

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

**NEPR**

**Received:**

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**IN RE:**

**REQUEST FOR APPROVAL OF  
AMMENDED AND RESTATED POWER  
PURCHASE AND OPERATING  
AGREEMENT WITH ECOELECTRICA  
AND NATURAL GAS SALE AND  
PURCHASE AGREEMENT WITH  
NATURGY**

**CASE NO.:**

**NEPR-AP-2019-0001**

**SUBJECT:**

**WindMar and Not for Profit Organizations  
Petition for Intervention and Request for  
Reconsideration**

**OMNIBUS OPPOSITION TO WINDMAR AND NOT FOR PROFIT ENTITIES  
PETITION FOR INTERVENTION AND REQUEST FOR RECONSIDERATION**

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

COMES NOW the Puerto Rico Electric Power Authority through the undersigned legal representation and respectfully sets forth and prays as follows:

**I. INTRODUCTION**

WindMar<sup>1</sup> and several not for profit entities request the Energy Bureau to grant them intervention in the case of caption and to reconsider its Final Determination in which it approved the EcoEléctrica PPOA and Naturgy GSPA Amended Agreements. Notwithstanding, and as will be discussed in the present motion, the intended intervention of the Petitioners is not consistent with the non-adjudicative nature of the process, applicable laws and regulations as there is no provision for a reconsideration of a final order that adjudicates a prior motion for reconsideration. Also, the Energy Bureau should not take lightly the gamesmanship associated with Windmar's intent on intervening after a final order was entered by this Forum. As we will discuss below, it was only after the filing of the Authority's motion to assume the contracts in the Title III proceeding, that

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<sup>1</sup> Capitalized terms not defined herein shall be ascribed the same meaning provided to them in the subsequent sections.

Windmar and others filed motions to intervene and requests for reconsideration in the matter of caption. This was done with the specific intent of arguing before the Title III court that the case was not final. At this stage of the proceedings the only available recourse as a matter of law is for the party affected by the Final Order, the Authority, to seek judicial review of such determination.

Therefore, the Petitioners request to intervene as well as their motion for reconsideration should be denied and stricken from the record.

## II. PROCEDURAL SUMMARY

On November 5, 2019, the Puerto Rico Electric Power Authority (the “Authority”) filed *Request for Approval of Amended and Restated Power Purchase and Operating Agreement with EcoEléctrica and Natural Gas Sale Purchase Agreement with Naturgy; Request for Confidential Treatment of this Letter and Accompanying Attachments* (the “Request for Approval”). At the time, the Authority requested the Energy Bureau to approve (a) the proposed *Amended and Restated Power Purchase and Operating Agreement between EcoEléctrica, L.P. and PREPA* and (b) the proposed *Amended and Restated Natural Gas Sale and Purchase Agreement between Naturgy Aprovevisionamientos, S.A. and PREPA* (the “Amended Agreements” or the “Approved Agreements”), pursuant to Regulation 8815.<sup>2</sup> The Authority later amended the request and moved the Energy Bureau of the Puerto Rico Public Service Regulatory Board (the “Energy Bureau”) to evaluate the Approved Agreements pursuant to the provisions of Article 6.32 of Act 57-2014<sup>3</sup> and the Energy Public Policy established in Act 17-2019<sup>4</sup>. The Request for Approval

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<sup>2</sup> Regulation 8815 of the Puerto Rico Electric Power Authority and the Puerto Rico Energy Commission: *Joint Regulation for the Procurement, Evaluation, Selection, Negotiation and Award of Contracts for the Purchase of Energy and for the Procurement, Evaluation, Selection, Negotiation and Award Process for the Modernization of the Generation Fleet* effective on November 6, 2016 (“Regulation 8815”).

<sup>3</sup> Puerto Rico Energy Transformation and RELIEF Act approved on May 27, 2014, as amended (“Act 57-2014”) 22 L.P.R.A. § 1054ff.

<sup>4</sup> Puerto Rico Energy Public Policy Act approved on April 11, 2019, as amended (“Act 17-2017”) 19 L.P.R. 17.

was duly supported by analysis, expert reports and the draft Amended Agreements. At the time, however, the Energy Bureau reasoned that the Request for Approval ought to be considered after the final resolution regarding the Proposed IRP<sup>5</sup> and therefore, on November 27, 2020, it was denied without prejudice.<sup>6</sup>

As the Energy Bureau noted in its November 27 Order, the consideration of the Authority's Proposed Integrated Resource Plan ("IRP") was being reviewed parallel to the captioned proceeding.<sup>7</sup> The petitioners were aware of this fact because WindMar Renewable Energy ("WindMar") and the Not for Profit Intervenors [sic] ("NFP"),<sup>8</sup> were intervenors in the Proposed IRP Proceedings. The IRP is a process by which the Energy Bureau evaluates and approves the Authority's plans for its resources over the period of the next twenty (20) year. As part of this proceeding the parties can conduct discovery of information relevant to the Authority's plans. This discovery can be served on the Authority by intervenors or the Energy Bureau and vice versa. On November 27 and December 6 of 2019, the Authority served on all the parties in the Proposed IRP Proceedings its response to the Energy Bureau's ninth requirement for information ("PREB 9<sup>th</sup> ROI"). In response to item identified as PREB-PREPA-09-01 of PREB 9<sup>th</sup> ROI, the Authority stated:

EcoEléctrica was assumed to remain in service considering the conditions stated in **the contract renegotiation underway** the (sic) is expected to result in the extension of the operation of this plant. The new contract

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<sup>5</sup> The "Proposed IRP" is the integrated resource plan that is currently submitted before the Energy Bureau for approval under case *In Re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, case no. CEPR-AP-2018-0001 (the "Proposed IRP Proceedings").

<sup>6</sup> *Resolution and Order* entered on November 27, 2019 (the "November 27 Order").

<sup>7</sup> *In Re: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, case no. CEPR-AP-2018-0001 (the "Proposed IRP Proceedings").

