the regulatory body may not alter or amend it, i.e., it will be incapable of acting to uphold the public interest.

As we explain in Part II of this testimony, the first step to establish rates is to determine the total expenses in order to establish the utility's revenue requirement. Payment to entities under the Alliance Contracts will be part of the utility's expenses, and, therefore, of its revenue requirement. Consequently, if such expenses are established by contract, which may not be reviewed by the regulator, said regulator will have no other option but to adjust rates in order to pay for these contracts. In other words, the regulator will not have the power to review the companies' expenses, as their recovery was agreed upon in the Alliance Contract. Therefore, under this premise, the rigorous rate review process becomes a mere certification.

On the one hand, long-term power purchase agreements generally establish two charges to be recovered by the entity: a fixed charge, in order to cover the provider's fixed costs (generally called a capacity charge), and a variable charge, in order to cover the variable costs of energy production (i.e., a sold/purchased power charge). In these contracts, recovery of the fixed investment expenses is guaranteed. Therefore, these long-term contracts do not incentivize modernization or performance improvement, as they transfer market risk and technology risk to the consumer.

On the other hand, besides not allowing it to adjust the rates, PS 860 establishes that the Commission may only review the rates of regulated service if it is not prohibited by the contract. In other words, the regulated entity will determine how and where it will be regulated. In no other jurisdiction in the world where there is a regulator is the regulated given free rein to accept or reject regulation.

This language is dangerous because it bestows public utility characteristics to a private entity, insofar as it allows for the total recovery of expenses, even when these are imprudent or unreasonable. These provisions threaten the public policy of establishing just and reasonable electric service rates. Furthermore, as it is not subject to regulation, the private entity would operate without any type of supervision, which would remove consumer protections.

The language of PS 860 establishes that all efforts possible be undertaken in order to complete the transaction. It gives the Alliance Committee the power to determine laws with which not to comply in order to make the transaction viable. This language could clear the path for establishing excessive profit margins, abusive rates, and even eliminating requirements to maintain the reliability of the system. In this manner, it creates an environment prone to irregularities, repeated expenditure imprudence, and abusive rates, while tying the regulator's hands down. An example of contracts established without the appropriate analysis, without the oversight of a regulator and with the condition that they be completed under any circumstances are the multiple contracts for renewable energy signed between 2010 and 2012.

The Commission is the entity specialized in these matters. Furthermore, the Commission carried out the first independent rate review proceeding in the history of the local energy market. By removing the Commission from the rate review process, the means of protecting the consumer and the public interest from abusive practices are also removed. Likewise, we must point out that no other government agency has the experience or expertise necessary to establish an electric rate; therefore, any other government entity would be at a disadvantage at the moment of negotiating the rates that would be established by contract.

If the desire to establish long-term contracts persists, the Commission recommends that these be established on the basis of the entity's performance, where it be determined that the regulator shall perform frequent reviews of the costs of service and a reasonable profit margin, instead of establishing a capacity charge and a production charge. Should this recommendation not be accepted, the contracts should be analyzed and authorized by the regulatory body in order to ensure that these result in a just and reasonable electric service rate, with adequate and reasonable profit margins.

2. Disorganized transition: PS 860 exempts companies from complying with the Integrated Resource Plan (IRP). Furthermore, it removes the requirement to undertake an orderly planning process through the IRP and the Energy RELIEF Plan. As we explained in Part II of this testimony, the IRP is an essential strategic planning tool for the short-, mid-, and long-term. It is a plan to meet the Island's energy needs, not designed exclusively for PREPA. It is worth clarifying that the IRP approved by the Commission is not an obsolete analysis; the

Modified IRP became final on March 2017.<sup>4</sup> As we mentioned previously, the IRP, through a rigorous process of analysis and evaluation, contains and identifies the most cost-effective energy resource portfolio (e.g., generators, renewable energy, distributed generation resources, energy efficiency, etc.) to supply the Island's energy demand, projected over several scenarios or futures, within a planning horizon of twenty (20) years. In other words, the IRP is the most cost-effective combination of resources, necessary to supply long-term energy demand. It is incorrect to infer that the IRP is obsolete and exclusive to PREPA.

Now then, PS 860, by removing compliance with the IRP under the proposed long-term contracts model, introduces the risk of entering into contracts with inefficient resources, with resources that have an established date of retirement from the system, or otherwise approving the incorporation of generation that will not be used but for which the consumer will be obligated to pay. This would result in generating capacity in excess of that which is necessary with guaranteed recovery, which necessarily implies higher rates and costs for consumers; i.e., rates higher than those for which they would be actually responsible if the generation, transmission, and distribution system were an optimized one.

A similar situation occurred with the renewable energy contracts signed between 2010 and 2012. Contracts aggregating approximately 1,200 MW were signed then, when the system's capacity to absorb renewable energy is slightly more than half the contracted generation.

By promoting only the sale and purchase of resources without adequate planning, PS 860 introduces the risk that the resources contracted might not be the ones that are necessary, or the most cost-effective ones, to meet the demand. For example, the implementation of an Energy Efficiency program is a more cost-effective resource, removing the need to build new generating plants and the costs associated with these. This last point was demonstrated in the most recent IRP approval proceeding before the Commission. Introducing a moderate Energy Efficiency program in the analysis resulted in the modification of the resource portfolio to meet demand. This new approved resource portfolio results in net present value savings of \$1 billion.

Furthermore, the five-year Action Plan, approved as part of the IRP, established the following:

Resource	Action <sup>5</sup>
Palo Seco 1 & 2	Retirement
San Juan 7 & 8	Retirement
Costa Sur 3 & 4	Retirement
San Juan 9 & 10	Designation as "limited use"

<sup>4</sup> Several entities have stated that the IRP is from the year 2015. Nothing could be further from the truth. The IRP was filed on 2015 and the process culminated with the final approval (September 23, 2016) and the rejection of PREPA's motion to reconsider (February 2017).

<sup>5</sup> Such actions were based on PREPA's compliance with several environmental laws and regulations, including the Mercury and Air Toxics Standards (MATS).

PS 860 does not establish if these units will be part of PREPA's asset sale. Additionally, the most recent Fiscal Plan presented by PREPA to the Financial Oversight and Management Board establishes that PREPA's generating units, including the San Juan, Palo Seco, and Costa Sur units, will be part of the new power purchase agreement structure.

**3. Sale vs. Modernization:** The Statement of Motives of PS 860 establishes that the generating fleet should be modernized. However, the measure only establishes the framework for the sale of assets and remains silent with regard to modernization. The sale of assets will not imply an instantaneous modernization, regardless of who acquires the generation assets. Therefore, the private entity that acquires the assets will sell power, at the short- and mid-term, utilizing the same inefficient units. The construction of new generation plants takes, within an optimistic timeframe, between 5 to 7 years.

**4. Market Structure:** Meanwhile, the electric power industry has four physical functions: generation, transmission, distribution, and system operation. Additionally, it has two commercial functions: wholesale energy selling and retail energy selling to the consumer. PS 860 remains silent on the market structure regarding those functions of the system.

**5. Sections 6, 11 and 12 of PS 860:** Section 6 of PS 860 would eliminate the applicability of the following statutory provisions to PREPA's Transitions: (1) the mandate for highly efficient generation; (2) the mandate for an optimal reserve margin; (3) the mandate to maximize the use of renewable energy; (4) identifying more effective and economical ways to develop distributed generation; (5) the requirement of a transparent bill to inform the consumer in a detail about the charges for electric service; and (6) the prohibition that the cogenerator or private producer derive profits attributable to fuel; among others. Furthermore, Sections 11 and 12 of PS 860 remove the Commission's power to approve power purchase agreements, as well as the power to approve transfers and acquisitions related to PREPA's Transitions. We must point out that Section 11 of PS 860 renders inapplicable to PREPA's Transitions the provisions of Section 6.32 of Act 57-2014, which include: (1) the Commission's power to establish the standards and requirements related to the transition, including the terms and conditions which must be included in every power purchase agreement, including **reasonable costs for power purchase**; (2) the requirement that every transaction must comply with the Integrated Resource Plan, including the energy efficiency goals established in such plan; (3) the requirement that interconnection with the system does not threaten the system's reliability and stability; and (4) the requirement that rates, rights, rents or charges that PREPA pays to the independent producer be **just and reasonable, and that they protect the public interest and the public purse**.

With said provisions, PS 860 turns back several advances made in the restructuring of the electric system introduced by Act 57-2014: highly efficient generation, optimal reserve margin, the maximization of the use of renewable energy and distributed generation, the implementation of a transparent bill, and prohibiting profits attributable to fuel, among others. Likewise, it removes independent analysis and evaluation of proposed contracts, whilst not taking into consideration the integrated planning of resources or the standard that rates and charges be just and reasonable. These provisions are not in accordance with the best regulatory practices implemented in other jurisdictions.



### **b. Comments regarding the Commission**

In one the Public Hearings on PS 860, witnesses argued that including the Commission in the transformation process would increase public expenses in consultants and legal representatives. We must point out that the Commission's budget is established by law and is a fixed amount. Specifically, the budget assigned to the Commission is \$5.8 million, of which ten percent (10%) is destined as the budget for the Independent Consumer Protection Office. The funds come from the rates charged by PREPA to its customers. Moreover, this budget is considerably lower than that of similar commissions in the United States.

Despite its modest budget, the Commission has worked efficiently on the following proceedings: Integrated Resource Plan, Securitization Charge, Economic Analysis of the Aguirre Offshore Liquefied Natural Gas Terminal, Transparent Bill, and the first independent rate case undertaken in Puerto Rico. It is important to highlight that, during the rate case, the Commission's consultants detected a series of errors in PREPA's filing, including the double counting of certain expenditures, as well as a series of imprudent or unreasonable expenditures. In sum, as a result of the thorough and independent analysis undertaken by the Commission, the increase in PREPA's revenue requirement was reduced from \$222.256 million per year to \$171.786 million per year, which represents a \$50.470 million reduction annually. In other words, if the Commission had not performed its independent analysis, PREPA's customers, that is to say, the people of Puerto Rico, would be paying an excess of \$50 million annually. Therefore, consumers are receiving an annual return on investment of 770%, in relation to the \$5.8 million investment made in the Commission. This return on investment only takes into account the savings related to the rate review process, without accounting for the other proceedings undertaken by the Commission, including investigations and rate review cases.

Likewise, in a Public Hearing witnesses stated that the inclusion of the Commission in the transformation process would delay decision-making. We must keep in mind that haste is costly and always a bad adviser. The proposed process for the transformation of PREPA is considerably complex and highly technical, one which must be carried out with the prudent urgency that Puerto Rico needs. Nevertheless, we cannot forsake a careful analysis and an orderly, planned and well thought-out process, in search of a speedy process. At a time when Puerto Rico's economy relies significantly on its energy system, we cannot afford the luxury of hasty decision-making with considering their overall effect. This takes on a higher relevance given that, in the current historic moment, the decisions we make in the upcoming months, perhaps years, will bind Puerto Rico's energy system and its economy for the next thirty (30) to fifty (50) years.

### **VI. Logical Steps for Performance**

As we mentioned earlier, restructuring the energy system is a complex task. It is far more complex than restructuring the telecommunications, gas, or even banking, industries. Electric power is vastly different from the telecom, gas, or banking industries. Among these

differences is that the electric power industry needs a system operator (in the case of PREPA, Monacillos) to continuously monitor the system in order to ensure its safety and stability.

One cannot remove the regulator, the specialized entity in relation to the transformation process, and expect the result to be beneficial to the people. In a Public Hearing, it was mentioned that market appetite will be the force that moves the process. It is wrong to assume that opening the gates to the market will result, without a doubt, in efficient service and a benefit to the people. Opening the gates to the market is not synonymous with competition and much less with effective competition which results in a benefit to the Island. The goal of obtaining the highest sale price cannot be the one that moves the process. The process should be moved by the goal of providing the people of Puerto Rico with the best energy product, in the most efficient manner and with the best performance.

In order to produce the performance that Puerto Rico needs, we must follow a logical sequence of steps:

1. Establish the combination of products and services that customers need, taking into consideration all kinds of customers: residential, large and small commercial, large and small manufacturers, tourism, government, agriculture, etc.
2. Establish the qualities of those products and services, in terms of their reliability, opportunity, innovation, and ease of use, among others.
3. Identify the market structures (i.e., monopoly, competition) that will provide those products and services most cost-effectively.
4. Identify the types of businesses that could provide those products and services most cost-effectively (for example, local companies, mainland companies, specialized companies, traditional services, independent companies).
5. For products and services provided by a monopoly market structure, establish the regulatory principles and procedures for the following:
  - a. How to select the best monopoly provider (which does not necessarily have to be PREPA).
  - b. Decide whether monopoly providers may or should be government enterprises, investor-owned enterprises, co-ops, or all of them.
  - c. How to regulate the monopoly provider, in terms of price and quality.
  - d. How long should the monopoly provider hold the privilege to serve, before offering the privilege to others.
6. For products and services provided by a competitive market structure, establish the regulatory principles and procedures for the following:

- a. Transferring the current provider's (PREPA's) assets to the new competitors.
- b. Establish the license requirements to ensure that the new competitors compete fairly and provide a high-quality service to their customers.
- c. Address any "stranded cost" in PREPA's books, which must be paid for as part of any transition to competition (e.g. existing debt).
- d. Decide whether eligible competitors may only be private companies, co-ops, or also government companies.
- e. Educate consumers on how to select their providers.
- f. Create rules to prevent consumer fraud.
- g. Create rules to prevent providers from only providing service to high return on investment customers exclusively.
- h. Create rules to prevent that some customers escape their just responsibility for past costs.

If we do not follow this logical sequence of steps, it will be "each man for himself". No car arrives at its destiny safely if each passenger takes the wheel and heads toward a different direction.

We are thankful for this opportunity and hope that our comments are useful to this Commission. Once again, we are willing to share ideas and proposals which, in unity of purpose, contribute to the well-being of the Island and its inhabitants.

Cordially,

José H. Román Morales  
Interim Chairman

The CHAIRMAN. Thank you very much, sir.  
Mr. Masses.

**STATEMENT OF RODRIGO MASSES, PRESIDENT, PUERTO RICO  
MANUFACTURERS ASSOCIATION**

Mr. MASSES. Good morning.

Masses.

The CHAIRMAN. Masses.

Mr. MASSES. Masses.

Good morning, Madam Chairman, good morning, Senators.  
Thank you for having us here.

We already submitted our testimony. So if you don't mind, I will go, I will summarize our points.

First of all, you ask about who is in charge? Who is in control? The Governor, the Oversight Board, PREPA, Energy Commission? Maybe I could answer who should be in control? The private sector should be in control.

The Manufacturers Association, Asociación de Industriales, represent 50 percent of the gross domestic product in Puerto Rico. No other sector gets close to seven or eight percent.

In the past two or three decades, we have been very much affected by bad and expensive energy. As a matter of fact, when they mention about 98.8 percent of the people of Puerto Rico getting back on energy, it should be corrected: getting back on bad and expensive energy. Okay?

It's been subject to blackouts and brownouts costing thousands of billions of dollars in terms of product lost and time lost and, of course, equipment damages.

So, we are going to hear and listen to many statements. We will receive a lot of data.

And yes, you're right, we need a stable, robust, regulatory framework, legal framework. And yes, it's very important to have an independent, regulatory entity. And we need to complete the integrated resource plan that was approved by the Energy Commission in 2016 in order to have a good map of what to do, how to transition this power-activity. Okay?

We also need, badly, to allow the productive sector to generate our own demand, to own the energy we need by allowing us to co-generate or generate by using distributive energy.

And yes, transparency. It doesn't matter if we have a beautiful higher peak and we have a beautiful framework, okay? If we go through the typical process of RFPs to contract and procure, we may get back into a bad and expensive energy at the end of all this mechanics.

So, the process of public auction, subasta pública in español, which is basically the way that everything is presented, the way that the agency announces the opportunities, the bid, allows you and me, if we are competing against each other, to review and audit our proposals, allow the press to follow up in all this. That's the only way that we're going to finish with a good product at the end of all this.

We have been accumulating a lot of intelligence. We have the data. We just have to go and execute what we should do.

And the only way that we are going to be resilient is when we own the generation that we're going to use.

Thank you, Madam Chairman.

[The prepared statement of Mr. Masses follows:]



**STATEMENT BY RODRIGO MASSES**  
**PRESIDENT OF THE PUERTO RICO MANUFACTURERS ASSOCIATION**  
 before the  
**U.S. Senate Energy and Natural Resources Committee Hearing to**  
**Examine Puerto Rico's Electric Grid: the Current Status of Puerto Rico's Electric**  
**Grid and Proposals for the Future Operation of the Grid**

**May 8, 2018**

Madame Chair Murkowski, Ranking Member Cantwell and Committee Members:

Thank you for the opportunity to testify today and share our statement and especially for your interest in the 3.3 million U.S. Citizens residing in Puerto Rico, a US jurisdiction larger in population than twenty States, as it pertains to the road to recovery of the Island's electric grid from the worst natural disaster to hit our island in 500 years.

I am here as Chairman of the Puerto Rico Manufacturers Association ("PRMA"). PRMA is the primary voice of the private sector and especially, Puerto Rico's manufacturing. Our Members are the principal business sector driving the island's economy for the last 50 years. Our members employ approximately 350,000 American jobs in the Island, produce 50% of Puerto Rico's GDP, the island's primary wellspring of tax revenue for decades and PREPA's largest revenue source as our membership includes the island's largest electricity consumers.

The subject of this hearing is not only vital for restoring the quality of life for those living in Puerto Rico but a priority task required to revitalize our economy and reverse our island's rapid loss of population to other locations in the United States. Clearly, reliable and affordable electrical power has been and continues to be critical for the future of our Island Territory.

**BACKGROUND:**

Hurricane Maria struck Puerto Rico, and according to FEMA caused more damage than Katrina and Sandy combined. Over 3.3 million US Citizens continue to struggle each day to restore life to normal, while the destroyed remains of the island's electrical infrastructure and its dysfunctionality are a daily reminder of the need to do things the right way this time. Nevertheless, we foresee a bright future for our island based on this



once-in-a-lifetime-opportunity to rebuild better than ever. However, restoration is taking far longer than we imagined.

For the last 15 years the island was constantly affected by poor electrical service, brownouts and today due to recent events repeated blackouts are now commonplace. The causes trace back to a infrastructure dating to the mid 20th century; said infrastructure is dated, well past its expected lifetime and now overwhelmed due to natural disasters. Currently, our hastily repaired electric grid and its crippled energy management system is sustained by mostly obsolete generation assets. Albeit this reality, the Puerto Rico industrial community continues to produce 1<sup>st</sup> class quality American made products and compete in the world commercial arena. Now, more than ever, our manufacturing facilities have been forced to rely on emergency generators as the only reliable power source in an attempt to maintain consistent production capacity and meet the needs of our customer base.

To continue to be competitive in this century, Puerto Rico's grid must be promptly rebuilt to reflect a 21<sup>st</sup> century electric grid and become a world-class model for similar systems already in place in the mainland. Not doing so, may result in the continued exodus of American jobs from Puerto Rico to non-U.S. jurisdictions and ultimately deprive Puerto Rico's industrial base of qualified resources lost to mass emigration. Thus, for the common good, it is time we learn how to build and operate reliable and resilient infrastructure capable of protecting our American families and investments across the globe.

For the latter to be long lasting and effective, is is necessary to re-prioritize the basic needs of Puerto Rico's electrical infrastructure based on the understanding of the need to adapt to the current reality of the island as dictated by recent events.

The Government operated utility, the Puerto Rico Electric Power Authority ("PREPA"), is deeply in debt and undergoing PROMESA's Title III restructuring process. Local government action clearly will not supersede PROMESA, nor does it have the capability to rebuild by 2019 all of the infrastructure needed to fully restore power. The repair of the existing transmission and distribution infrastructure requires replacement of thousands of power poles, transformers and thousands of miles of cable just to comply with up to date building codes. Such task will require years of investment and work and in many cases rebuilding what currently exists will not be economically feasible given current advances in technology. Unfortunately, PREPA's debt situation has and will continue to impose delays and roadblocks to the modern transmission and distribution infrastructure Puerto Rico urgently requires..

Recently, Puerto Rico's Governor Ricardo Rosselló, announced his administration's intentions to privatize and transform PREPA and presented a legislative proposal to the Puerto Rico Legislature with that goal. Furthermore, just last week, the Federal Oversight Management



Board (FOMB) approved a Fiscal plan for PREPA reflecting the Governor's announcement, and establishing a broad roadmap to create a new PREPA.

Pursuant to the Governor's announcement, the executive branch proposed legislation pursuing PREPA's transformation and changes to the current energy commission which were not accepted by our legislature. Currently our legislators are working on a new proposal that will hopefully create the legal framework needed to transform the island's energy model and promote new technologies. Congress may also consider initiatives to ensure the eventual development of the 21 Century electrical power supply and distribution system necessary to serve America's largest Territory of 3.3 million U.S. Citizens. It is evident that everyone agrees Puerto Rico's energy model has to change, it's just a matter of how it will be done.

#### **PRMA'S RECOMMENDATIONS:**

**STRONG REGULATORY FRAMEWORK** - First and foremost, PRMA strongly believes that there needs to be a clear path on how the Puerto Energy Commission's (PREC) expertise on energy matters will be integrated into PREPA transformation and transactional process; and how its commissioners are appointed outside political considerations and with relevant regulatory expertise. Therefore, strong collaboration will be required between the FOMB and the Puerto Rico Government to achieve such a goal. A lead role for a strong and independent regulatory authority is a basic requirement for the creation of a 21st Century electrical grid for Puerto Rico.

**DISTRIBUTED GENERATION** - Our second recommendation is that immediate regulatory measures be taken to facilitate private investment in distributed, independent generation and microgrids, as well as creation of the necessary legal framework to promote and develop cooperatives and municipal electric agencies similar to those deployed in many States. The advantage of this type of generation is that it can be deployed immediately, and is designed to the specific needs of those willing to make said investments albeit independently of PREPA's bankruptcy situation. Simply put, distributed generation is the first step to fill the void that PREPA has left and thus fulfill immediate and urgent needs. Puerto Rico's families and businesses desperately need affordable electrical rates and levels of quality service that the current PREPA grid simply cannot provide for the foreseeable future. Local policy and regulation can be enacted immediately for microgrids and distributed energy seeding and accelerating private investment to providing much needed energy security and reliability..

**UTILITY TRANSFORMATION REQUIRES TRANSPARENCY**- As a third step we recommend that this transformation be a transition from PREPA, a public monopoly, to multiple, independent private and cooperative entities. Nevertheless, this privatization must be executed transparently in order to in a guarantee that the public's best interests are respected and this process achieves lower, competitive costs. Frankly, taxpayers and ratepayers deserve full





transparency in every step of the process including procurement of selection of buyers, equipment and services.

We do not believe that by simply replacing a government run monopoly with a private monopoly is in the best interest of consumers and business. As such, we urge that strong, independent regulation be maintained going forward to ensure an open, transparent and fair competition which will greatly benefit both the new utilities as well as consumers.

The island already has a properly established regulator and, with the right resources, it can do an effective job to manage the transformation. The Puerto Rico Energy Commission ("PREC") is firmly established and has vast powers to oversee the transformation while keep all parties, not just consumers, in check. However, to further strengthen and professionalize the PREC, key selection method changes have to be implemented to assure the appointment of competent commissioners that have the proper credentials to take on the colossal task required for the transformation of our energy market model while simultaneously developing a state-of-the-art grid quickly.

Congress can play a key role in ensuring that the consumers of electricity are the first priority for reconstruction and ensuring that the final transformation results in a balanced system that includes competent independent regulation and a competitive marketplace served by multiple generators with a 21st Century grid system. Your focused questions and demand for accountability and transparency will be critical to protect the interests of Federal taxpayers.

In conclusion, we in the business and manufacturing sector ask to work with the Congress as well as Executive Branch agencies to ensure Puerto Rico emerges from the devastation of Hurricane Maria with a growing economy that creates well-paying jobs and supports essential services for all U.S. Citizens living and working on our island. This can be achieved in the short term through investment in distributed generation deployed by private investment but there still needs to be legal framework to promote and foster it for the long term by following the roadmap established by FOMB and properly regulated by a strong and independent PREC.

We thank you for your interest in Puerto Rico's future and look forward to opportunities to work with you to rebuild Puerto Rico's electrical grid - the right way.

Again, thank you for the opportunity to represent the Puerto Rico Manufacturers Association before your panel today. We appreciate that you recognize that manufacturing is the heart of today's Puerto Rico economy. I welcome the opportunity to address any questions of the Committee.

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The CHAIRMAN. Thank you, and thank you each for your statements. There is a lot to discuss here this morning. Let's just get right into it.

Let me ask first, Mr. Alexander, on the timeline that you have here. May 18 is the end date for the Army Corps power restoration mission. So, it concludes at that point in time—98.44 percent of the folks having power there is good, but for the 22,900 who are without, I would imagine that they look at that date and say, wait, you can't leave us. Is there any consideration of an extension of this mission? Any need for it to be extended?

Mr. ALEXANDER. Ma'am, I believe that options, all options, were looked at. The Unified Command Group, they deliberated. The gentleman to my left actually sits on that body. Our authority to be there rests with FEMA and our resources.

So we will do whatever the mission is, but we, right now, have been told at midnight on the 18th we will transition orderly with FEMA, our lines that we're working on and the material that we have and replenish their inventory as well—

The CHAIRMAN. Let me ask about the orderly transition and this may be directed to either you, Mr. Alexander, or to Mr. Higgins.

Big story, not too many weeks ago about the raid, I guess it was in January, a couple months ago now, of a PREPA warehouse at the Palo Seco power station where the rebuilding materials were seized.

So we have had a lot of discussion. You have mentioned the inventory of the material purchases but recognizing that that was one of the initial limiting factors in restoring the electric grid because you had supplies that were being requested in other parts of the country for other hurricanes. You had a supply issue at the time. We have obviously worked to address that. Then you had a very serious incident there in January where the materials are secured.

So now you are saying you are going to be doing an orderly transition? Can you give us that assurance that we really do have the materials that are needed and what that will entail when you move on and the work remains?

Mr. ALEXANDER. Ma'am, I'll start off.

You know, we will conduct an audit, an inventory, of the material that will be turned over to PREPA, again to replenish stocks that were consumed during the response and then the material that they still need to complete the mission.

The CHAIRMAN. How much is outstanding and do you have a sense in terms of what is needed to complete?

Mr. ALEXANDER. On what we need to complete?

Well, we're down to one point something percent until we hit 100 percent. I don't have the actual, you know, count for number of poles, transformers, conduit, et cetera.

The CHAIRMAN. I guess where I am going with the question is, is whether or not we are still in a situation where we have a shortage of the material for the completion. You are suggesting no because we have got to about 98 percent.

Mr. ALEXANDER. Ma'am, material is no longer a limiting factor.

The CHAIRMAN. Okay.

Mr. ALEXANDER. It was initially because there literally, in many cases, the material wasn't there. It had been consumed in the previous storms. It was coming straight off the manufacturing line and then there are some unique specifications that apply solely to Puerto Rico.

The CHAIRMAN. Okay.

Mr. Higgins, did you want to add anything to that?

Mr. HIGGINS. Yeah, I think Mr. Alexander has correctly stated that material acquisition is no longer a big picture problem. All the materials are either on the way or on the island or have already been deployed.

There could occasionally be a localized problem where a material isn't available to a crew at a particular time, but that's more of a matter of getting it to them, getting it from central to regional warehouses and out to a crew.

The important thing going on now with the Army's mission ending is the assumption by PREPA of the logistics operation, that the Army has capably and admirably performed over the last many months.

So now we're in the process of PREPA's material acquisition people taking over the inventories, all the material that the Army has acquired for this, taking over the replenishment of future materials, receiving the materials that the Army "borrowed" from PREPA. And in addition, being prepared, fully prepared to operate the logistics of material activities in a way that supports continuing restoration and the ongoing and soon to be undertaken recovery.

The CHAIRMAN. And you are prepared to take that up on the 18th of May?

Mr. HIGGINS. Well, we're still—it's going to be a challenge and we're probably going to get some help via the FEMA for that, but our people feel they are ready and the FEMA is going to give us some additional augmentation as we go through that transition.

The CHAIRMAN. I guess recognizing that May 18th is coming up next week, we sure want to know that you really are ready and that you are not still, kind of, "working through things." That is next week.

So if there are things, if there are steps, if there is anything that needs to be done on the outside looking in to help facilitate that, we would certainly hope that you would make sure that that is known.

Mr. HIGGINS. We feel that we are ready to take this task on and the help will make sure that we are ready. I don't doubt that we'll have some growing pains. This is a massive effort, but we are ready to take the task.

The CHAIRMAN. I understand that, sir, and I appreciate it, but I also think that for those that have been living with great uncertainty about their power generation since these hurricanes, these 22,900 that are still without, when they hear you say that there is going to be continuing growing pains, that must be really tough on them.

Mr. HIGGINS. Yeah, I completely agree with your comment, Madam Chairman.

The CHAIRMAN. Senator Heinrich.

Senator HEINRICH. I am still trying to—I am having a hard time wrapping my head around this.

Mr. Alexander, if there are over 20,000 Puerto Rican American citizens still without power, is your mission really accomplished?

Mr. ALEXANDER. Our mission, as assigned by FEMA, is.

Senator HEINRICH. I don't think that is acceptable. I cannot imagine a scenario where 20,000+ Texans or 20,000+ Floridians were without power and FEMA would make that decision. I think that is reprehensible.

