

COMMONWEALTH OF PUERTO RICO  
PUERTO RICO ENERGY COMMISSION



<b>IN RE:</b>  <b>INTEGRATED RESOURCE PLAN FOR THE PUERTO RICO ELECTRIC POWER AUTHORITY</b>	<b>NO.: CEPR-AP-2015-0002</b>  <b>SUBJECT: BRIEF OF INTERVENOR</b>
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**BRIEF OF INTERVENOR ECOELÉCTRICA, LP**

**TO THE HONORABLE ENERGY COMMISSION OF PUERTO RICO:**

**COMES NOW**, EcoEléctrica, L.P. (“EcoEléctrica”), through the undersigned legal counsel, and respectfully **STATES** and **PRAYS**:

**I. Introduction**

On February 9, 2016, this Honorable Energy Commission notified a Resolution ordering intervenors to file their intervenors’ brief regarding their arguments and opinions as to the Integrated Resource Plan (IRP) filed by the Puerto Rico Electric and Power Authority (PREPA), including their responses to any issue discussed during the technical conference, on or before April 20, 2016. Below is a preliminary brief of EcoEléctrica’s arguments and opinions. However, taking into consideration that PREPA has not filed a final IRP, EcoEléctrica reserves its right to file a supplemented brief after PREPA’s final filing.

Moreover, on April 16, 2016, York Capital Management Global Advisors, LLC and ITC Holdings Corp. (“York and ITC”) filed an Expedited Motion to Extend Briefing Schedule and Postpone Oral Argument, in which they argued that PREPA has failed to provide responsive or complete answers to several discovery requests, did not produce certain documents, and continues to revise and supplement its IRP. Thus, York and ITC argued

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## **II. Discussion**

PREPA's IRP should be the roadmap of the strategies required to make the utility cost competitive while incorporating the changes provoked by a consumer trends, environmental compliance and the realities of a contracting economy.

The IRP should represent a broad based vision of the Island future energy sector while avoiding the pitfalls of either the continuation of the status quo, or a preferred solution without sound technical and economic analysis and a broad based consensus developed with the contributions of all stakeholders.

Puerto Rico's financial situation of insurmountable debt and restricted cash demands for PREPA's IRP to include certain elements that favors conservation of capital resources while promoting and expediting changes leading towards financial soundness. Operational flexibility, system reliability compliance, optimization of capital, utilization of commercially proven technologies, experienced operators and integration of consumer preferences are among the elements that should be incorporated in the IRP. The IRP should focus on positioning the Island on a competitive edge regarding electricity rates and environmental stewardship when compared with other comparable manufacturing based economies.

During last decades energy production technology evolution provides excellent commercially proven alternatives to design an IRP that meets high efficiency, operational flexibility and environmental compliance requirements. The significant savings to be achieved through the fuel diversification and technology replacement should promote the early replacement of the aging installed plants and provide a significant reduction of energy production cost.

Another avenue to increase IRP cost effectiveness would be a broader embrace, than proposed, of rooftop solar renewable technologies integration. The IRP should incorporate the transition elements necessary to enable the integration of intermittent sources at the fastest possible pace without jeopardizing the quality of service. This strategy should provide wins in the long run by leveraging the capital cost reduction of renewable technologies experienced during the last five years.

PREPA's IRP shall also optimize the capital investment requirements by embracing opportunities to maximize the utilization of existing reliable and efficient infrastructure, such as the LNG Import and Regasification Terminal at EcoElectrica to source natural gas for the base units located at Costa Sur and Aguirre power stations. This alternative will be accomplished by completing the gas pipeline project between Costa Sur and Aguirre at a fraction of the proposed AOGP project, with less environmental impacts and improved net results on the Puerto Rico economy.

Additionally in order to maximize cost effectiveness a competitive environment should evolve for existing and new resources to transparently compete in the system dispatch requirements. System operations should evolve into an independent entity to ensure system reliability, transparency and a non-discriminatory framework to better serve consumers and other energy sector participants.

Furthermore, EcoEléctrica understands that PREPA's IRP shall specifically address the following subjects:

1. In the last IRP update, it has been observed that the only alternative to supply natural gas to Aguirre combined cycles is by the development of the AOGP. Considering the aforementioned and with the intention of enriching the IRP debate, it is requested to consider a scenario in which total system costs could

be reduced by supplying natural gas to Aguirre combined cycles through a pipeline connected to the EcoEléctrica regasification terminal.