<sup>8</sup> WindMar and NFP together are hereinafter referred to as the "Petitioners." The Not for Profit Intervenors [sic] are listed as Instituto de Competitividad y Sostenibilidad Económica de Puerto Rico, Centro Unido de Detallistas, Cámara de Mercadeo, Industria y Distribución de Alimentos, Puerto Rico Manufacturers Association and Unidos Por Utuado. Even though NFP labels itself as "Intervenors", they are not. However, they are intervenors in the Proposed IRP Proceedings.

includes reduced capacity prices and delivered costs of LNG gas to EcoEléctrica and Costa Sur. The restated PPOA **is negotiated to start on January 1st, 2020 and the term of the PPOA will be extended to Sept 30, 2032.**

After expiration of the PPOA in 2032, capacity payments (FOM and Demand Charges) are modeled to be reduced to 33% of the re-negotiated capacity payments. This amount will cover at least the fixed operation and maintenance costs of the LNG terminal serving EcoElectrica and the fixed operational cost of the plant. It is also assumed that PREPA will be charged the VOM costs of a typical CCGT post 2032. The program was free to retire the plant after 2032.<sup>9</sup>

Accordingly, since at least November 27, 2019 Petitioners were formally apprised of the “renegotiation [that was] underway.”<sup>10</sup> On December 13, 2019, the Energy Bureau entered a *Resolution and Order* in the Proposed IRP Proceeding in which the Petitioners, intervenors and the general public were informed again that the Authority had filed the Request for Approval and had moved the Energy Bureau to approve the Amended Agreements.<sup>11</sup> On the December 13, 2019 IRP Order, the Energy Bureau stated that it “dee[med] necessary to perform additional analysis regarding the [Proposed] Agreement's terms in the context of the [P]roposed IRP” and, as a result of that determination, the Energy Bureau issued its tenth requirement of information (PREB 10<sup>th</sup> ROI).<sup>12</sup> The discovery requests listed in PREB 10<sup>th</sup> ROI were directly related to the Amended Agreements.<sup>13</sup> The Petitioners are familiar with these discovery requests because the parties are

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<sup>9</sup> *The Puerto Rico Electric Power Authority Additional Responses to the Puerto Rico Energy Bureau Ninth Requirement of Information* dated and served on December 6, 2020 (Exhibit A) at pgs. 7-8 (Emphasis provided).

<sup>10</sup> *Id.*

<sup>11</sup> *Resolution and Order* entered in the Proposed IRP Proceedings on December 13, 2020 (the “December 13 IRP Order”) (“On the other hand, on November 5, 2019, PREPA filed before the Energy Bureau a document titled Request for Approval of Amended and Restated Power Purchase Agreement with EcoEléctrica and Natural Gas Sale and Purchase Agreement with Naturgy; Request for Confidential Treatment of its Letter and Accompanying Attachments (“Petition”), under Case No. NE PR-AP-2019-0001.2 In its Petition, PREPA requested the Energy Bureau to, pursuant to Section 7.1 of Regulation 8815 3, review and approve an Amended and Restated Power Purchase and Operating Agreement between EcoEléctrica, L.P. (“EcoElectrica”) and PREPA, and an Amended and Restated Natural Gas Sale and Purchase Agreement between Naturgy Aprovevisionamientos, S.A. (“Naturgy”) and PREPA, (together the “Agreements”). PREPA also requested the Energy Bureau to treat the Petition and its attachments as confidential documents.” (Internal citations omitted)).

<sup>12</sup> *Id.*

<sup>13</sup> *10<sup>th</sup> Requirement of Information to PREPA* served by the Energy Bureau on all the intervenors on December 13, 2019 (Exhibit B).

required to serve all the discovery requests, motions, resolutions and orders as part of the regular course of the case.<sup>14</sup> As the Energy Bureau is inherently aware, Petitioners were active participants in the Proposed IRP Proceedings, they filed discovery requests, written testimony, appeared at evidentiary hearings represented by counsel, presented expert testimony and consistently opposed to the Authority's Proposed IRP in many different ways. Nonetheless, when it came to the Amended Agreements, the Petitioners did not object to the Authority's responses to the PREB 9<sup>th</sup> ROI or PREB 10<sup>th</sup> ROI, nor did they move to serve additional requests on the subject.<sup>15</sup> Moreover, during the five (5) days of evidentiary hearings of the Proposed IRP Petitioners appeared represented by counsel and they did not mention the Amended Agreements or the related parallel ongoing proceeding that they now intend to hold hostage.

After several procedural milestones, the Energy Bureau resumed the Request for Approval of the Amended Agreements and summoned the Authority to appear before it for a Technical Conference.<sup>16</sup> During the Technical Conference, the Authority's officers and experts briefed the Energy Bureau about the terms of the Amended Agreements, discussed the underlying basis for the reports and analysis submitted by the Authority and also answered the Energy Bureau's technical questions and concerns, especially in light of the then recent seismic events that had

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<sup>14</sup> PREPA requests the Energy Bureau can take official knowledge of this fact.

<sup>15</sup> *Id.*

<sup>16</sup> On November 27, 2019, the Energy Bureau entered a *Resolution and Order* denying the Request for Approval. The Energy Bureau determined that, since the Proposed Agreements terms had not been considered in the evaluation process of the Approved IRP, the Energy Bureau couldn't determine that the Proposed Agreements were considered in the Approved IRP. Moreover, the Energy Bureau determined that requesting the information it needed to thoroughly evaluate the Proposed Agreements under the case of caption was going to be duplicative of these carried in the Proposed IRP Process. Therefore, the Energy Bureau denied the Petition and, since it had not made an evaluation of the Petition on the merits, the determination was without prejudice. The Energy Bureau granted PREPA leave to file the Petition after it issued a final resolution in the Proposed IRP Proceedings. On December 9, 2019, PREPA filed a *Request for Reconsideration of Resolution and Order on Denial without Prejudice of Approval of Amended and Restated Power Purchase and Operating Agreement with EcoEléctrica and Natural Gas Alte and Purchase Agreement with Naturgy* (the "Reconsideration"). After the Reconsideration was filed, PREPA requested a hearing to brief the Energy Bureau on the processes and considerations that lead to the Proposed Agreements. On January 17, 2020, the Energy Bureau granted PREPA's request and scheduled a Technical Hearing that was held on February 14, 2020.