Mr. Masses, I am going to get to the bottom of something you raised that I think is a bit of a game changer here. Puerto Ricans pay painfully high retail electric rates, both individual citizens and manufacturers. I can't imagine a world where you try to make manufacturing work at \$0.20 plus per kilowatt-hour. A lot of that is because of an antiquated over-reliance on diesel generation which is incredibly expensive.

So at a time when we see new generation from wind, from solar, from natural gas, all priced in the bulk market at \$0.02 to \$0.04, even \$0.02 to \$0.05 a kilowatt-hour, it seems to me that even on the retail price, we ought to be able to build new generation cheaper than operating the existing diesel generation. Am I missing something here?

Mr. MASSES. By all means, by all means, but let's get back into the material cost here.

Senator HEINRICH. Why can't you?

Mr. MASSES. They talked about the inventory is not a problem anymore because it's being handled.

What about in the next three or four months, if we are hit again is the inventory there because they fix what was broken the last two or three months?

Senator HEINRICH. Right.

Mr. MASSES. But what about if we get hit again? Are we going to go through this again? Of course, if we are, if we own our generation, we will have the inventory available to fix our problems.

Senator HEINRICH. What are the barriers to your members being able to own their own generation, their own storage, their own behind-the-meter distributed resources that then cannot only support your members, but in an emergency potentially provide services back to the grid?

Mr. MASSES. Well, not just in an emergency because we could design it in order to share our excess with the community and other components of these regions.

So, I mean, we could design all this in a proper way to help everybody in Puerto Rico.

Senator HEINRICH. Why can't you do that today?

Mr. MASSES. Well, we have not been able to do that in the past because typically PREPA protect their invoice. Remember that we are the biggest invoice of the company. So, they may be concerned about this kind of trend.

And yes, in terms of technologies, solar, wind and there's many others that are available and that could make things very nice.

Senator HEINRICH. Mr. Higgins, what is the PREPA legal stance with regard to behind-the-meter resources with regard to solar and storage for individual retail customers as well as with regard to

large commercial customers being able to have behind-the-meter generation?

Mr. HIGGINS. Senator Heinrich, I think the question needs to be answered in, kind of, two ways.

Number one, Puerto Rico needs to change the way the grid is supplied by power today. It is not being adequately and properly supplied with the current generation mix. That generation is troubled by a maintenance issue. It's troubled by being reliant on oil which is both environmentally and cost-wise a difficult commodity. And in addition, there's not enough generation where it needs to be and, in some cases, there's too much where we don't need it.

So, the grid needs to be rebuilt. It needs to be rebuilt, not just the wires, but the generation needs to be rebuilt and as we change it out, then I agree with Mr. Masses in that regard, we should be relying on customers to generate themselves. We should be allowing customers who want to self-generate to do so.

We need to interconnect with them safely such that the grid is still safe, the workers can still work without danger and the customer is able to supply what they want to and PREPA, in the new world, will supply what PREPA is capable of supplying for people that don't want to do it themselves or when it's more economic.

Senator HEINRICH. Do you have a current net metering policy either for retail or for large commercial users?

Mr. HIGGINS. As I understand the retail policy—I've not spent a lot of time looking into that in my short time there—a customer, in order to be a retail solar customer and still be connected to the grid, must have a system that supplies their own needs and have storage. Therefore, they aren't going to suddenly rely on the grid when their system doesn't work. That, I believe, is our current way of dealing with behind-the-meter solar.

Senator HEINRICH. Thank you.

The CHAIRMAN. Thank you, Senator Heinrich.

Senator Cassidy.

Senator CASSIDY. I agree with what the Chair said. There are a lot of things to talk about here. But let me, kind of, go to you, Mr. Walker, and I think also you, Mr. Sobrino Vega.

You mentioned the desire for resilience and for 30 percent renewables. Now when we took our tour of Puerto Rico, there were lots of smashed windmills, and on our tour of the U.S. Virgin Islands, a lot of smashed solar panels. I am guessing that if you are going to be resilient there has to be at least some redundancy in terms of yes, we have renewables, but there has to be an amount of backup generation as either baseload and/or reserve generation. Is that correct?

Mr. WALKER. Senator, when I spoke earlier, I spoke about the integration of renewables as part of the strategy. I did not indicate any percentage like an RPS.

Senator CASSIDY. That may be you, sir.

Mr. WALKER. But that being said, the question you're asking is a good one because I, too, saw the havoc that was wrought during Hurricane Maria and the impact it had on renewables.

To that end, part of the modeling effort we are undertaking is the utilization of our expertise with weather data, particularly wind, to identify where there are opportunities, strategically, to

place things like solar and wind that we saw damaged in Puerto Rico, utilizing the topography of the island to facilitate its ability to withstand hurricanes.

So——

Senator CASSIDY. Presumably though, it will always be more vulnerable than other assets.

And sir, you were going to comment?

Mr. SOBRINO VEGA. Yes.

Resiliency requires resiliency in generation capacity on the island. That's a given. But the introduction of renewable energy sources is not, the way it's structured in our renewable portfolio standard that was legislated back in 2010 and amended subsequently, is to provide a cheaper source of energy that can allow the energy sector and the cost of producing energy on the island is lower if we only depend and if we only depended on diesel and petroleum products.

Senator CASSIDY. I accept that.

So there would be redundancy, if you will, for resiliency, but nonetheless, net, you would have a lower price. I think——

Mr. SOBRINO VEGA. I think that is our goal, sir. Yes.

Senator CASSIDY. So let me ask. The other thing we learned, Mr. Higgins put it very nicely, the generation is not co-located with your consumption. I recall that coal-powered power plant on one side of the island, but it is the opposite side in San Juan.

That seems as if you are going to address that. You are actually going to put some of this redundant, necessary for resiliency capacity on the northern side of the, or I should say, on the opposite side of the island from the coal-fired plant. I presume that plan is in the works?

Mr. HIGGINS. Yes, sir.

One of the important initiatives that we are undertaking is to look at, possibly and hopefully, repowering some of the northern generation, both bringing the maintenance up to standards and repowering it with a, hopefully, liquified natural gas imported and then burned in the generators.

Senator CASSIDY. Now we saw that.

Going back to the former regime, I remember being struck at that plant outside San Juan. It was rusted. I mean, it was just amazing how lousy the maintenance had been of that plant.

But there were two, kind of, I think GE, looked like jet engines sitting there generating electricity. Do you anticipate this, sort of, LNG associated with these sorts of engines on multiple places around the island so it can back up these microgrids and the 30 percent renewable?

Mr. HIGGINS. Senator, for the first round we're thinking of, perhaps a small, not a massive LNG solution for the two jet engine installations that you talked about so that instead of being fired by oil they'd be fired by natural gas.

Senator CASSIDY. I thought those were being fired by natural gas. Do I remember that incorrectly?

Mr. HIGGINS. They are not fired by natural gas today, the ones at the San Juan generating station that you allude to.

I also think it's very fair to say that we are not proud of the maintenance condition of our fleet, whether it's the generating fleet

or our transmission grid. That needs to be maintained better and our future budgets call for that.

Senator CASSIDY. Lastly, but to my point, it seems when we flew there, it seemed as if, again, you have this island way over here that was one of the last places to have its island restored. As we flew over, that was dark and other things were lit. Then you have the mountains separating three or four different places. You know exactly what I am stumbling and fumbling to try and describe.

Again, would you put that sort of two jet engines, sort of, back in each of those places or are we, again, going to have all these lines stretching over the mountains, being vulnerable to a big storm?

Mr. HIGGINS. Senator, what we're going to try to do through the integrated resource planning process that Chair Román has addressed, that Mr. Sobrino has also addressed, that Mr. Walker has addressed. Integrated resource planning is a modern, highly developed methodology for determining what the right mix of resources and grid improvements and technology should be to best meet the island's energy needs.

It's clear that we're not meeting them very well today; therefore, the integrated resource plan should identify the very kinds of things you're identifying. Where does the generation need to be? What kind of generation would make the most sense? Meeting all the goals, whether environmental or cost—

Senator CASSIDY. Let me stop you—

Mr. HIGGINS. Sorry.

Senator CASSIDY. —because I am out of time.

I will say that I guess one more question I would have asked, and I will ask for the record is, we have just spent all this money rebuilding, but it looks as if going forward we may redistribute. Knowing that maybe that is how it had to be done, it does seem as if there is an inefficiency on resource allocation. Again, maybe it had to be done that way, but it does seem as if you are going to relocate from your testimony.

I yield back. I am sorry for going over, Madam Chair.

The CHAIRMAN. Thank you, Senator Cassidy.

Senator Smith.

Senator SMITH. Thank you, Madam Chair, I am really happy to be here today. Thank you all very much for being here.

I am new to this Committee, but I am just so struck by the reality that with Hurricane Maria, we lived, American citizens, lived through the second largest blackout in the history of the world. It is incredible to think about, and yet we are still working to recover from this. And I am thinking about what would happen if this had happened in my state of Minnesota and we were still waiting to recover.

I appreciate the complexities of trying to respond to this amazing disaster, but I would like to just first go to Mr. Walker and Mr. Alexander and try to get at what you think our responsibility is in Puerto Rico. We have, this Committee, has to be the voice for Puerto Rico here because there are no representatives from Puerto Rico on this Committee. But what is our responsibility to make sure that we recover quickly from this? It feels like it is up to us.

Mr. WALKER. Do you want to take that?



Mr. ALEXANDER. Ma'am, our responsibilities are, you know, tied to the Stafford Act and it's to provide temporary interim repairs, not permanent repairs.

There, we have a, the Corps has a long history in working with Puerto Rico. We have an area office there. We work on projects. We will continue to be on projects. Our Jacksonville district is focused on Puerto Rico.

But we are, our responsibility is to turn the lights on as quickly as possible and other missions assigned, and we're doing that to the best of our ability.

Senator SMITH. I appreciate that this is complicated, as I said, but I am glad to have this opportunity to figure out what we all can do to do better because this is—I think about what would happen if we were in Minnesota and we were coping with this.

Mr. Sobrino Vega, I would like to ask you about something related to your testimony which I thought was very helpful. We know that with climate change we are going to be seeing more storms, more frequent storms, more intense storms. Your testimony, I think, gets at really laying out the problem that we have, all of us have, in Puerto Rico with long-term failure to invest and modernize the electricity system and also the need for transformation, right, so that it is more sustainable and as you say, more customer centered in the way that we do this.

I always like to think about how we can have more affordable, reliable, resilient and clean energy as a solution to that problem. Could you talk to us a little bit about what you see as the federal policy changes that we should be considering or the things we ought to be considering from this Committee's level to help you to achieve that goal?

Mr. SOBRINO VEGA. The main driver right now in the recovery effort in Puerto Rico is really the funding.

The issue with maintaining the infrastructure for PREPA, the truth of the matter is that it, PREPA was succumbed to a fiscal crisis. When you have any municipality or any entity, any public entity, that is involved in a fiscal crisis, typically what you'll see is that the first budget item that goes down is capital expenditures and maintenance costs. That explains why the San Juan plant that the Senator alluded to had rusted infrastructure, why you had transmission lines that hadn't been replaced. The mere effort of re-establishing electricity was, in and of itself, an improvement on what we had before.

So something that we would appreciate is—and the federal agencies like DOE, FEMA, U.S. Army Corps of Engineers, that have been helping us out on this—is ensure that the infrastructure, that the infrastructure funds and recovery funds that are provided to the island reflect what is the best assessments not only from a conceptual phase up here in Washington but what we know in Puerto Rico to be best for the island.

Senator SMITH. Thank you.

I just want to ask a quick follow-up question.

As we think about the goal of getting more resilience in the system as well as more affordability, is there, do we think that having more renewable generation takes away from the resilience of the system?

Mr. SOBRINO VEGA. No, there are inherent difficulties with producing and providing energy and fuel to an island. That's inherent. That's part of the reality that Puerto Rico faces.

What we do need to make sure is that while we strive to have cleaner and renewable energy sources, we do provide for redundancy, so in case that there is an atmospheric event like the one ago, we can turn on generators.

Senator SMITH. Yes, that is not the conflict.

It strikes me that my colleague, Senator Hirono, might want to, may well have comments about this, given the similar situations that Hawaii has and a huge emphasis on renewables.

Madam Chair, I realize that I am out of time. I appreciate this.

I am also really interested as a follow-up as we go forward on this question that you raised at the beginning about who is in charge here and how do we make sure that the coordination happens? It needs to happen so we can be successful.

The CHAIRMAN. Thank you, Senator.

Senator Gardner.

Senator GARDNER. Thank you, Madam Chair, for your time and testimony. Thank you for allowing this testimony to be held today, this hearing to be held today, and thank you for the time and testimony of the witnesses today.

A few questions.

Mr. Walker, you talked briefly about one of these questions already. In your testimony you describe how DOE provided both modeling support for the island electric grid and technical assistance for the microgrids. I think you answered yes to a question basically of, were these grid models used to identify microgrid opportunities and the long-term role that they can play. I think you have already talked a little bit about that. But the models that you used on microgrid modeling, will they be made available to future owner-operators of the grid?

Mr. WALKER. Senator, absolutely.

My team is working with Mr. Higgins' team. We have people in Puerto Rico today both from the PMAs from a technical expertise standpoint as well as personnel from within my R&D organizations coordinating with the national labs providing those models.

Senator GARDNER. And so, the modeling techniques, can they be used for regional, other national models, within the continental U.S.?

Mr. WALKER. Absolutely.

Senator GARDNER. And will there be regulatory innovations to address the increased use of distributed energy systems that we can transfer then to the 50 states?

Mr. WALKER. Yes.

We're building the model bigger and larger, a more sophisticated model in Puerto Rico, that will be both a planning tool and an operational tool with the idea that we will be able to transport the lessons learned while we're building that model into the broader model for North America.

Senator GARDNER. I think you mentioned that DOE is working with the Southern States Energy Board (SSEB) to develop a policy and legal framework that would help provide a regulatory process for possible restructuring and privatization efforts in Puerto Rico.

What role is DOE playing there? What is the timeline to deliver options and recommendations?

Mr. WALKER. Yeah.

So mainly DOE's role there was the Secretary and I met with Governor Bryant from Mississippi who chairs their Executive Board. Recognizing that our expertise within DOE is on the technical side of the energy systems, we hired the Southern States Energy Board to work with Puerto Rico and USVI mainly because both USVI and Puerto Rico are already members of SSEB and they have the expertise with regard to regulatory policy, working with municipal utilities.

Senator GARDNER. Thank you.

Mr. Higgins, as you oversee the rebuilding of the grid you have talked about resiliency, but how broad of a definition does that resiliency cover? Do you have the ability to not only withstand storms, but manmade, physical and cyber threats as well with this new resiliency?

Mr. HIGGINS. I think as the grid, Senator, as the grid is redeveloped and much along the lines of what Assistant Secretary Walker talked about, we will build into some of these new systems more resistance, more resiliency to, let's say, a cyberattack.

As we rebuild and redesign the grid to the newly adopted standards and with the help of the Federal Government, which we appreciate, we'll be able to build some of these things, these structures, so that they're more resistant to the next storm that might come.

Senator GARDNER. Okay.

Do you have the ability or authority to hire a manager team at PREPA? What authorities do the Governor and legislature retain in assigning or approving the management team there?

Mr. HIGGINS. I was asked to come to Puerto Rico with the full knowledge that I could replace anybody in management that I felt I should replace. I've received no interference on that. The Governor has made clear to me that I am an independent CEO, have the authority to replace management as I see fit.

Senator GARDNER. So, the Governor and legislature, what if any do they retain in terms of authorities?

Mr. HIGGINS. The Governor is the Chief Executive of the island and he sets policies for the island. And my job, as the head of a major state agency, albeit under an independent board, is to carry out the policies of the Governor.

Senator GARDNER. But in terms of assigning or approving your manager team, you have that full authority?

Mr. HIGGINS. Completely.

Senator GARDNER. Very good.

Mr. Román, I am sorry, go ahead Mr. Vega, I am sorry.

Mr. SOBRINO VEGA. I would like to clarify that.

Walt is the first CEO of PREPA that was appointed through a non-politically influenced process. He was selected through a head-hunting mechanism. He was evaluated by a committee of directors that was comprised of the independent directors of PREPA, and he was selected and his compensation was also established through that governing structure. And that is something that we are very

proud of that we have this first, non-politically appointed CEO for PREPA.

Senator GARDNER. Thank you.

Mr. Román Morales, in your testimony you expressed frustration with both the Governor's office and FOMB contending they are impeding in the Commission's ability to implement measures that would push PREPA toward financial and operational responsibility.

Could you talk a little bit more about those frustrations directly?

Mr. ROMÁN MORALES. Yeah, sure. Thank you, Senator.

Yeah, I have expressed my frustrations, one with Fiscal Oversight and Management Board because of what we see as being an overreach of the delegated powers by Congress. So, I would ask Congress to really specify the FOMB, they should operate within trying to harmonize commonwealth law and not against commonwealth law.

As we see it, Congress delegated the Fiscal Oversight and Management Board fiscal duties, but not policy responsibility within the island. That remains completely within the Commonwealth of Puerto Rico and where the Commonwealth send delegates to the Commission, then the Commission would carry out its duties.

For fiscal problems, the Commission isn't self-sustainable. Our funding comes through rates. We have not been able to fully utilize our funding through the hiring of either external counsel or external consultants or hiring personnel because of this law that requires the approval of the Office of the Governor. And that has taken a long time to acquire. That has actually impeded the performance of the Commission.

Senator GARDNER. Thanks again. Thanks to all the witnesses.

Thanks, Madam Chair.

The CHAIRMAN. Thank you, Senator Gardner.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you.

Mr. Higgins, let me start with you. During our last hearing on this subject, it was made clear to the Committee that the Stafford Act, as written, requires funds to be used only to restore damaged equipment to its previous state which made no sense for Puerto Rico given the disrepair its electrical system was in prior to the hurricane.

In the budget bill that we passed in February a provision was included allowing funds to be used to replace or restore systems to the industry standard without regard to the pre-disaster condition of a facility. It also allowed flexibility to allow components not damaged by the hurricane to be replaced in order to bring a larger system up to industry standards.

My question to you is, does this provision go far enough in enabling PREPA to rebuild for resilience and reliability?

Mr. HIGGINS. Senator, I think that the way it's written and subject, of course, to funding, it does go far enough. These are serial activities. You can't redesign and rebuild a system from scratch and completely upgrade it to the new standards. You had to get the power back on first, so that's been the priority.

But as I understand the funding, as it's been explained to me, as I read it, provided it is funded, there is enough authorization ac-

tivity and hopefully funding to rebuild the system so it meets modern standards.

Senator CORTEZ MASTO. Mr. Walker, let me ask you the same question. Do you think that we need to take any further action in regards to the Stafford Act in order to achieve power and resiliency in Puerto Rico?

Mr. WALKER. Thank you for the question, Senator.

Yes, I do.

When testifying in front of the House I spoke to this a couple weeks ago, and my point was that there's an opportunity for us to allow engineering to be done to modify and make corrections with regard to design, particularly to add the resiliency.

And so, rather than be held to what a standard may very well be, there are opportunities. And I think Puerto Rico has presented many of those, where we could have replaced and made decisions early in the restoration process to increase the capability for, let's say, a line. And so, I could build it with, you know, double up lock poles as opposed to what the industry standard might be a single lock.

So I think the capability to allow those who are on the ground, making decisions with regard to the emergency restoration, to incorporate the ability to modify the system and to add capability whether it's through redesign or just stronger equipment, even if it exceeds industry capacity or the industry standard.

Senator CORTEZ MASTO. And that is true for not just Puerto Rico, but some of the other islands that sustained damage as well?

Mr. WALKER. That's right.

Senator CORTEZ MASTO. Thank you.

Would you be willing to work with my staff as we address these issues?

Mr. WALKER. Yes, ma'am.

Senator CORTEZ MASTO. Thank you.

Mr. Higgins, let me go back to a question that came up, and I believe it was the Chair who talked about this and the concern with the Corps leaving May 18th and my understanding with PREPA taking over.

You mentioned in your response to the Chair that as you take over these logistics that there are going to be challenges to take over the logistics to engage in the continuing recovery. What challenges were you talking about?

Mr. HIGGINS. There's a—Senator, thank you for the question.

There's a massive amount of material both still coming in and that needs to be reintegrated into PREPA's warehouse system from the Army's warehouse system that they very capably developed in order to fight the battle, so to speak.

And so, our people are now in the process of receiving all that material and all the paperwork that goes along with it so that everything is properly accounted for, along with getting all the material out of the laydown yards and the Army warehouses, getting out of the Army warehouses. That's a lot more things than the company was normally doing.

In order to do that efficiently we've asked for some temporary help, but our people feel they're capable, and I agree with them, of managing the ongoing material requirements, but this transition

period where we're getting a lot more stuff, we have a lot more things to do and we have to comply with FEMA requirements all the way along the way to be sure it's reimbursable.

Senator CORTEZ MASTO. So you say you are going to be getting help. Who is providing the help for you?

Mr. HIGGINS. FEMA will fund some temporary help for us. I don't know exactly the source, Senator.

Senator CORTEZ MASTO. Would you prefer that the Corps extend its mission and stay and continue?

Mr. HIGGINS. We've been delighted with the work the Corps has done. And at the end of the day, it's not really PREPA's decision. We're very interested in how the work got done and the Corps engaged contractors to do that work. And they've done a good job. The Corps also took over the logistics operation which was very helpful.

We just want it done. We're not indifferent. We want the job done well. We have more contractors coming to the island to replace the Corps' soon to depart contractors. We don't choose. This is FEMA's choice, but I think the FEMA is making a choice that's dictated by what their guidelines are as well.

Senator CORTEZ MASTO. Alright, thank you.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator.

Senator Lee.

Senator LEE. Thank you, Madam Chair, for holding this hearing. Thanks to all of you for being here.

I would like to start with Mr. Alexander. Are you concerned about mismanagement within PREPA?

Mr. ALEXANDER. No, sir. I am not.

We've been a partner. We've been in collaboration with PREPA since day one, and we've been working out of their headquarters. I believe it's been a partnership that has led to our ability to get as far as we have.

Senator LEE. Are you aware of any ongoing investigations regarding the missing inventory information for Warehouse Five, located near Puerto Rico's Palo Seco generating station?

Mr. ALEXANDER. Sir, I'm not aware of any.

Senator LEE. Can you tell us why the raid of Warehouse Five was conducted on January 6th?

Mr. ALEXANDER. I don't know if I would characterize it as a raid. I believe it was just some of our personnel were there and they happened to notice that there were supplies in our warehouse that had not been previously identified when we were working with PREPA to inventory the stocks on hand which would ultimately help inform what we needed to procure.

Senator LEE. Since that operation, whether you call it a raid or otherwise, do you have reason to believe that there are other gaps in PREPA's inventory?

Mr. ALEXANDER. No, I think an extensive joint inventory was done. And again, that's what resulted in the material we procured, about 90+ percent of the 36 million items that we ordered has been delivered. I think that we'll find the inventory will be suffice and allow PREPA to not only have replenished stocks but to finish the restoration mission.

Senator LEE. Okay.

Mr. Higgins, I would like to talk to you for a moment.

In November, before this Committee, I asked Governor Rosselló about some of the serious issues with PREPA's management and operation.

I would like to follow up on that by asking you directly, do you think there is mismanagement and corruption within PREPA in Puerto Rico, generally, and in particular within PREPA?

Mr. HIGGINS. I have no idea about Puerto Rico, Senator. I don't know enough about it yet to know that.

I can tell you this, that with respect to PREPA there are always going to be in an organization of 6,000 people, something that's going on that shouldn't be, and we're going to vigorously investigate and go after anything that's not done the right way.

Similarly, I've told all the Senior Managers that were there when I came, it's time for you to decide if you want to be a part of the solution or you don't. And if you don't want to be a part of the solution, tell me now because if you don't tell me and I have to make a change, it's not going to be nice. So, some may make it, some may not.

I'm optimistic that some get it, that PREPA is going to be different in the future, but I've made quite clear to them, you've got to be different, you've got to be a different kind of leader and run the company differently than it used to be run.

Senator LEE. To the extent you are suggesting that PREPA is no more susceptible to or vulnerable to or the victim of mismanagement and corruption than any other business organization or any other utility company, state owned or otherwise. I don't think you are suggesting that, are you?

Mr. HIGGINS. No, sir, I am not.

I'm simply saying that within a group of 6,000 people there's likely to be somebody that's not doing the job the way they ought to. Hopefully, it's just not doing the job as opposed to something corrupt, but anything that we find that even suggests corruption will be seriously and thoroughly investigated and dealt with strongly.

Senator LEE. Some of the things that have concerned me involve reports of staff being hired without experience or expertise required for the job that sometimes resulted in the failure of big, multi-year projects, widespread theft of power and billing failures, outdated infrastructure systems that cause an unusually high rate of forced outages and generation units that are often technologically outdated requiring reliance on very expensive fuel. Are you aware of some of those problems and are you taking steps to address them?

Mr. HIGGINS. Senator, several of the last few you mentioned were covered in my remarks that we do have maintenance issues with our generators. We do have environmental compliance issues with our generators. And if they're not able to be run for environmental reasons, they have to be shut down. If our generators are not up to snuff, maintenance wise, then we do have to run a less efficient, more expensive generator.

There's no question that is going on. That needs to be fixed. That's part of my mandate.

Senator LEE. Thank you. I see my time has expired. Thank you.

The CHAIRMAN. Thank you, Senator Lee.

Senator Hirono.

Senator HIRONO. Thank you, Madam Chair.

Question for Mr. Alexander. In a May 6th article in the New York Times, the Commanding General of the U.S. Army Corps of Engineers, General Semonite, was quoted as saying that, "prior to Puerto Rico, the Corps had never repaired an electric power grid of this magnitude as part of a domestic disaster response and could not predict the assignment from FEMA to restore the grid."

Do you believe that the Corps should be tasked with grid repairs in future natural disasters because there will be more, beyond its more routine task of bringing in generators? As you said, your immediate mission was to turn on the lights. So should the Corps be able to do more than just turn on the lights in a situation like what happened in Puerto Rico?

Mr. ALEXANDER. Thank you, Senator.

You know, the Corps has traditionally just done the temporary emergency power generators. This was a new mission set.

We have done some grid work in Iraq and Afghanistan, but certainly nothing to this extent. It's not a core, c-o-r-e, competency of ours.

The decision on whether this should be, you know, incorporated in our portfolio of services is not ours to make, but if it is made, then we would have to train our personnel and be resourced adequately to be able to execute that mission.

A lot of this was done on the fly, if you will. We were able to get contracts in place quickly under federal acquisition regulations due to the large contract vehicles that we had in place.

Senator HIRONO. So you say the decision to expand the mission of the Corps is not yours. Whose decision is it? The Congress?

Mr. ALEXANDER. Well, the determination for the grid restoration mission for the Corps to end at midnight on the 18th, that decision is by FEMA. You know, we're there under the Stafford Act authority and under the associated resources. We run out of money on the 18th and we run out of authority.

I would tell you, based on a statement made earlier, and I would be remiss if I didn't say, you know, the thousands of Corps of Engineer employees and military that have deployed to serve the citizens of Puerto Rico, it's not in our culture to walk away from a mission——

Senator HIRONO. Yes.

Mr. ALEXANDER. ——when it hasn't been fully accomplished. But we follow orders. We follow orders and——

Senator HIRONO. Yes, I understand that, especially because I know that FEMA was on Kuai and they're on the Big Island right now. So this is not denigrating anything that FEMA is doing.

It's to ask whether or not we should in instances such as Puerto Rico which is a very unique island nation, on an area just like Hawaii is, whether there should be some greater flexibility under the Stafford Act to allow you to do more and to have more training and, of course, depending on resources provided.

Mr. WALKER. Senator, if I may answer this question.

I do not believe that the Corps should be focused on emergency restoration for power grids as an expansion of their duties.



The Corps was assigned, a mission assigned by FEMA, because PREPA did not call for mutual aid. The standard within the industry is that any utility, whether it's an EEI or NRECA or APPA, they call for mutual aid and command the resources across the entire United States and Canada to restore events. And so, but for that failure to call for mutual aid, that is what resulted in FEMA mission assigning the Corps to undertake the emergency restoration component.

So, had the process worked as designed and the reason why General Semonite indicated in his article that it was the first time, it is, in my nearly 30 years working the industry, it's the first time I've never seen mutual aid called.

Senator HIRONO. So this is a responsibility of PREPA to have a call for that mutual aid?

Mr. HIGGINS. Excuse me.

Senator HIRONO. And so, Mr. Higgins, have you rectified or has somebody rectified this omission?

Mr. SOBRINO VEGA. Senator, we did eventually call for mutual aid. At the time when Hurricane Maria hit Puerto Rico a lot of the utilities and the companies that would be providing it usually were essentially busy in Florida and Texas.

Before that, after Irma, PREPA had hired certain contractors to help in the restoration process and the mission for the Corps, as I remember, because I was there, was signed because they put it in front of the Governor and asked him to sign it so that we could have energy in 40 days. So it's a little more complicated than as narrated before.

Mr. WALKER. I'm not sure that's accurate because I was there.

Mr. SOBRINO VEGA. I was there, sir.

Mr. WALKER. As was I.

Senator HIRONO. So obviously there needs to be more coordination because we can expect various kind of weather conditions to be hitting simultaneously in all parts of the country and our territories. I think that this is something that needs to be resolved.

Mr. Walker, did you?

Mr. WALKER. Yeah, just for the record, the request for mutual aid came on October 31st.

Senator HIRONO. And the hurricane hit when?

Mr. WALKER. Late September.

Mr. SOBRINO VEGA. September 20th and the contractors were there in five days.

Senator HIRONO. That sounds like an area for rectification.

