PUERTO RICO ELECTRIC POWER AUTHORITY

House Committee on Natural Resources
Oversight Hearing on
PREPA Post Implementation of the LUMA Transmission and Distribution Contract

Responses of Fernando Gil-Enseñat, Chairman, Governing Board,
Puerto Rico Electric Power Authority
to
Post-Hearing Questions Posed by Committee Members
October 20, 2021

Questions from Rep. Nydia M. Velázquez:

1. *How is PREPA going to comply with the Renewable Portfolio Standard to achieve a minimum of 40% of renewable energy on or before 2025, if as of today Puerto Rico only generates 3% of renewable energy?*

Response:

The Puerto Rico Electric Power Authority (PREPA) is proceeding as required by its approved Integrated Resource Plan and orders of the Puerto Rico Energy Bureau (PREB) to procure the quantities of renewable generation and energy storage resources required to satisfy Puerto Rico's Renewable Portfolio Standard (RPS), as established by Act 82-2010, as amended. The RPS contemplates that 40 percent of the energy distributed to Puerto Rico consumers be generated by renewable resources, by 2025. As I testified to the Committee on Natural Resources on October 6, 2021, to this end PREPA has embarked on one of the most ambitious efforts to procure new renewable generation and energy storage resources being undertaken anywhere in the United States.

PREPA will seek commitments from third party developers to permit, construct, own and operate a total of 3,750 MW of renewable energy generation resources and 1,500 MW of energy storage resources. This quantity is approximately equal to the amount of generation capacity currently available from PREPA. In the first of what will be six procurement Tranches, PREPA has sought commitments from third parties to develop at least 1000 MW of renewable generation and energy storage systems having a capacity of at least 500 MW. These quantity thresholds are consistent with those set out in PREPA's approved IRP and those the Energy Bureau has determined are required to meet the 40 percent renewable generation requirement, by2025.

The response to the Tranche 1 RFP has been encouraging. The renewable generation and energy storage resource capacity offered was in the aggregate greater than the targets PREPA identified for that first Tranche. PREPA representatives are currently engaged in efforts to conclude the evaluation of more than 40 renewable generations, energy storage and virtual

power plant projects, and PREPA expects to complete this process and the contracts approvals by all the external stakeholders (Puerto Rico Energy Bureau and the Financial Oversight and Management Board for Puerto Rico) by the end of this year.

By the end of this month, PREPA will issue its second Tranche RFP. In this second Tranche, as the Energy Bureau has directed, PREPA will seek to procure at least 500 MW of renewable generation capacity and at least 250 MW of energy storage capacity. PREPA intends to request Proponents to submit their Tranche 2 proposals in early January. The remaining 4 RFP Tranches will be issued at 6 month intervals over the next two years.

As of today, PREPA acquires only around 3 percent of the energy it distributes from renewable resources. This percentage is lower than it would have been if PREPA had been permitted to execute power purchase and operating agreements with sixteen "shovel ready" renewable generation projects, representing 594 MW of capacity, which PREPA renegotiated last year. Unfortunately, although the Energy Bureau authorized PREPA to enter into those renegotiated agreements, on August 17, 2020 the Financial Oversight and Management Board for Puerto Rico notified PREPA that it had concluded that the cost of energy to be purchased under those contracts would be higher than those assumed under PREPA's Fiscal Plan, and therefore permitted PREPA to procure only 150 MW of the nearly 600 MW of renewable generating capacity it had set out to acquire from the "shovel ready" projects.

2. *According to your testimony and the answer to my question, Costa Sur's recent failure was due to issues with the transmission. Could you please provide the pertaining documentation regarding this incident and how a fault in transmission was responsible?*

Response:

On August 22, 2021, a transmission line, 38,900, suffered a malfunction which led to the loss of two of the San Juan generating units (Units 5 and 6), and Units 3 and 4 of Palo Seco Steam Plant. The loss of these four units caused an automatic load shedding in the electric system. As a result of those Units being forced offline, the transmission system experienced significant voltage fluctuations. Those fluctuations may have affected generating facilities in the south, including Costa Sur, as they attempted to compensate for voltage excursions. Although further testing and evaluations would be needed to establish this as a fact, the fluctuations could have technically led to turbine vibrations which eventually forced Costa Sur Unit 6 offline and damaged that Unit's steam turbine rotor.

