

**COMMONWEALTH OF PUERTO RICO  
PUBLIC SERVICE REGULATORY BOARD  
PUERTO RICO ENERGY BUREAU**

SECRETARIA  
COMISION DE ENERGIA DE  
PUERTO RICO

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

**No.** CEPR-AP-2018-0001

**SUBJECT:** PREPA's Petition and  
Informative Motion Regarding its  
Accompanying Integrated Resource Plan  
Filing

**PREPA's Petition and Informative Motion Regarding  
its Accompanying Integrated Resource Plan Filing**

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

COMES NOW the Puerto Rico Electric Power Authority ("PREPA") and respectfully submits to the Puerto Rico Energy Bureau (the "Energy Bureau")<sup>1</sup> PREPA's Petition and Informative Motion Regarding its Accompanying Integrated Resource Plan ("IRP") filing. This Petition primarily serves as a brief overview and a table of contents of the accompanying IRP filing. PREPA submits the accompanying IRP filing in compliance with the applicable statutory provisions, the Energy Bureau's Regulation ("Reg.") No. 9021, and the Energy Bureau's applicable orders in this docket, subject to a separate Motion for limited waivers of filing requirements in Reg. No. 9021. This Petition also provides the witness information required by Reg. No. 9021, § 3.06(A).

**I. INTRODUCTION**

The IRP filing, in brief, consists of a Report presenting extensive analysis and a proposed Action Plan, developed in accordance with the Energy Bureau's directives and after an extensive stakeholder process, plus the submission of other required documents and Direct Testimony.

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<sup>1</sup> References in this Petition to the Energy Bureau include the former Puerto Rico Energy Commission.

The goals of the IRP filing, within the governing law, are to help develop and support a cost-effective modernized Puerto Rico electric system that reflects PREPA's Governing Board's vision:

1. **Customer-centric:** The IRP includes costumer participation via energy efficiency, customer side energy resources and demand response with a predominant role in the supply and consumption matrix of Puerto Rico, and empowering customers to participate and take ownership on their energy security and affordability.
2. **Financial Viability:** Within the requirements of resiliency and reliability, the plan minimizes the cost of supply and drastically reduces the dependence on imported fuels and the associated volatility; thus, supporting affordable rates that promote financial viability at both sides of the meter.
3. **Reliable and Resilient:** The IRP is centered on the concept of "MiniGrids", which are defined as zones of resiliency into which the system can be segregated during and after a major storm or weather event ensuring that the load can be served using local resources and supporting the effective and timely recovery from the event.
4. **Model of Sustainability:** The IRP's implementation will transition the Puerto Rico electric system from one centered on fossil fuels to one in which the renewable resources play a central, if not, the predominant role. The IRP's implementation will drastically reduce emissions, increase the penetration of renewable generation, achieve compliance with all current regulations, and position Puerto Rico for future regulations.
5. **Economic Growth Engine:** The distributed nature of the new generation resources that will have to be developed, the high levels of customer participation on the energy production and the overall reduction in the system cost are expected to result in employment opportunities and economic growth for Puerto Rico. The IRP will support a reliable and economic system that will attract economic development in Puerto Rico.

Puerto Rico Integrated Resource Plan 2018-2019: Draft for the Review of the Puerto Rico Energy Bureau (the IRP "main Report"), Part 1, Section 1.1, pp. 1-1 – 1-2.

In brief, the IRP filing consists of:

- the IRP main Report (a document with ten Parts), plus two Attachments (A and B) and Appendices 1-5 (see Reg. No. 9021, §§ 2.02(A) – (D));<sup>2</sup>
- the required work papers (due to their number and size, and regulatory requirements, provided in electronic form only on a “USB” drive) (see Reg. No. 9021, § 2.02(E) – (F));<sup>3</sup>
- the required Direct testimony, including notarizations (see Reg. No. 9021, § 3.06);
- a certificate of compliance with Act 83-1941, Section 6B(H)(vi)), 22 L.P.R.A. § 196b(h)(vi) (see Reg. No. 9021, § 2.06);
- a chart of the witnesses and of which portions of the IRP filing they support (see Reg. No. 9021, § 3.06(A)); and
- two Motions, one to support the confidentiality designations, and one for limited waivers of filing requirements in Reg. No. 9021.