I am running out of, in fact, I have run out of time.

I will submit some further questions relating to the flexibility that we provided under the Stafford Act.

The CHAIRMAN. Thank you, Senator Hirono.

I will just share that one of the impressions that I had when we visited less than a month after the hurricane hit was the difference between the U.S. Virgin Islands and Puerto Rico.

One had teed things up so that mutual aid assistance was going to be there in anticipation of the disaster. And literally on the day after, there were crews coming from the continental United States into the USVI to help with just the debris cleanup.

But the decision not to act, not to act for a full month afterwards, I think, was one of those decisions you look back on and say, we could have seen a different effort in terms of what could have come to Puerto Rico more readily.

A lot of Monday morning quarterbacking goes on, but I do think that is a very clear example of one place being prepared in anticipation of the disaster and another hoping to get lucky and they did not get lucky.

Senator KING.

Senator KING. Thank you, Madam Chair.

First, I want to thank you and Senator Cantwell for arranging this hearing on this important topic and acknowledge the role that, I believe, Senator Nelson played in trying to encourage us to work on and look into this problem. I know that he exerted a great deal of leadership on this issue.

I am a little unclear. We now have 98 percent restored. Does that mean the system is all rebuilt and have we rebuilt the old, vulnerable system?

Mr. Alexander? Are we, have we gone beyond building a new system? In other words, are we patched up to work for now or have we precluded the opportunity to build an entirely new and modern system?

Mr. ALEXANDER. Well, sir, our mission wasn't to build a modern, resilient system. Our mission was to do the interim measures to get power restored and in that Department of Energy has been supporting us.

I think the longer-term resilient grid you mentioned, the Department of Energy could play a heavy hand in that, as well as PREPA.

The notion that our Chief of Engineers would say that Puerto Rico would have power in 40 days, here sign this, is the first time I've ever heard this.

Our Chief is very clear on expectations and when power would be established, the different dates, the different percentages. And it was not consistent with what, I believe, the Governor unilaterally declared which we never agreed was feasible.

Senator KING. Okay.

So we have the system back up and running. Again, my question is whether we have, sort of, gone by the moment when we might have built a different kind of system.

Who is in charge? Who makes the next decisions about what the system is going to look like? I asked that question the last time, and I am still not sure I know. Who will make the decision, for example, to go to a more distributed system as opposed to the current baseload diesel plan and wire cross the isle?

Mr. SOBRINO VEGA. Senator, regarding how the structure for generation is connected in Puerto Rico, that is a policy choice that's handled through the legislative process, through the regulatory process at PREC. Regarding infrastructure funding and investment, especially when it comes to——

Senator KING. Before we even get to funding, I want to know who is going to decide do we maintain the current baseload, long wire system or do we go to a different kind of system. Is that PREPA? Is it——

Mr. SOBRINO VEGA. As in any state, it is the government through its legislative process in discussions with the regulatory authority.

Senator KING. No, that is not true in my state.

Mr. SOBRINO VEGA. Who does—

Senator KING. The utilities make proposals. The Public Utilities Commission approves them. The legislature doesn't design the grid.

Mr. SOBRINO VEGA. But in Puerto Rico there is—PREPA is a public corporation so it is subject to certain legislation. That's why we want to transform PREPA to have private operators so that it is completely de-politicized, disconnected from the legislative process and it can look like a utility in the mainland.

Senator KING. Well, Mr. Higgins, do you have the authority to start to redesign the system?

I have a very limited amount of time, so, give me a quick—

Mr. HIGGINS. I believe that through the auspices of the integrated resource planning process and through the auspices of the various initiatives that have been undertaken providing longer-term funds and opportunities to make the grid more resilient, we can do exactly what you say. We can figure out a better way to do it.

Senator KING. What is the price of electricity today all in—

Mr. HIGGINS. Around \$0.20 a kilowatt-hour.

Senator KING. In my state we are building a 50-megawatt solar project. This is in the State of Maine. Our costs are way below \$0.20, and it is competitive. I just read that last year we are down to \$0.06 a kilowatt-hour for solar.

Why isn't this the natural response in Puerto Rico? Why are we doing 47 percent diesel, 17 percent coal, 34 percent gas, 2 percent renewables in a state with one of the great solar resources in the history of the world?

Mr. HIGGINS. Senator, I believe that it's fair to say that that's probably where things are going to go, but that has to be taken through a process that everybody buys into, properly funded, a plan made for how we get rid of the old generation, where to locate the solar, how to put individual and distributed solar projects around, how to bring, perhaps, liquefied natural gas to the island so we can be cleaner.

Senator KING. And I get back to my initial question. Is that going to be your decision or is that going to be a political decision? Who is going to decide how this new, what this new grid is going to look like?

Mr. HIGGINS. I believe it will be my decision subject to the oversight of the PREC that Mr. Román runs and through the auspices of the Oversight Board which has to approve my integrated resources.

Senator KING. I understand there is discussion of divesting generation from transmission which has happened lots of places in the U.S., including in my state. Who will regulate the remaining wires? I understand that will still be a public company or publicly owned company. Will there be a regulator of the wires company, the wires and distribution company?

Mr. SOBRINO VEGA. Yes, the Energy Commission, represented by Mr. Román, will continue to be a regulator.

Senator KING. And the wholesale production of energy will be unregulated up to competition?

Mr. SOBRINO VEGA. No, sir, that would be subject also to regulation by Mr. Román's entity and would be subject to the concession or the asset sale contracts that are signed by the parties.

Senator KING. Well, I appreciate the constraints and I really appreciate your being here, but I hope we don't lose sight of the big picture that Puerto Rico could go from a challenged electrical system to a world leader given the natural assets that the island has and solar prices have plunged 80 percent since 2010.

Enormous opportunity, I hope. I look forward to working with you to help seize those opportunities.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator King.

Senator Daines.

Senator DAINES. Thank you, Chair Murkowski and Ranking Member Cantwell for holding this hearing to reevaluate the progress made and certainly the lessons learned in addressing Puerto Rico's energy needs and others nearly six months following a natural disaster.

Like others, I was troubled to learn that PREPA had contracted with an energy company, although based in my home state, with minimal experience. While I understand the need to move quickly, given PREPA's and the island's financial state, it is equally as important that these quick decisions are made with the best interest of ratepayers and taxpayers.

Mr. Sobrino Vega, what kind of oversight is in place with respect to PREPA's finances, and the other part of that question, in your view does PREPA have sufficient internal controls in contracting expertise?

Mr. SOBRINO VEGA. So following the contracting issue that you alluded to, Senator, we, the Governor, instituted a limited receivership over the contracting process in PREPA. It's called the OCPC, the Office of Contract and Procurement. It has effectively conducted its oversight of the procurement process.

We have to submit those contracts also to the Fiscal Oversight Board under Section 204 of PROMESA. To this date, they have not denied any of those contracts for consistency with the fiscal plan in the budget.

Those contracts, when they are to be reimbursed by FEMA, also are now subject to a pre-audit and that has also been conducted successfully.

Regarding PREPA itself, it is subject to fiscal oversight by state authorities and it is subject to the oversight, to fiscal oversight by the Fiscal Oversight Board under PROMESA.

Senator DAINES. When were those additional controls put in place?

Mr. SOBRINO VEGA. Sorry?

Senator DAINES. When were those additional controls put in place?

Mr. SOBRINO VEGA. I don't remember the exact date, but they were following, I believe, they were in October and November, yes.

Senator DAINES. Okay.

Had they been in place before, do you think it would have prevented this contract issue?

Mr. SOBRINO VEGA. I think that learning from what we've seen in the USVI, maybe in Hawaii and other islands, we would implement probably, best practice, like conducting RFPs and activating mutual aid agreements before hurricane season. The USVI, for example, is subject to more hurricanes than Puerto Rico had been historically. This was a matter also, we had limited resources from the mainland. The USVI is much smaller than Puerto Rico, so bringing in resources to the island was difficult. So we do have to do work on our emergency planning for atmospheric events like Hurricane Maria or Irma.

Senator DAINES. Mr. Higgins, PREPA has had serious problems with debt and mismanagement. Given the disaster situations, will customers be able to pay for the service?

Mr. HIGGINS. Senator, I'm not sure I exactly understand your question. Is it a question about the rates the customers pay?

Senator DAINES. Yes.

Mr. HIGGINS. We're some distance yet from a final decision on how PREPA will be restructured and taken to the bankruptcy judge, if you will, and how all the different contracts and all the different activities of PREPA.

We now have a certified budget and that will guide us and that certified budget will imply some rates that will have to be submitted to Mr. Román's organization for approval. So we're in the process. The goal of many of the activities that are being undertaken inside the entity now are to reduce the cost pressures and reduce the cost so that there's less upward pressure on the rates.

So, I think the bottom line is, with the federal help that we're getting and with cost control measures underway, and with an adequate set of solutions to the many, call it, contractual problems we have, the rates are going to end up being fair and acceptable to the customers, given that they're already too high and they will need to come down over time.

Senator DAINES. In your written testimony you mentioned your concerns about PREPA having only two months of operating expense and liquidity. How can this be addressed?

Mr. HIGGINS. In the short-term, we need to start doing a better job, which we're trying to do, of collecting from our customers in real time. We're only able to get about 80 percent of the customers billed now because the automated meter reading system depends on some substation devices that are, have not yet been replaced. And the substations, in many cases, a large portion of them, are still out of service. That will help in getting the bills out and getting that cash flowing in which is now about \$50 million a week. That will help a lot. And the continuing support of the bankruptcy court for loans that would come from the Commonwealth of Puerto Rico, they are actually who we borrow from, will help us to bridge through.

We'll be back asking for more if we need it when the—in the next few months of the new fiscal year.

Senator DAINES. Thank you, Chair Murkowski.

The CHAIRMAN. Thank you, Senator Daines.

Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair.

I apologize for not being here earlier. This is an important hearing, and I certainly appreciate all the witnesses being here and the attention to detail.

And Mr. Higgins, it is good to see you. I know that we fought another battle together to make sure that ratepayers and taxpayers got a fair deal after a lot of market manipulation, so it gives me some degree of comfort to know that you are helping in this.

Although, I'd have to say this recent run-up in debt securities where the hedge funds are profiting off of this is some of the frustration that, at least, we were concerned about before. And to me, it is, really, it is shameful. We are trying to get something done here at taxpayer expense. We will save this to a different oversight hearing about that operation.

But I did want to go to, I did put out a larger statement that I won't go into now. Mr. Walker, I wanted to go back to, I know some of my colleagues while I was sitting here, they were asking about the blackout condition. What was the main cause of that?

Mr. WALKER. Based on the information we know and when that happened, working with Mr. Higgins, the thing that I think people neglect when looking at it, is the system is not in its normal state by virtue of that there's two main transmission lines that go from the south to the north on the 230 kV system.

One of those lines is out and being worked on which places all of the northern, or the majority of the north/south corridor, basically, relying on that one line. And the relays are set and designed to operate with the system in, basically, it's normal state. The system is not in its normal state for a variety of different reasons, including that transmission line that they're working on, and it's surmised and I think Mr. Higgins, his team has done more and I know he's been working with folks from NYPA, relay experts, to look at the details. But it looks like that there's an overtrip mechanism or overtrip of the relays based on the abnormal state of the grid and maybe, Walt, if you want to add any more?

Mr. HIGGINS. I think Assistant Secretary Walker's comment, Senator, is very appropriate that the grid is very weak right now because a number of lines are still out, but notably, one of the main transport lines to take power from the south to the north.

When an incident occurred that caused a protective action to start on an adjacent line, the way the relays were set which was probably right for the normal system, caused the entire, an entire set of lines to trip off. And then you suddenly had a mismatch. And an electric system can't handle a mismatch for very long and then things start tripping.

So, as a result of that, we just didn't have enough generation in the northern part of the island to hold the load. Therefore, everything started to trip. That's just the way it protects the system by turning things off before they're damaged.

Senator CANTWELL. Was this something that was originally fixed or reset, if you will?

Mr. HIGGINS. No.

Senator CANTWELL. No.

Mr. HIGGINS. Not to my knowledge.

Senator CANTWELL. So this did not have anything to do with Whitefish?

Mr. HIGGINS. No, no.

This is—the issue starts with not enough generation in the north and too much in the south. And then the second thing that when the grid is in a bad condition, which it is right now until that second line is built, then you're vulnerable to almost any kind of incident. And then third, we really have to look at—and this is what the Department of Energy's currently helping us with as were the NYPA workers, the NYPA relay and protection experts—are there things that we could do to better operate in these abnormal conditions that exist right now? So we're getting help on all three fronts.

Senator CANTWELL. Okay.

And now to this proposal on the Energy Commission and changes to it. I don't know that any utility operates this way in the United States—basically considering what NARUC recommends as far as an energy commission.

Mr. Alexander, do you think this will make us less or more independent, this effective independent regulator?

Mr. ALEXANDER. Ma'am, that's not an area that the Corps usually delves into, so I don't have an informed opinion.

Senator CANTWELL. Okay.

Mr. Higgins, do you have any comments?

Mr. HIGGINS. As the recipient of regulatory activity in many, many places I've lived in my life, I believe that nothing is better for a customer in the long run than a fair, firm, strong, well-managed, regulatory entity and nothing is better for a utility. At the end of the day, the customers get better rates, better reliability and their utility knows what the rules are and they operate by it.

Senator CANTWELL. Well, I guess that is why I would be concerned about having all of the appointees and then being able to ignore it as well as being somewhat concerning. But again, that is something that we will have to keep our eye on and watch carefully for the future.

My colleagues were discussing distributed generation. Do you think that we have enough in place now to focus on that given this load issue?

Mr. HIGGINS. Senator, do you mean enough distributed generation?

Senator CANTWELL. Enough in the framework of discussion, not so much in distributed generation, but my colleagues were asking which I think is a viable question. It's a viable question. You know, we have this all the time as it relates to FERC and its oversight.

Given some of the changes that are being recommended, do you think that there is a framework that exists within Puerto Rico to properly vet and incent distributed generation?

Mr. HIGGINS. I think more work will have to be done to make that work well in Puerto Rico, regulatory work, perhaps legislative work and certainly work within PREPA.

But we do need distributed generation and it will be adopted, I believe, as a result of the integrated resource planning process.

Senator CANTWELL. Okay, would you get back to us on what legislative ideas you think we might need to make that a reality because to me this is, look, I know all our colleagues, well actually,

I don't know what all our colleagues think, but I hear them and a lot of them think this tragedy happened and now we're going to build this most resilient grid.

As Mr. Walker just said, we basically got the grid up and running to the best of our ability, okay? Now we know that hurricane season is about to hit again, so people are going to come back to us and say, I thought we built the most resilient grid. No, we put some money toward that, but obviously we all know that distributed generation could help in the reliability of this.

Listen, the Chair and I want to get about rebuilding our own grid and making it smarter. We hope our House colleagues will help us get a bill at some point in time.

But I think that the key thing now for us in Puerto Rico is to make sure that the regulatory process does allow for some distributed generation that would help us with resiliency. And so, if there are barriers to that, I certainly want to know and I would think some of my colleagues would as well.

Mr. HIGGINS. Senator, I do not mean to imply any federal actions needed. Mr. Sobrino talked about several legislative initiatives in Puerto Rico about policies and that's the kind of thing that might be needed to really make this work.

Senator CANTWELL. Okay, great.

Alright, thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Cantwell.

A few more follow-on questions here.

Mr. Walker, in your testimony you mention the report on the energy resilience options and potential solutions for the grid. You said it is nearly complete. When might we see that report?

Mr. WALKER. So, the final draft was done on the 30th. It's going through final edits and we'll be presenting the report at the next meeting of the Undersecretaries from all the responding agencies which, I believe, is next Wednesday. And at that point we'll be distributing that report.

The CHAIRMAN. Okay, great. We will look forward to that.

You also mentioned, talking about microgrids, the national labs' work through the microgrid design tool and you indicated in your testimony here this morning that you had identified some key locations.

Can you share with us what you are looking at and probably as important as where they are is whether or not these microgrids have the support of the local folks there to use the land and basically are signed on to the fact of having this opportunity, as opposed to obtaining power from central generation?

Mr. WALKER. Sure.

The focus on microgrids is diverse. Our initial work on the microgrids was with PRIDCO, which is the Puerto Rican Industrial Development Company, who owns 200 pieces of property throughout, industrial pieces of property throughout the island.

We were working with them to help facilitate providing better power quality for a number of the industrial customers, particularly those that were out of power, to ensure that the economic vitality of the island remained intact while we were going through the emergency restoration component.



In addition to that work being done, we're now working with PREPA to identify, kind of, the last mile, you know, isolated communities where we can do that and also with FEMA and the Corps for those locations where we had placed generation for critical infrastructure and continue to have generation at those critical infrastructure locations.

The idea being that by providing those microgrid capabilities there, the next time an event like Hurricane Maria, which is inevitable, is presented to us, there will be some level of normalcy that can be established to help facilitate the health and safety of those on the island while we work to go through our restoration effort again.

The CHAIRMAN. In that vein there has been a lot of discussion about the smaller islands off of Puerto Rico, Vieques and Culebra, which you look at them and you say, well, it makes total sense that these would be perfect opportunities for the microgrid pilot projects.

Can you give me any update and maybe, Mr. Higgins, you might be able to jump in here or Mr.—

Mr. WALKER. I can answer the question.

The CHAIRMAN. Okay.

Mr. WALKER. So, Vieques and Culebra are being designed to be a microgrid where Vieques will be separated from the mainland initially. There's two underground or undersea cables that presently feed it. Those are inactive. There was an RFP that went out for localized generation, diesel generation that's presently there with work being done to develop the best microgrid strategy for Vieques and Culebra going forward.

The CHAIRMAN. So we don't have that strategy identified whether it is wind, solar or a combination.

Mr. WALKER. There's an RFP that—

The CHAIRMAN. Okay.

Mr. WALKER. I'm not sure if it's gone out or is going out with regard to seeking the best information, you know, from providers for those strategies.

We will be, DOE, will be working with PREPA to evaluate the RFP submittals once they're coming in, utilizing the expertise that we have within our national labs on microgrids.

The CHAIRMAN. Okay, great.

Let me ask you, Mr. Higgins, for an update on restoring power to some of the more remote and the more mountainous areas.

When several of us on the Committee went to Puerto Rico in October we went out to Barranquitas—pretty isolated in the sense of where it was.

I will tell you, you are left with impressions of conversations that you have with people at certain places. And a conversation that we had with a young woman who was five months pregnant who was looking across this cut through the earth, this ravine that separated us. The road was taken out but she was separated from the home that she had just bought and had not been able to move into because of the damage that was done, not to her home, but in order to access her home. I was thinking about her just a few days ago and the fact that okay, she has had that baby by now. Hopefully all is well there, but I have wondered whether she was ever able

to get back to her house and whether her home has been restored to power.

Can you tell me how things are looking there in those central mountain areas and what the plan is?

Mr. HIGGINS. Senator, thank you for the question.

You've identified the hardest part of this restoration, and we're down now to where we're getting less than or sometimes only one-tenth of a percent additional customers restored on any given day. That's not very many. There were days before when we'd get a half percent or even one.

Now I use that as an example because we still have about 1,500 people out in the field working every single day to restore these distribution customers. That's in addition to the 300 or 400 that are working on the transmission lines which you just can't put as many people on.

There are many, I think, situations like the one you described. There's no question that that's going on. Many of our employees still don't have power because they live in similar places.

So in addition to continuing to work down the lines, and that's exactly what the crews do, we also have an initiative to try to identify the ones that are just really too hard to get to in any reasonable amount of time, for any reason. And sometimes, quite literally, you're crossing a canyon, kind of like you describe, or you're going through, almost a jungle, in almost rainforest, trying to refinish a line or put back up a line that is 1,000 feet long and down.

We're making progress, not nearly as fast as our customers would like, not nearly as fast as we would like, but we're doing about as good as you can do in these very narrow, very tight areas where you almost can't even drive two trucks past each other.

So we're continuing with, you know, a lot of people working on it. I think we try very hard to get there as fast as we can. It will never be satisfactory to the person whose power has been out for seven or seven and a half months. There's nothing we can do to make that better except continue to work really hard to try to do it.

The CHAIRMAN. Can you tell me whether, even in these areas where they have been without that power for now seven months, the schools have been taken care of? They have generators. Kids are in their schools, aren't they? Please give me that assurance.

Mr. SOBRINO VEGA. Yes, ma'am. School started. The schedule, of course, changed.

A lot of work was done by UPR, the Department of Education, to make sure they don't lose that semester, but kids are back in school.

The CHAIRMAN. Okay.

Just kind of jumping around here.

Mr. Sobrino, you have talked about the sale of the assets from PREPA, but given the age, the condition of many of the electric power plants, who is really going to buy them? Who do we anticipate is going to look at this and say, okay, here is a deal?

Mr. SOBRINO VEGA. That's a great question.

What we're going to conduct is a market sounding process. What we see is a lot of the PREPA generation fleet, part of their value is their location, part of their value is the requirement to continue

operating them as new generation assets are constructed. So we are open to not only having just an outright sale but having intermediate agreements also included in this transformation process.

The CHAIRMAN. So if I am somebody who is looking at this as an opportunity, again, having seen some of it. I think Senator Cassidy mentioned the condition of some of what we had seen. It was not exactly enticing.

I understand that there is an opportunity because of the location, but is this something that decisions on this would be delayed as potential purchasers look to see what really is going to be stood up?

There is just so much that is at play right now. You have FEMA and the Corps who have been in place for these eight months now. You have a transition. You have just so much that is moving around and a great deal of uncertainty. Mr. Higgins, you mentioned that part of your responsibility here is to make sure that you have a grid that is resilient here. You are preparing for the next hurricane season. Assistant Secretary Walker has said that we are not in "a normal state," and that is why we saw this most recent blackout. So we are not in a normal state yet.

Hurricane season is, you said, a month away. The Corps is leaving. You have a transition that is going on that Mr. Higgins has said, you know, it may be, I think you said uncomfortable or a little painful in the process. I just have a hard time believing that anyone is going to view this as a real opportunity to come in and purchase these assets.

Mr. SOBRINO VEGA. The process to concession or to sale of an asset, what we're working on right now is getting legislative authority in Puerto Rico through our legislature so that we can commence a market sounding and interface with possible investors.

What is clear is that whatever happens there is going to continue to be a transmission distribution service in Puerto Rico. And the way that we have found in the past that services like those are depoliticized are managed adequately is if we contract the private operator or we provide some kind of long-term concession. What we're trying is to find ways to actually avoid falling into traps of the past and have a stronger customer centric system.

There are a lot of challenges, Senator. We are not shying away from them. We have asked for help when we need that help and we invite that help to continue coming to the island, but it is part of the reality of living on an island in the Caribbean that you have to juggle governing, you have to juggle what Mr. Higgins has to do in PREPA, what José has to do in the Energy Commission, what Mr. Masses has to do in the private sector. We all have to do, we have to continue our operations, but also face possible atmospheric events in the future. So that's what we're working on to make sure that what happened before never happens again.

The CHAIRMAN. Well, I think we would all encourage that.

Mr. MASSES. Senator, if I may?

The CHAIRMAN. I think it is important, your comment about trying to de-politicize to the extent possible. I think we recognize you have some pretty difficult history with the politicization of your power grid, and I think that that has been a real drag on your ability to move beyond it and the genesis or the root of many of the questions that have been presented.

I want to ask you, and I will let you, Mr. Masses, jump in here, but as far as the coordination, the working together that you have just referenced, how well are the Governor, the board and PREPA coordinating with each other on the structure and on the operation? It is one thing to sit here in front of a Committee and share a table, but do you believe that all of the necessary entities that must be coordinating to allow for a better energy future for Puerto Rico, do you believe that that is happening? I will ask each of you and also from the private sector side as well.

Mr. SOBRINO VEGA. Should I start?

The CHAIRMAN. Yes, go ahead.

Mr. SOBRINO VEGA. Part of what we did when we, two months after the hurricane to try to enable that coordination, we created that recovery office within the P3 authority. We were following best practices in Louisiana, in New York, in New Jersey, trying to centralize that coordination effort.

The communication with FEMA, with U.S. Army Corps of Engineers, with other federal stakeholders has been improving substantially over the months.

Right now, I think that the unitary command group, I mean, we can discuss, maybe, differences of what happened in the past, but the truth of the matter is that federal officials and Puerto Rican officials have been walking on the ground holding hands to get working together for months and they've done great work.

With the Oversight Board and PREPA. PREPA management runs the day-to-day operation. We do have to conduct fiscal and budgetary planning with the Oversight Board. They're included in that process.

And from the regulatory point of view, we have been working hard on improving relationships with the regulator to make sure that they are more involved in the process. There was confusion because of what are the authorities between PROMESA, between the energy regulator, between PREPA itself, now that it's in Title III. Those issues, some of those issues, have been litigated and resolved. Some of them, we're working together to figure them out.

But we are—that working together is happening day-to-day and it is going to lead to more successful, a stronger and better Puerto Rico in the future.

The CHAIRMAN. Mr. Higgins.

Mr. HIGGINS. My job is not to figure out what the policy should be but to implement it and when the legislature and the Governor, working with the Oversight, decide that the right future for Puerto Rico's electric utility is go a certain way, my job is to get it as ready as possible to execute that plan.

The CHAIRMAN. Do you feel you have that clear direction now?

Mr. HIGGINS. Yes. I don't have the exact direction, but I certainly have a good general direction at this point. And that's what is being debated in the legislature, is how to look at that.

The CHAIRMAN. And from the private side, what is the observation there?

Mr. MASSES. Well, first, one million, five hundred thousand meters is a huge market. The importance of the value, it's not the equipment in PREPA. The southeast, the market, it's a huge market.

So as we speak, we are having the international energy event in San Juan with dozens of companies interested in competing for this market. So there is going to be many competitors and there's going to be a huge appetite to get to be part of this.

Now, our energy committee has offered itself to present a bi-weekly progress report to this honorable commission in order to keep you informed and assist you in helping. We will present, every two weeks, a report of how Puerto Rico is progressing in this crisis.

In terms of the relationship between the government and the agencies, no pain, no gain, right? I believe that they're going through some strong, some difficulty, but as Mr. Sobrino mentioned, they will be fine and things are going well.

I hope that the conclusion will be a great, great for all of us in Puerto Rico.

The CHAIRMAN. Mr. Román Morales, would you like to jump in there?

MR. ROMÁN MORALES. Yes, thank you very much, Madam Chair.

I'm actually encouraged with what I'm hearing today at the hearing. There is still work to be done to delineate responsibilities between all the different agencies. There are many agencies that have either, that there's an interaction between the decision-making and there's overlap between them as well.

So we have issues. I included that as part of, as an attachment to my testimony, protocols that we established so that we could work with the Fiscal Oversight and Management Board so that we can mesh our responsibilities so that we don't step on each other's jurisdictions.

And we have started conversations with Mr. Sobrino and the government. There is the policy starts, starting within the government, starting with the Governor and the commonwealth legislature. It delegates to different entities in this regard on the energy policies, the implementation of the policies, but it's a possibility that they are implemented relies on the energy commission and PREPA to carry out those policies or whatever future transformation takes place.

But I'm encouraged with what I'm hearing. I hope that this conversation keeps happening, that we're able to delineate where we are all supposed to operate for the benefit of the people of Puerto Rico.

The CHAIRMAN. Very good.

I had one more question and this was prompted from your comments, Mr. Higgins, about this RUS national standard that you mentioned for construction going forward. Is that standard what is being utilized now as we are operating under these new provisions within the Stafford Act that we just authorized recently, or how does this RUS national standard fit in?

MR. HIGGINS. Senator, what we did in restoring the system so that people had power was to put it back the way it was which was designed to a lot of standards that had evolved over many years. They were standards, but they were not standards that were generally adopted throughout the United States, but they were professionally competent standards.

What we've now said, based in part on the findings of difficulties that were encountered during the aftermath of Hurricane Maria in

having material issues, different voltages, issues with linemen who came from the other states to know exactly what they were encountering.

We have said, we're now going to reconstruct the system and all new construction would be to this new national standard which exists already, a national standard, new to us, called the Rural Utility Standard. And that will identify all the things, the practices, that need to be met as we reconstruct things in the system, not simply put the power back on, but as we rebuild the system to be more resilient, to be more able to withstand.

The CHAIRMAN. I understand all that, but what you have just said is we are rebuilding twice. We rebuilt the first time to get things up and running, and now we are going to improve the system. It was my hope that with changes to the Stafford Act that we would do it once.

I understand, logistically, that the immediate need after an emergency is to get power back to the people. I am going to ask you, Mr. Walker, with this in place going forward with these RUS standards, does this meet what you thought we needed to do with addressing the Stafford Act limitations?

Mr. WALKER. The Stafford, no, Senator.

The components of the Stafford Act get into being able to, you know, redesign—

The CHAIRMAN. Right.

Mr. WALKER. —in very short time and make those decisions to install.

In having spoken with Mr. Higgins about the RUS standards over the last several weeks, this is an establishment of a standard that will be incorporated for new projects as they go forward.

The resiliency that needs to be built into the system comes from a number of different things. Standards is just simply one component on a going forward basis. But the design and how certain components are integrated, so where the generation is, what type of construction is used on certain poles that are going to be subjected to certain type of winds during a hurricane, the ability for the system to disconnect itself and reaggregate itself through things like reclosers. Things like that are not components that are going to be impacted by the RUS standards. The RUS standards simply will define things like standard pole size, how certain poles are guyed, certain transformers. I know that Mr. Higgins had, you know, one of the things that we struggled with when we were putting—going through the emergency restoration component was the disparity of the different types of voltages and how they didn't match up with responding utilities.