affected Costa Sur. After thoroughly evaluating the submittals by the Authority, taking official knowledge of the responses to the PREB 10<sup>th</sup> ROI and finding the Amended Agreements in compliance with the Proposed IRP, on March 11, 2020, the Energy Bureau **reconsidered** its November 27, 2019's denial of the Request for Approval and issued a final *Resolution and Order* approving the Amended Agreements.<sup>17</sup> In summary, the Energy Bureau determined that the Amended Agreements were consistent with the Proposed IRP and the Puerto Rico Energy Policy included in Act 17-2019.<sup>18</sup>

Almost a month after the Order approving the Amended Agreements, on April 1, 2020, the Authority filed *PREPA's Urgent Motion for Entry of an Order Authorizing PREPA to Assume Certain Contracts with EcoEléctrica, L.P. and Gas Natural Aprovevisionamientos SDG, S.A.* ("Motion to Assume the Approved Agreements") in the Title III Court<sup>19</sup>. The Authority sought to assume the Approved Agreements under the provisions of Title III of the Puerto Rico Oversight and Management Stability Act (PROMESA)<sup>20</sup>.

On April 27, 2020, WindMar filed an opposition to the Request to Assume the Approved Agreements in the Title III proceeding.<sup>21</sup> Surprisingly, almost five (5) months after the submission of the Request for Approval, Petitioners for the first time questioned the Amended Agreements and the Final Order entered by the Energy Bureau. It was done inexcusably, almost like an

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<sup>17</sup> *Resolution and Order* entered on March 11, 2020 (the "Final Order") ("Thus, with the benefit of [the] evaluation and analysis process [produced in response to PREB 10<sup>th</sup> ROI], the Energy Bureau is in a position to reconsider its initial determination.").

<sup>18</sup> *Id.*

<sup>19</sup> The United States District Court for the District of Puerto Rico (the "Title III Court").

<sup>20</sup> PROMESA is codified at 48 USC 2101 *et seq.*

<sup>21</sup> *Response to PREPA's Urgent Motion for Entry of an Order Authorizing PREPA to Assume Certain Contracts with EcoEléctrica, L.P. and Gas Natural Aprovevisionamientos SDG, S.A.* filed by WindMar in case 17-04780-LTS [ECF No. 1973] pending before the United States District Court for the District of Puerto Rico. Documents filed in this docket can be accessed free of charge at <https://cases.primeclerk.com/puertorico/Home-DocketInfo?DocAttribute=4386&DocAttrName=PREPADOCKET>.

afterthought, and in the incorrect proceeding and forum. Following suit<sup>22</sup> and after appraising itself of the extension orders as a result of the COVID-19 pandemic, on May 22, 2020, **more than six (6) months** after the Authority submitted the Request for Approval and disclosed in the Proposed IRP Proceedings that the Amended Agreements were being negotiated and **more than two (2) months** after the Energy Bureau resolved the Authority's Reconsideration and entered the Final Order approving the Amended Agreements, the Petitioners filed a *Petition for Intervention and Motion for Reconsideration* (the "Petition to Intervene") with the Energy Bureau.<sup>23</sup>

In their filing with the Energy Bureau, Petitioners mix their self-serving and disingenuous factual arguments with statements made and argued in their briefs and oral arguments presented before the Title III Court related to the Motion to Assume. Thereby, intermingling different legal standards which incorporate energy regulations, local and bankruptcy law. However, this Forum should not engage in this sort of legal gamesmanship and evaluate the Petition to Intervene for what it is, a desperate attempt to affect the decision of the Title III court by affirming in that tribunal that the case before the Energy Bureau is not final. The question before this forum is narrow in its scope. Do applicable local laws and regulation allow for Petitioners to intervene in a non-adjudicative proceeding which has a final order in place? The answer is no and therefore the Energy Bureau should deny the Petition.

As will be further developed below, the Petitioners request is not consistent with the non-adjudicative nature of this proceeding and there is no right, as a matter of law, to a second bite at the apple, *vis a vis*, a reconsideration to a final order ruling on a previous request for reconsideration. At present, the next available recourse would be for the party affected by the Final

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<sup>22</sup> As other intervenors and groups did.

<sup>23</sup> The Petitioners are named in pg. 1 of the Petition to Intervene.

Order, the Authority, to seek judicial review from the Court of Appeals, which it will not. Therefore, the Energy Bureau should **DENY** and **STRIKE** Petitioner's request for intervention and the request for reconsideration from the record.

### III. LEGAL STANDARD AND ANALYSIS

#### a. The Petitioners cannot intervene in the matter of caption because the right intervene is limited to adjudicatory proceedings.

Petitioners request to intervene is made under section 3.5 of the Uniform Administrative Procedures Act of the Government of Puerto Rico<sup>24</sup> and section 5.05 of Regulation 8543<sup>25</sup>. Act 38-2017 and Regulation 8543 both provide that the right to intervention is limited to adjudicative proceedings.<sup>26</sup>

In an adjudicatory proceeding the administrative “agency determines the **rights, obligations or privileges that correspond to a party.**”<sup>27</sup> Chapter III of Act 38-2017 regulates adjudicative proceedings. Specifically, section 3.5 provides that “[a]ny person having a legitimate interest in an **adjudicatory proceeding** before an agency may file a written, duly grounded application in order to be allowed to intervene or participate in said procedure.”<sup>28</sup>

As stated before, Petitioners base their Petition in section Chapter III of Act 38-2017. A comprehensive review of this chapter shows that the process is clearly made for adjudicatory proceedings<sup>29</sup>. Chapter III of Act 38-2017 provides examples of what an adjudicative proceeding

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<sup>24</sup> Uniform Administrative Procedures Act of the Government of Puerto Rico approved on June 30, 2017, as amended (“Act 38-2017”).

<sup>25</sup> Regulation 8543 of the Energy Bureau: *Regulation on Adjudicative, Notice of Non-Compliance, Rate Review and Investigation Proceedings* effective on January 16, 2015 (“Regulation 8543”).