The IRP filing’s components are filed separately from this Petition, except that the chart of the witnesses and of which portions of the IRP filing their testimony supports is set forth in the body of this Petition, below.

On February 11, 2019, PREPA’s Governing Board formally adopted Resolution 4676 approving submission of the IRP, including the Action Plan, and stating grounds for the Board’s decision. A copy of the Board’s Resolution is attached to Direct Testimony, as referenced below.

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<sup>2</sup> Please note that Attachment B and Appendix 1 contain confidential information, including Confidential Energy Infrastructure Information (“CEII”) that is protected from public disclosure under federal and Puerto Rico law.

<sup>3</sup> Please note that, due to number and size of these documents, and because Reg. No. 9021 requires working electronic versions in native form of some of these documents, these documents will be made available electronically (in electronic form only on a “USB” drive) rather than being printed out. Please also note that some of the work papers contain confidential information.



PREPA respectfully requests that the Energy Bureau approve the IRP, including the Action Plan. The Action Plan is the "Preferred Resource Plan" required by Reg. No. 9021.

## II. BACKGROUND

Act 83-1941, as amended: (1) provided for PREPA (in 2014, later extended to 2015) preparing and proposing to the Energy Bureau an initial integrated resource plan based on a twenty (20)-year planning horizon; and, (2) provides for review of the IRP, after it is established, every three years (after adoption of the prior IRP), and for the possibility of an earlier review in the event of a substantial change in energy demand or the set of resources. Act 83-1941, § 6B(h), 22 L.P.R.A. § 196b(h).

In brief, the nature of an IRP is: (1) an economic / engineering analysis conducted within the framework of applicable objectives and constraints, such as public policy and governing law; and (2) a proposed resource plan for the planning period, with special focus on the near term, in this case an Action Plan for the next five years. The analysis "describ[es] the combination of energy supply and conservation resources that satisfies in the short-, medium-, and long-term the present and future needs of the energy system both of Puerto Rico and of their customers at lowest cost possible." Act 57-2014, § 6.23(a), 22 L.P.R.A., § 1054v(a).

The IRP process occurs within the framework of the overall Puerto Rico public policy on electric power, which the Legislative Assembly has addressed in a number of enacted statutes, such as Act Nos. 57-2014 and 120-2018.<sup>4</sup>

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<sup>4</sup> This IRP process also occurs within the context of PREPA's bankruptcy restructuring process and the ongoing efforts to transform PREPA and the Puerto Rico electric sector under the federal Puerto Rico Oversight, Management, and Economic Stability Act ("PROMESA") statute, 48 U.S.C. §§ 2101-2241, and

PREPA's first proposed IRP was filed in July 2015. The Energy Bureau, to address the initial proposed IRP, opened docket no. CEPR-AP-2015-0002. As a result of an Energy Bureau order, PREPA filed a revised IRP in August and September 2015. That revised IRP commonly was referred to as the "Base IRP" in that prior docket. As a result of another Energy Bureau order, PREPA filed a series of materials culminating in a "Supplemental IRP" filed in final form in April 2016. The main difference between the Base IRP and the Supplemental IRP was that the Supplemental IRP used a significantly lower demand forecast directed by the Energy Bureau.

The Energy Bureau did not adopt PREPA's Base IRP or its Supplemental IRP and instead issued a final Resolution and Order establishing a "Modified IRP" on September 23, 2016, in that prior docket. PREPA filed a motion for reconsideration. The Bureau granted in part and denied in part PREPA's motion for reconsideration and thereby revised the Modified IRP in certain respects in a Resolution issued on February 10, 2017. The Modified IRP became effective on March 13, 2017, as discussed in the Bureau's March 14, 2018, Resolution and Order in the instant docket.

PREPA notes that the Modified IRP was incomplete in certain respects. In brief, the Modified IRP did not resolve the questions of whether to approve PREPA's then-pending Aguirre Offshore Gasport ("AOGP") proposal and of what to build at the Aguirre site. Those questions were transferred to another docket, the Aguirre Economic Site Analysis case, docket no. CEPR-AP-2017-0001, but they were not resolved in that docket, either, because, after the devastation wrought by Hurricanes Irma and Maria in September 2017, the Energy Bureau ultimately dismissed that docket "without

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the PROMESA Title III federal court case involving PREPA, No. 17-04780 (D. P.R.); and under Puerto Rico statutes, including but not limited to Act Nos. 2-2017 and 120-2018.

prejudice". The Modified IRP also was incomplete in certain other respects, *e.g.*, it provided for further discussions of what to build at the Palo Seco site, and it provided for further steps to be determined on some other subjects, such as energy efficiency and demand response programs.