So, what would be a typical voltage in the United States, in the mainland, so that when those crews move from the mainland down to Puerto Rico or USVI they can bring their own stock with them and replace it. In this instance, they could not because of some of the voltage standards in Puerto Rico.

So, those are the things that when you look at resiliency on a much more holistic basis, there's a lot of components that go into it, and a lot of it is the design capabilities.

Utilities, you know, typically always have a standard that is utilized by their company. So, it's not—this would be in step with

moving toward resiliency. It's just, it's a big island. It's 3,500 square miles, and there's lots and lots of infrastructure. So it will take a period of time to transition through all of those components, but there are, and we're working very closely with PREPA. There are opportunities for resiliency through design and through microgrids in utilization of different technologies and resources to expand the capabilities of the system.

The CHAIRMAN. Good.

This may be for both Mr. Higgins and Mr. Alexander, in terms of the materials that we have sitting in the warehouses, whether they are in the Corps or whether they are going to be transferring over to you. Do these materials meet what you will need to match up with these RUS national standards?

Mr. HIGGINS. Yes.

As we change voltages and do some other things over time, we'll have to get new equipment to replace that, but the things that have been brought back in are adequate to allow us to operate until we make changes in the future.

If a voltage is set at a certain level for a structure, you can't use just any other piece of equipment, you must use one that is adequate for that voltage.

And so, many of the things that we'll have to do in the future will require different equipment to be installed, but I will endorse what Mr. Walker said. Resilience is about not just design, but also design philosophy, operating philosophy. Many things have to be done. That work is really just starting.

The CHAIRMAN. Okay.

So the stuff that you are going to be receiving is material that you will be able to use.

Mr. HIGGINS. We will be able to use it. It will take years and years for the system to be completely rebuilt.

The CHAIRMAN. Got it.

I always hate it when I am asked the question, give yourself a grade on your performance. It is always much easier to be the teacher and give you the grade, but this is national teacher week, so I am going to ask you each to give yourself a grade on how you feel the rebuild, the response is going, seven months after with regards to the disaster in Puerto Rico. I am going to make it easier on you and suggest that it not be a letter grade, but let's go back to elementary school when you are, where you are given an O for Outstanding, an S for Satisfactory, or an N for Needs Improvement or an Incomplete. That is always a good one.

Mr. Walker, we are going to start with you.

Mr. WALKER. O plus, Senator.

The CHAIRMAN. There you go.

[Laughter.]

O plus.

Mr. Alexander.

Mr. ALEXANDER. It's incomplete. Our goal was always 100 percent.

The CHAIRMAN. That is fair.

Mr. Sobrino.

Mr. SOBRINO VEGA. Ma'am, there's been a lot of tests. I think we've aced a couple. We've passed others and there's need for im-

provement in some of those as well. There's probably, at the end of the day, the overall test of rebuilding the island, that's still incomplete, but it is a process and there are a lot of tests in it.

The CHAIRMAN. Good.

Mr. Higgins.

Mr. HIGGINS. You didn't say work in progress was another choice, did you?

[Laughter.]

The CHAIRMAN. Needs improvement, incomplete.

Mr. HIGGINS. I think PREPA's response has gotten better and better as time has gone on. I'm fairly new, so I can't take credit for any of that. For myself, I'm at the needs improvement stage because we still have a lot to do.

I think PREPA has learned a great deal about itself and about what its responsibilities are. I would say overall, especially fairly early, needs improvement and beginning to get almost to satisfactory, but it won't be satisfactory until every customer is back in service.

The CHAIRMAN. Good.

Mr. Román Morales.

Mr. ROMÁN MORALES. It needs improvement, definitely needs improvement.

I feel we have wasted two years. The Commission was created in 2014. We did a lot to get PREPA up to a much better standard to what it is. Definitely the hurricanes have affected the performance of PREPA. We were in the process of establishing performance metrics for PREPA before the hurricane hit the island. And now I hear we're—see KPI is being thrown around which I'm happy to see, but I feel we have wasted too much time. And we're still are incomplete and therefore to restore power and there still needs a lot of improvement.

The CHAIRMAN. Mr. Masses.

Mr. MASSES. Before Maria, a very poor job in having a good electrical grid. Yes, indeed, Mr. Román is right. The early commissions contribute heavily in terms of higher standards in PREPA. After Maria there's a lot of improvement to be done in order to complete this job. Thank you.

The CHAIRMAN. Well, thank you all.

I think I would agree with what many of you have said that this is still a work in progress.

I think for the people on the ground, it is clearly a work in progress and we worry that the progress has not been fast enough. It is unnerving, I think, to think that we have the hurricane season that will once again be upon us and there is a vulnerability to the people in Puerto Rico, in the area. But today's hearing, our focus today, is on Puerto Rico and how we are doing in our response.

I appreciate the fact that we all recognize that we have more to do in our various capacities and appreciate the work that has gone into the response. It has been very complicated. It was extraordinarily devastating to be hit by two hurricanes and to be laid flat in many areas by the winds that came through. Fortunately, we don't see the level of devastation in these very populated areas too very often. And so, getting the level of coordination that needed to come together in response was an imperative.



Mr. Walker, I think having been on the ground, as you all were working with, not only a great number of agencies but a great number of volunteers that really did try to gear up, team up, just as quickly as possible to provide for that response and that relief. It is recognized that it was a considerable challenge. And you were doing so in an area where you had a system that was troubled to begin with. And so, there are a whole host of issues that have just led to us having this second hearing now within a six-month period following the disaster.

Know that we will continue as a Committee to be vigilant in following this to ensure that the resources that are necessary, that the coordination that is required, will continue.

I do hope that we don't take the eye off of the ball until this is done. My fear has always, is always, after every disaster that the news is there for a cycle. The relief efforts are there for a limited period of time and then we move off to the next disaster, to the next issue and the people who remain vulnerable feel forgotten. Well, we are not going to forget the people of Puerto Rico. We are going to stay on this, and we need your leadership to do just that.

Thank you for the time that you have given. I know that other colleagues will be submitting additional questions for the record. Hopefully you can be responsive to us as we continue to help in this important area.

Thanks for what you do. With that, we stand adjourned.

Thank you for your time today.

[Whereupon, at 12:30 p.m. the hearing was adjourned.]

## **APPENDIX MATERIAL SUBMITTED**

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**U.S. Senate Committee on Energy and Natural Resources**  
**May 8, 2018 Hearing**  
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**Questions for the Record Submitted to Hon. Bruce J. Walker**

**QUESTIONS FROM RANKING MEMBER CANTWELL**

- Q1. Will the Energy Commission reforms passed and pending in the Puerto Rico legislature lead to a more or less effective independent regulator?
- A1. State energy regulators are typically independent bodies with limited to no decision-making authorities contingent on a Governor's oversight. In any structure, it is critical that the regulator be well-resourced, expert, and experienced, as well as lack conflicts of interest. While these objectives can be met under a variety of organizational structures, reforming institutions can be disruptive, especially during a time of ongoing policy reforms and a multi-billion dollar recovery.
- Q2. The Governor's proposed PREPA reform and privatization legislation recommends privatization of generation assets. The legislation also shields any of these privatization transactions from oversight of the energy regulator. The Institute for Energy Economics and Financial Analysis criticized this construct as allowing too much political influence to govern privatization transactions.
- Q2a. Can you explain how it is in the best interest of consumers to shield privatization transactions from oversight of the energy regulator?
- A2a. This question is outside of the scope of the Office of Electricity and the Office of Cybersecurity, Energy Security, and Emergency Response, and may be more appropriate for the Federal Energy Regulatory Commission (FERC), which deals with mergers and acquisitions regularly.
- Q2b. If only to avoid the appearance of impropriety, why not provide the energy regulator with this jurisdiction?
- A2b. This question is outside of the scope of this Department, and may be more appropriate for FERC, which deals with mergers and acquisitions regularly.

- Q3. In December, a public-private working group, including DOE, the National Labs, and PREPA, issued a report about redesigning the grid. The group found that 85% of transmission lines cannot withstand a Category 4 storm, partly because they are built on windy mountains. The group recommended relocating and upgrading 350 miles of line in better locations like highway rights-of-way. How do you plan to follow this recommendation and relocate or redesign some transmission to make it more resilient?
- A3. DOE considered the recommendations outlined in the *Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico* report, as well as other insights gained from DOE's participation in restoration and recovery efforts. DOE synthesized our recommendations in the *Energy Resilience Solutions for the Puerto Rico Grid* report released in June, 2018.<sup>a</sup>
- Q4. During the hearing there seemed to be a coalescing around the idea of an upcoming Integrated Resources Plan (IRP) that would help determine the future of the Puerto Rico grid. However, given the uncertainty of the independent regulator's future, the Governor's decision to move forward on his own PREPA Privatization Bill in advance of the IRP, and the certification by the Financial Oversight and Management Board of a fiscal plan for PREPA, there appear to be several distinct, uncoordinated efforts that have led many inquire about the process.
- Q4a. What is the specific process for determining a plan for PREPA reform and the future of the Puerto Rican grid, and how does that interact with the plan to develop an IRP?
- A4a. The process for PREPA reform is in the hands of the Puerto Rican Governor's office and the Puerto Rican Legislature, but ultimately the Puerto Rican Legislature will be responsible for passing enabling legislation to reform PREPA. The future of the Puerto Rican grid will be determined by the Puerto Rican government, in collaborative dialogue with Federal agencies funding the recovery of the island's energy system.
- The IRP will provide demand projections, a resource adequacy evaluation, and supply-side resource plans that can form the basis of infrastructure and generation investment plans. While the IRP process is not tightly coordinated with the PREPA reforms currently under consideration, the information from the IRP generators will prove valuable for government and private stakeholders as they specify and undertake PREPA reform.
- PROMESA § 503(b)(1)(D) calls for reliance on the Puerto Rico Energy Commission's (PREC) IRP process.

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<sup>a</sup> <https://www.energy.gov/oe/articles/office-electricity-releases-energy-resilience-solutions-puerto-rico-grid-report>

Q4b. With respect to both the PREPA reform plan and the IRP, who will propose them and who ultimately is required to approve them? What is the time frame for both?

A4b. The Governor has proposed specific privatization legislation, but ultimately the Puerto Rican Legislature will be responsible for passing enabling legislation to reform PREPA. The timeframe for final legislation is highly uncertain; therefore I would refer you to the Puerto Rican government for more details on their proposed timeline. Subsequent to the enabling PREPA reform legislation's enactment, the Federal Oversight and Management Board or the holders of Puerto Rican bonds may have legal interests related to some aspects of PREPA's reform.

In December 2014, Puerto Rico established PREC, a local energy regulatory authority with jurisdiction over energy planning. PREC was created with explicit jurisdiction over the IRP process as part of a landmark energy reform law designed to align Puerto Rico's energy system governance with established state practices, and increase the fuel diversity, efficiency, and overall performance of the energy system in Puerto Rico. With the passage of the Puerto Rico Energy Transformation and Relief Act, Act 57-2014 (Act 57), Puerto Rico became the first U.S. territory to require forward-looking energy infrastructure planning with comprehensive oversight of the process by an independent local regulatory authority. The IRP is anticipated to be completed by PREPA's contractors by September 2018.

Q4c. What other parties are involved with the development and approval of the PREPA reform plan and the IRP?

A4c. The Puerto Rican legislature has solicited input from a wide variety of national and Puerto Rican stakeholders in considering the PREPA reform plan. To support the Puerto Rican government in transforming PREPA in a transparent and effective manner, DOE has provided funding to the Southern States Energy Board to build a stakeholder participation network, create legislative options for a revitalized electric grid, identify long term goals for policy and regulatory frameworks, and review economic, financial, and insurance risks of PREPA reform.

The IRP Request for Proposals explicitly outlines a stakeholder engagement process to include the public, industry groups, current investors, and potential investors. Puerto Rico energy stakeholders actively participated in PREC proceedings regarding the 2015 IRP. A similar process conducted by PREC for the 2018 IRP would provide a robust venue for stakeholder engagement.

- Q4d. What governing document or statute lays out the formal process and timing? If that governing statute is the Act for the Transformation and Energy Relief of Puerto Rico (Act 57), what specific provisions of Act 57 will remain assuming the current Reorganization Plan No. 8 Puerto Rico Public Service Regulatory Board bill is implemented?
- A4d. DOE has neither reviewed the Reorganization Plan No. 8 nor assessed its impact on any Acts of the Puerto Rican Legislature.
- Q4e. Will an independent, robust, and transparent oversight body with energy expertise have the authority to review, approve and/or reject the PREPA reform plan and the IRP after performing sufficient diligence if not in the public interest?
- A4e. Puerto Rico became the first U.S. territory required to conduct forward-looking planning with Act 57, including comprehensive oversight of the process by a local regulatory body as is common in most States. Act 57 requires that PREPA periodically develop and submit an IRP to PREC for review and approval. The Puerto Rican Legislature maintains the authority to determine the role of PREC or any other regulatory body in the review, approval, or rejection of PREPA reform plans.
- Q4f. If no current legal framework addresses these issues, what changes in law do you propose?
- A4f. DOE stands ready to provide expert technical advice on draft legislation, but does not propose specific changes in law.

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QUESTIONS FROM SENATOR MANCHIN

- Q1. The blackout that plagued Puerto Rico was the longest in American history. While much of the island is now out of the dark, there are thousands and thousands of citizens in more rural areas of the island that remain without power.
- Q1a. You have stated that the National Labs are playing a role in restoration using the Microgrid Design Tool, and this work “explores the viability of microgrids to support critical infrastructure, remote communities, and industrial facilities.” What kind of progress have you made using this tool?
- A1a. DOE’s Grid Modernization Initiative (GMI) includes research activities focused on the development of innovative technologies, tools, and techniques to modernize the distribution portion of the electric delivery system. Results from the research in advanced distribution management systems, microgrids, and dynamic controls and communications will enable industry to strengthen the resilience of electrical infrastructure against adverse effects of future extreme weather phenomena and other unforeseen natural and man-made occurrences.
- RADIANCE, a project located in Cordova, Alaska, is enhancing resilience methods for distribution grids under harsh weather, cyber-threats, and dynamic grid conditions using multiple networked microgrids, energy storage, and early-stage grid technologies.
  - The Industrial Microgrid Analysis and Design for Energy Security and Resiliency project is investigating, developing, and analyzing the risks, costs, and benefits of a microgrid utilizing renewable energy systems at the UPS WorldPort and Centennial Hub facilities. The roadmap developed will help industries evaluate microgrid adoption by defining institutional and regulatory challenges associated with development of industrial-based resilient systems.

- The Grid Analysis and Design for Resiliency in New Orleans project is conducting technical evaluations to assess energy and critical infrastructure vulnerabilities and to identify cost-effective options, including microgrids, to improve the resiliency of both the electrical grid infrastructure and the community.
- The Alaska Microgrid Partnership project is developing a design-basis framework and programmatic approach to assist stakeholders in their efforts to reduce diesel fuel consumption by at least 50% in Alaska's remote microgrids without increasing system lifecycle costs, while improving overall system reliability, security, and resilience.
- Additionally, DOE's Office of Electricity has used the Microgrid Design Tool to identify and evaluate a number of priority sites for microgrids supporting the recovery efforts in Puerto Rico.

Q1b. Are you working with the National Energy Technology Lab to integrate fossil fuels into this planning?

A1b. The multi-lab modeling effort addresses interdependencies of infrastructures. This includes analysis of integration of fossil fuels into the planning.

Q1c. Will you please elaborate on some of solutions the National Labs are considering and what you think could be implemented in Puerto Rico?

A1c. The optimal solutions for Puerto Rico will be determined based on the system modeling. Some of the solutions already identified include deployment of microgrids for improved resilience, reliability, and power quality.



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**QUESTIONS FROM SENATOR HIRONO**

- Q1. You described in your testimony the solutions that the DOE is developing that could help increase the resilience and reliability of Puerto Rico's power system, such as the wider use of microgrids. What challenges are posed by the possible restructuring of PREPA for implementing the solutions that DOE is developing, and how do you plan to address those challenges to help get solutions put in place to strengthen Puerto Rico's power system?
- A1. The solutions DOE is developing with the support of our national laboratories are based on rigorous, technology-based analysis and are agnostic to the structure of the utility sector in Puerto Rico. DOE will continue to support Puerto Rico as it improves the resilience and reliability of its power system no matter how the restructuring of PREPA proceeds.

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QUESTIONS FROM SENATOR DUCKWORTH

- Q1. Puerto Rico faces ongoing issues with their electric grid. It has been over seven months since Hurricane Maria swept through island, yet an estimated 44,000 households still are without power. As recently as April 18, 2018, Puerto Rico experienced an island-wide blackout that lasted for two days, and hurricane season is slated to begin once again on June 1, 2018. We must find ways to help Americans living in Puerto Rico have access to a resilient and sustainable electric power system.

Mr. Walker, do you agree that an important facet of moving towards resiliency is to encourage investments in distributed energy resources across Puerto Rico?

- A1. DOE developed recommendations as part of the *Energy Resilience Solutions for the Puerto Rico Grid* report released in June, 2018.<sup>a</sup> One of the topics considered was the role of microgrids and distributed energy resources as a complement to central generation in Puerto Rico.

A variety of advanced electric system designs that involve distributed energy resources, storage technologies, and microgrids show potential to increase future system resilience. Assessing ongoing activities is critical to assuring that future investments are technically informed and successfully benefit from these broader experiences.

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<sup>a</sup> <https://www.energy.gov/oe/articles/office-electricity-releases-energy-resilience-solutions-puerto-rico-grid-report>

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QUESTIONS FROM SENATOR CORTEZ MASTO

- Q1. Secretary Walker, you stated during your testimony that you believe there is an opportunity for Congress to amend the Stafford Act in a way that would allow engineers and others who are on the ground to make decisions early in the restoration process to increase the capabilities and resilience of an electrical grid, even if a modification exceeds industry standards.
- Q1a. Could you describe how this expanded authority would have helped in Puerto Rico, the U.S. Virgin Islands, and any other situations?
- A1a. The Stafford Act provides the principal Federal mechanism to reimburse state, tribal, territorial, and local governments for the actual cost to repair or rebuild damaged public infrastructure. The Stafford Act also authorizes FEMA to provide funds for hazard mitigation projects that can lower projected rebuilding costs or reduce the rebuilt infrastructure's risk of future damage, as authorized by a major disaster declaration under the Stafford Act. There are some restrictions on how Stafford Act funds can be utilized that can limit the electric sector's ability to use more resilient technology. In some instances, more resilient technologies could provide long-term savings by mitigating against future disasters.
- Q1b. What specific recommendations do you have to improve the Stafford Act to ensure the restoration process is effective and efficient?
- A1b. DOE is working to better utilize its capabilities and expertise, to include how these capabilities support each phase from pre-incident preparedness, response, damage assessment, and restoration to long-term recovery. In the future, advance contracting mechanisms could be established for the resources that would enable DOE to activate quickly under additional authorities other than the Stafford Act (such as pre-scripted mission assignments for National Disaster Recovery Framework (NDRF) support and memoranda of understanding for Power Marketing Administration (PMA) and DOE national laboratory support).

- Q2. Could such broader authority to increase capabilities potentially compromise the scope of available relief because of cost constraints? Do you foresee any negative impacts that broader authority could have?
- A2. Any adjustments to the Stafford Act, or other related acts of Congress, should clarify authorities to ensure an effective and efficient energy restoration process, and not increase the cost of recovery and restoration.
- Q3. Do you believe this opportunity for expanded rebuilding authority beyond industry standards should be available during all major natural disasters or just under specific circumstances? If the latter, what would be those circumstances?
- A3. Advance contracting mechanisms could be established for the resources that would enable DOE to activate quickly under additional authorities other than the Stafford Act (such as pre-scripted mission assignments for NDRF support and memoranda of understanding for PMA and DOE national laboratory support). In some instances, expanded authorities and funding for replacing damaged infrastructure with more resilient technologies following a catastrophic event could provide long-term savings by mitigating against future disasters.

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**QUESTION FROM SENATOR SMITH**

- Q1. After most serious natural disasters, presidents have established interagency task forces to coordinate Federal recovery assistance. Has the Administration established such a task force for Puerto Rico to address the challenges arising from Hurricanes Maria and Irma along with the territorial government?
- A1. The Resilience Support Function Leadership Group, which includes multiple Federal agencies, was established to provide this function.

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**Questions from Ranking Member Maria Cantwell**

**Questions:** How many wood poles did the Corps replace after the hurricane? What types of pole were they replaced with (specific numbers for each type)?

**Answer:**

Collectively 24,750 wooden poles ordered and 20,127 replaced.

Height	Qty	
	Ordered	Replaced
30'	2250	2232
35'	8500	8366
40'	5500	3274
45'	5000	3820
50'	1000	813
65'	2000	1370
70'	500	252

How many aluminum poles did the Corps replace after the hurricane? What types of pole were they replaced with (specific numbers for each type)?

**Answer:** There were no aluminum poles ordered, therefore none replaced.

How many concrete poles did the Corps replace after the hurricane? What types of poles were they replaced with (specific numbers for each type)?

**Answer:** Collectively 4,000 concrete poles were ordered and 3,389 replaced.

Height	Qty	
	Ordered	Replaced
40'	500	169
45'	1750	1714
50'	1250	1237
65'	500	269

How many other poles did the Corps replace after the hurricane, and what types were they? What types of poles were they replaced with (specific numbers for each type)?

**Answer:** There have been 23,167 galvanized poles and 520 galvanized transmission ordered. 13,771 galvanized poles were replaced and 0 galvanized transmission were replaced.

Pole type	Height	Qty Ordered	Replaced
Galvanized	35'	6250	5447
Galvanized	40'	3750	3682
Galvanized	45'	2500	2339
Galvanized	50'	500	379
Galvanized	60'	167	92
Galvanized	70'	10000	1832

Pole type	Height	Qty Ordered	Replaced
Galvanized Transmission	Type "A"	200	0
Galvanized Transmission	Type "B"	200	0
Galvanized Transmission	Type "C"	120	0

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**Questions from Senator Mazie Hirono**

**Questions:** During this committee's hearing in November 2017 on hurricane recovery efforts, the Governors of Puerto Rico and the Virgin Islands asked Congress to provide flexibility under the Stafford Act to allow for rebuilding to a higher level of resiliency, rather than rebuilding to out-of-date pre-disaster conditions and standards. Congress included flexibility for rebuilding in Puerto Rico and the Virgin Islands to industry standards without regard to the pre-disaster condition as part of the Bipartisan Budget Act of 2018 (Public Law No. 115-123). How did the Corps use the flexibility provided by Congress in its efforts in Puerto Rico, and would you recommend that Congress include similar flexibility as part of future recovery missions?

**Answer:** FEMA is the Federal agency responsible for implementation of the Stafford Act, and for evaluating the effects of any possible changes to this program.

At the request of FEMA, the Corps has been assisting the Puerto Rico Electric Power Authority (PREPA) to repair the Puerto Rico power system to its pre-storm condition. Public Law 115-123 included authority to ensure that the Federal government was able to help Puerto Rico and the U.S. Virgin Islands address the particular challenges that they faced following Hurricanes Irma and Maria, which were unprecedented. This provision did not affect the scope of the Corps mission assignment, or the assistance that the Corps has provided.

Per the Stafford Act, the Corps has been working in Puerto Rico to replace, in kind, the system that was in place before the hurricanes. For the most part, this means line-for-line, pole-for-pole, and wire-for-wire. There are exceptions, primarily where the cost of a different solution is less than restoring to the pre-storm condition. For example, in some cases the original poles might have run up an undeveloped stretch of mountainous terrain or through wetlands. If a better solution exists, such as running the new poles along a road near that mountain or near that wetland, we have been able to change the installation after a review for cost, schedule and any right-of-way issues.

Per the Stafford Act, the Corps mission also has included meeting current code requirements, where the power system did not meet them prior to the storm. The grid is being upgraded to current PREPA standards. In addition, new lines and new poles are replacing decades-old infrastructure. Therefore, the replacement system will be more resilient going forward than was the pre-existing grid.

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**Question from Chairman Lisa Murkowski**

**Question 1:** Your testimony states that the current regulator and regulatory structure cannot achieve the objectives of the Governor's transformation and modernization of Puerto Rico's electric sector without modification. What specifically needs to be modified and how is the current structure deficient?

**Answer:**

Puerto Rico is committed to a strong and independent regulator and regulatory structure to facilitate the transformation of its energy sector. The current regulator and regulatory structure is not suited to support the transformation and modernization of Puerto Rico's electric sector for four reasons. *First*, the current structure was not drafted to fully support the incorporation of private entities and capital. *Second*, the current regulatory climate is not sufficiently stable and predictable to attract private participation or support private investment. Attracting private capital at a reasonable cost is essential to future investment in Puerto Rico's energy sector. *Third*, the existing regulations and rates were drafted before the enactment of PROMESA and did not contemplate and are inconsistent with the certified fiscal plan as being implemented by the Government of Puerto Rico. *Fourth*, a revamped regulatory structure in line with those that are used in mainland jurisdictions to effectively and efficiently regulate privately-owned or operated utilities is essential if capable private operators and investors are to come to and commit to Puerto Rico. Legislation currently under review by the Puerto Rico legislature seeks to improve on these issues by expanding the PREC from three (3) members to five (5) members and requiring a professional recruitment process. Key changes to the regulatory process will be subject to a regulatory working group, tasked with recommending amendments 180 days after legislation is approved.

**Questions from Ranking Member Maria Cantwell**

**Question 1:** Will the Energy Commission reforms passed and pending in the Puerto Rico legislature lead to a more or less effective independent regulator?

**Answer:**

It is unclear what specific reforms are referred to in this question. As stated in the previous answer, however, Puerto Rico, is committed to a strong and independent regulator and any proposed reforms should be viewed as consistent with that commitment. Puerto Rico expects that changes to the current regulator and regulatory structure will need to be made to implement the transformation and modernization of Puerto Rico's electric sector but does not anticipate weakening independent regulation.



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**Question 2:** The Governor's proposed PREPA reform and privatization legislation recommends privatization of generation assets. The legislation also shields any of these privatization transactions from oversight of the energy regulator. The Institute for Energy Economics and Financial Analysis criticized this construct as allowing too much political influence to govern privatization transactions.

- Can you explain how it is in the best interest of consumers to shield privatization transactions from oversight of the energy regulator?
- If only to avoid the appearance of impropriety, why not provide the energy regulator with this jurisdiction?

**Answer:**

The legislative framework for the transformation transaction is within the purview of the Government of Puerto Rico, not PREPA. Furthermore, the legislation referenced in the above question is evolving as of the time of this response and we are monitoring such legislative process. In any event, I note that the Government of Puerto Rico has repeatedly expressed its commitment to the creation and empowerment of a reformed energy regulatory agency designed to regulate a sector that includes privately owned and capitalized participants. Legislation currently under review by the Puerto Rico legislature seeks to improve on these issues by expanding the PREC from three (3) members to five (5) members and requiring a professional recruitment process. Key changes to the regulatory process will be subject to a regulatory working group, tasked with recommending amendments 180 days after legislation is approved.

**Question 3:** The Governor's proposal for the future of PREPA involves privatizing generation assets and entering into concession agreements for transmission and distribution. How was this decision made? How will the governor's proposal ensure that long-term contracts are in the best interest of consumers? How will the governor's proposal ensure rates are just and reasonable?

**Answer:**

The Governor's vision for the future of Puerto Rico's electric sector is to achieve private participation in the electric sector in Puerto Rico in order to assure that the system is modern and reliable and that the electric rates are affordable for the people

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of Puerto Rico. The Governor proposed a “base case” for a contemplated transaction involving (a) private ownership and operation of all generation assets with a focus on diversified fuel mix and clean energy and (b) a private operator of the transmission and distribution (T&D) system through a concession model, which leaves the ownership of the T&D assets in public hands under the operation of a private operator. The Governor arrived at that “base case” in consultation with various advisors, input from mainland energy experts and utilities and the Oversight Board. The plan has always been to subject that base case to an open, transparent marketing process that will consider various alternatives in order to achieve the best interests of the people of Puerto Rico.

My understanding is that the P3 Authority will manage, with input from PREPA, PREC and others, the contract negotiations, including power purchase agreements, entered into as part of the sale of any generation capacity in order to gain the best practical outcomes for the people of Puerto Rico. Thereafter, the performance of contract counterparties will be subject to the ongoing regulatory jurisdiction of the reformed PREC.

Similarly, my understanding is that, under the proposed legislation, any concessionaire or manager managing the T&D utility and performing the supply function will have initial rates set as part of the transformation process which is designed to obtain the best practical outcome on rates and the other terms of the transaction(s) for the people of Puerto Rico. Thereafter, either as provided in the concession contract, or when the concessionaire seeks to propose its own rates, the PREC will have jurisdiction akin to that of mainland regulators supervising a privately-owned and regulated T&D operator. Furthermore, the proposed legislation requires PREC certification of proposed rates as “just and reasonable.”

**Question 4:** During the hearing there seemed to be a coalescing around the idea of an upcoming Integrated Resources Plan (IRP) that would help determine the future of the Puerto Rico grid. However, given the uncertainty of the independent regulator’s future, the Governor’s decision to move forward on his own PREPA Privatization Bill in advance of the IRP, and the certification by the Financial Oversight and Management Board of a fiscal plan for PREPA, there appear to be several distinct, uncoordinated efforts that have led many inquire about the process. What is the specific process for determining a plan for PREPA reform and the future of the Puerto Rican grid, and how does that interact with the plan to develop an IRP? With respect to both the PREPA reform plan and the IRP, who will propose them and who ultimately is required to approve them? What is the time frame for both? What other parties are involved with the development and approval of the PREPA reform plan and the IRP? What governing document or statute lays out the formal process and timing? If that governing statute is the Act for the Transformation and Energy Relief of Puerto Rico (Act 57), what specific provisions of Act 57 will remain assuming the current Reorganization Plan No. 8 Puerto Rico Public Service Regulatory Board bill is implemented? Will an independent, robust, and transparent oversight body with energy expertise have the authority to

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review, approve and/or reject the PREPA reform plan and the IRP after performing sufficient diligence if not in the public interest? If no current legal framework addresses these issues, what changes in law do you propose?