<sup>26</sup> 3 L.P.R.A. § 9645, *see also* Regulation 8543 at sec. 5.05.

<sup>27</sup> 3 L.P.R.A. § 9603(b) (Emphasis provided).

<sup>28</sup> *Id.*

<sup>29</sup> As a matter of fact, the chapter is titled “Adjudicatory Proceedings.”



entails. These processes include administrative judges,<sup>30</sup> the filing of complaints,<sup>31</sup> initial scheduling conferences in which the parties discuss the process and evidence to be used,<sup>32</sup> discovery of evidence,<sup>33</sup> “adjudicative” hearings in which there is evidence, direct and cross examination of witnesses,<sup>34</sup> entry of default,<sup>35</sup> among others. None of these processes are available or contemplated as part of the proceeding of caption.

By the same token, a review of the Energy Bureau’s Regulation 8543 shows that the right to intervene is contingent to the adjudication of a controversy. The right to intervene is included in Regulation 8543 as part of the provisions of articles 3, 4 and 5. These articles regulate processes in which there is a complaint,<sup>36</sup> counterclaim,<sup>37</sup> response to complaint,<sup>38</sup> substitution of parties,<sup>39</sup> amendment to statements or responses,<sup>40</sup> “claim[s] requesting the [Energy Bureau]’s review of” “the invoices of [the Authority] or any other electric service company”, “the decisions of [the Authority] regarding the process of interconnection,” “the decisions of [the Authority] regarding participation in the net mediation program or any other related program[s],” and “the decisions of any other company regarding the provision of electrical services to customers.”<sup>41</sup>

As shown above, the right to intervention is subject to the adjudicative nature of the proceeding in which the movant seeks to intervene. However, a closer look at the proceeding of caption and the applicable laws and regulations unequivocally show that the current proceeding is

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<sup>30</sup> Sec 3.3.

<sup>31</sup> Sec 3.4.

<sup>32</sup> Sec. 3.7.

<sup>33</sup> Sec. 3.8.

<sup>34</sup> Secs. 3.9, 3.13.

<sup>35</sup> Sec. 3.9.

<sup>36</sup> Secs. 3.02, 3.03 Regulation 8543.

<sup>37</sup> *Id.*

<sup>38</sup> Sec. 4.01, 4.02.

<sup>39</sup> Sec. 5.01.

<sup>40</sup> Sec. 5.02.

<sup>41</sup> Sec. 3.04; Regulation 8543.

not adjudicative in nature as it does not contemplate the due process elements listed in both Act 38-2017 and Regulation 8543 that result in the determination of rights, obligations or privileges of a party involved.

**i. The review of the Amended Agreements was made pursuant to Sec 6.32 of Act 57-2014, not under an adjudicative process.**

The matter of caption is a process under which the Energy Bureau revised the amendments to the EcoEléctrica PPOA and Naturgy's GSPA agreements with the Authority under article 6.32 of Act 57-2014 and determined that these were compliant with said article as well as other applicable laws and regulations. As the Final Order provides:

Article 6.3 of Act 57-2014 provides that the Energy Bureau has the power to establish and implement regulations and the necessary regulatory actions to determine the guidelines, standards, practices, and processes pertaining to purchase power agreements, as well as to modernizing power plants or electric power generation facilities. In addition, the Energy Bureau has the power to establish and implement, through regulation, the public policy rules regarding electric power service companies, as well as any transaction, action or omission in connection with the electric power grid and the electric power infrastructure of Puerto Rico. The Energy Bureau shall implement public policy rules that are consistent with the Energy Public Policy.

Moreover, Paragraph (b) of Article 1.11 of Act 17-2019 provides that any power purchase agreement, or any amendment to, or extension of, a power purchase agreement awarded prior to the approval of Act 57-2014 between PREPA and any independent power producer, such as EcoEléctrica, shall be executed pursuant to the provisions of Article 6.32 of Act 57-2014 and the regulations adopted thereunder by the Energy Bureau.

In order to ensure that such agreements have an appropriate and reasonable price, the parameters established by the Energy Bureau shall be consistent with the ones normally used by the industry for such purposes, as well as any other parameter or method used to regulate revenues attributable to power purchase agreements. In addition, Power Purchase Agreements shall be awarded taking into account the goals and mandates established in the Renewable Portfolio Standards, which compel the transition from energy generation from fossil fuels to an aggressive integration of renewable energy as provided in Act 82-2010.

On the other hand, Article 6.32 of Act 57-2014 provides a comprehensive statutory framework for the evaluation and approval of power purchase agreements, as well as other transactions involving electric power services companies, such as PREPA and EcoEléctrica. It reiterates the Energy Bureau's authority to adopt the necessary regulations and regulatory actions that govern the process of evaluation and approval of power purchase agreements and other transactions involving electric power services companies. As explained before, Paragraph (b) of Article 6.32 expressly states that any extension of, or amendment to, a power purchase agreement executed prior to the approval of Act 57-2014 shall comply with the Puerto Rico Energy Public Policy Act and shall be subject to the approval of the Energy Bureau.<sup>42</sup>

The Final Order provides that Article 6.32 sets the statutory framework for the Energy Bureau to evaluate amended power purchase agreements and therefore, the Amended Agreements. The relevant part of Article 6.32 states:

(a) The Energy [Bureau] shall evaluate and approve all agreements between PREPA and any electric power service company, including independent power producers, prior to the execution thereof. This includes but shall not be limited to the evaluation and approval of power purchase agreements whereby an independent power producer shall provide energy to PREPA for its distribution by the latter.

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(c) The Commission shall adopt and promulgate regulations that establish the guidelines and standards to which the agreements between PREPA and any independent power producer shall adhere; and the terms and conditions that shall be included in every power purchase and interconnection agreements, including a reasonable cost per kilowatt-hour (kWh) according to the type of generation technology. In the process of analyzing and drafting these regulations, the Commission shall request and consider the comments and feedback of PREPA, the Commonwealth Energy Public Policy Office, independent power producers, and the public in general. The guidelines and standards established by the Commission through regulations shall have the purpose of ensuring compliance with the principles of this chapter, in §§ 191 217 of this title, known as the 'Puerto Rico Electric Power Authority Act', and the public policy of the Commonwealth of Puerto Rico.