As noted above, Act 83-1941 requires the IRP be reviewed every three years (from adoption of the prior IRP), and it also provides for a possible earlier review. The Energy Bureau's May 29, 2018, Order in the instant case directed PREPA to file an updated IRP earlier than the March 13, 2020, three year cycle due date, citing the statute's early review provisions and the serious and widespread damage done to the Island and the electric system and services by Hurricanes Irma and Maria.

Meanwhile, on April 20, 2018, the Energy Bureau issued its Regulation No. 9021, entitled "Regulation in Integrated Resource Plan for the Puerto Rico Electric Power Authority." Reg. No. 9021 sets forth extremely detailed requirements for the current IRP, in terms both of form and substance.

In brief, Reg. No. 9021 provides for the IRP main Report having 10 Chapters or Parts (Reg. No. 9021, § 2.02(B)) and five or six Appendices (Reg. No. 9021, § 2.02(D)). The regulation also contains very detailed directives regarding the analysis and contents of the IRP. The regulation also requires, as specified in detail, provision of source materials or references (Reg. No. 9021, § 2.02(E)) and work papers (Reg. No. 9021, § 2.02(F)(1)). The regulation also requires notarized Direct testimony that explains and supports the IRP (Reg. No. 9021, § 3.06) and a list or chart of which portions of the IRP filing are supported by which witness (Reg. No. 9021, § 3.06(A)).



Finally, the regulation also requires a certification of compliance with Act 83-1941, § 6B(h)(vi) (Reg. No. 9021, § 2.06).

### III. STRUCTURE OF THE IRP FILING

In this IRP filing:

- the IRP main Report and its two Attachments and five Appendices are being filed as PREPA Exhibit (“Ex.”) 1.0;
- the work papers are being filed (due to their number and size, and regulatory requirements, provided in electronic form only on a “USB” drive) as PREPA Ex. 2.0; and,
- the Direct testimony (with attachments, including notarizations) is being filed as PREPA Exs. 3.0, 4.0, 5.0, 6.0, and 7.0.

Some attachments have their own subsidiary exhibit numbers.

The IRP main Report is divided into ten Parts, in accordance with Reg. No. 9021, § 2.02(B):

- 1) Part One - Introduction and Summary of Conclusions
- 2) Part Two - Planning Environment
- 3) Part Three - Load Forecast
- 4) Part Four - Existing Resources
- 5) Part Five - Resource Needs Assessment
- 6) Part Six - New Resource Options
- 7) Part Seven - Assumptions and Forecasts
- 8) Part Eight - Resource Plan Development
- 9) Part Nine - Caveats and Limitations

## 10)Part Ten - Action Plan

The IRP also contains two Attachments, Attachment A one on a gas market model and Attachment B on certain transmission and distribution information (the latter of which is designated as confidential), plus five Appendices (the first of which is designated as confidential), in accordance with Reg. No. 9021, § 2.02(D):

- 1) Appendix 1 -Transmission and Distribution Planning
- 2) Appendix 2 - Prior Action Plan Implementation Status
- 3) Appendix 3 - Renewable Energy Project Status
- 4) Appendix 4 - Demand-Side Resources
- 5) Appendix 5 - New and Existing Supply-Side Resources Supplemental Data

The following chart lists the witnesses providing Direct testimony explaining and in support of the IRP, and the chart also identifies the portions of the IRP that their testimony addresses and supports, in accordance with Reg. No. 9021, § 3.06(A).