**Answer:**

The Government of Puerto Rico and the Oversight Board are working together in a collaborative effort toward the transformation of the electric sector in Puerto Rico. Citibank and Rothschild + Co have been engaged to lead the investment banking aspects of the transformation process and are already deeply involved in the planning process. We have also engaged the PREC in regulatory matters. Although the legal framework for the transactions are currently being developed, there is broad agreement that the transformation will proceed as follows:

- The Puerto Rico Public-Private Partnership Act of 2009, as amended (PPP Act), will provide the basic legal framework for the transaction(s). The PPP Act is well-understood by potential investors and has been used successfully in the Luis Muñoz Marín International Airport concession, the concession of certain toll roads, and multiple other infrastructure projects in Puerto Rico. The legal framework is one that promotes a competitive process and assures transparency and fairness while still providing the flexibility necessary to achieve the best results for Puerto Rico.
- The first step in the transformation process is the informal market-sounding process that is being commenced and which is designed to canvas the market and solicit feedback from interested parties on overall transaction structure, desired regulatory structure, interest in transmission and distribution assets and operations, and interest in generation assets and opportunities. The market-sounding process will inform the approach going forward as will input provided from other stakeholders.
- The regulator and regulatory structure will be revised as necessary to meet the needs of the process.
- Pursuant to the PPP Act, the transaction(s) will be run through an RFQ and RFP process open to interested parties. We expect the RFQ and RFP process to provide both a clear road map for the transaction process but also detailed information about criterion and factors that will be relevant to potential counterparties.
- The successful transaction counterparties will be selected with the approval of the Governing Board of PREPA, the Board of Directors of the P3 Authority, AAFAF,

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the Government of Puerto Rico, and the Oversight Board. We anticipate the PREC will certify certain aspects of the transaction.

- The Title III Court having jurisdiction over PREPA in its pending insolvency proceeding will also approve the transaction(s).

With regard to the IRP, after several efforts and a formal request for proposals, PREPA recently retained the services of independent experts and consultants to assist it with the preparation of a new Integrated Resources Plan or IRP. PREPA expects that the IRP will be completed by October 2018. This will allow factoring the IRP into the RFP process mentioned above. PREPA's main purpose of preparing an IRP during the upcoming months is to use it as guide for the electric sector transformation process and PREPA expects that the IRP will be available in time to provide guidance to the process and the potential counterparties. PREPA believes that it is within PREPA's powers to determine if this IRP, prepared for that main purpose, also will be presented as a "statutory" IRP, nearly two years ahead of the March 2020 due date (as calculated by the Energy Commission itself) for the next statutory IRP. Act 83-1941 reserves to PREPA the authority to make this determination. Act 83-1941, § 6B (h)(i), 22 L.P.R.A. § 196c (h)(i). At this juncture, PREPA has not made a determination as to whether the IRP developed through this process will be the next statutory IRP.

**Questions from Senator Ron Wyden**

**Question 1:** In March 2018, legislation was introduced in the Puerto Rican legislature to privatize PREPA. During the hearing, several witnesses testified as to the importance of the Integrated Resource Planning process as a way for the voices of Puerto Rican citizens to be heard.

How would the legislation to privatize PREPA treat the existing Integrated Resource Plan and renewable portfolio standard?

**Answer:**

After several efforts and a formal request for proposals, PREPA recently retained the services of independent experts and consultants to assist it with the preparation of a new Integrated Resources Plan or IRP. PREPA expects that the IRP will be completed by October 2018. PREPA's main purpose of preparing an IRP during the upcoming months is to use it as guide for the electric sector transformation process and PREPA expects that the IRP will be available in time to provide guidance to the process and the potential counterparties. PREPA believes it is within PREPA's powers to determine if this IRP, prepared for that main purpose, also will be presented as a "statutory" IRP, nearly two years ahead of the March 2020 due date (as calculated by

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the Energy Commission itself) for the next statutory IRP. Act 83-1941 reserves to PREPA the authority to make this determination. Act 83-1941, § 6B (h)(i), 22 L.P.R.A. § 196c (h)(i). At this juncture, PREPA has not made a determination as to whether the IRP developed through this process will be the next statutory IRP.

As a matter of policy, the Governor of Puerto Rico is committed to a substantial increase in the renewable sources of energy for the Island. During the first IRP case, PREPA proposed a plan to reach, over time, the targets set in the Puerto Rico renewable portfolio standard law, Act No. 82 of 2010. The Puerto Rico renewable portfolio standard law does recognize, however, that there may be valid reasons for not reaching a target for any given year, including but not limited to insufficiency of sustainable renewable energy (which could include insufficiency in particular areas of the grid) and excessive cost (such as curtailment costs, i.e., sums that must be paid to renewable energy providers *not* to generate and inject energy onto the grid when it would be counter-productive or cause operational problems). See Act No. 82 of 2010, § 2.12(d)(5) and (6). In PREPA's first IRP case, PREPA proposed very large increases in both utility-scale and distributed renewable generation, but there are limits on what is affordable and practical when you factor in curtailment cost risks and system constraints and characteristics. For example, modeling by independent experts Siemens Industry, Inc., retained by PREPA to help develop the first IRP showed curtailment costs could reach as much as \$74 million in a single year in one scenario. More recent analysis and actual operating results have highlighted the insufficiency of PREPA's existing inflexible generation fleet to meet the intermittency of much higher renewable power generation. However, with recent cost declines in battery storage and improved grid technologies to enable renewable integration, the IRP will be focused on examining and incorporating these new alternatives.

**Question 2:** In December 2017, a group of 14 government agencies, companies, and nonprofits submitted a report, "Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico." This report contained specific recommendations on how to use modern technology and lessons learned from other disasters to build an electric grid that is more resilient, more sustainable, and less expensive.

How is the Puerto Rican government incorporating the recommendations of the Build Back Better report in its planning for the Puerto Rican grid?

**Answer:**

Certain of the recommendations set forth in the Build Back Better Report are incorporated in the fiscal plan certified for PREPA as being implemented by the Government of Puerto Rico. The balance of the recommendations set forth in the Build Back Better report are dependent on federal funding being available to allow for

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hardening and resiliency in the electric system. In the absence of federal funding, it is unlikely that many of the recommendations can be implemented because the cost of funding them with private capital will be prohibitive.

**Question 3:** Governor Rosselló, citing the potential for budget savings, proposed dissolving the Puerto Rico Energy Commission and combining multiple regulators into a single public service commission. In response to a question from my colleague, Senator King, you said, “The Energy Commission, represented by Mr. Roman, will continue to be the regulator [for the wires].” This seems to be a contradiction.

What would the role of the Puerto Rico Energy Commission be going forward?

**Answer:**

My comment was intended to make clear that Puerto Rico is committed to a strong and independent regulator and that regulator is the PREC. We did, however, recognize that the PREC in its current form is not suited to regulating the transformation and modernization of the electric grid in Puerto Rico. The current regulator was designed and outfitted to regulate the single, vertically-integrated and publicly-owned utility that is being transformed through reforms to the energy regulatory framework and the privatization and concession of assets and services. Puerto Rico expects that changes to the current regulator and regulatory structure will need to be implemented for the successful transformation and modernization of Puerto Rico's electric sector. These changes will bring the regulatory structure in line with mainland U.S. jurisdictions and will ensure appropriate and effective oversight and guidance. Legislation currently under review by the Puerto Rico legislature seeks to improve on these issues by expanding the PREC from three (3) members to five (5) members and requiring a professional recruitment process. Key changes to the regulatory process will be subject to a regulatory working group, tasked with recommending amendments 180 days after legislation is approved.

**Question 4:** In your testimony, you said one of the goals of privatizing PREPA is to ensure that benefits flow to the citizens. In 1995, the Puerto Rico Aqueduct and Sewer Authority (PRASA) signed a contract with Vivendi (now Veolia) to privatize its operations. In the subsequent years, however, the Puerto Rican Office of the Comptroller and other organizations issued reports critical of Vivendi, citing deficiencies in administration, operations, and maintenance.

What specific lessons learned from the PRASA experience will the Puerto Rican government use to ensure that any changes to PREPA benefit all Puerto Ricans?

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**Answer:**

Valuable lessons can (and were) learned from our previous experience with PRASA as well as from other privatization transactions (and attempted privatization transactions) throughout the United States. While not without their own challenges, private management and operation of public utility services is a model that has worked successfully in places such as New York. Some of the lessons learned from other transactions include: (a) a need to carefully craft the contracts to provide the correct incentives for all parties and to provide for clear metrics and deliverables, (b) the importance of providing a solid fiscal and regulatory oversight function to insure compliance with the contractual agreement, (c) the need to control the ability of the private owner/operator to impose incremental costs on customers, (d) obtaining support of the community and the necessary labor force, and (e) limiting political interference.

**Questions from Senator Bernard Sanders**

**Question 1:** When Governor Rosselló appeared before this committee on November 14, 2017, he made a commitment that he was “100% backing renewables in Puerto Rico.” In February, Congress allocated \$2 billion in Community Development Block Grant (CDBG) funds to rebuild the electric grid, and included a provision to waive the Stafford Act to allow public infrastructure to be improved relative to the condition of the island’s infrastructure before Hurricane Maria.

Please describe how you and the Governor are working to support the deployment of renewable energy in the next PREPA Integrated Resource Plan (IRP).

Given the Governor’s statement of support for renewable energy, please describe the Puerto Rican government’s plan, including a timeline, to use FEMA, CDBG, and other federal funds to build resilient, reliable, and renewable electric grid in Puerto Rico.

**Answer:**

The purpose of the on-going IRP process is to develop the best and most efficient resource mix, including renewables, and to promote renewable sources everywhere they meet those criteria. We expect the IRP process to recognize the need to develop renewable sources of energy within Puerto Rico while also meeting the necessary resiliency and reliability metrics. The IRP will seek to identify the lowest cost portfolio of power generation resources and grid technologies that meets industry standard reliability and resiliency constraints. Given the recent cost declines and technology improvements for renewable power and battery storage, we believe these types of resources will be a cornerstone of the new IRP.

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**Question 2:** The Puerto Rico Institute of Statistics (PRIS) that provides reliable, impartial data that is critical for Congress to understand the social and economic needs of the people of Puerto Rico.

Earlier this year, Puerto Rico's legislature considered a proposal that would dismantle the PRIS by reorganizing the agency's statistical functions and placing them under the Department of Economic Development and Commerce (DEDC). The plan would also require the DEDC Secretary to outsource all statistical functions currently performed by PRIS. Currently, PRIS is an independent government agency of the Executive Branch with many protections established by law—including having an Executive Director named to 10-year terms and a Board of Directors composed by experts—to ensure its impartial collection, production and communication of statistical data. Such protections could face significant pressures or be eliminated under this reorganization plan.

Given that PRIS keeps objective, scientifically-verifiable data, and given the Island's dire need to receive adequate federal disaster aid, please describe the Governor's plan, including a timeline, to maintain the independence of the PRIS to ensure that Congress and the people of Puerto Rico continue to receive objective, scientifically verifiable data.

**Answer:**

The proposal to consolidate PRIS functions under the Department of Economic Development comes from a broader assessment of the economic statistics function across the government. These are fragmented in various agencies and pockets, including not only the PRIS but also the Puerto Rico Planning Board, the Government Development Bank, the Treasury Department, the Puerto Rico Industrial Development Company, the Commerce and Trade Company, the Department of Labor, among others. This fragmentation contributes to the lack of integrated and consistent reporting and analytics based on reliable statistical data and creates inefficiencies throughout the Government.

A Bi-Partisan Congressional Task Force on Economic Growth in Puerto Rico was created by PROMESA, and performed a detailed and comprehensive analysis of the treatment of Puerto Rico under major U.S. Census Bureau statistical ("BEA") programs. The principal recommendation from the bipartisan task force was that "that BEA should calculate GDP for Puerto Rico, just as BEA does for every other U.S. jurisdiction. The Task Force recognizes that a transition period will likely be required, during which BEA and the government of Puerto Rico may need to share data collection and calculation responsibilities pursuant to a hybrid model". Most recently, the final report from the Committee on Appropriations for Commerce, Justice, Science (CJS) for the appropriations bill for fiscal year 2018 included strong language urging the Department of Commerce and the BEA to continue collaborating with Puerto Rico



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to modernize its economic statistics and to initiate efforts to calculate GDP for Puerto Rico and to report back to Congress within 90-days of the enactment of that Act.

The Government's proposal to transform Puerto Rico's economic statistics functions has two main components: (1) consolidating, modernizing, upgrading and focusing Puerto Rico's statistical functions into a single effective entity and (2) "Externalize functions" by working with the Federal Government to ensure and support the implementation of the Task Force's recommendation to integrate BEA in data-collection, survey programs, and calculation and forecasting of key economic indicators. The ultimate objective of this change is to enhance efficiency and improve accuracy of economic statistics to allow for more informed policy decisions.

All the Government's efforts are focused to achieve, in fact, the collection and maintenance of objective, scientifically-verifiable data so that Puerto Rico can receive adequate federal disaster aid. The reforms proposed in the fiscal plan certified by the FOMB during April of this year are geared to achieve that

**Question 3:** The Governor's proposed fiscal plan in March included a provision that would impose punitive work requirements on some nutrition assistance benefits recipients in Puerto Rico. The unemployment rate in Puerto Rico is approximately 11 percent, which is 6 percent higher than the U.S. average, and its economy is still struggling to recover from Hurricane Maria. Research from the Center on Budget and Policy Priorities clearly shows that the vast majority of individuals subject to work requirements remain poor, and some became even poorer.

As Governor Rosselló's chief advisor for Economic Development, and given the track record of other related work requirements, please explain how proposed work requirements in Puerto Rico will help those in desperate need of assistance.

Please describe the kind of work available to fulfill proposed work requirements in Puerto Rico right now for low-income families trying to make ends meet.

If low-income people in Puerto Rico are able to complete their work requirements for nutrition assistance through unpaid work with community service organizations, how will community service organizations qualify? How will the plan to use community service organizations prevent paid workers from being fired in favor of unpaid labor? Additionally, how will the government of Puerto Rico ensure beneficiaries' and community service organizations' compliance with its plan to use community service organizations to meet work requirements?

**Answer:**

Puerto Rico's labor force participation rate, which is defined as the percentage of working-age people that are either employed or looking for a job, is among the very

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lowest in the world and has been for decades. Today, only around 40% of Puerto Rico residents are in the labor market. This is the 7th lowest formal labor force participation rate globally, far below the mainland United States (~63%) and the Dominican Republic (~63%), and the lowest in the Americas. Low rates of employment contribute to Puerto Rico's low incomes and its high rate of poverty. Were Puerto Rico to increase its labor force participation rate even to that of the lowest mainland state -- West Virginia, at 54% -- household incomes would rise significantly, poverty would fall and many of the government's budget problems would be addressed.

Puerto Rico residents may face disincentives to participate in the formal labor market due to rules attached to various welfare benefits, including the Nutritional Assistance Program (PAN), Mi Salud (Medicaid), Section 8 public housing, TANF, WIC, and other programs. These benefits are sometimes stereotyped with a claim that "welfare pays more than work." This is simply not true. The true problem occurs when welfare beneficiaries work in the formal sector and receive earnings that trigger reductions in benefits. This acts as a disincentive that is not aligned to the purpose of providing certain benefits to the most vulnerable and assisting those in difficult moments. The phase-out of government transfer benefits as earned income increases is a disincentive to formal employment, as effective hourly wage (income received by working minus the loss of benefits) can be substantially lower than the formal hourly wage received.

While transfer benefits in Puerto Rico are not more generous than on the mainland in dollar terms, they are more generous relative to generally lower earnings on the Island. When benefits are phased out as a beneficiary works, loss of benefits may be larger relative to earnings than for a mainland worker. This can serve as a severe disincentive and place individuals in difficult situations. Different individuals entitled to different sets of benefits are thus faced with various incentives that inform the ways they engage with the labor market.

Mainland states face many of these same incentive issues as Puerto Rico, which they address in two ways. First, residents of mainland states are eligible for the Federal Earned Income Tax Credit (EITC), which provides a partial refund against Federal income taxes for eligible low-income workers. Many states supplement the Federal EITC to increase benefits to recipients. By increasing the reward to work, the EITC has been shown to increase labor force participation. Puerto Rico residents do not pay Federal income taxes and are not currently eligible for the Federal EITC, and there is no relative equivalent tax credit under Puerto Rico tax code.

Likewise, the Federal Government requires that food stamp programs on the mainland (Supplemental Nutrition Assistance Program, "SNAP") contain a work requirement. In general, working-age SNAP beneficiaries on the mainland must register for work, cannot turn down a job if offered, and may be required by the state to attend education

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or work training classes. Further, Federal law requires that non-disabled adults without dependents must work, go to school, or volunteer to maintain eligibility for benefits.

The Government's Human Capital Reform seeks to create a thriving private sector that can provide jobs for the residents of the island (i.e. boost employment demand) and an intelligent welfare structure that works as a safety net for the most vulnerable segment of the population while supporting and encouraging their return to the formal workforce (i.e. promote supply of workers). The Government (through the Department of Labor, Department of Education, and the Department of Economic Development and Commerce) is working with existing and new programs that can promote an increase in labor participation. Additionally, the Government will work with local partners to identify additional programs and services that could benefit from increase collaboration.

It is imperative to assess the welfare structure. Ultimately, it must provide reasonable protection to vulnerable parties, while promoting self-sustainability (i.e. entrepreneurship and re-entry into the workforce). Starting with Puerto Rico's largest welfare program, the Nutrition Assistance Program, the Government is focused on working with the Food and Nutrition Service (part of the US Department of Agriculture ("FNS")) to include the necessary and prudent requirements to the program that will seek an increase in labor force participation.

Targeted participants are able-bodied whose ages range from 18 to 59. Exceptions would include: (1) participants under 18 years and over 60, (2) parents with dependents under 18 years, and (3) medically certified unfit for employment. Under this proposal, paid work, voluntary work, training, education and job search would qualify as work. Children, even if their parents do not work, will continue to receive the benefit. Current Government estimates suggest that potential participants for work requirements would be between 100,000 to 150,000. The work requirements are a vital part of the labor reform package that the Government of Puerto Rico projects will create substantial growth over the next 30 years.

Any program savings derived from the PAN work requirement must be redistributed to working beneficiaries, effectively increasing take-home pay for workers. The increased worker benefit shall take place through an expansion of the Earned Income Disregard, which will increase the amount of earned income eligible recipients can exclude in calculating the amount of benefits they can claim. For example, a family of four currently receiving PAN will lose the benefit after exceeding a maximum annual income of \$5,904. By creating a sliding scale after this amount, or allowing families to exclude a certain amount of earned income from this calculation, Puerto Rico can ensure no one is disadvantaged by seeking work in the formal economy and that no families lose benefits prematurely. The increase in PAN benefits for workers combined

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with the EITC would improve conditions for low-income workers in the formal economy and reduce poverty.

The Administration of the Socioeconomic Development of the Family (ADSEF by its Spanish acronym) has begun preliminary conversations with FNS for its guidance and support during the implementation process. Given current labor market and funding constraints, and preliminary recommendations from FNS, the current Administration has determined to minimally modify its original proposal, and limit what qualifies as work to (a) paid job, (b) job search and (c) voluntary work. ADSEF will establish a partnership with the Department of Labor, and participants will be able to search for jobs at the American Job Centers around the Island. There will be no work requirement during fiscal year 2019.

A qualified third-party analytical firm retained by the Government and acceptable to the FOMB must validate that these requirements and organization are being fully implemented and compliance. This third party will share equal information about its work with both the Government and FOMB.

All the Government's efforts in this matter are focused and aligned as described in the Government's fiscal plan, recently certified by the FOMB during April of 2018.

**Question 4:** Several proposals have been introduced to consolidate, or even entirely strip away, the independence and oversight authority of the Puerto Rico Energy Commission (PREC) have been floated in Puerto Rico.

What oversight should the electric utility regulator in Puerto Rico have?

Why are any changes to the existing format of the PREC necessary?

What should the ongoing regulatory process look like if any of Puerto Rico Electric Power Authority's assets are privatized?

**Answer:**

The Government of Puerto Rico is committed to having a strong and independent energy regulator and that regulator is the PREC. To be effective, however, in regulating a robust sector that includes privately-owned and capitalized entities, changes to the current regulator and regulatory structure are required. The changes we support will not remove oversight from the sector. To the contrary, they are aimed at bringing the energy commission into line with the regulatory structure and function of mainland U.S. jurisdictions that effectively and independently regulate privately owned or operated utilities. Legislation currently under review by the Puerto Rico legislature

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seeks to improve on these issues by expanding the PREC from three (3) members to five (5) members and requiring a professional recruitment process. Key changes to the regulatory process will be subject to a regulatory working group, tasked with recommending amendments 180 days after legislation is approved.

Many mainland jurisdictions have restructured their electricity sectors in recent decades, separating generating assets from utilities that continue to own the “wires” and that deliver energy to customers. Regulators in such restructured sectors must be prepared to regulate the wholesale electric supply market (e.g., for potential exercise of market power). The regulator must also address resource planning in a market with multiple non-vertically integrated participants, although approaches to resource planning have varied among the restructured States. The regulator also will need to be designed and equipped to handle regulation of a T&D utility that, for the first time, has private management and does not own generating facilities. This regulation will include rate and other standard regulation as well as, including, I anticipate, monitoring and thereafter establishing performance targets for sectors and functions. The regulator also will need to have appropriate authority relating to corporate reorganizations of regulated private entities, issuance of debt by the T&D entity, affiliate transactions, etc. The regulator may also have to handle other new functions, such as considering whether to award certificates of public convenience and necessity to major new investments.

I do not feel it is appropriate to be overly prescriptive, but legislation has not yet been introduced to create the new regulatory structure, although the pending proposed legislation addresses some aspects of the regulator. Moreover, I must be mindful that the Government of Puerto Rico is working on implementation of its public policy which includes points relating to the regulator. That process is ongoing, not concluded.

**Questions from Senator Catherine Cortez Masto**

**Question 1:** Your testimony states that the Governor’s goal is to achieve more than 30 percent renewable energy generation. When do you expect to achieve that goal and what is going to change in Puerto Rico in order to actually see some progress towards achieving this goal?

**Answer:**

PREPA has retained an independent IRP consultant and expert advisors to develop a plan to achieve the aspirational goals set out by the fiscal plan within a reasonable timeframe. The IRP will consider the practical realities of power project development and technical system constraints in order to develop a plan of action that is actually achievable for Puerto Rico’s energy sector. In the near-term, PREPA and the P3

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authority are soliciting bids for battery energy storage and developing and implementation plan for near-term renewable project expansion.

**Question 2:** The Governor's plan for the future of Puerto Rico's electric system relies heavily on private investment. How will you ensure that the private companies that own and operate various components of the electric system are working to achieve the established goals for renewable energy?

**Answer:**

The purpose of the on-going IRP process is to develop the best and most efficient resource mix, including renewables, and to promote renewable sources everywhere they meet those criteria. We expect the IRP process to recognize the need to develop renewable sources of energy within Puerto Rico while also meeting the necessary resiliency and reliability metrics. After the transaction, the private investors will be subject to both contractual and regulatory requirements to achieve the appropriate metrics for renewable energy.

**Question from Senator Tina Smith**

**Question 1:** A recent study finds that climate change and coastal development will lead to an eight-fold increase in the number of people facing expected damage from hurricanes in the next 60 years. Doesn't reducing the risk to Puerto Rico and all coastal electric systems require a head on attack on the forces driving climate change?

**Answer:**

Addressing climate change is an important issue for our future. Governor Rosselló is a strong supporter of addressing climate change aggressively as evidenced by his participation in a coalition of governors targeting reduction of emissions by 26 to 28 percent from 2005 levels, and meeting or exceeding the targets of the federal Clean Power Plan. In addition to addressing climate change, however, Puerto Rico's electric system must be improved to provide more resiliency as part of the restoration and recovery process. Federal funds will be necessary to rebuild Puerto Rico's grid in a way that will protect it from future storms.

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 and Proposals for the Future Operation of the Grid*  
 Questions for the Record Submitted to Mr. Walter Higgins

**Questions from Ranking Member Maria Cantwell**

**Question 1:** In your testimony you discuss some of the biggest challenges that Puerto Rico faced when recovering from Hurricanes Irma and Maria last year. With a new hurricane season quickly approaching, the people of Puerto Rico cannot afford to re-live the consequences of those mistakes.

- Does PREPA have a comprehensive disaster response plan in place for this upcoming hurricane season? If so, have you personally reviewed it?

**Answer:**

PREPA is in the process of finalizing an initial revision of a comprehensive disaster response plan for the 2018 hurricane season. As part of this effort, PREPA assembled an internal team comprised of representatives from all of its directorates to revise the emergency management plans that were in place as of 2017. The team completed a consolidated aftermath report questionnaire where staff provided input on lessons learned during the 2017 hurricane emergency. I am personally overseeing and reviewing the emergency plan revision process and final documentation. As part of preparations for the new 2018 hurricane season, FEMA and PREMA have also organized preparedness initiatives.

Following is a short chronology of certain of PREPA's recent efforts related to response plan updates and preparedness:

- April 3, 2018: PREPA participated in the first of four seminars being offered in coordination with the Puerto Rico State Agency for Emergency and Disaster Management (AEMEAD, by its Spanish acronym). This consists of a multi stage revision process, which extends through June 26, 2018. Seminars/sessions consist of 30 agencies and AEMEAD reviewing the emergency management plans for the respective agencies, as well as for the 78 municipalities.
- April 24/26, 2018: PREPA representatives participated in seminars being provided by FEMA to the private sector, where PREPA obtained additional information/considerations for purposes of revising its emergency plan based on the comments received from private sector participants.
- May 22, 2018: PREPA's working team revised the basic disaster recovery plan and produced a draft. The draft is serving as a foundation for the revisions to the emergency plans for each PREPA directorate. In addition, PREPA is crafting a catastrophic annex, which will form part of the multi-risk plan (POEM by its Spanish acronym), pursuant to which the state (central government) will be

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providing further guidance on assembling the mentioned annex and defining PREPA's role in the larger statewide catastrophic plan.

- May 24, 2018: A readiness exercise was performed by PREPA.
- May 29 - June 1, 2018: AEMEAD hosted a government-wide conference where PREPA took part in a drill to conduct a "dry-run" of its emergency management plan. This allowed for adjustment to the emergency management plan (as needed) by the June 26th final submission deadline to AEMEAD, for use during the 2018 hurricane season.
- May 29 – June 1, 2018: FEMA and PREMA organized a training exercise focused on hospital leadership across Puerto Rico.
- June 11 - June 15, 2018: Another exercise-based training session is scheduled for the Puerto Rico Emergency Operations Center (EOC) staff from multiple offices across multiple state agencies. This will be conducted in coordination with FEMA.
- June 18 - June 22, 2018: Multiple trainings and exercises are scheduled to be hosted in coordination with FEMA to test the region's capabilities for a disaster at federal, state, and local levels.
- June 19, 2018: This is AEMEAD's target date for the catastrophic plans to be revised in final and for validation to take place. Any edits to emergency plans will be incorporated and final plans submitted to AEMEAD by June 26, 2018.
- Beyond June 26, 2018: PREPA will continue to work internally and with advisors as well as FEMA/DHS to further improve and perfect emergency plans, which will include fully translated documents in accordance with applicable FEMA and relevant requirements.
- Where does activating mutual aid fit in the response plan?

**Answer:**

Mutual aid is a key component of PREPA's 2018 emergency response preparedness and action plan. As part of that, it is my intention to be sure that PREPA is able to activate mutual aid immediately after a future hurricane. PREPA is in the process of securing contracts with various mutual aid partners that supplied restoration services post hurricanes Irma and Maria in order to provide future restoration services, when required. These on-going mutual aid contracts should enable a more rapid response



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when the next major event occurs. I do want to make clear, however, that mutual aid is not free; its costs must be borne by PREPA and our customers. It is one tool in emergency restoration efforts, not the only tool.

- What are the two biggest lessons that PREPA learned in the last hurricane season, and how are you incorporating these in to future planning?

**Answer:**

While I was not in Puerto Rico for the 2017 hurricane season, the information I have received suggests that the biggest lessons learned relate to communications and restoration crews/materials.

Total communication failure challenged PREPA's restoration efforts. To improve the communications infrastructure, PREPA's IT department is in the process of installing two different communications mechanisms that would enable PREPA to have a more resilient and redundant communications system. This and other enhanced communications technologies and strategies will be part of the more detailed and revised emergency plan.

PREPA was also challenged by lack of restoration crews and materials supplies. As indicated in my prior response, PREPA is working to assure that mutual aid will be available to it in the future and entering into contracts with restoration contractors to provide further support.

- Are there currently enough supplies on hand to properly respond, should there be another catastrophic hurricane?