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<sup>42</sup> *Final Resolution and Order* at pgs. 7-8 (Original footnotes and citations omitted).

(d) In evaluating every proposal of agreements between PREPA and an electric power service company, the [Energy Bureau] shall consider the provisions of PREPA's integrated resource plan. The Commission shall not approve an agreement that is inconsistent with PREPA's integrated resource plan, particularly in all that pertains to the conservation and efficiency goals established in PREPA's integrated resource plan.

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(f) In evaluating a proposal for an agreement between PREPA and an electric power service company, the [Energy Bureau] shall verify whether or not the interconnection jeopardizes the reliability and safety of the electric power grid and require the elimination of any term or condition under the agreement's proposal that is contrary to or jeopardizes the safe and reliable operations of the electric power grid. The Commission shall not approve any agreement when technical evidence shows that the project in question or the contractual conditions thereof would jeopardize the reliability and safety of the electric power grid of Puerto Rico.

(g) The [Energy Bureau] shall oversee that the rates, fees, rents, or charges paid by [the Authority] to independent power producers are just and reasonable and protect the public interest and the treasury. The [the Authority] shall oversee that the charge to be paid for interconnecting to [the Authority]'s system, including construction fees and wheeling rates, as well as any other [the Authority] requirement applicable to independent power producers or other electric power service company that wish to interconnect to [the Authority]'s system, is just and reasonable. In this process, the [Bureau] shall assure that the charges allow for an interconnection that does not affect the capacity of [the Authority] to provide a reliable electric power service consistent with the protection of the environment, the mandates of [the Authority]'s Act, and that do not adversely affect [the Authority]'s customers.

(h) In evaluating any power purchase agreements' proposal, the [Bureau] shall require PREPA to submit the 'Supplementary Study' for the project subject of the proposed agreement, duly evaluated and endorsed by PREPA, or the pertinent technical analysis supporting the agreement. If a project does not require a 'Supplementary Study', PREPA shall issue a certification to the Commission stating the reasons for which the circumstances and characteristics of the project do not warrant a 'Supplementary Study' or technical evaluation.<sup>43</sup>

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<sup>43</sup> 22 L.P.R.A. § 1054ff.

As provided by Act 57-2014, what the Energy Bureau oversees and approves in a process under Article 6.32, is corroboration that the draft power purchase agreements submitted by the Authority to the Energy Bureau comply with the requirements of the law. This process is thus more akin to a process regulating *ex-parte* procedures of the Authority than the adjudication of rights which would allow Petitioners to request intervention. Therefore, the Request for Approval is not an adjudicatory proceeding and thus, no organization or individual has a right to intervene in it.

**b. The Energy Bureau has already determined that this process is not designed for the participation of other parties or intervenors.**

The Energy Bureau has had the opportunity to settle a request for intervention in the case of caption. EcoEléctrica, party to one of the Amended Agreements, requested the Energy Bureau for leave to intervene in the proceedings.<sup>44</sup> EcoEléctrica argued that it was entitled to have full rights as an intervening party because it (1) had substantial interests in the proceedings, (2) was able to assist with the proceeding, (3) would not delay the proceeding and, (4) its interests were aligned with the public interest.<sup>45</sup> After analyzing EcoEléctrica's Petition to Intervene and what their participation in the Request for Approval would imply, the Energy Bureau determined to **deny** their request to intervene and granted EcoEléctrica only a limited participation <sup>46</sup>

EcoEléctrica's expertise and knowledge in relation to the matters addressed in the EcoEléctrica PPOA was indisputable. They were the party to the original and amended agreements and had the technical expertise to assist the Energy Bureau in navigating any concerns or questions it had as to the Proposed Agreements. Also, when evaluating EcoEléctrica's Petition to Intervene, the Energy Bureau considered that they had already been a party to the negotiations of the

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<sup>44</sup> *Petition of EcoEléctrica, L.P. to Intervene* filed on December 16, 2019 (the "EcoEléctrica's Petition to Intervene").

<sup>45</sup> *Id.*

<sup>46</sup> See *Resolution* in case NEPR-AP-2019-0001 entered on January 28<sup>th</sup>, 2020.

agreements in question, that they were a corporation with vast experience as an independent power producer and that the intervention would not cause undue delay in the process.<sup>47</sup> Notwithstanding and in spite of all of this, the Energy Bureau **denied EcoEléctrica's Petition to Intervene and granted them only a limited participation.**<sup>48</sup> The reasoning behind the Energy Bureau's decision was that the intervenor designation "was not consistent with the non-adjudicative nature of this phase of the proceeding."<sup>49</sup>

**c. The Energy Bureau analyzed a request similar to the Petitioners' in a similar case and which the Energy Bureau reiterated the denial to an organizations' intervention in a non-adjudicatory proceeding.**

The Energy Bureau recently ruled on a request for intervention in a process very similar to the one followed in the case of caption in the matter of *In Re: Request for Proposal of Temporary Emergency Generation*.<sup>50</sup> In the Temporary Generation RFP Case, the Energy Bureau was tasked with reviewing and approving a request for proposal (RFP) document that PREPA intended to publish. As with the current proceeding, the Temporary Generation RFP Case was not designed to adjudicate the rights of any parties, rather, its purpose was the approval of the RFP document pursuant to applicable laws and regulations. After the RFP's approval, the Energy Bureau would continue to oversee the process up to the approval of the contract that was going to be executed between PREPA and the selected proponent.<sup>51</sup> The process can be compared with the process

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<sup>47</sup> See *Id.* at Sec. III ("EcoElectrica's expertise and industry knowledge may benefit the review process, particularly considering its participation in the negotiation of the Proposed Agreements and its vast experience as an independent power producer.").

<sup>48</sup> See *Id.* at Sec. IV (Emphasis provided).