Questions from Rep. González-Colón (PR):

1) *Please provide us the latest generation report and the tables/report on the condition of the generating fleet.*

   Response:

   Enclosed is the last report of October, 2021.

2) *Those reports are expected to show [t]here are units both in PREPA and in the private generators that should have long already been undergoing maintenance or upgrade but remain active so as not to lose capacity.*

   a) *Can you identify critical units that absolutely must go offline soon for maintenance?*

      Response:

      The two units of EcoEléctrica generating facility in Peñuelas need to be taken offline for maintenance from November 6 until November 30, 2021, and Unit 2 of the AES generating facility in Guayama needs to be taken offline in January 2022 for approximately four to six weeks.

   b) *How will that leave us in reserve capacity?*

      Response:

      The information that PREPA has available indicates that the projected average of reserve capacity that PREPA will have available with the EcoEléctrica and AES units offline is approximately 300 MW. Provision of official information regarding the reserve capacity that will be available for that period is the responsibility of LUMA Energy's Dispatch Control Center.

3) *What do you answer to those who say we need not rebuild or convert to new fuels any of the existing fleet, but just fix it to keep running until the renewables come online?*

   Response:

   PREPA anticipates that, even under optimal conditions, the build-out of renewable generation and energy storage is likely to take the better part of ten years. As this build-out is being pursued, Puerto Rico will need reliable conventional generation to meet system demand. Accordingly, PREPA believes that it must take a balanced approach that includes the repair of many of the generating facilities that are currently unavailable, since their capacity will

continue to be required as renewable generation and energy storage is developed, constructed and placed into service over the next several years.

In addition to repairing and improving the maintenance of existing units, PREPA believes it will be necessary to add some new natural gas-fired generating facilities, including a baseload unit in the San Juan area, to provide more reliable capacity and to support system operations, as renewable generation and storage are being added. Experience in other jurisdictions, including California, Texas, Spain and Germany, shows that some amount of fast-response rotating generating equipment, generally in the form of natural gas-fired combustion turbines, must continue to be available even in systems with large amounts of renewable generation and storage to maintain system voltage within acceptable levels, to compensate for the unavailability of solar generation during certain times and to enable the system to respond to weather events.

4) *How fast could the "Virtual Power Plants" be established, from PREPA's perspective? Are they in the plans?*

Response:

PREPA has sought to procure virtual power plant resources in its Tranche 1 RFP, and VPPs are anticipated to be among the resources that will be added quickly once PREPA is authorized to enter into contracts with VPP Proponents. Three Proponents have come forward in Tranche 1 with VPP project proposals. These Proponents have indicated that some of the Participant resources they would aggregate into a VPP are already interconnected with the Transmission and Distribution System, and they have suggested that they could make some capacity available from VPP resources within one year of their execution of a Grid Services Agreement.

A major challenge for PREPA and LUMA Energy, the operator of the T&D System, is that the Energy Management System that is currently employed in the operation of the T&D System was not designed to interface with VPPs, and until that system is replaced the ability to dispatch and benefit from VPP resources is very limited. The replacement of the Energy Management System is planned and will be carried out by LUMA Energy. This project will be supported by funding to be supplied by the Federal Emergency Management Agency. PREPA understands that this replacement is unlikely to be completed before 2023.

5) *Palo Seco Station's three so-called "portable" 23MW generators - They were installed with a waiver for certain parameters for emission control during the Maria emergency. They cannot be fully used due to still to this date remaining non-compliant. What is the status of progress?*

Response:

PREPA is awaiting a required clearance from the Environmental Protection Agency (EPA) to perform the unit's operational water injection system commissioning. This is required in the operation of the emissions control systems in the Palo Seco portable combustion turbine generators. PREPA will commission the combustion turbines once it has the requested EPA authorization in hand. PREPA expects that such authorization could be in place by the end of October 2021.

6) *Workforce matters: How many enterprise critical positions are vacant?*

Response:

There are approximately 122 vacant critical positions. In addition to the aforementioned vacant positions, the Generation Directorate has some employees in critical positions that are going to retire in the near future.

7) *Future Generation:*

a) *What is the status of the Renewables/Storage RFPs?*

Response:

As I have testified, the Renewable Generation and Energy Storage RFP process is well underway. See my response to Rep. Velázquez's first question set forth above.

