

COMMONWEALTH OF PUERTO RICO
PUERTO RICO ENERGY BUREAU

IN RE: REVIEW OF THE PUERTO
RICO ELECTRIC POWER
AUTHORITY INTEGRATED
RESOURCE PLAN

NO. CEPR-AP-2018-0001

SUBJECT: Direct Testimony of Matthew
Lee

Direct Testimony of

MATTHEW LEE

Office of the Chief Financial Advisor
Puerto Rico Electric Power Authority

February 12, 2019

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1 **I. INTRODUCTION AND SUMMARY**

2 **A. Witness Identification**

3 **Q. Please state your name, title, employer, and business address.**

4 A. My name is Matthew Lee. I am a Consultant with Filsinger Energy Partners, an energy-
5 sector advisory firm ("FEP"). Since December 2017, Todd Filsinger, the head of FEP,
6 has served as Chief Financial Advisor to the Puerto Rico Electric Power Authority
7 ("PREPA"). In my capacity as a Consultant with FEP I have worked in the Office of the
8 Chief Financial Advisor as an advisor to PREPA. My business address is 90 Madison St,
9 Suite 600, Denver, CO 80206.

10 **Q. On whose behalf are you testifying?**

11 A. I am testifying on behalf of PREPA, in support of testimony being provided by Mr.
12 Filsinger in this proceeding (see PREPA Exhibit ("Ex.") 4.0). I have been involved
13 personally in the collaborative processes through which the plans I discuss in this
14 testimony were developed and refined.

15 **Q. Have you previously provided testimony before the Energy Bureau?**

16 A. Yes. I provided testimony regarding the alternative fuel Request for Proposals initiated
17 by PREPA in 2018.

18 **B. Summary of Direct Testimony**

19 **Q. What does your Direct Testimony address?**

20 A. My testimony is intended to provide certain details supporting the high-level overview of
21 PREPA's Integrated Resource Plan (the "IRP," PREPA Ex. 1.0) which Mr. Filsinger

offers in his Direct Testimony. I also provide additional detail concerning PREPA's Action Plan which was developed at the direction of and in close collaboration with PREPA's Planning Directorate (the Action Plan may be found in Part 10 of the IRP). Through Dr. Nelson Bacalao, PREPA's IRP consultant, Siemens Power Technologies International ("Siemens") is presenting detailed Direct Testimony in support of the Action Plan. This testimony appears as PREPA Ex. 6.0. The IRP and the associated Action Plan are endorsed by PREPA's senior management, as shown in the Direct Testimony of PREPA's Executive Director and Chief Executive Officer, José Ortiz Vázquez (PREPA Ex. 3.0).

Q. Are there any exhibits to your testimony?

A. Yes. My testimony includes the following exhibit:

- Ex. 5.01 – my *curriculum vitae*

C. Qualifications and Professional Background

Q. What are your duties and responsibilities as a Consultant with Filsinger Energy Partners relating to PREPA?

A. FEP is an independent energy advising firm consisting of senior executives and experts who have decades of experience in the power sector and other sectors of the energy industry. Our firm advises clients on issues relating to utility and energy company restructuring, the development, purchase and disposition of utility-scale power generation assets, pursuit of facility and enterprise-wide operational improvements, utility and project finance, utility budgeting and billing and collection, and other areas. The services we provide include the performance of independent engineering reviews of utility and

power generation operations, advising on utility and power generator financing, assisting in construction monitoring, and advising on facility start-up, testing, and operation and maintenance. We also complete financial evaluations to support power supply investment and business decisions.

Since 2017, FEP has staffed the Office of the Chief Financial Advisor, which was established in accordance with PREPA's revised Fiscal Plan to support PREPA's Chief Executive Officer ("CEO"). Other FEP personnel and I provide the CEO with general financial and managerial support on such matters as budgeting, financial management, cash management, and expense approval. We also advise and support the CEO in the implementation of the fiscal and operations restructuring reforms and initiatives outlined in the certified Fiscal Plan and the implementation of the certified Budget. We assist and support the CEO on any other matters on which he requests our help.

As a Consultant working in the office of the Chief Financial Advisor, I have provided advice to PREPA on an as-needed basis during the IRP process in particular concerning the development of the Action Plan. I have been personally and actively involved as an advisor to PREPA in support of the IRP, and in the associated Action Plan.

Q. What is your professional background?

A. I was educated as a mechanical engineer, and I have 28 years of experience leading and advising companies in the energy and petrochemicals sectors, including a number of participants in the electric power sector. I have managed the development, design, permitting, and financing of power, petrochemical and infrastructure projects, and have

provided consulting services in connection with private debt and equity placements, project financings and public offerings. I have advised a number of purchasers and sellers of energy assets, as well as electric utilities and municipalities. My experience includes traditional and renewable forms of generation, gas and electric power distribution, plant performance testing, economic modeling, operational reviews, technical due diligence, and valuations. I have been responsible for contract negotiations involving the development of a number of electric generating facilities. I have advised power project developers, electric utilities, municipalities, lenders and other energy and petrochemical sector companies on resource evaluation, project permitting and compliance with environmental laws and regulations. My current CV is attached as PREPA Ex. 5.01.