<sup>49</sup> See *Resolution and Order* denying EcoEléctrica's Request to Intervene at Sec IV.

<sup>50</sup> *In Re: Request for Proposals for Temporary Emergency Generation*, case no. NEPR-AP-2020-0001 (the "Temporary Generation RFP Case").

<sup>51</sup> *Resolution* in Temporary Generation RFP Case entered on April 21, 2020 at pag. 8 ("The administrative process before the Energy Bureau under Regulation 8815 has two parts: (1) the evaluation and approval (or disapproval) of a proposed RFP and (2) the approval (or disapproval) of the proposed contract (or contracts) that results from the approved RFP process.").

followed in this case, both are non-adjudicative processes in which the Energy Bureau oversees an action of PREPA that is regulated by additional energy regulations.

In the Temporary Generation RFP Case, the Energy Bureau analyzed movants' petition to intervene and determined that "the non-adjudicative nature of this process [and] the current stage of the instant proceeding does not allow for other parties' intervention." The Energy Bureau based its reasoning in section 3.5 of Act 38-2017 which provides that that "any person who has a legitimate interest in an **adjudicative proceeding** before an agency may submit a request in writing to be allowed to intervene or participate in said procedure."<sup>52</sup> The movants' petition was denied.

**d. The Energy Bureau must follow its own previous rulings of denying petitions to intervene in non-adjudicative process.**

In Puerto Rico, the law of the case, also known as the *stare decisis*, applies to the effect that prior orders from the same judge might have within the same case.<sup>53</sup> The controversies submitted to a court, litigated and decided should be respected and obeyed as final.<sup>54</sup> This practice promotes the stability and certainty of the law.<sup>55</sup> As a general rule, a court must resist to alter its own decisions and rulings.<sup>56</sup> The value of judicial precedent responds to considerations about stability and certainty that the law must have, in the spirit of imparting fair justice.<sup>57</sup> The reasoning behind judicial precedent is that it is advantageous to use accumulated experiences from previous

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<sup>52</sup> Resolution and Order, pag. 10 Sec. II B (Original emphasis).

<sup>53</sup> *Mgmt. Adm. Servs, Corp. v. E. L. A.*, 152 D.P.R. 607 (2000).

<sup>54</sup> *Id.* at 607-608.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.*

<sup>57</sup> *Rodriguez v. Hosp.*, 186 D.P.R. 889, 927-28 (2012) (*See, e.g.,* K.N. Llewellyn, Case Law in Encyclopedia \* 928 of the Social Sciences, New York, The Macmillan Company, 1930, Vol. III-IV, p. 249 ("The force of precedent in the law is heightened by ... that curious, almost universal sense of justice which urges that all men are to be treated properly alike in like circumstances.")).

cases, in addition to avoiding having to deal with the same problem differently each time it is presented in court.<sup>58</sup>

As stated before, the present matter does not adjudicate the rights of any party, it is an *ex parte* process in which the Energy Bureau reviewed drafts of the Amended Agreements and determined that they complied, to the extent of their review, with Act 57-2017 and Puerto Rico Public Energy Policy. Therefore, there is no right for a party to intervene before this forum.

The Energy Bureau's reasoning and subsequent denial of EcoEléctrica's intervention should be followed to deny Petitioners' request. Considering the applicable laws and the rationale used by the Energy Bureau for the resolution of EcoElectrica's petition to intervene, the Petitioner's request should be denied.

**e. The Petitioners intervention at this junction, when the Energy Bureau has already entered a Final Order, is untimely and immaterial.**

The Petitioners request to intervene at this stage of the proceedings is beyond untimely. The Petitioners have been cognizant of the fact that the Authority was negotiating the Amended Agreements since at least December 6, 2019, when the Authority served them with the responses to the PREB 9<sup>th</sup> ROI. Moreover, on December 13, 2020, the Energy Bureau entered an order in the Proposed IRP Proceedings in which is clearly stated that this case had been filed.<sup>59</sup> However, the Petitioners elected to wait until after the Final Order had been entered to request to intervene and move the Energy Bureau for a belated second reconsideration. The dilatory tactics of the Petitioners, in which they seek to untimely delay the execution of the Approved Agreements by challenging the Final Order, is groundless. It is evident that the only reason for the filing of this

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<sup>58</sup> *Rodriguez* at 928 (See M.D.A. Freeman, Lloyd's Introduction to Jurisprudence, 8th ed., London, Sweet Maxwell, 2008, p. 1536.).

<sup>59</sup> December 13 IRP Order.



Petition to Intervene was to argue to the Title III Court that the Motion to Assume the Agreements was not ripe for consideration by that forum. If Petitioners had the substantive technical knowledge and evidence to show that the Amended Agreements should have not been approved, they should have filed something in the Proposed IRP Proceedings when the Energy Bureau served discovery related to the Amended Agreements and their feasibility. Why didn't Petitioners request to intervene in the case of caption when the Energy Bureau informed them in December 13, 2020 that this case had been opened? The Energy Bureau should not condone this conduct as Petitioners had more than six (6) months to request intervention in this case but chose to wait until the Energy Bureau had entered the Final Order to do so. What is more, the only reason for such intervention was to use the extension orders entered as a result of the COVID-19 pandemic as a dilatory tactic to argue in the Title III court that the case before the Energy Bureau was not final.

This case has been evaluated and decided and the Final Order is the result of a motion for reconsideration that had been previously filed by the Authority. Not only do the Petitioners ignore the rules and regulations applicable to reconsiderations, but they also show a complete disregard and indifference to the months of administrative resources and efforts the Energy Bureau and the Authority have put into these proceedings. A party's intervention at this juncture, when the case before the Energy Bureau has been finalized is unwarranted.

**f. The Petitioners do not meet Act 38-2017 requirements for intervention.**

If the Energy Bureau were to derail from what is clear precedent on the matter of intervention and decided to evaluate Petitioners request on the merits, it is the Authority's position that the factors set forth for intervention by section 3.5 of Act 38-2017 are not met and Petitioners request should be denied.