**Answer:**

PREPA is in process of replenishing its stores of supplies to pre-hurricane Irma and Maria levels. Currently, approximately 50% of pre-storm inventory levels have been replenished, and PREPA is actively working with the Army Corps of Engineers to replenish the remaining stores and inventories to 100% of pre-storm levels. This remaining replenishment relies on parts and materials which are on order today or in the process of being transported from the Mainland. In addition to replenishing stocks to pre-storm levels of inventory, PREPA is also actively pursuing avenues to acquire additional materials and equipment from various providers, including some who assisted in the restoration efforts. PREPA has had numerous conversations with providers to acquire equipment and materials that are on the island, and is working with FEMA to identify and execute on those opportunities.

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**Question 2:** Will the Energy Commission reforms passed and pending in the Puerto Rico legislature lead to a more or less effective independent regulator?

**Answer:**

It is unclear what specific reforms are referred to in the question. Any such reforms are within the purview of the Government of Puerto Rico, not PREPA. It is my understanding, however, that Puerto Rico has confirmed its commitment to a strong and independent regulator.

**Question 3:** In December, a public-private working group, including DOE, the National Labs, and PREPA, issued a report about redesigning the grid. The group found that 85% of transmission lines cannot withstand a Category 4 storm, partly because they are built on windy mountains. The group recommended relocating and upgrading 350 miles of line in better locations like highway rights-of-way. How do you plan to follow this recommendation and relocate or redesign some transmission to make it more resilient?

**Answer:**

PREPA is reviewing all these reports as well as receiving recommendations from relevant federal agencies and other stakeholders, local and national. The Build Back Better Report, for example, included a series of recommendations, certain of which are incorporated in the PREPA fiscal plan recently certified by the Federal Oversight and Management Board for Puerto Rico. The report also contained a number of recommendations that are aspirational in nature, and while seemingly logical could face significant implementation challenges given Puerto Rico's geography, topography, road systems, etc.

PREPA is also evaluating a series of steps to improve hardening and resiliency of the transmission and distribution (T&D) system, including some relocation of T&D lines, providing for certain undergrounding of key infrastructure, and upgrades to critical Transmission Centers, among others. These evaluations and expert assessments that are underway are focused on achieving the greatest resiliency and hardening, within the shortest possible time at the best cost-effective structure to maximize the use of federal funds.

In the absence of federal funding, it is unlikely that many of the recommendations for resiliency and hardening can be implemented because the associated cost of funding them with private capital will be prohibitive.

**Question 4:** The Governor's proposed PREPA reform and privatization legislation recommends privatization of generation assets. The legislation also shields any of these privatization

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transactions from oversight of the energy regulator. The Institute for Energy Economics and Financial Analysis criticized this construct as allowing too much political influence to govern privatization transactions.

Can you explain how it is in the best interest of consumers to shield privatization transactions from oversight of the energy regulator?

If only to avoid the appearance of impropriety, why not provide the energy regulator with this jurisdiction?

**Answer:**

The legislative framework for the transformation transaction is within the purview of the Government of Puerto Rico, not PREPA. Furthermore, the legislation referenced in the above question is evolving as of the time of this response and we are monitoring such legislative process. In any event, I note that the Government of Puerto Rico has repeatedly expressed its commitment to the creation and empowerment of a reformed energy regulatory agency designed to regulate a sector that includes privately owned and capitalized participants.

**Question 5:** The Committee has been informed that the independent power producers on the island have had a difficult time finding a willing partner in PREPA. Specifically, 90% of one independent power producers' megawatts cannot be dispatched due to lack of collaboration by PREPA. How can PREPA work more collaboratively with the independent power producers? Are you committed to ensuring this take place?

**Answer:**

I disagree with the factual premise of your statement. PREPA currently has (and had after the storms) power purchase agreements for approximately 1,200 megawatts ("MW") of capacity. After the storms, approximately 510 MW of capacity under power purchase agreements with independent power producers returned to production in October 2017. Approximately 450 MW of capacity was restored to the grid in January 2018. The delay in reestablishing this capacity was directly related to the repair of the transmission lines that directly service this facility. There is an additional 110 MW that has been operating to the grid on a constrained basis since March 2018. This 110 MW of renewable capacity have been operated on a reduced basis in order to ease any frequency and operational issues on the power grid as the restoration activities have been taking place. Another 95 MW of damaged renewable capacity has been undergoing recent testing and it is expected to become operational to the grid in the near future. Lastly, approximately 25 MW megawatts of renewable capacity sustained

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damage to the degree that the capacity is likely to be out of service for an extended period even beyond today.

As outlined above, the reestablishment of service from independent power producers on the island faced various timelines and challenges. With that said, since October 2017, greater than 10% of independent power producers' megawatts have been generated.

PREPA is committed to working with its power providers to dispatch these units when it does not impinge on the stability of the power grid.

**Question 6:** How many wood poles did PREPA replace after the hurricane? What types of poles were they replaced with (specific numbers for each type)?

**Answer:**

PREPA ordered approximately 24,750 replacement wood poles after the hurricanes. The stratification of these poles is as follows:

30 foot poles – 2,250  
 35 foot poles - 8,500  
 40 foot poles – 5,500  
 45 foot poles – 5,000  
 50 foot poles – 1,000  
 65 foot poles – 2,000  
 70 foot poles – 500

- How many aluminum poles did PREPA replace after the hurricane? What types of pole were they replaced with (specific numbers for each type)?

**Answer:**

PREPA replaced approximately 183 aluminum tower structures after the hurricanes. PREPA does not use aluminum poles in its distribution system, therefore, all of the aluminum towers relate to transmission operations.

- How many concrete poles did PREPA replace after the hurricane? What types of poles were they replaced with (specific numbers for each type)?

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**Answer:**

PREPA ordered approximately 4,000 replacement concrete poles after the hurricanes. The stratification of these poles is as follows:

40 foot poles – 500  
 45 foot poles – 1,750  
 50 foot poles – 1,250  
 65 foot poles – 500

- How many other poles did PREPA replace after the hurricane, and what types were they? What types of poles were they replaced with (specific numbers for each type)?

**Answer:**

PREPA ordered approximately 23,687 replacement galvanized steel poles and towers after the hurricanes. The stratification of these poles is as follows:

35 foot poles – 6,250  
 40 foot poles – 3,750  
 45 foot poles – 2,500  
 50 foot poles – 500  
 60 foot poles – 167  
 70 foot poles – 10,000

- How many poles are part of the PREPA system as of today? What materials are they made of, and how many are there of each?

**Answer:**

Currently, there are 656,112 poles across the PREPA system. Approximately 55% of these poles are wood, 36% are concrete, 6% are galvanized steel and 3% are aluminum.

**Question 7:** The Governor's proposal for the future of PREPA involves privatizing generation assets and entering into concession agreements for transmission and distribution. How was this decision made? How will the governor's proposal ensure that long-term contracts are in the best interest of consumers? How will the governor's proposal ensure rates are just and reasonable?

**Answer:**

As the Chief Executive Officer of PREPA, I am not able to provide insight into how the Governor made his decision to proceed in this manner or how he intends to address

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any specific issue. However, I do note that regulated, privately owned utilities are a norm in most mainland jurisdictions and those utilities can and do enter into prudent contracts and have just and reasonable rates.

I also note that the objectives of privatization and concession of the Puerto Rico electric grid are outlined in the now certified fiscal plan for PREPA which takes into consideration, among other things, ensuring just and reasonable rates (through a robust regulatory structure), leverage of federal funds for T&D grid reconstruction, private capital and market competition, with options for customers – in alignment with the new PREPA Board of Directors' Vision for a transformed energy sector on the island as well as the underlying policies of PROMESA.

**Question 8:** During the hearing there seemed to be a coalescing around the idea of an upcoming Integrated Resources Plan (IRP) that would help determine the future of the Puerto Rico grid. However, given the uncertainty of the independent regulator's future, the Governor's decision to move forward on his own PREPA Privatization Bill in advance of the IRP, and the certification by the Financial Oversight and Management Board of a fiscal plan for PREPA, there appear to be several distinct, uncoordinated efforts that have led many inquire about the process. What is the specific process for determining a plan for PREPA reform and the future of the Puerto Rican grid, and how does that interact with the plan to develop an IRP? With respect to both the PREPA reform plan and the IRP, who will propose them and who ultimately is required to approve them? What is the time frame for both? What other parties are involved with the development and approval of the PREPA reform plan and the IRP? What governing document or statute lays out the formal process and timing? If that governing statute is the Act for the Transformation and Energy Relief of Puerto Rico (Act 57), what specific provisions of Act 57 will remain assuming the current Reorganization Plan No. 8 Puerto Rico Public Service Regulatory Board bill is implemented? Will an independent, robust, and transparent oversight body with energy expertise have the authority to review, approve and/or reject the PREPA reform plan and the IRP after performing sufficient diligence if not in the public interest? If no current legal framework addresses these issues, what changes in law do you propose?

**Answer:**

As Chief Executive Officer of PREPA, my responsibility is for the day-to-day management of PREPA including assuring that PREPA provides the support necessary to the transformation process announced by the Governor and contained in the certified fiscal plan under PROMESA. PREPA is working collaboratively with the Government of Puerto Rico and the Oversight Board to support the proposed transformation of the electric sector in Puerto Rico. It is my understanding that Citibank and Rothschild + Co have been engaged to lead these aspects of the transformation process and are already deeply involved in the planning process. It is also my understanding that the legal framework for the transactions are currently being considered by the Legislature

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of Puerto Rico and that there is broad general agreement on the process as set forth in the written responses of Mr. Christian Sobrino Vega.

Regarding the IRP, after several efforts and a formal request for proposals, PREPA recently retained the services of independent experts and consultants to assist it with the preparation of a new updated IRP. PREPA expects that the IRP will be completed in October. PREPA's main purpose of preparing an IRP during the upcoming months is to use it as guide for the electric sector transformation process and PREPA expects that the IRP will be available in time to provide guidance to the process and the potential counterparties.

**Questions from Senator Bernard Sanders**

**Question 1:** According to the Rocky Mountain Institute (RMI), the proposed \$500 million Aguirre Offshore Gasport (AOGP) could be obsolete within a decade and reinforce the risk of highly concentrated power systems. RMI's December 2017 report also details how renewable systems will be more cost-effective in the long term.

- A. With the advancements in renewable and energy storage technologies, and the historic volatility of fossil fuel prices, what is the justification for maintaining use of fossil fuels like natural gas?

**Answer:**

The purpose of the on-going IRP update process is to develop recommendations on the best and most efficient resource mix, including renewables generation. PREPA also needs to account for and assure its compliance with applicable environmental laws. AOGP could be one element of that mix. We expect the 2018 IRP process to recognize the need to develop renewable sources of energy within Puerto Rico and to comply with environmental laws while also meeting the necessary resiliency and reliability metrics. The recently started IRP update process will assess all available options and technologies for meeting Puerto Rico's resources needs over a 20-year horizon (including environmental compliance) and determine the most cost-effective path forward.

- B. Has PREPA factored into its decision making the potentially high price volatility of natural gas compared to renewable sources of power factoring into PREPA's consideration to invest in the AOGP rather than renewable sources of power? What factors would lead PREPA to choose an option that has higher price volatility potential?

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**Answer:**

Please see earlier response. The recently started IRP update process will assess all available options and technologies for meeting Puerto Rico's resources needs over a 20-year horizon (including environmental compliance) and determine the most cost-effective path forward.

- C. Given that the AOGP could mean more expensive electricity for Puerto Rican residents compared to renewable sources of power, why is the Puerto Rican Electric Power Authority (PREPA) continuing to consider the inclusion of the AOGP in its next Integrated Resource Plan (IRP)? What factors would lead PREPA to choose to include the AOGP in the next PREPA IRP?

**Answer:**

Again, the recently started IRP update process will assess all available options and technologies for meeting Puerto Rico's resources needs over a 20-year horizon (including environmental compliance) and determine the most cost-effective path forward.

- D. As an offshore facility located off the southern coast of Puerto Rico, the AOGP would be vulnerable to physical damage from high winds and storm surges resulting from future extreme weather events. If the centralized Central Aguirre Power Plant, also located on Puerto Rico's southern coast near Salinas and Guayama, is converted to gas, damage to the subsurface pipeline would further increase the system's vulnerability. Continuing to depend on centralized generation in the south does not solve concerns about needing to wheel power across the mountains to serve the vast majority of Puerto Rico's demand coming from the North. In comparison, a renewable energy system would be more resilient than fossil fuel infrastructure like the AOGP in the face of future extreme weather events. How is the infrastructure's vulnerability to storms factoring into PREPA's consideration to invest in the AOGP rather than renewable sources of power? What factors would lead PREPA to choose a less resilient option in its next IRP?

**Answer:**

Again, the recently started IRP update process will assess all available options and technologies for meeting Puerto Rico's resources needs over a 20-year horizon (including environmental compliance) and determine the most cost-effective path forward. We expect the IRP process to recognize the need to develop renewable sources of energy within Puerto Rico and to comply with environmental laws while meeting the necessary resiliency and reliability standards.

- E. Will you commit to incorporating the findings of this Rocky Mountain Institute report into the creation of the next PREPA IRP? If not, why not?



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**Answer:**

It is my view that to impose in advance any conclusions or assertions on an IRP is antithetical to the very nature of an IRP and would be contrary to normal and best practices for developing the IRP. PREPA, through a public RFP process, has retained independent experts to prepare the next IRP. As part of that process, PREPA and its IRP consultant can review the findings of the RMI report (as one of many inputs from stakeholders) and determine how best to incorporate these findings into the 2018 IRP process to the extent as relevant.

**Question 2:** Several proposals to consolidate, or even entirely strip away, the independence and oversight authority of the Puerto Rico Energy Commission (PREC) have been floated in Puerto Rico.

What oversight should the electric utility regulator in Puerto Rico have?

**Answer:**

Any such reforms are within the purview of the Government of Puerto Rico, not PREPA. The Government of Puerto Rico, however, has indicated that it has a commitment to a strong and independent regulator.

**Questions from Senator Tammy Duckworth**

**Questions:** On April 19, 2018, the Financial Oversight and Management Board for Puerto Rico certified a fiscal plan for PREPA requiring the creation of a new Integrated Resource Plan that expands distributed energy generation.

Mr. Higgins, please share PREPA's plan to ensure the resiliency of your system for the next storm. In addition, please confirm whether PREPA will support the installation of distributed solar plus storage to help safeguard against future storms.

**Answer:**

The recently started IRP update process will assess all available options and technologies for meeting Puerto Rico's resources needs over a 20-year horizon (including environmental compliance) and determine the most cost-effective path forward. PREPA has an on-going IRP process to develop the best and most efficient resource mix. I expect solar plus storage to be evaluated as part of that IRP process.

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**Question from Senator Bill Cassidy**

**Question:** The United States has spent a large sum of money rebuilding Puerto Rico, but it looks as if, going forward, we may relocate electricity generation to the location of the demand. In order to connect generation to demand, Puerto Rico previously had power lines stretching over mountains that were vulnerable to storms or other natural disasters. Knowing that may be how it had to be done, it does seem that there is an inefficiency in resource allocation. Your testimony alludes to the idea that you are going to relocate generation to the location of demand. Could you please elaborate on your testimony and the plans for Puerto Rico moving forward?

**Answer:**

PREPA is currently evaluating its options to add incremental sources of generation closer to the main population base in the northern part of the island, or to convert certain existing generation units in the northern part of the island to burn cleaner fuels than they do today. These initiatives are in the exploratory phase, but there appear to be some interesting alternatives in the market that could allow PREPA the ability to site lower cost generation nearer to the major load center.

PREPA is also reviewing all these reports as well as receiving recommendations from relevant federal agencies and other stakeholders, local and national. The Build Back Better Report, for example, included a series of recommendations certain of which are incorporated in the PREPA fiscal plan recently certified by the Federal Oversight and Management Board for Puerto Rico. The report also contained a number of recommendations that are aspirational in nature, and while seemingly logical, could face significant implementation challenges given Puerto Rico's geography, topography, road systems, etc.

PREPA is also evaluating a series of steps to improve hardening and resiliency of the transmission and distribution (T&D) system, including some relocation of T&D lines, providing for certain undergrounding of key infrastructure, and upgrades to critical Transmission Centers, among others. These evaluations and expert assessments that are underway are focused on achieving the greatest resiliency and hardening, within the shortest possible time at the best cost-effective structure to maximize the use of federal funds.

The ability to relocate lines and harden the system is dependent on federal funding being available to allow for hardening and resiliency in the electric system. In the absence of federal funding, it is unlikely that much of this can be achieved as the cost of funding those efforts with private capital will be prohibitive. Federal funding for T&D re-design and

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hardening will also have an impact on the ability of Puerto Rico to place new generation facilities closer to the load centers in the north and north-east region of the island.

**Questions from Senator Catherine Cortez Masto**

**Question 1:** During his testimony, Assistant Secretary Walker stated that he believed expanded authority under the Stafford Act would have allowed the electrical grid in Puerto Rico to be built according to the resilience and capability needs as determined by those on the ground, instead of by industry standards. Do you agree that such expanded authority would have been or would continue to be beneficial for rebuilding Puerto Rico's electrical system?

**Answer:**

Yes, I agree with Assistant Secretary Walker that the Stafford Act should be modified to allow for funds to be spent to build resiliency and capacity that makes sense for the specific situation and not limited to industry standards or replacement of existing assets. The limitations on the uses of funding under the Stafford Act result in an inefficient use of funds, leave jurisdictions vulnerable to further storms and result in the same repairs being made multiple times.

**Question 2:** What are the factors that have kept PREPA from incorporating more renewable energy sources in the past and how do you recommend overcoming those barriers to improve electricity generation in the future?

**Answer:**

Although my tenure at PREPA began in March of this year, I understand that some of the factors historically impeding more renewable energy penetration included factors, such as: (a) Puerto Rico being an independent isolated grid; (b) intermittency and emerging battery technology concerns; and (c) the impact of such intermittent power on a grid with a large number of customers, including residential, commercial and heavily regulated industrial and manufacturing operations.

Although wind and solar have historically been high cost technologies globally and particularly in Puerto Rico, during recent years, their costs have declined dramatically. Battery storage technology which is needed to overcome the intermittency issues with these technologies, has also improved and come down in cost. While economic factors are less of an issue, there is still the fragility of PREPA's grid as a key concern. In order to incorporate and maximize a larger amount of lower cost renewable power on the island, PREPA will work to maximize federal funding to improve and harden the T&D grid.

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I note that before any work is completed to harden the PREPA system, the PREPA power grid is very sensitive to frequency fluctuations. The inclusion of additional intermittent resources like renewables exacerbates this susceptibility to frequency changes. The grid hardening efforts will seek to incorporate the proper levels of battery storage and other fault mechanisms so that renewables do not introduce this threat to grid reliability in the future.

**Question 3:** Restoration after Hurricanes Irma and Maria was significantly delayed because instead of entering into mutual aid agreements with utilities on the mainland, Puerto Rico awarded a contract to Whitefish Energy, a contractor that had no experience in the field and charged exorbitant rates for little work. Do you have mutual aid agreements in place for the coming year should you once again need help rebuilding after a storm?

**Answer:**

I was not at PREPA when the decision was made to forego mutual aid and to proceed with Whitefish Energy and other private contractors. My understanding is that Mr. Ricardo Ramos, my predecessor at PREPA, previously stated that the decision to proceed with private contractors was necessary given the exigencies of the situation and did not foreclose mutual aid. Moreover, Mr. Ramos stated that he did not believe that mutual aid was available to him because of the storm damage on the mainland (Hurricanes Harvey, Irma in Texas and Florida, among other jurisdictions), PREPA's financial condition (bankrupt) and the inability to provide housing and food for mutual aid workers because of the extensive damage caused in Puerto Rico. I also have no personal knowledge of any material issues with the restoration work done by Whitefish Energy.

That said, I understand that the industry typically relies on mutual aid and I would expect to activate mutual aid in the event of a future storm, as earlier explained in this response document. Mutual aid is a key component of PREPA's 2018 emergency response preparedness and action plan. As part of that, it is my intention to assure that PREPA is able to activate mutual aid immediately after a future hurricane. PREPA is in the process of securing contracts with various mutual aid partners that supplied restoration services post hurricanes Irma and Maria in order to provide future restoration services, when required. These on-going mutual aid contracts should enable a more rapid response when the next major event occurs. I do want to make clear, however, that mutual aid is not free; its costs must be borne by PREPA and our customers. It is one tool in emergency restoration efforts, not the only tool.

**Responses of Acting Chairman José Román Morales, Puerto Rico Energy Commission**

**Questions from Chairman Lisa Murkowski**

**Question 1:** Do you believe that the energy regulatory board, as proposed by the Governor, is an independent actor that can provide regulatory certainty to the consumers and investors outside of political influence?

**Response:** Not as originally proposed. The bill as proposed by the Governor amended the Commission's enabling act and made the Commission's decisions subject to the review of a higher, non-expert Board comprised by experts on subjects not related to energy issues and political appointees. The proposed bill also reduced the number of Commissioners to a single member and authorized the Governor to unilaterally remove that person without just cause. As a result, the Governor would have simultaneous direct control over the regulator (the Commission) and the regulated entity (PREPA). It should be noted, however, that the Governor's original plan is currently stalled in the Puerto Rico Legislature.

The proposed Puerto Rico Electric Power Authority (PREPA) Transformation Act, which authorizes the privatization of PREPA assets, includes a provision which increases the number of Commissioners from three to five. However, that same bill reduces the Commission's authority over the energy market by, among others, allowing concession or asset transfer agreements to be entirely exempt from complying with an Integrated Resource Plan (IRP). Therefore, regardless of the number of Commissioners, the Commission's authority to act as an independent regulator (or as a regulator at all) is thwarted by the remaining provisions of the proposed PREPA Transformation Act.

Other issues still present an even greater challenge to a truly independent Commission, free of undue political interference. Current local legislation requires the Governor's approval for the hiring of personnel and the contracting of outside consultants and experts, including attorneys, economists, engineers, etc. Since January 2017, the Commission has been unable to fill essential vacancies because the authorizations required from the Governor have not been granted. Similarly, the Commission has been unable to contract necessary outside consultants or procure essential services because the necessary authorization have not been granted. A Commission's substantive independence comes hand-in-hand with the ability to recruit resources and contract services as those services are needed to fulfill its duties. The current situation demonstrates that controls over hiring and contracting, while necessary to ensure prudence in spending, may also have a chilling effect on the Commission's initiatives, under the risk that determinations unfavorable to the Governor may result in a hiring or contracting freeze.

**Question 2:** Mr. Sobrino's testimony states that the current regulator and regulatory structure cannot achieve the objectives of the Governor's transformation and modernization of Puerto Rico's electric sector without modification. Do you agree with this statement?

**Response:** No. That statement, made repeatedly by PREPA, the Administration and the Federal Oversight and Management Board, is misleading. Act 57-2014, which creates the current regulatory structure, has two main objectives: (1) regulate PREPA, a vertically integrated

monopoly which has been free of regulation for the last 77 years; and (2) develop a market structure which breaks away from the traditional PREPA monopoly by introducing private participation and competition, embracing new technologies and developments, and focusing on resource diversity and efficiency, to produce quality service at just and reasonable prices. Act 57-2014 also created the Commission, modeled on existing stateside utility regulators, to achieve those objectives. Therefore, to say that the current regulatory structure is inadequate to achieve the objectives and the Governor's transformation and modernization plan is inaccurate.

Act 57-2014 includes provisions related to the certification of private energy companies, the development of an IRP, the development and implementation of industry performance standards, the determination of system-wide resource mix, the integration of renewable energy resources, the setting of rates for PREPA and private generators, the development of wheeling and interconnection regulations, billing practices, energy efficiency standards, approval of Power Purchase and Operation Agreements (PPOA), construction and development of energy infrastructure, and the merger and acquisition of energy companies, amongst others. All of these are powers and authorities necessary for the regulation of PREPA as a vertically integrated monopoly in the short and medium term, and the regulation of a competitive market, in the long term.

We recognize, however, that certain amendments to Act 57-2014 may be beneficial, and may provide further clarity as to the Commission's powers and authority. A necessary amendment, for example, may be to make Act 57-2014 less PREPA centric; that is, to explicitly recognize the Governor's intention of entirely privatizing PREPA's services. But, while beneficial, the need for such an amendment is not rooted in an ineffective or deficient regulatory structure, nor does it make such framework any less applicable to current circumstances. Rather, such an amendment provides clarity and meshes post-María public policy with existing regulatory policy.

Stated simply, Act 57-2014 and the Commission's powers, authorities and organizational structure were developed taking into consideration the regulatory models currently in place in all 50 States and Act 57-2014's motives and objectives are consistent with public policy goals announced by the Governor and members of the Legislative Assembly.

#### **Questions from Ranking Member Maria Cantwell**

**Question 1:** Will the Energy Commission reforms passed and pending in the Puerto Rico legislature lead to a more or less effective independent regulator?

**Response:** As currently proposed, it is our opinion these reforms will lead to a less effective regulator. The PREPA Transformation Act currently under consideration by the Legislative Assembly sets forth the procedural framework under which PREPA's generation assets are to be transferred to private sector actors and concession agreements are to be awarded for Transmission and Distribution (T&D) services.

Ordinarily, the sale of PREPA assets and the concession of T&D services would be informed by an IRP developed using industry best-practices, such as those applied by other

stateside regulatory bodies and which informed the IRP approved by the Commission as recently as February 2017. An IRP would identify Puerto Rico's resource needs and allow the relevant government agencies to adequately design procurement procedures that protect the public interest and provide clarity and certainty to investors. However, contrary to this principle, the PREPA Transformation Act authorizes the Private-Public Partnerships (P3) Authority (the entity tasked with undertaking this process) to conduct said process without having to comply with an approved IRP. Moreover, it identifies the P3 Authority as the single entity responsible for identifying PREPA's resource needs, entirely circumventing the type of expertise and experience that an agency such as the Commission is able to provide.

Finally, the concession or asset transfer agreement may preclude the Commission from subsequently exercising its review authority over matters that would ordinarily be subject to its review, such as rates, performance, resource planning, etc. Under these circumstances, the Commission would be left to oversee a market for which it has limited authority to regulate, because most of the essential determinations were made by a separate, non-expert entity, and contractually agreed to without Commission input or intervention.

**Question 2:** The Governor's proposed PREPA reform and privatization legislation recommends privatization of generation assets. The legislation also shields any of these privatization transactions from oversight of the energy regulator. The Institute for Energy Economics and Financial Analysis criticized this construct as allowing too much political influence to govern privatization transactions.

- Can you explain how it is in the best interest of consumers to shield privatization transactions from oversight of the energy regulator?

**Response:** Any provision which seeks to limit the regulator's role in ensuring fairness, transparency, just and reasonable rates, cost-effectiveness, reasonableness and prudence of expenditures is not in the best interest of consumers. The PREPA Transformation Act, as proposed by the Governor and approved by the House of Representatives, relegated the Commission to the role of an advisor (if such advice was indeed requested by the relevant authorities), allowed for any concession or asset transfer agreement to be exempt from Act 57-2014 provisions, including those related to compliance with approved IRPs, and allowed that any such agreements (and the energy related activities undertaken under such agreements) to be exempt from Commission oversight.

The Puerto Rico Senate introduced certain amendments aimed at reversing the ability to entirely remove any possibility of Commission oversight. However, these amendments are either ineffective or do not address the root of the problem. The bill still allows for concession and asset transfer agreements to be exempt from complying with approved IRPs and does not provide for Commission intervention until after an agreement has been signed. The bill as approved by the Senate also prevents the Commission from modifying the terms and conditions of any agreement and allows for subsequent review of rates or resource planning, provided such actions do not interfere with a signed agreement. A novelty introduced by the Senate is requiring any agreement, prior to entering into effect, to obtain a Certificate of Compliance from the Commission, stating that the proposed agreement complies with existing public policy. However, the Commission only

has a term of 15 days to issue such certificate, and if such term expires without a response from the Commission the proposed agreement would be deemed approved by the Commission. This abbreviated term turns the Commission's review into a rubber stamp proceeding, since it would be unfeasible for the Commission to conduct a thorough analysis within such short timeframe.

A transaction of this magnitude should be as transparent and fair as possible. That is only possible with the regulator's involvement. The regulator is required by law not to be arbitrary or capricious. Not involving the regulator invites opportunism, having proponents take advantage of the people as well as an invitation to irregularities. These are transactions that will tie Puerto Rico's future for a long period of time. It is not the moment to rush into decisions behind closed doors.

- If only to avoid the appearance of impropriety, why not provide the energy regulator with this jurisdiction?

**Response:** While we are not aware of the motivations behind the Administration's recent efforts on these matters, a plausible justification may be that efforts are being focused on finding a fast and simple solution to a complex problem. The proposed PREPA Transformation Bills places importance on speed over precision, incorrectly assuming that Commission intervention would result in unreasonable delays. This concern is baseless. The Commission has been subject to strict timelines since its inception and has consistently met those deadlines (see, for example, the Commission's Resolution on PREPA's Transition Charge, issued within the statutory term of 75 days, and the Commission's 2017 Rate Order, issued within the statutory term of 180 days). Other possible motivations may be that less regulatory oversight would result in greater interest by potential investors.

**Question 3:** The Governor's proposal for the future of PREPA involves privatizing generation assets and entering into concession agreements for transmission and distribution. How was this decision made? How will the governor's proposal ensure that long-term contracts are in the best interest of consumers? How will the governor's proposal ensure rates are just and reasonable?

**Response:** We are not privy to the process through which the Governor made this determination or the particular factors taken into consideration. From the Commission's stand-point, the most effective mechanism for ensuring that any transaction or reform, regardless of its nature, benefits the public interest and protects consumers is through oversight by an expert and independent regulatory body. Commission intervention and oversight promotes transparency and ensures that determinations made in relation to each of these agreements are based on rational and fact-based conclusions with regards to the electric market needs and the alternatives to supply those needs.