Q. What is your educational background?

A. I received a B.S. in Mechanical Engineering from the Colorado School of Mines in 1992.

Q. Have you appeared as a witness in other energy regulatory proceedings?

A. Other than the PREB proceeding concerning PREPA's alternative fuel Request for Proposals initiated in 2018, no.

II. PREPA'S PREFERRED RESOURCE PLAN

Q. What is PREPA's Action Plan?

A. PREPA's Action Plan is set forth in Part 10 of the IRP main Report (PREPA Ex. 1.0). It incorporates PREPA's preferred approach to the improvement of the Commonwealth's electric utility system by, among other things, creating Minigrids that will incorporate

sufficient localized generation to serve critical loads connected to each Minigrid under conditions of system stress. The Action Plan envisions the implementation of elements of two least-cost scenarios developed through the IRP process that are commonly referred to as the Energy System Modernization Plan (the “ESM Plan”) and Scenario 4 Strategy 2 (“S4S2”), which was developed through the IRP process. The ESM Plan reflects PREPA’s preferred locations for certain generating assets, while S4S2 identifies alternatives that could be deployed during Action Plan execution should site specific circumstances or market conditions warrant deviations from that Plan.

Q. How was the Action Plan developed?

A. The Action Plan was developed by a collaborative working group led by PREPA and the Puerto Rico Central Office for Recovery, Reconstruction and Resiliency (“COR3”); supported by advisors to PREPA and COR3, including FEP. The Action Plan reflects significant input from other utility industry experts and governmental agencies, such as the U.S. Department of Energy. It envisions implementation of the various initiatives identified by PREPA, COR3, their advisors and other stakeholders in the ESM Plan and in the IRP’s S4S2 scenario. I was personally involved in the working group’s activities, and supported data gathering efforts, coordinated activities with other FEP subject matter experts, assisted with the definition of permit requirements at both the federal and Commonwealth levels, and assisted PREPA with optimizing generation locations as they apply to the Action Plan.

Q. Would you describe the Action Plan more specifically?

108 A. The Action Plan is PREPA's Preferred Resource Plan, as that term is used in the
109 regulations establishing the criteria an IRP must meet. The Action Plan sets forth
110 PREPA's preferred implementation strategy considering all other plans that were
111 evaluated during the recent IRP process. It draws primarily on the ESM and S4S2
112 scenarios, and it offers the least-cost option available to achieve PREPA's stated
113 objectives of improving system resiliency through the integration of Minigrids and
114 distributed generation. The Action Plan envisions the deployment of distributed
115 generation technologies that conform to RPS requirements and makes provision for
116 options to increase renewable energy integration should Puerto Rico elect to increase
117 RPS requirements. The Action Plan also takes into account specific directives ordered by
118 the PREB, including the requirement that all IRP scenarios assume the conversion of
119 PREPA's San Juan Units 5 & 6 to be fueled primarily by natural gas.

120 As more fully described in the IRP and by Siemens' witness Dr. Bacalao (PREPA
121 Ex. 6.0), the Action Plan is PREPA's preferred approach. It was derived from many
122 different fuel resource scenarios modeled with three load projections, and three
123 generation resource strategies. The Action Plan emerged from the IRP process based on
124 the modeled results, as performed by Siemens, and is PREPA's Preferred Resource Plan
125 because it is designed to mitigate future potential disasters by emphasizing a Minigrid
126 solution with sufficient distributed generation to serve critical loads. It also retains
127 sufficient large-scale, centralized generation to provide cost effective, efficient, base-load
128 generation resources.

129 Q. **How does the Action Plan relate to the ESM Plan and scenarios considered in the**
130 **IRP process?**

131 A. The Action Plan presents PREPA with a cost effective opportunity to redesign its utility
132 to increase reliability and resiliency of the Commonwealth's electric grid in light of
133 Puerto Rico's desire to decrease its dependence on oil and favor renewable energy. The
134 Action Plan draws on options identified in the ESM, but it provides additional options
135 relating primarily to new generation resource locations. The aspects of the ESM Plan
136 that have been incorporated into the Action Plan reflect PREPA management's views as
137 to the best alternatives for locations for new and distributed generation. The Action Plan
138 also incorporates some options highlighted by the S4S2 analysis.