Pursuant to Act 38-2017, the Energy Bureau has the prerogative to grant or deny a Petition to Intervene at its discretion after taking the following factors into consideration, among others:

(a) Whether the petitioner's interests may be adversely affected by the adjudicatory procedure. (b) Whether there are no other legal means for the petitioner to adequately protect his interests. (c) Whether the petitioner's interests are already adequately represented by the parties to the procedure. (d) Whether the petitioner's participation may help, within reason, to prepare a more complete record of the procedure. (e) Whether the petitioner's participation may extend or delay the procedure excessively. (f) Whether the petitioner represents or is the spokesperson of other groups or entities in the community. (g) Whether the petitioner can contribute information, expertise, specialized knowledge or technical advice which is otherwise not available in the procedure.

The agency shall apply the above criteria liberally and may require that additional evidence be submitted to it in order to issue the corresponding determination with regard to the application to intervene.<sup>60</sup>

**i. The Petitioner's interests will not be adversely affected by the procedure of caption.**

Assuming *arguendo* that the case of caption does involve the Petitioners' interests, mere general allegations without concrete indications of adversity to its interest is not enough to bend the needle in its favor. Petitioner's motion lacks any concrete indication into how it is that the Amended Agreements affect its interest. In the current proceeding, the Authority presented to the Energy Bureau the draft Amended Agreements for their consideration under specific legal provisions and regulations. Under these proceedings, it is the Energy Bureau, the Agency that has been tasked by the Legislature with overseeing the interests at stake in the process and enforcing compliance with the applicable laws and regulations.

**ii. The Petitioners' interests are adequately represented by the Energy Bureau, the administrative agency tasked with overseeing compliance with the applicable regulatory framework.**

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<sup>60</sup> *Id.* at § 9645.

The Energy Bureau was envisioned by the Puerto Rico legislature as the agency designated by law with overseeing the Authority's processes and compliance with Puerto Rico's energy policy, including the renewable energy portfolio standards.<sup>61</sup> The Energy Bureau is:

the key component for the faithful and transparent execution of the Energy Reform. It shall be an independent government entity in charge of regulating, overseeing, and ensuring compliance with the public policy on energy of the Commonwealth of Puerto Rico.”<sup>62</sup>

Among the powers and duties granted to the Energy Bureau are to:

(a) Oversee and ensure execution and implementation of the public policy on the electric power service of the Commonwealth of Puerto Rico.

...

(c) Establish and implement regulations and the necessary regulatory actions to guarantee the capacity, reliability, safety, efficiency, and reasonability of electricity rates of Puerto Rico and establish the guidelines, standards, practices, and processes to be followed by the Authority when purchasing electricity from other power service companies and modernize its power plants or facilities; provided, that every power purchase agreement shall meet the standards, terms, and conditions established by the Commission in accordance with the provisions of subsection (a)(2) of § 196c of this title.

...

(d) Oversee the quality and reliability of the electric power services provided by PREPA and any other electric power company certified in Puerto Rico.

...

(h) Review and approve policies and strategic plans, as well as short-, medium-, and long-term plans in connection with energy resources integrated planning in Puerto Rico, and oversee compliance therewith.

...

(r) Oversee compliance with any mandatory standard or goal under the renewable energy portfolio imposed by legislation or regulations.

...

(v) Establish reliability standards for the electric power grid of Puerto Rico in accordance with the parameters recognized by governmental and nongovernmental organizations specialized in electric power service and oversee compliance therewith.<sup>63</sup>

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<sup>61</sup> 22 L.P.R.A. § 1054, *et seq.*

<sup>62</sup> *Id.* at § 1051, *Statement of Motives, Regulations.*

<sup>63</sup> *Id.* at § 1054b.

Pursuant to these prerogatives, the Energy Bureau proceeded with a detailed analysis of how the Amended Agreements complied not only with Act 57-2014 and Act 17-2019 but also with the Proposed IRP, thoroughly considered and analyzed the Amended Agreements and aptly sustained its determination with the record.<sup>64</sup> Further, the interests pursued in both Act 57-2014 and Act 17-2019 were adequately safeguarded by the Energy Bureau's independent criteria as the Authority's regulator.

**iii. The Petitioners' have had the opportunity to participate in the IRP proceeding where the Amended Agreements were considered. Allowing Petitioner's participation in this proceeding will return the process to square one.**

As discussed *in extenso*, Petitioners were avid participants in the Proposed IRP proceeding which included extensive discovery including answers to requests for information and hearings. During this proceeding, the Amended Agreements were discussed, and Petitioners had the opportunity to have their say and challenge the feasibility of the transaction. They decided not to. At this stage of this case, Petitioners' request to intervene is unwarranted, ill intended and is done with the only purpose of delaying execution of the agreements. Further, the intervention would result in starting the proceedings from square one which has no rational basis given that Petitioners fully participated in the Proposed IRP Proceedings where the Amended Agreements were considered and amply discussed.

**iv. The Petitioners' participation is not necessary to have a more complete record and the specialized knowledge and technical advice needed to review the Amended Agreements was provided to the Energy Bureau by the Authority.**

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<sup>64</sup> Courts give deference to administrative decisions because administrative agencies have expert knowledge and also, specialized experience in the matters that are entrusted to them. *P.C.M.E. Comercial, S.E. et al. v. Junta de Calidad Ambiental, et al.*, 66 D.P.R. 599 (2005).

Petitioners have woefully failed at pointing out what “knowledge” or “technical” advice they possess that would be useful or even necessary to evaluate the transactions. This failure is enough to deny them their Petition. The Amended Agreements are contracts that include complex transactions which require specialized technical knowledge to assess their provisions. The Authority, the only wholesale power producer in Puerto Rico, is, without a doubt, the best suited contributor of the specialized knowledge required to comprehend the technical requirements of the transaction. The Authority was able to thoroughly explain and support the details of the transaction to the Energy Bureau and, in the areas that the Authority needed additional technical and specialized support, the Authority produced experts to the Energy Bureau that were able to answer all the technical questions and explain how the Amended Agreements complied with the applicable laws and regulations. Lastly, it is the Energy Bureau who has the technical knowledge and expertise, not only to evaluate the Amended Agreements, but also to identify and determine if they need additional information or technical input. The Energy Bureau did not seem wavering in its Final Order as it thoroughly expressed and discussed how the Amended Agreements complied with the Proposed IRP and the Puerto Rico Energy policies as manifested in Act 17-2019 and Act 57-2014. This, in and of itself, is sufficient evidence that no further information is needed to evaluate the agreements.