The absence of such intervention is a recipe for disaster and is the common denominator in many of the decisions made in relation to PREPA which, when added up, result in PREPA's current situation. Take, for example, the haphazard manner in which PREPA entered into utility scale renewable energy contracts (currently a major constraint in PREPA's resource planning) and PREPA's decades-long failure to implementing strategies for energy diversification.



**Question 4:** During the hearing there seemed to be a coalescing around the idea of an upcoming Integrated Resources Plan (IRP) that would help determine the future of the Puerto Rico grid. However, given the uncertainty of the independent regulator's future, the Governor's decision to move forward on his own PREPA Privatization Bill in advance of the IRP, and the certification by the Financial Oversight and Management Board of a fiscal plan for PREPA, there appear to be several distinct, uncoordinated efforts that have led many inquire about the process.

What is the specific process for determining a plan for PREPA reform and the future of the Puerto Rican grid, and how does that interact with the plan to develop an IRP?

**Response:** In an ordinary situation, the first step would be to define the Island's goals and, secondly, identify its constraints. Both of these elements form the pillars on which any vision for the Island's energy future is billed upon. Without a clear vision in place, any reform of the energy market is destined to fail. The policy decisions and their implications depend on the ultimate objective defined in the vision for the future, as power sector decisions made today will last for years to come.

It is the Legislative Assembly's role to identify the overarching public policy, based on those goals and constraints, which will frame any future efforts. This involves decisions related to the types of products and services, the quality and performance expected from them and the appropriate market structure to provide these products and services cost-effectively. Once these decisions have been made, the Commission must then design and undertake the proceedings necessary to implement the Legislature's public policy.

The most important process for implementing and reforming Puerto Rico's energy market is the IRP. An IRP is a formal process conducted by the Commission which analyzes a variety of resources under different possible futures to determine the most efficient, reliable and cost-effective combination of supply and demand energy resources. The IRP will produce a 20-year plan with actionable goals that represent the least-cost path towards achieving the goals and objectives originally identified by the Legislative Assembly.

However, the Administration's current process for PREPA's transformation does not follow this process. The Administration's plan seems to rush into the implementation stage without having gone through the planning stage (i.e. IRP) or defining a clear public policy. Instead, the Administration has opted for a market sounding process designed to allow the Government to test investor appetite and propose concession or asset transfer transaction to meet that appetite. The risk of this approach is that it is designed to address, not the Island's energy needs, as determined by an independent, thorough and robust scientific analysis, but address the particular interests of investors, which may not align with the public interest or may not represent least-cost alternatives.

Market sounding is an appropriate tool for gauging investor interests in a set of alternatives which have already been identified through an IRP as possible least-cost alternative. A market sounding process at that stage would help align public interests objectives with market expectations, producing practical, not only theoretical, results. On the contrary, a market sounding process that has not been informed by an IRP will unavoidably produce inaccurate results and skew any IRP developed after-the-fact.

With respect to both the PREPA reform plan and the IRP, who will propose them and who ultimately is required to approve them? What is the time frame for both?

**Response:** The PREPA Transformation Act is currently under review by the Puerto Rico Legislature and is expected to be approved and signed into law by the Governor before August 2018.

With regards to the IRP, under existing local law, PREPA must develop an IRP proposal and present such proposal for Commission review and final approval. The most recent IRP received final Commission approval on February 10, 2017 and became legally binding and enforceable on March 13, 2017. However, the PREPA Transformation Act, as presently written, authorizes the Puerto Rico P3 Authority to exempt any concession or asset transfer agreement from complying with the Commission approved IRP. Moreover, in recent filings before the Commission, PREPA has signaled its intention to develop an internal IRP, which will inform the transformation procedure, and argued that such IRP does not require Commission approval.

That is, based on the existing language in the proposed PREPA Transformation Act and PREPA's recent filings before the Commission, it is likely that PREPA will attempt to develop an alternate IRP—what it calls an “non-statutory” IRP. Said IRP would then be used by the P3 Authority as the basis for PREPA's transformation. It seems, then, that PREPA Transformation process seeks to circumvent Commission independent review of resource plans and implement particular projects based on unverified criteria.

Notwithstanding the current uncertainty created by PREPA with regards to the development of an IRP, on April 2018 the Commission published amended IRP rules which contain all procedural and substantive guidelines related to the development of an IRP. Furthermore, on May 29, 2018, the Commission ordered PREPA to file an updated IRP for Commission review and approval no later than October 31<sup>st</sup>, 2018. The Commission's evaluation of an IRP, provided PREPA is responsive and provides all necessary information, may take approximately 4 to 6 months.

What other parties are involved with the development and approval of the PREPA reform plan and the IRP?

**Response:** The Commonwealth Legislature, PREPA, and the Commission. Other additional actors indirectly involved include the Puerto Rico Fiscal Agency and Financial Advisory Authority (AAFAF, for its Spanish acronym), the FOMB, and the Governor.

What governing document or statute lays out the formal process and timing? If that governing statute is the Act for the Transformation and Energy Relief of Puerto Rico (Act 57), what specific provisions of Act 57 will remain assuming the current Reorganization Plan No. 8 Puerto Rico Public Service Regulatory Board bill is implemented?

**Response:** There is some uncertainty on this matter. The Reorganization Plan No. 8 addresses the Commission's organizational structure. The bills necessary for the implementation of this Plan are, for the moment, stalled in the Senate.

Act 57-2014 is currently the governing statute. However, the Senate has signaled its intent of enacting, before the end of 2018, a new energy public policy bill. It is likely that said bill will maintain core principles of Act 57-2014, most likely those related to IRP and rate review procedures. It is still unclear whether that bill will amend Act 57-2014 or whether it will constitute entirely new legislation.

We anticipate that any new legislation (whether standalone or an amendment to Act 57-2014) will take into account the fact that Puerto Rico's energy market will no longer be dominated by a government-owned, vertically-integrated monopoly.

Will an independent, robust, and transparent oversight body with energy expertise have the authority to review, approve and/or reject the PREPA reform plan and the IRP after performing sufficient diligence if not in the public interest?

**Response:** As currently written, the PREPA Transformation Act places significant limitations on the role, if any, the Commission would play in any upcoming transactions. First, because it directs the P3 Authority, not the Commission, to determine the Commonwealth's energy resource needs. Secondly, the PREPA Transformation Act expressly allows the P3 Authority to exempt any concession or asset transfer agreement from complying with a Commission approved IRP. Lastly, the PREPA Transformation Act expressly bars the Commission jurisdiction to review any of the agreements entered into in relation to the transformation, and severely limits the Commission's authority to monitor such agreements in the future.

If no current legal framework addresses these issues, what changes in law do you propose?

**Response:** As we previously mentioned, it is our view that the most effective mechanism for ensuring transparency, accuracy, protecting the public interest and promoting certainty and confidence in Puerto Rico's energy market is by subjecting energy market determinations to oversight by an independent and expert regulatory body. Act 57-2014, Puerto Rico's current regulatory framework, provides the tools necessary for the Commission to guarantee these objectives. However, that capability is significantly threatened by current legislative efforts, and has been severely restricted by both PREPA, AAFAP and the Oversight Board.

#### Questions from Senator Ron Wyden

**Question 1:** In your testimony, you expressed concern that PREPA privatization discussions were too broad, and needed more clarity.

What steps should the Puerto Rican government be taking to ensure that privatization discussions are sufficiently well-defined, and that all voices are heard?

**Response:** First, the roles, jurisdictions and powers of government entities (including federal entities) with an interest in the process must be clearly defined and circumscribed. Currently, there are many actors (Oversight Board, DOE, the Commonwealth Legislature, the Governor, the Commission, PREPA, AAFAF, the P3 Authority, to name a few) each claiming superior authority to make determinations related to PREPA's transformation. The result is a confusing and often contradicting message which creates uncertainty and delays any forward progress.

Secondly, the Legislative Assembly should adopt a coherent energy public policy, with clearly defined goals and objectives and delegate to an expert, independent regulatory entity the authority to implement and execute that public policy. This step includes decisions on market structure, products and services, and short, medium and long-term aspirations.

Third, the Commission, as the expert, independent regulatory body, would execute the Commonwealth's energy public policy through a series of proceedings, most notably, an IRP. The IRP would identify the least-cost path, with clear and actionable objectives, to implementing the energy public policy in a transparent, economical and effective manner.

Once an IRP has been developed and approved, the relevant entities (i.e. PREPA, P3 Authority, etc.) would each undertake those proceedings within their authority to implement the approved IRP (such as competitive bidding procedures, procedural reforms, publishing of information, maintenance investments, etc.), subject to Commission oversight and guidance.

This four-prong process will produce, in our view, an outcome that encourages confidence and promotes certainty, and is based on widely-accepted and tested industry standards.

**Question 2:** In December 2017, a group of 14 government agencies, companies, and nonprofits submitted a report, "Build Back Better: Reimagining and Strengthening the Power Grid of Puerto Rico." This report contained specific recommendations on how to use modern technology and lessons learned from other disasters to build an electric grid that is more resilient, more sustainable, and less expensive.

How is Puerto Rico incorporating the recommendations of the Build Back Better report in its planning for the Puerto Rican grid?

**Response:** We are unaware of the effect, if any, the Build Back Better Plan is influencing the determinations being currently made in relation to Puerto Rico's energy market. Ideally, the recommendations and alternatives identified in that Plan should be tested, along with any other possible alternatives, through an IRP procedure.

Many of the objectives identified in the Build Back Better Plan, such as grid resiliency, resource diversification, infrastructure modernization and system strengthening, are main areas of focus for the Commission and the Commission would look for way of implementing any of the recommendations contained therein if such are proven to be the most appropriate alternatives currently available.

However, current uncertainty in the future of Puerto Rico's energy market has unreasonably delayed the implementation of any corrective measures, and will continue to do so until a clear path forward is identified.

**Question 3:** My colleague, Senator Heinrich, asked Mr. Masses why private industry hasn't deployed behind-the-meter generation and storage assets that could benefit the grid. Mr. Masses replied, "PREPA protects their invoices."

What steps can the Puerto Rico Energy Commission take to ensure that barriers to behind-the-meter resources such as generation and storage are addressed?

**Response:** We appreciate the opportunity to clarify this point. There are currently no regulatory constraints stopping private industry customers from installing behind-the-meter generation. Private parties (whether residential, commercial or industrial) have the ability to install behind-the-meter generation without the need to comply with any Commission regulatory requirement. Behind-the-meter generation that will interconnect to PREPA's grid do face some challenges, mainly related to PREPA's administrative inability or unwillingness to process interconnection and net-metering or energy purchase agreements on timely manner.

The Commission has issued Standards for Interconnection and has decreased the amount of time PREPA has to process applications for system interconnection. Based on these standards, PREPA developed new interconnection rules, which the Commission reviewed and approved. The Commission also recently approved Microgrid Rules which authorizes customers to install systems which allow them to be entirely independent from PREPA. Other Commission initiatives aimed at empowering customers include the development of rate designs which promote efficient consumption or behind-the-meter generation and storage.

#### Questions from Senator Bernard Sanders

**Question 1:** Several proposals to consolidate, or even entirely strip away, the independence and oversight authority of the Puerto Rico Energy Commission (PREC) have been floated in Puerto Rico. What oversight should the electric utility regulator in Puerto Rico have?

**Response:** The regulator is the key element for carrying out any transformation of the electric sector. An evaluation and assessment from an independent expert on the matter must not be weighted down or influenced by politics, or election cycles. The Commission is able to make decisions for the long term benefit of the people that sacrifice the short term gains. There is a misunderstanding of what a regulator does, specifically what the Commission does. The Commission's role is to extract the best performance from the regulated entity in order to provide benefits for the consumer. Furthermore, to align private interests with the public interest. Yet, what exists is a battle of ideologies from different actors, for example, more vs. less regulation, more vs. less oversight, regulation of prices vs. competition.

There has been no discussion regarding what is the correct amount of regulation and oversight. Striking down rules or eliminating them on a numbers basis is not the right path to set forth the correct oversight and measurements of the different markets that could develop. The

effective regulator has different roles depending on the type of market structure. For example, under a monopoly market structure, there is price regulation of rates. Under a competitive market structure, the regulator screens and monitors all market participants for market power, in order to establish an efficient and effective competitive market structure. Without an effective competitive market, market forces will not be efficient hence, rates will not be just and reasonable.

Reforming the electric energy sector is different from reforming the telecommunications, gas or even the financial sector. The reason being that it is not cost-effective to store electricity yet, it travels through a delicate transmission systems following laws of physics, and needs constant operation control from a system operator. The electric system, or market needs to be properly designed by engineers and economists before incorporating lawyers and financial decisions.

If the Puerto Rico Electric Power Authority (PREPA) assets are privatized, how would the existing structure of the Energy Commission ensure that the Puerto Rican ratepayers are protected from unjust or unreasonable rate increases? What should the ongoing regulatory process look like if PREPA assets are privatized?

**Response:** Under the existing statute, Act 57-2014, the Commission has the capability of regulating energy actors, either private or public. Act 57-2014 also grants the Commission authority over market structures and their development. However, the proposed PREPA Transformation Act strips the Commission of its regulatory powers. At this moment, there is uncertainty as to what the resulting regulatory powers of the Commission will be.

**Question 2:** What has been the biggest obstacle to the penetration of distributed renewable energy in Puerto Rico?

**Response:** There have been many obstacles for intermittent and variable renewable energy sources like wind and PV to be incorporated in the electric system. For utility scale renewable energy, the main obstacle is of technical nature. Puerto Rico's peak demand occurs at night, between 8-10 PM. The existing central plant turbines are old, inefficient and slow to ramp-up. Considering that in the electric system there needs to always exist a constant balance between supply and demand, PREPA's turbines need to be providing energy at their minimum during the day in order to meet the night demand, limiting how much PV systems can be introduced to the grid.

For the distributed renewable energy resources, the challenge has been PREPA's delays in the interconnection procedures and the solar developers price signals. The Commission addressed PREPA's interconnection procedures through its interconnection standards order, which resulted in the elaboration of new interconnection rules from PREPA. On the other hand, the Commission is investigating the solar developers price signals to confirm if the rates are just and reasonable.

**Question 3:** In Section II of your written testimony, you describe the challenges of operating under a budget that requires "approval from the Governor's Office for procurement of external consultants, outside counsel, and personnel." Can you please describe in detail how this process affects the PREC's ability to remain effective and independent?

**Response:** The Commission, in order to be truly independent, requires to be able to make decisions based on facts and logic, and not to have outside undue influences. To address the fiscal challenges that the Commonwealth Government has, the Commonwealth enacted a law that requires all agencies, except from AAFAF, to get approval from the Executive Branch to hire personnel and professional services. This requirement makes sense on all agencies that receive their budget from the general fund. However, the Commission's income is independent from the Commonwealth, it comes from ratepayers, not taxpayers. The Commission is self-sufficient. Furthermore, the Commission has operated under budget and does not issue debt. Therefore, the Commission is not covered under PROMESA.

Due to this imposition, the Commission has not been able to operate efficiently. The Commission has not been able to hire additional personnel it requires, as well as outside consultants and counsel. As an example of the situation, PREPA and AAFAF have sued the Commission, challenging its jurisdiction to protect ratepayers, and the Commission has not been able to hire outside counsel to defend its position in court. It didn't receive approval from the Governor's office. The Commission has had to reallocate resources from within the Commission to be able to appear before the court. With limited personnel, for lack of approval of resources, and the need to reallocate our regulatory attorneys to appear before court, the Commission's regulatory proceedings get affected and delayed.

#### Questions from Senator Joe Manchin III

**Questions:** The Department of Energy has stated that the lead time for purchase of a spare transformer could be 2 years or longer in periods of high demand. And up to 12 months otherwise. That's why, in this Committee, during hearings on cybersecurity and physical security we talk a lot about the idea of spare transformer reserves although debate continues on that idea. It's my understanding that that manufacturers in the US are limited in number and that these pieces of equipment are highly customized. What is PREPA's current arrangement with utilities in the Caribbean or within the United States to purchase spare transformers in the event of an emergency? What are other pre-staging actions are you taking to prepare for another hurricane?

**Response:** We are unaware of PREPA's arrangement as it prepares for this year's hurricane season. PREPA has continually resisted attempts by the Commission to disclose information, arguing that it is short-staffed and dedicated to complying with restoration efforts and requirements from AAFAF and the Oversight Board. When the Commission has challenged PREPA's resistance in court, such actions have been removed to federal court by AAFAF, with Oversight Board's consent, arguing that the Commission is interfering with PROMESA. The effect, PREPA's ability to confront another hurricane is unknown.

I may, however, provide some insights gained from my own professional experience. While at GE Power Systems, utilities had plenty of outages. My division designed rewinds for the generators. When a client's outage occurred, the company looked at the manufacturing pipeline, and identified quick solutions. Sometimes a product was being manufactured for another client that would satisfy the outage client, and coordination was made to relocate those products to the affected clients or to put them ahead on the pipeline.

Having a large inventory of spare transformers might not be cost-effective. Having a resilient plan in place, however, exponentially increases the ability to confront any emergency situation. Resiliency goes beyond distributed generation and spare transformers. Resiliency as defined by the U.S. Presidential Policy Directive – 21 is the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. It is a whole event measure of performance, which considers the before, during and after an event. It is different from reliability, as resilience addresses a low probability high risk event. First, the need is to anticipate and prepare for an event. Second, during the event resist, absorb, respond and adapt. Finally, the system should recover to normal operation mode. These stages can be seen at a micro or macro level. There are different strategies for improving resilience. Strategy one is system hardening with underground lines, infrastructure upgrades, redundancy and tree trimming. Strategy two is taking advantage of smart grid technology as microgrids, demand side management, distributed energy resources, etc.

#### **Questions from Senator Mazie K. Hirono**

**Questions:** Mr. Román, your testimony described how the Puerto Rico Energy Commission identified the installation of distributed generation, energy storage, and microgrids as alternatives consistent with developing a “resilient, modern, and agile electric system” for Puerto Rico and that the Commission will shortly publish final rules to support the establishment of microgrids. You also requested that Congress remind the Financial Oversight and Management Board (FOMB) that it should not interfere with the Commission’s jurisdiction and testified that the “FOMB has freed PREPA from regulatory control.” Do you believe that the FOMB’s New Fiscal Plan for PREPA released in April is compatible with the development of a more resilient, modern, and agile electric system in Puerto Rico, and why do you believe so?

**Response:** PROMESA does not grant the Oversight Board authority to determine, order or require changes to Puerto Rico’s grid. That being said, PREPA’s Fiscal Plan, as certified by the Oversight Board, is only an aspirational plan. It hasn’t gone through the rigorous analysis of the IRP Process. The grid resiliency part of the fiscal plan, incorporates the Build Back Better Plan and focuses on high level strengthening of the system. As mentioned on the answer to Senator Manchin, a resilient system is more than just system strengthening, it requires planning, smart grid technologies and a complete integration of systems. All utilities and systems are interdependent, strengthening one without strengthening the other does not create a resilient system. Fuel supply chain, communications, water systems need to be addressed.

#### **Question from Senator Catherine Cortez Masto**

**Question:** Do you believe that incorporating more renewable energy sources into Puerto Rico’s electricity production will address some of the problems with the system, such as lowering costs, increasing resiliency, and bringing generation closer to demand?

**Response:** Adding new resources, be them renewable or traditional, need to be evaluated for cost effectiveness. After a proper evaluation, through an IRP, it can be determined what is the correct



combination of renewable resources, energy storage and demand side management and efficiency that lowers costs, increases resiliency and brings generation closer to demand.

#### Questions from Senator Tina Smith

**Question 1:** Harnessing the power of markets can be a crucial tool for increasing reliability and reducing costs to customers, but things can get worse, not better, if we replace public ownership with private ownership in an unproductive way. How can we make sure that market forces are brought into the Puerto Rican system in a way that benefits the actual consumer?

**Response:** We agree with the premise of your question, and it seems that the Administration is experiencing some difficulty in grappling that concept. Electric energy is different from other commodities. The market needs to be designed in way that will produce the results being sought after, not simply to be opened to competition and hope for the best. Electric markets are natural monopolies, that is, left unchecked, actors in an energy market will move towards few participants in such a way that competitive forces that would ordinarily provide benefits in other, more traditional market, are no longer in place.

Designing an energy market with effective competition begins with understanding what are the objectives that we as a society wish to achieve through that market. Then we determine products and services through procedures such as an IRP. Based on the conclusions from these three steps, we then determine the market structure best suited to achieve these objectives. For example, if we analyze a traditional system composed of generation, transmission, distribution and system operator –ignoring for the time being other functions such as demand side management and distributed generation– there are at least four basic models of merchant systems, each with different market structures.

- Model 1 would be a vertical integrated utility under a monopoly market structure. One company provides all functions and retail sale of the commodity. Under this model, the independent regulator would extract the performance that would have been produced by an effective competitive market structure.
- Model 2 would be the single buyer model, generation is supplied by independent power producers and one company owns transmission, distribution and system operations. This model typically is made through long term contracts. These contracts have capacity and energy charges established. There is no incentive for the IPP to increase efficiency as they are guaranteed payment. The risk of investments is shifted to the ratepayers. The regulator needs to evaluate and approve these contracts to guarantee just and reasonable rates. The only competition is the procurement through bidding of the IPP.
- Model 3 would be the establishment of a fully competitive wholesale market. In order to produce just and reasonable rates it needs to be a properly designed market to be effective. To be considered effective it needs to mimic what a perfect competition market structure would produce. There have to be enough sellers and buyers so that none have market power. Neither a particular seller nor a particular buyer can influence prices. The regulator does not carry out price regulation. The regulator screens and monitors for market power.

- Model 4 would be a fully competitive retail market. This model requires a fully functioning wholesale market and knowledgeable consumers. The availability of suppliers does not mean the knowledge to properly select suppliers. It requires a consumer education program.

If the physical system and market structures are not properly designed, the end result will not benefit the people of Puerto Rico.

**Question 2:** For remote villages supplied by electrical lines that run miles through the jungle, local microgrids based on solar power would represent a big step forward in terms of reliability. What policies should be put in place to encourage the development of such microgrids in Puerto Rico?

**Response:** On May 16, 2018, the Commission approved microgrid rules which promotes the development of all types of microgrid systems under any circumstances. The rules adopted by the Commission contemplate cooperative microgrids, which are intended to allow customers to pool in resources to purchase, lease or otherwise install microgrid systems in their neighborhoods.



July 9, 2018

Attn: Darla Ripchensky, PMP  
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Washington, DC 20510

Please find below the answers to the Questions for the Record submitted by Committee Members from the Senate Committee on Energy and Natural Resources from the May 8th hearing on the current status of Puerto Rico's electric grid and proposals for the future operation of the grid. Thank you for the opportunity for Rodrigo Masses to testify.

**Question from Chairman Lisa Murkowski**

**Question:** Do you believe that the energy regulatory board, as proposed by the Governor, is an independent actor that can provide regulatory certainty to the consumers and investors outside of political influence?

Answer from Rodrigo Masses;

The Puerto Rico Energy Commission (PREC) was created as an independent energy regulator in 2014. Act No. 57-2014 created PREC as a regulator for the Puerto Rico Electric Power Authority (PREPA) and the private energy sector. Since the creation of PREPA (then the P.R. Water Resources Authority) in 1941, the utility operated as a self-regulated public utility.

The creation of PREC was opposed by PREPA, the unions that operate inside the utility, the then minority party (now the majority party), an even the executive branch. The notion of an independent entity regulating PREPA, taking decisions outside of political influence, did not sit well with several sectors who benefited from operating "business as usual".

The PREC has more than four (4) years of regulatory experience. In its short existence, PREC has gained a reputation as a transparent, fact-based regulator. The private sector, including the Puerto Rico Manufacturers Association (PRMA), embraced the new framework of a regulated energy sector, as opposed to the monopolistic control of PREPA. As perceived by investors, the existence of PREC contributed to regulatory certainty in the energy sector.



The current administration of Puerto Rico opposed PREC since the 2016 transition. The regulator was viewed as an "obstacle" to the transformation of the utility and the energy sector. After the resignation of its chairman on April 2017, the governor did not name its successor for more than a year. For months, legislative proposals were discussed to reduce the independence of the PREC, and even to exclude the regulator from the utility's privatization process (announced by the governor in January 2018).

The private sector, including the PRMA, voices in Congress and the Senate of Puerto Rico, publicly opposed curtailing the authority of the regulator. The government recently passed legislation that integrates the PREC as a "bureau" under a public services board (also regulating telecommunications and transportation). With the same budget, the former PREC (now reduced to an "energy bureau") will now be composed by five (5) commissioners, instead of three (3). The legislation to privatize PREPA includes a mandate whereby the privatization agreements would require the "energy bureau" to issue a "certificate of compliance" with the territory's energy policy.

The governor recently appointed the chairman of the PREC. The entity is currently composed of two (2) commissioners. Under recent legislation, the former PREC (now reduced to an "energy bureau") will now be composed by five (5) commissioners. With the resignation of Jose Roman, P.E., the former acting chairman (who appeared before this Committee), the governor will get to appoint three (3) new energy commissioners. Notwithstanding recent reforms, the effectiveness of the "energy bureau", and its independence from political influence, will depend on the understanding of the new commissioners on the legislative intent of Act No. 57-2014. The PREC, now an "energy bureau", was created precisely to act with total independence from the government. The energy regulator was designed to respond to the territory's energy policy, not to the political platform of the governing party in power.

The PRMA will advocate for the selection of three (3) appointees to the "energy bureau" with no active participation in party politics. Part of the success of PREC was the independence of the commissioners from PREPA and the government. Their adherence was to Puerto Rico's energy policy, not to political platforms or special interests. The independent nature of the "energy bureau" is key to successful energy regulation.

#### **Questions from Ranking Member Maria Cantwell**

**Question 1:** Will the Energy Commission reforms passed and pending in the Puerto Rico legislature lead to a more or less effective independent regulator?

#### **Answer from Rodrigo Masses:**

1- It is too early to tell whether recent changes to PREC will turn it into an ineffective energy regulator. The governor recently appointed the chairman of the PREC (now, an "energy bureau").



The entity is currently composed of two (2) commissioners. Under recent legislation, the "energy bureau" will now be composed by five (5) commissioners. With the resignation of Jose Roman, P.E., the former acting chairman (who appeared before this Committee), the governor will get to appoint three (3) new energy commissioners.

Notwithstanding recent reforms, the effectiveness of the "energy bureau", and its independence from political influence, will depend on the understanding of the new commissioners on the legislative intent of Act No. 57-2014. The PREC, now an "energy bureau", was created precisely to act with total independence from the government. The energy regulator was designed to respond to the territory's energy policy, not the political platform of the governing party in power.

The PRMA will advocate for the selection of three (3) appointees to the "energy bureau" with no active participation in party politics. Part of the success of PREC was the independence of the commissioners from PREPA and the government. Their adherence was to Puerto Rico's energy policy, not to political platforms or special interests. The independent nature of the "energy bureau" is key to successful energy regulation.

**Question 2:** The Governor's proposed PREPA reform and privatization legislation recommends privatization of generation assets. The legislation also shields any of these privatization transactions from oversight of the energy regulator. The Institute for Energy Economics and Financial Analysis criticized this construct as allowing too much political influence to govern privatization transactions.

- Can you explain how it is in the best interest of consumers to shield privatization transactions from oversight of the energy regulator?
- If only to avoid the appearance of impropriety, why not provide the energy regulator with this jurisdiction?

**Answer from Rodrigo Masses:**

2- The final version of the legislation to privatize PREPA includes a mandate whereby the privatization agreements would require the "energy bureau" to issue a "certificate of compliance" with the territory's energy policy. The original bill, as filed, excluded PREC from the privatization process.

Public outcry over the original bill, from the private sector, including the PRMA, voices in Congress and the Senate of Puerto Rico, helped change the language to integrate PREC (now, the "energy bureau") to PREPA's privatization process. PREC was created precisely to protect energy consumers, and provide certainty to the private sector.



Excluding the energy regulator at the exact moment of attempting to privatize PREPA's assets, is a dangerous proposition. This is precisely the time when significant oversight is must needed to make sure that privatization agreements do not affect the public interest.

The PRMA will advocate for the selection of three (3) appointees to the "energy bureau" with no active participation in party politics. Part of the success of PREC was the independence of the commissioners from PREPA and the government. Their adherence was to Puerto Rico's energy policy, not to political platforms or special interests. The independent nature of the "energy bureau" is key to successful energy regulation.

**Question 3:** The Governor's proposal for the future of PREPA involves privatizing generation assets and entering into concession agreements for transmission and distribution. How was this decision made? How will the governor's proposal ensure that long-term contracts are in the best interest of consumers? How will the governor's proposal ensure rates are just and reasonable?

**Answer from Rodrigo Masses**

3- PRMA does not have information about the internal process that led the government to decide on the privatization of PREPA's generation assets, and enter into concession agreements for the transmission and distribution assets. Since Puerto Rico is an Island, it would make sense that the government retain ownership over the transmission and distribution assets.

It is the view of the PRMA that a strong, well-financed, and independent regulator is the best guarantee to make sure that long-term contracts are in the best interests for consumers, and ensure that "just and reasonable rates", as ordered in Act No. 57-2014.

The PRMA will advocate for the selection of three (3) appointees to the "energy bureau" with no active participation in party politics. Part of the success of PREC was the independence of the commissioners from PREPA and the government. Their adherence was to Puerto Rico's energy policy, not to political platforms or special interests. The independent nature of the "energy bureau" is key to successful energy regulation.