PREPA Ex. No.	Witness	Title	Subject of Testimony	Portions of IRP Explained and Supported
Ex. 3.0	José F. Ortiz Vazquez	Executive Director and Chief Executive Officer, PREPA	Executive Director and CEO Mr. Ortiz (an electrical engineer) formally submits the IRP filing; briefly discusses the context of the IRP; presents the PREPA Governing Board's Resolution approving the IRP, including the Action Plan; and, identifies the other PREPA witnesses and their subjects.	See cell to the left. The substance of the Action Plan is discussed in the IRP main Report primarily in Parts 8 and 10.
Ex. 4.0	Todd W. Filsinger	Chief Financial Advisor, PREPA (Filsinger Energy Partners)	CFA Mr. Filsinger explains, at a high level, the IRP, including the Action Plan, and the reasons PREPA proposes the Action Plan.	See cell to the left.
Ex. 5.0	Matthew Lee	Consultant, Filsinger Energy Partners	Mr. Lee supports in more detail the Action Plan, describes its relationship to the other Scenarios considered in the IRP, and explains the manner in which it incorporates elements of those Scenarios.	See cell to the left.



PREPA Ex. No.	Witness	Title	Subject of Testimony	Portions of IRP Explained and Supported
Ex. 6.0	Dr. Nelson Bacalao	Senior Consulting Manager, Siemens Power Technologies International	<p>Dr. Bacalao is the lead outside Siemens consultant in the preparation of the IRP. His testimony supports the development of the IRP (including the advance extensive stakeholder processes) and the contents of the IRP, subject to the additional support provided by the other witnesses.</p> <p>Please note that Dr. Bacalao is testifying on behalf of the Siemens team that worked on the IRP.</p>	<p>The entire IRP, subject to the support provided by the other witnesses.</p> <p>Please note that, if specific issues are raised with respect to the IRP, PREPA may identify additional witnesses to provide rebuttal and/or technical hearing testimony.</p>
Ex. 7.0	Gregory Rivera Chico	Assistant Division Chief, Planning and Research Division, PREPA	<p>Engineer Mr. Rivera briefly discusses the "RFP" process used to select Siemens as the IRP consultant. He also supports data inputs provided by PREPA to Siemens that were used in the IRP. He also generally addresses PREPA's compliance with applicable Energy Bureau requirements, including PREPA's posting the public version of the IRP on its web site.</p> <p>Please note that Engineer Mr. Rivera is testifying on behalf of the PREPA personnel involved in working with Siemens on the IRP.</p>	<p>See cell to the left. In brief, Engineer Mr. Rivera is supporting PREPA data inputs to the IRP.</p> <p>See also note above regarding potential additional witnesses at later stages of the docket.</p>

PREPA separately is filing two Motions: (1) a motion for confidential treatment of limited portions of the IRP Filing and (2) a motion for limited waivers of filing requirements in Regulation No. 9021. Those motions set forth the factual and legal grounds for PREPA's requests to treat certain information in this filing as confidential and for limited waivers of certain filing requirements of Reg. No. 9021, respectively.

#### **IV. OVERVIEW OF PREPA'S IRP AND OF THE ACTION PLAN**

##### **A. The IRP's Analysis**

As shown in the IRP main Report and attachments and Appendices, PREPA Exs. 1.0 and 2.0, and as discussed primarily by Dr. Nelson Bacalao's Direct testimony,

PREPA Ex. 6.0, the IRP, as directed by the Energy Bureau, evaluates a variety of combinations of strategies, scenarios, load forecasts, and other sensitivities.

Siemens and PREPA, with the assistance of the Smart Electric Power Alliance ("SEPA"), engaged in extensive stakeholder processes regarding what the IRP should consider, how, and with what data. There also were stakeholder processes between Siemens and PREPA and the Energy Bureau itself through filings, technical conferences, and Energy Bureau orders.

Based on input from stakeholders and directives from the Energy Bureau, the IRP evaluates a variety of scenarios, each of which lays out a combination of system requirements needed to serve load, commodity prices, capital costs, total system costs, and risks that influence the choice of resources to serve PREPA's future load. The IRP scenarios are those directed by the Energy Bureau plus the scenario of PREPA's Energy System Modernization Plan ("ESM"). The ESM was studied in the IRP in the same manner as the other scenarios.

Based on input from stakeholders and directives from the Energy Bureau, the IRP considers three strategies: (1) a traditional centralized energy program that is reliable and economic; (2) a highly distributed system of flexible generation and MiniGrids and hardening of infrastructure around the Island that is resilient and closer to the customer; and, (3) a mixture of the first two strategies that embodies a combination of the benefits of each strategy.