On September 30, 2021, PREPA communicated to Tranche 1 participants its selection of proposals that will advance to "Phase III" of the RFP process, in which contract documentation will be completed and final costs of interconnection determined. More than three dozen project proposals are being considered in this third Phase. PREPA and LUMA will complete System Impact Studies and Facility Studies addressing the interconnection of each generation and storage project to the Transmission and Distribution System, and PREPA will make interconnection cost estimates, based on these studies, available to each project proponent.

b) *What is the status of proposals for privatizing the legacy generation fleet?*

Response:

This process is being managed by the Public-Private Partnerships Authority (the "P3A"), with the technical advice of PREPA. We understand that several prospective respondents have performed due diligence reviews and site visits focused on individual generating facilities. We

respectfully recommend that the Committee request any additional information concerning this process from P3A, which is in charge of the procurement process.

i) Are proponents likely to take on plants nearing end-of-life?

Response:

PREPA understands that the operation and maintenance agreement that would govern the relationship among PREPA, P3A and the party or parties who contract to take on responsibility for the operation, maintenance and retirement of legacy generating facilities will require the successful bidders to assume the obligation to decommission and dismantle the existing plants. The sites at which the legacy generating facilities are located are likely to be valuable as potential locations of new generating and energy storage facilities or as industrial facilities, and therefore there will be substantial incentives to make these sites ready for redevelopment. We respectfully recommend that the Committee request any additional information from P3A, which is in charge of the procurement process.

ii) When are the older units scheduled for replacement?

Response:

PREPA's approved IRP assumes that the legacy baseload units fired by heavy fuel oil will be retired over the next ten years.

8) Permitting of LNG units:

a) What's the status of the PREB/PREPA discussion on the installation of LNG units that were not in the prior PREB-approved resources plan?

Response: See response immediately below.

b) Does the renewables plan in any way forbid any further installation of combustion units transitionally?

Response:

The Integrated Resource Plan, under which PREPA is currently pursuing procurement of new renewable generation and energy storage facilities, significantly limits PREPA's ability to pursue the installation of new fossil-fired combustion turbine generating facilities. But it does not entirely preclude the installation of such facilities. PREPA continues to evaluate the possibility of installing some new fossil-fueled generating facilities to support the ongoing transition to a future state in which renewable generation and energy storage dominate the resource mix supporting electric power supply in Puerto Rico.

In its August 24, 2020 order in Case No. CEPR-AP-2018-0001, approving in part and rejecting in part PREPA's IRP, the PREB declined to authorize the inclusion of new gas-fired

combustion turbine generating units in the Modified Action Plan, pending further study. The PREB also declined to approve the development of additional liquefied natural gas infrastructure that would support the delivery of natural gas to certain generating units. The PREB authorized PREPA to commence preliminary design, economic analysis, engineering and site selection work on a new fossil fuel-fired combined cycle generating facility at Palo Seco or at another location in the San Juan area. The purpose of such a facility would be to serve as a dependable source of generating capacity, energy and ancillary services, permitting the retirement of several existing, obsolete oil-fired generating units by 2025.

In January 2021, PREPA reported to the PREB that it is performing planning and preliminary engineering studies which evaluate the construction of a new dual-fuel combined cycle generating facility in the San Juan area having a capacity of 300-400 MW. It also reported that in October 2020, the Federal Emergency Management Agency had obligated $13,507,500 of mitigation funds under Section 404 of the Stafford Act, for the planning and design of a new combined cycle facility in the San Juan area. If this new combined cycle facility were to be built, it would be 100 percent federally funded. The Energy Bureau is monitoring PREPA's development of preliminary studies for this new combined-cycle generating facility in Case No. NEPR-MI-2021-0003 and has required PREPA to file quarterly reports on the status of those studies.

The PREB has directed PREPA to evaluate the replacement of only a small amount of the gas combustion turbine generating capacity that is installed, though generally unavailable, around the Island. At the same time, FEMA has approved Section 404 hazard mitigation funding in the amount of $280.7 million to cover the costs of replacing eleven Frame 5 combustion turbine units to minimize the risk that Puerto Rico's recovery could be hampered by the unavailability of generating units capable of responding in an emergency. Moreover, the availability of fossil fuel-fired generating facilities would mitigate risks of increasing grid instability that could result as rotating generating equipment is replaced by inverter-based generation and energy storage. PREPA is continuing to engage with the PREB on the question of how much gas-fired combustion turbine generating capacity should be included in PREPA's going-forward resource procurement plans.