**Question 4:** During the hearing there seemed to be a coalescing around the idea of an upcoming Integrated Resources Plan (IRP) that would help determine the future of the Puerto Rico grid. However, given the uncertainty of the independent regulator's future, the Governor's decision to move forward on his own PREPA Privatization Bill in advance of the IRP, and the certification by the Financial Oversight and Management Board of a fiscal plan for PREPA, there appear to be several distinct, uncoordinated efforts that have led many inquire about the process. What is the specific process for determining a plan for PREPA reform and the future of the Puerto Rican grid, and how does that interact with the plan to develop an IRP? With respect to both the PREPA reform plan and the IRP, who will propose them and who ultimately is



required to approve them? What is the time frame for both? What other parties are involved with the development and approval of the PREPA reform plan and the IRP? What governing document or statute lays out the formal process and timing? If that governing statute is the Act for the Transformation and Energy Relief of Puerto Rico (Act 57), what specific provisions of Act 57 will remain assuming the current Reorganization Plan No. 8 Puerto Rico Public Service Regulatory Board bill is implemented? Will an independent, robust, and transparent oversight body with energy expertise have the authority to review, approve and/or reject the PREPA reform plan and the IRP after performing sufficient diligence if not in the public interest? If no current legal framework addresses these issues, what changes in law do you propose?

**Answer from Rodrigo Masses:**

4- The transformation of PREPA already started with Act No. 57-2014, which created a new energy policy and mandates for the energy sector in Puerto Rico. After suffering from the longest blackout in U.S. history, transforming the territory's energy model became a key priority for the people, private sector and communities.

The government of Puerto Rico decided to go forward with the privatization of PREPA's generation assets, and providing for long-term concessions for the utility's distribution and transmission assets.

After Maria, the question of "who's in charge?" regarding the transformation of the Island's energy model remains to be seen. Is it PREPA? The government of Puerto Rico? The Fiscal Oversight and Management Board? The energy regulator? Congress?

The IRP process (ordered by Act No. 57-2014) is already underway. The "energy bureau" (formerly PREC) will have the final say on the IRP. At the same time, Act No. 120-2018 ordered the legislature to draft a bill which would define the regulatory framework for privatization, and revamp the Island's energy policy, while the government "feels the market" to privatize PREPA's assets. The PREC has now been transformed into an "energy bureau", with more commissioners (five), but with the same modest budget. Also, on April, the Fiscal Oversight and Management Board approved PREPA's fiscal plan under the PROMESA act.

The legislature must pass the new regulatory framework bill on or before November 2018. The Committee on Energy of the Senate of Puerto Rico and the government of Puerto Rico are already working on drafting the bill, with the assistance of the Southern States Energy Board (pursuant to an agreement with the Department of Energy), and other entities from the private sector. Citibank and Rothschild were engaged as financial advisors for PREPA to sound the market for potential privatization agreements. Siemens was engaged to draft PREPA's IRP.



The PRMA will advocate for the selection of three (3) appointees to the “energy bureau” with no active participation in party politics. Part of the success of PREC was the independence of the commissioners from PREPA and the government. Their adherence was to Puerto Rico’s energy policy, not to political platforms or special interests. The independent nature of the “energy bureau” is key to successful energy regulation.

#### **Questions from Senator Ron Wyden**

**Question 1:** My colleague, Senator Heinrich, asked you why private industry hasn’t deployed behind-the-meter generation and storage assets that could benefit the grid. You replied, “PREPA protects their invoices.”

Given this concern, what steps should the Puerto Rico Energy Commission and the Puerto Rico government be taking to ensure that private industries can develop behind-the-meter resources that benefit their businesses and the grid

#### **Answer from Rodrigo Masses:**

1- In our view, legislation and regulation is already in the books to promote behind the meter resources in Puerto Rico. As stated on the hearing, the problem is that PREPA has historically opposed, or created technical obstacles to, behind the meter strategies. So, it is more a problem of PREPA failing to comply with laws and policies, rather than the absence of such legal mandates.

**Question 2:** I have said repeatedly that a range of technologies--such as energy storage, smart grid solutions, and energy efficiency--are a means of moving to grid that is more resilient, more sustainable, and less expensive.

What opportunities do you see going forward for Puerto Rican private industry to deploy more of these technologies?

#### **Answer from Rodrigo Masses:**

2- After Maria, the government of Puerto Rico publicly embraced the concept of transforming the territory’s energy model. Energy storage, smart grid solutions, and energy efficiency, are part of that vision. However, PREPA’s and the government’s own fiscal situation is a challenge to integrate new technologies and practices which would help transform Puerto Rico’s energy model.

#### **Question from Senator Joe Manchin III**

**Question:** In your written testimony, you stated that over the last 15 years, over 3.3 million Puerto Ricans have suffered from the “dysfunctionality” of an outdated and aging electrical





infrastructure. And you rightfully note that Hurricane Maria only made that worse. Blackouts are now a part of daily life. I come from a state where we export energy and rely on electricity. I also come from a state where rural communities struggle with basic infrastructure issues that other parts of the country take for granted. Can you describe for me what the instability of the electric grid is doing to Puerto Rico's manufacturing base with a focus on the more rural communities in particular?

**Answer from Rodrigo Masses:**

The manufacturing sector depends on a cost effective and, more important after Maria, a reliable energy system, to operate in Puerto Rico. Regulatory certainty, reasonable energy rates, reliability (few, if any, blackouts), are key factors in preserving Puerto Rico's manufacturing sector, which accounts for more than 40% of our Gross National Product.

Making rural communities more resilient, energy wise, is a challenge that PREPA and the private sector must face. The manufacturing sector needs their workers to have access to reliable energy in their homes. Microgrids, community-shared solar (with storage), and the creation of electric cooperatives, could certainly help rural communities deal both with the effects of a weakened energy grid, and future storms. Wheeling, which PREPA has failed to regulate since it was ordered to do so in 2008, would certainly help manufacturing operations located in or near rural communities.

**FINANCIAL OVERSIGHT AND MANAGEMENT BOARD  
FOR PUERTO RICO**



*José B. Carrión III*  
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*Natalie A. Jarosko*  
Executive Director

BY ELECTRONIC MAIL

May 16, 2018

United States Senate  
Committee on Energy and Natural Resources  
Washington, DC 20515

Dear Chair Murkowski, Ranking Member Cantwell, and Members of the Committee:

I write on behalf of the Financial Oversight and Management Board for Puerto Rico (the “Oversight Board”), created under the bipartisan Puerto Rico Oversight, Management, and Economic Stability Act (“PROMESA”), to thank you for the important and informative Full Committee Hearing on Puerto Rico’s Electric Grid that you held on May 8, 2018. You called attention to the pressing issues confronting Puerto Rico’s electric grid and its electric utility, PREPA, and demanded answers to the lingering questions on the minds of so many in Puerto Rico, Washington, and throughout the United States. Why has the restoration has progressed so slowly? What is the current status of the grid? What are Puerto Rico, PREPA, and the federal government doing to ensure the grid performs better during the next hurricane, and how are they preparing for the upcoming hurricane season? And perhaps most importantly: will the future PREPA provide low-cost, reliable energy, and if so, what is the process for getting there and who is responsible? Your dogged determination in pursuing these issues is essential to achieving the goals of ensuring the electric grid is more resilient, more storm-resistant, and more cost-effective.

As was discussed throughout the Hearing, there are many stakeholders involved in PREPA’s recovery, restoration, and future transformation. The multitude of parties and unclear, often overlapping roles and responsibilities are causing confusion within Puerto Rico, in Washington, and in the marketplace. In the interest of providing some clarity on this point, I write to describe how the Oversight Board fits in to these processes. The Oversight Board’s authority with respect to PREPA arises from its responsibility to certify its fiscal plan and approve its budget, as provided for in Title II of PROMESA, and as the representative of PREPA in its court-supervised insolvency proceedings, as provided for in Title III of PROMESA.

After Hurricanes Irma and Maria pummeled Puerto Rico, causing catastrophic damage to Puerto Rico's electric grid and generation assets, the Oversight Board endeavored to revise PREPA's fiscal plan to account for its radically reshaped reality. Over several months the Oversight Board engaged with a wide variety of stakeholders, undertook rigorous research and analysis, and negotiated with PREPA and its advisors before certifying, on April 19, 2018, the New Fiscal Plan for PREPA. The goal of the New Fiscal Plan is to support the financial sustainability of PREPA and guide its transformation into an electric utility that provides low-cost, reliable energy, consistent with the Governor's vision. The key elements of the New Fiscal Plan are setting an aspirational rate target of less than 20c/kWh by 2023; delivering reliable, resilient, cleaner power; and implementing operational efficiencies to lower cost and improve service.

The New Fiscal Plan also provides the contours for PREPA's annual budgets through 2023 in PREPA's steady-state, assuming no transformation transaction takes place. The Oversight Board is currently working with PREPA to create the budget for the fiscal year beginning in July 2018. The Oversight Board projected PREPA's revenues for the year and then will determine PREPA's expenditures based on that revenue estimate so that PREPA is fiscally responsible. The budget also requires PREPA to achieve certain operational and financial targets to promote efficiency and sustainability until the transformational transaction occurs.


As the representative of PREPA in the Title III court proceedings, the Oversight Board leads the negotiations to restructure PREPA's legacy obligations, such as debt and unfunded pension. The Oversight Board also plays an integral role in the process to transform PREPA into a modern electric utility that provides low-cost, reliable energy because any transaction to effectuate that transformation will have to be approved by the Title III court as part of PREPA's plan of adjustment to emerge from Title III. The Oversight Board has retained Citigroup Global Markets, Inc. as the financial advisor, representing both the Oversight Board and the Government, on any potential transformation transactions. Among other things, Citi intends to conduct a broad market sounding exercise to gauge interest level in participating in any potential such transformation transactions that could entail a long-term concession for the transmission and distribution system and the potential sale of generation assets. This market sounding will help shape the RFQ and RFP process that will be conducted pursuant to the amended P3 legislation that is currently being debated in the Puerto Rico Legislature.

One final clarification about one role the Oversight Board decidedly does not, cannot, and does not want to play – that of the regulator of PREPA. The New Fiscal Plan for the Commonwealth calls for a professional regulator, modeled on best practice regulatory structures employed in the United States, to provide robust regulatory oversight of the transformed PREPA, whatever shape that takes. As part of the legislation to authorize the PREPA transaction, the Puerto Rico Legislature is amending the statute that created the current regulator, the Puerto Rico Energy Commission. The Oversight Board supports these efforts and looks forward to the creation of an independent, expert, and well-funded regulator that is tailored for the transformed PREPA.

On behalf of the Oversight Board, thank you again for holding the productive and enlightening Hearing, for your hard work for the people of Puerto Rico, and for your continued engagement on the challenges facing Puerto Rico's power sector. If you have any questions about the Oversight Board and its roles or responsibilities with respect to PREPA, please do not hesitate to contact me.

Page 3

Sincerely,

  
Natalie A. Jaresko

Andrew G. Biggs  
José B. Carrión  
Carlos M. García  
Arthur J. González  
José R. González  
Ana J. Matosantos  
David A. Skeel, Jr.

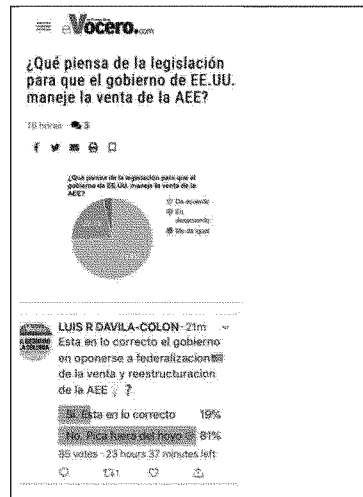
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MAY 8, 2018  
 Ana L. Toledo  
 COMMENTS SUBMITTED TO UNITED STATES COMMITTEE ON ENERGY AND NATURAL RESOURCES  
 ON HEARINGS TO EXAMINE PUERTO RICO ELECTRIC GRID

I am a born and raised Puerto Rican attorney currently living in Puerto Rico.

I want to express my deepest gratitude to the Senate's Committee on Energy and Natural Resources for looking out for the future of Puerto Rico. I do not recall that Congress had undertaken before such an important initiative that will greatly improve the quality of life of the American Citizens residing in Puerto Rico as well as the economy of the island itself.

I am convinced that only if the United States government takes over the sale of PREPA will there be a guarantee of utmost transparency and efficient allocation of resources assigned for the effective reconstruction of the electric system. Two informal twitter polls among Puerto Ricans on the day the news of the possibility of PREPA's sale by the US government circulated reflect most of the population of Puerto Rico would support Congress' initiative to take over the transaction.

	<p>Substantial translation:  <b>El Vocero Twitter poll:</b>          What do you think of the legislation to have the government of the US handle PREPA's sale?          (16 hours left)</p> <p>74.4% agree          22.1% disagreed          3.4% don't care</p> <p><b>Luis R. Davila Colon Twitter Poll:</b>          Is the government right in opposing the federalization of the sale and restructuring of PREPA?          19% - yes, it is correct          81% - no – it is mistaken          (85 votes, 23 hrs, 37min left)</p>
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I am delighted to have lived to witness PREPA's final days of their control and abuse of Puerto Rico. I never thought a day would come that Puerto Rico would no longer be hostage to PREPA.

MAY 8, 2018  
 Ana L. Toledo  
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Over 20 years ago, I earned a Masters of Environmental Law at Vermont Law School, and decided to come back to Puerto Rico to engage in the fight for environmental justice of disenfranchised communities.

In the course of this endeavor, the first lesson I learned was that the largest polluter in Puerto Rico was the government itself. PREPA and PRASA were and to blame for most of my beautiful island's environmental woes. To this day, they continue to do so.

I also learned that the electricity customers in Puerto Rico unfairly pay for others' electricity, as well as every kw generated, even if it is given away in subsidies, unpaid by the government, stolen or lost in the transmission lines.

As a resident of Puerto Rico victim of PREPA's monopolistic abuses, I would like to mention a couple of issues that I believe may be valuable for you to reach a holistic assessment of matters that need to be addressed in the course of revamping Puerto Rico's entire electric system and operation.

The opinions I set forth below are the product of many years of experience dealing with PREPA as a community advocate, as well as a client. Since Puerto Rico is so different from any other jurisdiction you may have dealt with before, it is my hope that some of my observations may be useful to you upon your preparation of the plan to modernize and rebuild Puerto Rico's electric system.

It is no secret that PREPA has operated like the mafia. Its veil has been impenetrable. What little people know is because it has been in plain view. The only alleged whistleblower I once heard of from community leader Rosa Hilda Ramos I actually never met. He was accused and thrown in jail for allegedly installing a "pillo de luz" --a device to tamper with the meter-- in his aunt's house. It is a felony to install them. However, all the persons I have known to be caught except for him have only been forced to pay a fine.

#### **THE LEGAL FRAMEWORK AND AGENCIES ENABLED THE HORROR OF PREPA**

PREPA has gotten away with atrocious abuses against its customers because the Puerto Rico laws have enabled it to do so. The government has defended PREPA's monopoly for decades because it has exploited the sale of electricity to its customers at whatever rate they concocted at a whim, in order to continue:

MAY 8, 2018

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- A) Paying outrageous salaries and benefits to its management, the union UTIER, and contractors (political donors);
- B) Giving away jobs as coveted prizes from elected officials to political campaign leaders and their relatives in exchange for their help getting them elected;
- C) Giving away free electricity under the guise of “subsidies” to individuals or government entities, such as Law 69 of 2009.

Federal agencies vested with the obligation to scrutinize PREPA’s illegal actions and prosecute their violations of federal law, have also been extremely lenient with the entity.

Specifically, the United States Environmental Protection Agency for decades has allowed PREPA to indiscriminately contaminate our air, water and land unlike any entity would have been able to anywhere in the mainland.<sup>1</sup>

It is my position that if EPA had complied with its legal duty to ensure that PREPA strictly complied with all applicable environmental laws and regulations in place throughout the last 40 years, the electric system in Puerto Rico would not have been in the dire conditions it was when Hurricane Maria hit the island on September 2017.<sup>2</sup>

Relying on outdated opacity measurements meant that when driving by any PREPA plant at night, when no EPA employee would measure what type of fuel was being burnt and no opacity measurements could be taken, the plume coming out of the San Juan and Palo Seco plants stacks was so dense, it could be seen from miles away.

An example of how EPA’s irresponsible enforcement of the applicable environmental laws resulted in the degradation of the system stems from its endorsement of PREPA’s use of Venezuelan oil with a high sulfur content. Being infamous for failing to do any preventive maintenance, coupled with the high sulfur content and the exposure to saline environment was a recipe for destruction of ancient equipment.

**Had EPA forced PREPA to burn lower-sulfur oil would have resulted in less corrosion of all plant equipment.** Even though the Cataño community insisted that EPA force

<sup>1</sup> While the Puerto Rico Environmental Quality Board was entrusted with the administration of its State Implementation Plan, EPA witnessed how it never demanded PREPA to enter into compliance with the law.

<sup>2</sup><https://www.elnuevodia.com/noticias/locales/nota/decadasdeviolacionesambientalesporpartedelaaee-2039303/>

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PREPA to lower the sulfur content of the fuel burnt in its San Juan and Palo Seco plants, EPA insisted that as long as they complied with opacity limitations, they were free to burn 3.00% sulfur content oil.

The greatest “achievement” for the Cataño community was to have EPA force it to lower it to 1.5% sulfur content as a result of the 1997 consent decree in the case *US v. PREPA*. This, despite the fact that both plants were within the San Juan/Guaynabo Air basin that for 30 years had been a non-attainment area under the CAA.

After an explosion in the San Juan Plant that caused black soot emission for two days, in 2004 the communities were able to pressure EPA to have PREPA burn a .05% sulfur content fuel.

Had EPA demanded that PREPA install the MACT equipment required in the mainland, continuous improvements, maintenance and state-of-the-art generating plants and their necessary accessory facilities would have had to materialize. Since EPA did not demand any of it from PREPA, the latter got away with running outdated, rusted piles of metal scrap.

As recent as December 2017, EPA announced that from 2011 through 2017, PREPA had been in violation of the CAA standards for sulfur in the San Juan and Salinas-Guayama basins.<sup>3</sup>

Pollution prevention/reduction and energy efficiency have never been within PREPA’s goals because EPA has traditionally failed to make the utility comply with the law.

EPA also looked the other way in matters it could have steered PREPA away from perpetuating its abuse against its customers. EPA granted the operating permit for the AES plant despite the modeling predictions that showed its emissions would violate air quality standards. is an example of how EPA became an accomplice to PREPA.

When the time came for Eco Electrica and AES to set up shop in Puerto Rico, they both paid millions of dollars to PREPA to opt out of PURPA. Even though it was to the detriment of the Puerto Rican consumer, the federal government allowed it.

EPA could have denied the AES permit based on the modeling projections, but instead chose to acquiesce to PREPA’s demands. This allowed to irresponsibly concentrate power generation in the South, resulting in the foreseeable disaster that restoration of power distribution

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<sup>3</sup> <https://www.elnuevodia.com/english/english/nota/highsulfurlevelsintheair-2388221/>



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lines across the Cordillera Central would represent. Distribution lines that were never maintained because the UTIER workers would get lost on their way there.

During the AES permitting process, Ms. Sarah Peisch (RIP), a community consultant and founder of Centro de Accion Ambiental, proved to EPA that its air modeling was incorrect and that the Salinas/Guayama Air basin would not be in compliance with the NAAQs. 15 years later, Sarah's assertions proved to be right: from 2011 through 2017, the Salinas/Guayama air basin has been an SO<sub>2</sub> nonattainment area.<sup>4</sup> In fact, Guayanilla and Guaynabo/San Juan are also nonattainment areas. Today, PREPA is even in violation of the mercury air toxic standards.

An entity for whom environmental compliance is a priority and strictly adheres to environmental regulations is likely to have clean, modern, state-of-the-art facilities that are resilient and not prone to the constant "accidents" that PREPA's plants suffer from.

The excuse for EPA's leniency I consistently encountered was that PREPA could not afford to install better equipment and/or implement stricter legally required pollution control mechanisms or provisions. Instead of demanding that PREPA comply with Maximum Achievable Control Technology, EPA allowed it to argue lower BACT standards and using higher sulfur-content fuel impermissible in the continental US, alleging, *inter alia*, that they could not afford any better; that the trade winds diluted the pollution; and a host of other excuses that EPA acquiesced to.

Of course, EPA never demanded accountability from PREPA regarding the \$9B in loans it took and did not invest in the system.

Most EPA directors first served under Puerto Rico state administrations. The regulator and the regulated entity always had a special rapport.

**To conclude: I firmly believe that if EPA had complied with its legal duty to demand that PREPA comply with the Clean Air Act, Clean Water Act, RCRA, CERCLA, EPCRA, and all applicable environmental regulations thereunder, PREPA's electric plants and grids would not have been in the state of disarray that Maria encountered.**

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<sup>4</sup> I am not even going into the discussion of the billions in healthcare costs that EPA's disregard for their duties costs Puerto and the US since it has been highly documented that Puerto Ricans are disproportionately affected by different chronic respiratory diseases, including asthma.  
<https://www.cienciapr.org/en/blogs/conocimiento-tu-salud/asthma-multifactorial-disease>

MAY 8, 2018  
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## II. TIME FOR A CLEAN SLATE

As painful as the experience of Hurricane Maria has been for me and many Puerto Ricans, we are certain of one thing. The ‘blessing in disguise’ behind it was its capacity to rid us of PREPA and UTIER. The storm unearthed the horrendous state of the utility, the system and the character of their workers. Charging illegally to perform their work and prioritizing their jobs where politicians or high-paying merchants lured them to, the UTIER workers earned the contempt of the entire population.

Nothing short of a category 5 storm could have paved the way to eliminate PREPA from Puerto Rico’s destiny.

Every time any governor tried to discuss PREPA’s privatization, a major blackout would occur.

In just six months after the hurricane, without any *force majeure* event, there have been 8 major blackouts, affecting from 2.1 million persons to the entire island. PREPA never formally allotted responsibility for any of them. Economists estimate that the daily losses to PR’s GNP oscillate between \$350M and \$480M.

No person has ever been held accountable for any of the ‘accidents’ that resulted in any blackout. Even though each one costs the economy millions of dollars, people forget and PREPA management sweep it under the rug because no one demands an explanation nor an assurance that the event will not recur.

If the federal government does not take over the reconstruction of Puerto Rico’s electric grid and its privatization, Puerto Rico will demand, *inter alia*, that any purchaser hire UTIER workers as part of the deal.

That would be a tragedy. No government should impose on any company the obligation to hire anyone. Let alone persons that do not necessarily meet the professional and ethical standards any investing company may seek in its future employees.

PREPA workers’ product seen on their installations demonstrates that they have no sense of pride in their work. There are sloppy, do things as least professionally as they can get away with. When a group of linemen from the US were working in San Juan, I asked them about a specific pole and some cables dangling from it. They replied: “That’s ok. It will work. That’s just the way PREPA does things.”

Ana L. Toledo

COMMENTS SUBMITTED TO UNITED STATES COMMITTEE ON ENERGY AND NATURAL RESOURCES  
ON HEARINGS TO EXAMINE PUERTO RICO ELECTRIC GRID

### III. LEGAL PROVISIONS GIVING AWAY ELECTRICITY MUST BE ELIMINATED

The Puerto Rico legislature and PREPA have authorized a myriad of special rates (tarifas) to grant subsidies that regular paying customers end up funding.

One subsidy law that I urge you to find a means to eliminate is Law 69 of 2009. This law granted the 68,000 families living in low-income residential projects unlimited electricity consumption with a bill capped at \$50.00 per month. In 2012 the law was amended to place a “cap”.

The rate PREPA concocted is as the following:

FACTURACIÓN MENSUAL				
TARIFA FLJA	NUM. HABITACIONES	COSTO TARIFA FLJA	CONSUMO MÁXIMO (kWh)	COSTO DEL EXCESO SOBRE EL CONSUMO MÁXIMO
105	1	\$30	600	Más de 600 kWh a \$0.05/kWh
106	2 ó 3	\$40	800	Más de 800 kWh a \$0.05/kWh
107	4 ó 5	\$50	1,000	Más de 1,000 kWh a \$0.05/kWh

To show you the impact of this rate, I include below a bill for the month of March 2018.

**TODOS NUESTROS RECURSOS ESTÁN DIRIGIDOS A REESTABLECER EL SERVICIO.** Estamos brindando la mayor cantidad de opciones para realizar sus pagos. Recuerde siempre que tiene el derecho de recibir cualquier reintegración correspondiente.

Deposito o Bono	Fecha	Cantidad Acumulada

**1) Localidad**

Tarifa	Tipo Servicio	Residencia	General	Días de Consumo	31	Lectura Actual	Periodo	02-mar-2016 al 01-abr-2016
Mínimo	Contrato	Fecha Lectura	02-abr-2016	Días de Consumo	31	Lectura Actual	Lectura Anterior	Consumo
Constante	10	Previa Lectura	01-mar-2016			KWH Leída	3129.00	2668.00
Cargos Cuentas por Venta de Electricidad								
Tarifa Básica							865.47	
Tarifa Preconómica 1.310 kWh x \$0.10/299							17.59	
Consumo De Conectividad 1.310 kWh x \$0.40/350							136.03	
Compra De Energía 1.310 kWh x \$0.04/807							63.64	
Total Servicio								\$162.73

Consumo Realizado (kWh) Anterior (kWh)

Consumo Realizado (kWh) Actual (kWh)

**Consumo por día**

Código por kWh  
no incluye cargo \$6.21/33

**Historial de Consumo**

☐ Lectura  
☐ Enviado  
☐ Ajustada

NO DATOS

Para información detallada visite nuestra página de Internet

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Under the Law 69 rate, instead of \$282.46, the bill would be for 65.50. The other \$216.96, the regular paying customers would pay. Multiply that by 68,000 units. That is passed on to regular-paying customers under the current law that needs to be eliminated.

<b>example with regular home PREPA bill for 2-mar-18 to 2-april-18</b>	
BR	4
consumption (kwh)	1310
PREPA bill	\$282.46

<b>The same consumption, under tariff 107, would pay \$65.450</b>	
first 1000 kwh	50.00
310 kwh @.05	15.50
<b>TOTAL</b>	<b>65.50</b>
<b>Difference</b>	<b>216.96</b>

Should this be the case of a residential unit covered under rate 107, paying customers foot the bill for the difference of \$216.96 that the person that used the electricity does not get to pay. Multiply that (or even a lower amount for discussion purposes' sake) by 68,000 units. One must add to that the fact that they don't even pay the capped \$50.00 a month and their electricity service does not get cut off because UTIER personnel refuse to.

Prior to law 69, many low-income housing residents had debts of over \$3,000.00 and their payment plan was of \$10.00 a month. They would have to live at least 300 more years to pay the debt. The regulation sets forth that the payment plan terms are \$10.00 a month regardless of the debt. No down payment required.

There are currently in place in Puerto Rico many statutes that contemplate unfair subsidies that the paying customers end up funding. I take particular objection to this one because it was done blatantly to purchase votes, it is extremely discriminatory, abusive against paying customers and does not promote the efficient use of energy.

#### IV. ELECTRICITY THEFT

The theft of electricity has also been a huge problem for paying customers because they get billed for all the stolen electricity. Hence, **PREPA has never had an incentive to curtail electricity theft.**

If anyone could prohibit PREPA immediately from passing on to its customers the cost of theft of electricity, in a matter of months the theft would be reduced to negligible amounts. In any particular sector, PREPA can compare the amount of electricity going to it to the amount registered

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in the meters of paying customers. It can detect areas of high incidence of theft resulting from direct connections to PREPA's cables.

While the other methods of installed contraptions in the homes that tamper with the meters can be a tad more difficult, PREPA has the mechanisms to detect them as well.

I have inquired with a few people that know a bit about how people go about stealing electricity that gets billed to paying customers. Following is the explanation I received, which is likely the modus operandi for most of the theft of electricity that does not entail tampering with the meters per se with the "pillos de electricidad".

The "trenzado" is a "braided electrical connection" or TRIPLEX cable, has been installed by PREPA in many communities where electricity theft occurs.

The triplex line that connects the pole to the house is the "service drop". The service drop is made up of two 120 V lines and a neutral line. When these lines are insulated and twisted together, they are referred to as a triplex cable which may contain a supporting messenger cable in the middle of the neutral conductor to provide strength for long spans. The neutral line from the pole is connected to a ground near the service panel; often a conductive rod driven into the earth. The service drop provides the building with two 120 V lines of opposite phase, so 240 V can be obtained by connecting a load between the two 120 V conductors, while 120 V loads are connected between either of the two 120 V lines and the neutral line. 240 V circuits are used for high-demand devices, such as air conditioners, clothes dryers, ovens and boilers, while 120 V circuits are used for lighter loads such as lighting and ordinary small appliance outlets.

Without the triplex cable, the electricity thieves have to climb the pole to make the connection. The triplex cable facilitates the theft of electricity because it can be directly connected to temporary bypass links readily available in any store such as Walmart:

<https://www.walmart.com/ip/Milbank-K8180-Meter-Jumpers-Temporary-Bypass-Links-1-Pair/108011547>

Detecting this kind of theft is easy because it is in plain view. Unless PREPA is forced to curtail this practice, it will not do so voluntarily as it does not lose money while it can bill the stolen electricity to paying customers.

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This is not to say that in expensive neighborhoods the theft of electricity is not ongoing. I know of two persons with neighbors that steal electricity but do not want to report them. They don't want to get in trouble. They are afraid.

I am at your disposition if you deem in any way I can gather information that can assist you in your endeavors of helping Puerto Rico rebuild its electric grid and privatize PREPA.