Please note that the term MiniGrids, as used in the IRP, basically means dividing up the PREPA grid into very large segments that can operate separately, mainly for

resilience purposes, as explained in the IRP. Thus, the term MiniGrids, as used in the IRP, is not simply another term for microgrids.

The IRP evaluates and addresses the balance between low cost reliable operation under normal conditions and the ability to mitigate and timely recover from major disruptive events.

As referenced in Mr. Gregory Rivera's testimony, PREPA Ex. 7.0, PREPA issued a Request for Proposals ("RFP") seeking professional services for performing the IRP. As a result of the RFP process, PREPA selected Siemens Power Technologies International ("Siemens" or "Siemens PTI") (also referred to as Siemens Industry, Inc.) to assist PREPA in developing the IRP. The Energy Bureau through Reg. No. 9021 and the stakeholder processes directed PREPA and Siemens in great detail regarding the IRP, including changes in some specifics as work on the IRP was performed. Mr. Rivera, on behalf of PREPA personnel, also supports PREPA's data inputs supplied for and used in the IRP. Mr. Rivera also notes that PREPA plans to publish the IRP on its web site (with appropriate redactions for confidential material).

#### **B. The Action Plan**

The IRP main Report (PREPA Ex. 1.0), in Part 10, discusses the Action Plan, which is PREPA's Preferred Resource Plan. *See also* IRP main Report, Part 8, on Resource Plan Development.

The Action Plan is supported by the testimony of four witnesses, Dr. Nelson Bacalao, Senior Consulting Manager, Siemens Power Technologies International, PREPA Ex. 6.0; PREPA Executive Director and Chief Financial Officer José Ortiz Vázquez, PREPA Ex. 3.0; PREPA Chief Financial Advisor Todd Filsinger, PREPA Ex. 4.0; and Consultant Matthew Lee, PREPA Ex. 5.0.



CEO Mr. Ortiz presents the PREPA Governing Board's Resolution of February 11, 2019, regarding approval of the IRP, including the Action Plan. As the witnesses explain and support, PREPA has concluded that, of the available options for directing further investment in and development of Puerto Rico's electric utility system, the Action Plan is the best plan for the people of Puerto Rico.

**V. CONCLUSION**

WHEREFORE, for the reasons stated above, the Puerto Rico Electric Power Authority respectfully requests that the honorable Puerto Rico Energy Bureau accept PREPA's Integrated Resource Plan and approve PREPA's Action Plan, and make such other findings, conclusions, and orders as are needed for purposes of this IRP docket and are supported by the record of this case and the applicable law.

RESPECTFULLY SUBMITTED,

IN SAN JUAN, PUERTO RICO, THIS 13<sup>th</sup> DAY OF FEBRUARY, 2019

**PUERTO RICO ELECTRIC POWER AUTHORITY**



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### **CERTIFICATION OF FILING AND SERVICE**

I HEREBY CERTIFY that, on February 13, 2019, the foregoing Petition and the "IRP filing" as described in the Petition, with and subject to PREPA's two separate Motions, were filed in person in hard copy format (with certain materials, due to their number and size, and regulatory requirements, provided in electronic form only on a "USB" device) at the office of the Clerk of the Puerto Rico Energy Bureau, at the Seaborne Building Plaza (old World Plaza Building), 268 Munoz Rivera Avenue, Plaza Level, Suite 202, San Juan, Puerto Rico, 00918; and, further, at approximately the same time, that courtesy copies of the Petition (not including the IRP filing) and the two Motions were sent via email to the Puerto Rico Energy Bureau via email to [secretaria@energia.pr.gov](mailto:secretaria@energia.pr.gov) and [mcintron@energia.pr.gov](mailto:mcintron@energia.pr.gov), to the office of the Energy Bureau's internal legal counsel via email to [legal@energia.pr.gov](mailto:legal@energia.pr.gov) and [sugarte@energia.pr.gov](mailto:sugarte@energia.pr.gov),

Please note that PREPA also will post the IRP main Report and its Attachments and Appendices on its web site (subject to applicable redactions of confidential material).