2. It is not possible to compare the fuel costs of the defined futures (with the AOGP and without the AOGP) due to different indexation of the natural gas price. In the futures where the AOGP is developed, natural gas prices are 100% indexed to Henry Hub, in the others scenarios natural gas prices are 50% indexed to Henry Hub and 50% indexed to FO No.6. It is suggested to consider the same kind of indexation for natural gas prices in all different futures.
3. The formula considered to determine natural gas prices for futures where the AOGP is developed is as follows:  $100\% \text{ HH} + 4.5 \text{ USD/MMBtu}$ , where HH is the price of the natural gas delivered at Henry Hub. This kind of formula does not reflect the industry standards. According to market prices of US LNG, therefore indexed to Henry Hub, FOB natural gas prices formulas include  $115\% \text{ HH} + \text{fixed costs}$ , where the 115% corresponds to costs of gas fuel and transportation to the regasification terminal while the fixed costs represent the liquefaction services.
4. PREPA shall clarify if the future Proposals must include all the projects of the selected Portfolio (new power plants, repowering, decommissioning of existing power plants and improvements in the electrical network) or if they can include only some of the projects of the selected Portfolio.
5. In PREPA's IRP and Supplemental IRP and sensitivities modelled were the AOGP project does not happen, EcoElectrica Spot Fuel Price is assumed equal to PREPA's Oil#2 (diesel) fuel cost. This assumption lacks a valid rationale and introduce distortions to the results of the production cost models.

6. In order to comply with Act No. 82 of 2010 "Public Policy on Energy Diversification by Means of Sustainable and Alternative Renewable Energy in Puerto Rico", PREPA's generation expansion plan under consideration as part of the IRP by the Puerto Rico Energy Commission encompass the integration to the electric system of certain capacity generation additions by means of intermittent renewables sources. Due to its high variability characteristics large penetration of intermittent sources imposes several challenges to the operation and management of electric systems. In particular, PREPA's system being a small islanded grid is highly sensible to large frequency excursions due to its inherent low inertia. If not properly designed, high levels of intermittent sources introduce material changes to the operating regime of the rest of the generating facilities. This effect will be more severe due to low systems levels of energy storage capabilities and conventional thermal plants most probably will be pushed to the limits imposed by their technical constraints (AGC ramp rates, droop characteristics and plant wear and tear). In the case of gas turbines, the effect of an increase in the primary and supplementary frequency control duty may have a substantial effect in the hot gas path components thermal mechanical fatigue where creep, oxidation and corrosion could limit the life of the parts between inspection intervals. The operating regime of the combined cycle facilities have a direct impact on the facility's O&M cost and reliability. PREPA's system studies published to present didn't sufficiently address the intermittent sources impacts on system frequency control due mainly to two factors; limitation of the dynamic characteristics on the models utilized, and the assumptions made regarding availability of system secondary reserve margins. Further investigation and modelling is necessary to confirm the degradation on system area control error (ACE) expected as a result

of the integration of intermittent sources. System ACE deterioration should be prevented in order to avoid undesirable impacts on quality of service and in the operating regime of conventional resources. The results of these further studies will have a direct impact on the technologies and capacities of the new generating stations as well as the implementation schedule of the new resources proposed in the IRP. Thus this further studies are necessary to provide the reasonable level of assurance that the IRP provides for the timely compliance with the Puerto Rico Renewable Portfolio Standard (RPS).

7. In addition, the following IRP Appendix B Model Assumptions should be revised and aligned with accepted industry parameters for modelled technologies in order to improve the accuracy of the IRP unit commitment, economic dispatch and production cost models results;
  - i. Minimum Downtime and Runtime - should be driven only by technology limitations.
  - ii. Heat rate - should consider degradation and accurate auxiliaries consumption.
  - iii. O&M Expenses - should consider same cost concepts across all technologies.

### **III. Conclusion**

EcoEléctrica submits the foregoing brief in compliance with this Honorable Energy Commission's Order dated February 9, 2016 and Resolution dated April 19, 2016. As detailed above, EcoEléctrica understands that there are various issues that the IRP, as drafted, shall clarify, change, address or consider. EcoEléctrica reserves its right to file a supplemented brief if PREPA files any further revisions to the IRP or if any request for extension of time to file intervenors' brief is granted.

**WHEREFORE**, EcoEléctrica respectfully requests that: (i) the Energy Commission acknowledge the foregoing, (ii) the IRP be amended to address and/or adopt the comments questions, suggestions, requested changes and presented matters included herein and (iii) the Energy Commission determine that EcoEléctrica complied with the Order dated February 9, 2016.

**I HEREBY CERTIFY**, that this Motion was notified on this date via the emails of record to the following:

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**RESPECTFULLY** submitted in San Juan, Puerto Rico on April 29, 2016.

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