139 As an example, an aspect of the ESM component of the Action Plan is to locate
140 new base-load generation in the east, near Yabucoa. The S4S2 had selected the west side
141 of the island as a potential location for new base-load generation. The advantage of the
142 Yabucoa location, from PREPA's perspective, is that it provides additional resiliency to
143 an area of the island that was hardest hit by Hurricane Maria. Therefore, the Action Plan
144 is designed to prefer new base-load generation in the east, but pursue potential generation
145 at Mayaguez. The benefits of this parallel approach is that PREPA will have a contingent
146 site, with comparable economics, for new base-load generation should market or site
147 specific attributes delay or complicate project development activities.

148 Q. **What would you characterize as the essential elements of the Action Plan?**

149 A. The Action Plan envisions the reconstruction and renewal of Puerto Rico's electric
150 supply, transmission and distribution infrastructure in a manner that will balance the

objectives of enhancing resiliency, reducing costs, and achieving sustainability. The Action Plan is intended to provide a roadmap for meeting future electricity demand at reasonable cost, while significantly improving electric system reliability in ways that are economically and environmentally sustainable and responsible. It is, as well, consistent with initiatives which PREPA and other Puerto Rico agencies are pursuing to support broader transformation objectives established by the Governor and the Fiscal Oversight and Management Board.

Unavoidably, the resource options presented in the IRP are based on estimated costs and assumptions regarding siting and overall project feasibility which eventually must be tested in the real world. We do not know today whether the cost estimates reflected in the IRP analyses are accurate or whether particular evaluated project development alternatives are feasible. The Action Plan preserves flexibility and optionality in the face of this uncertainty. It provides alternatives that may be pursued in the event that certain resource options cannot be developed or procured as expected as a result of site-specific evaluations or responses of prospective resource developers on the basis of then-current market conditions.

Q. How does the Action Plan measure up against the criteria the Energy Bureau must apply in evaluating it?

A. The Action Plan satisfies the requirements which a Preferred Resource Plan must meet under the Energy Bureau's Regulation No. 9021. A Preferred Resource Plan must adequately address (i) minimization of the present value of revenue requirements; (ii) system reliability; (iii) short- and long-term risk; (iv) environmental impacts; (v)

transmission needs and implications; (vi) distribution needs and implications; (vii) financial impacts on PREPA; and (viii) the public interest. (Regulation No. 9021, § 2.03(H)(2)(d)). The Preferred Resource Plan need not be the lowest-cost portfolio evaluated, so long as the reasons for choosing a portfolio that is not lowest-cost are described in detail. (Regulation No. 9021, § 2.03(H)(2)(d)(iii)).

The Action Plan embodies the least cost option available to PREPA to meet anticipated electric power demands over the IRP planning horizon. It envisions the establishment of a number of Minigrids which, when integrated with identified distributed generation resources, will be significantly more reliable and resilient than Puerto Rico's grid is today, reducing both short- and long-term risks of catastrophic system failures and unacceptably long recovery times. In other words, the Action Plan incorporates lessons learned from the recent disasters, with a mind to better serving the areas that were hardest hit. It assumes a decisive move away from petroleum-based fuels in favor of renewable resources and natural gas, which will yield very substantial reductions in air emissions, aid in the achievement of National Ambient Air Quality Standards, and reduce the potential for environmentally damaging fuel oil spills. The establishment of Minigrids and the distribution of generation and storage resources around the Island will address vulnerabilities and inadequacies in Puerto Rico's transmission and distribution systems in ways that will minimize the need for costly additional transmission infrastructure development. This, along with fuel cost savings that will result from the displacement of petroleum-based fuels with renewable resources and natural gas, will reduce the financial burden which high and increasing fuel and

195 maintenance costs have imposed on PREPA. All of these outcomes would be consistent
196 with the public interest.

197 **III. CONCLUSION**

198 Q. **Does this conclude your Direct Testimony?**

199 A. Yes, it does.


ATTESTATION

Affiant, Matthew Lee, being first duly sworn, states the following: The prepared Pre-Filed Direct Testimony and the information, documents and workpapers attached thereto and the portions of the IRP filing I am sponsoring constitute the direct testimony of Affiant in the above-styled case. Affiant states that he would give the answers set forth in the Pre-Filed Direct Testimony if asked the questions propounded therein at the time of the filing. Affiant further states that, to the best of his knowledge, his statements made are true and correct.


MATTHEW LEE

Affidavit No. _____

Acknowledged and subscribed before me by Matthew Lee, of the personal circumstances above mentioned, in his capacity as Consultant to the Chief Financial Advisor to the Puerto Rico Electric Power Authority, who is personally known to me or whom I have identified by means of his driver's license number Colorado 92-131-9024, in Denver, Colorado, this 11 day of February 2019.



Notary Public

State of Colorado
County of Denver

NETRA RAJ NEUPANE
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20164013421
MY COMMISSION EXPIRES 04/07/2020