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**GOVERNMENT OF PUERTO RICO**

Puerto Rico Electric Power Authority

Governing Board

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**RESOLUTION 4676**

**To approve the IRP's Action Plan and authorize the CEO to file said IRP before  
the Puerto Rico Energy Bureau**

**WHEREAS:** The Puerto Rico Electric Power Authority (PREPA) is a public corporation and an instrumentality of the Government of Puerto Rico created by Act No. 83 of May 2, 1941, as amended (Act No. 83). PREPA was created to provide electrical energy in a reliable way contributing to the general welfare and sustainable future of the people of Puerto Rico, maximizing benefits and minimizing social, environmental and economic impacts. In addition, it provides a service based on affordable, fair, reasonable and non-discriminatory cost that is consistent with environmental protection, non-profit, focused on citizen participation and its clients.

**WHEREAS:** On March 18, 2014, PREPA's Governing Board approved Resolution No. 4129, ordering the commencement of the development of a critical path for the improvement of PREPA's future taking into consideration, but not limited to, the following aspects: its current and future economic situation; its existing generation, transmission, and distribution infrastructure; the electrical industry's transformation, and the development of renewable energy and other technologies; new ways to operate and design electrical grids; the costs, risks and volatility of the energy supply resources and the economic dispatch of resources; the risks to clients; local and federal environmental regulations already in place and those about to be approved; the Government's public policy regarding preference of resources, and the economic growth of Puerto Rico.

**WHEREAS:** Also, on March 27, 2014, PREPA's Governing Board approved Resolution No 4132 for PREPA to begin the modernization of generation units and development of new units, through the development of projects aimed at achieving a safe and reliable system, as well as a financial structure that benefits clients, while complying with environmental regulations.







- WHEREAS: Act No. 57 of May 27, 2014, as amended (Act No. 57), known as the "Puerto Rico Energy Transformation and Relief Act", ordered PREPA to prepare an Integrated Resource Plan (IRP), which requires a detailed planning process with ample citizen participation, while considering all the reasonable resources necessary to supply the demand for electric service during a 20-year period. Act No. 57 establishes the minimum requirements with which said IRP must comply.
- WHEREAS: As stated in Act No. 57, PREPA is required to periodically update the IRP to show current and future system conditions. In the aftermath of Hurricanes Irma and María, PREPA's situation under PROMESA Title III proceedings, and the announcement by the Governor of the privatization of PREPA's generation fleet and the concession of the Transmission and Distribution areas, an update of the IRP has become a necessity. This was discussed and coordinated with the Governing Board's Infrastructure Committee on February 21, 2018.
- WHEREAS: New technologies, such as storage and microgrids, along with increased renewables, must be integrated along with the design of PREPA's Fiscal Plan under PROMESA, which requires an updated IRP.
- WHEREAS: On April 27, 2018, through Resolution No. 4606, the Governing Board authorized PREPA's Chief Executive Officer to execute a Contract with Siemens Industry, Inc., for the development of the updated IRP.
- WHEREAS: After significant stakeholder engagement from a diverse group of participants, including federal and local government regulators, environmental groups, industry groups, power producers, the Puerto Rico Energy Bureau (PREB) and the Fiscal Oversight Management Board, Siemens has delivered the finalized and updated IRP.
- WHEREAS: The IRP provides a road map for PREPA's development into the next 20 years. It also contains a five-year Action Plan, in Chapter 10 of the Report, scoping out system improvements that will bring greater resiliency, compliance with environmental law and regulations, and greater fuel diversification, in accordance with the strategic vision established by the Governing Board.

WHEREAS: According to Act No. 57, the Chief Executive Officer shall file PREPA's IRP before the Puerto Rico Energy Board for its consideration and approval.

THEREFORE: In compliance with Act No. 83, supra, PREPA's Governing Board determines to:

1. Approve the IRP's Action Plan, as indicated in Chapter 10, as it complies with PREPA's vision for a more resilient, reliable, and economic electrical system.
2. Authorize the Chief Executive Officer to file the IRP before the Puerto Rico Energy Bureau, in accordance with the CEPR-AP-2018-0001 Order.

Approved in San Juan, Puerto Rico, on the eleventh day of February two thousand nineteen.

A handwritten signature in black ink, consisting of a large, stylized 'E' followed by a series of loops and a final flourish.

Eduardo Arosemena-Muñoz  
Secretary of the Board