**g. The Petition to Intervene is untimely because the Request for Approval has been fully considered by the Energy Bureau and there is no additional reconsideration process available.**

Petitioners request to intervene **after** a Final Order granting a motion for reconsideration implies that there is no reconsideration remedy available at this stage.<sup>65</sup> As stated before, Chapter III of the Uniform Administrative Procedures Act regulates adjudicative administrative

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<sup>65</sup> 3 L.P.R.A. §§ 9641 – 9661.

proceedings.<sup>66</sup> Section 3.15 of said chapter provides who and at what stage a reconsideration can be filed. Pursuant to said section, “the party adversely affected by an order or a partial or final judgment may file a motion for reconsideration of such order or judgment.”<sup>67</sup> **“If a determination is made upon consideration, the term to petition for review shall begin to elapse from the filing date of a copy of the notice of the agency’s final judgment regarding the motion for reconsideration in the case record.”**<sup>68</sup> At the time the Energy Bureau entered its Final Order approving the Amended Agreements, the only party<sup>69</sup> in the case as envisioned by Act 38-2017 was the Authority, no one else. The only logical consequence to this fact is that no other entity can be considered a party for purposes of Act 38-2017’s applicability. Simply put, Petitioners failure to request an intervention in the case at an earlier stage has the implicit consequence that they cannot be considered parties for the purpose of the rights afforded by Act 38-2017. This reality combined with the fact that there is no space for a second reconsideration necessarily suggests that Petitioners Petition does not proceed as a matter of law and should be stricken from the record as there are no remedies available to non-parties.

The proceedings for the Request for Approval are final. The submission was filed by the Authority, subsequently denied by the Energy Bureau, reconsidered by the Authority and finally decided “upon consideration” by the Energy Bureau. At the time of the Final Resolution and

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<sup>66</sup> 3 L.P.R.A. § 9641 (a) (“When by provision of a law, rule, regulation or of this chapter, an agency must formally adjudicate a controversy, the proceedings shall be governed by this subchapter.”).

<sup>67</sup> *Id.* at § 9655; *see also*, Regulation 8543 which provides that “[a]ny party dissatisfied with the [Energy Bureau]’s final decision may file a motion for reconsideration[.]”

<sup>68</sup> 3 L.P.R.A. § 9641 (a) (Emphasis provided).

<sup>69</sup> Party - Means any person or agency authorized by law to whom you specifically address the action of an agency or that is a party to said action, or that is allowed to intervene or participate in the same, or that a petition has been filed for the revision or fulfillment of an order, or that is designated as a party in said procedure. Section 1.3(k) Act 38-2017.

Order there were no other parties to the case other than the Authority and a limited participation that had been granted to EcoEléctrica.

#### IV. CONCLUSION

In summary and pursuant to the above, Petitioners request for intervention in the present non-adjudicative process should be denied. Petitioners status as non-parties at the time the Final Resolution and Order was entered necessarily implies that they are not entitled to participate in the present proceeding and the reconsideration dispositions are not available to them. Moreover, the present stage of the proceedings does not allow for a further reconsideration of an already reconsidered order. Accordingly, Petitioners request for reconsideration should be DENIED and STRICKEN from the record.

WHEREFORE, PREPA requests the Energy Bureau to DENY Petitioner's request for intervention and DENY and STRIKE the request for reconsideration from the record.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 15<sup>th</sup> day of June 2020.

/s Maraliz Vázquez-Marrero  
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/s Katiuska Bolaños-Lugo  
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### CERTIFICATE OF SERVICE

It is hereby certified that, on this same date I have filed the above motion using the Energy Bureau's Electronic Filing System, at the following address: <http://radicacion.energia.pr.gov> and that a courtesy copy of the filing was sent via e-mail to: [ccf@tcm.law](mailto:ccf@tcm.law); [agraitfe@agraitlawpr.com](mailto:agraitfe@agraitlawpr.com); [rstgo2@gmail.com](mailto:rstgo2@gmail.com); [rolando@bufete-emmanuelli.com](mailto:rolando@bufete-emmanuelli.com); [jessica@bufete-emmanuelli.com](mailto:jessica@bufete-emmanuelli.com); [notificaciones@bufete-emmanuelli.com](mailto:notificaciones@bufete-emmanuelli.com); [valvarados@gmail.com](mailto:valvarados@gmail.com); [fcintronmoscoso@elpuente.us](mailto:fcintronmoscoso@elpuente.us); [ausubopr88@gmail.com](mailto:ausubopr88@gmail.com); [acasepr@gmail.com](mailto:acasepr@gmail.com); [jmenen6666@gmail.com](mailto:jmenen6666@gmail.com); [Julia.mignuccisanchez@gmail.com](mailto:Julia.mignuccisanchez@gmail.com); [gmchg24@gmail.com](mailto:gmchg24@gmail.com); [noloseus@gmail.com](mailto:noloseus@gmail.com); [cambiopr@gmail.com](mailto:cambiopr@gmail.com); [jaramillo@utier.org](mailto:jaramillo@utier.org); [brendasantiago@utier.org](mailto:brendasantiago@utier.org).

In San Juan, Puerto Rico, this 15<sup>th</sup> day of June 2020.

*s/ Katuska Bolaños-Lugo*  
Katuska Bolaños-Lugo



Exhibit A

The Authority Responses to PREB 9<sup>th</sup> ROI

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

**IN RE:**

**REVIEW OF THE PUERTO RICO  
ELECTRIC POWER AUTHORITY  
INTEGRATED RESOURCE PLAN**

NO. CEPR-AP-2018-0001

SUBJECT:  
THE ENERGY BUREAU 9<sup>TH</sup>  
REQUIREMENT OF INFORMATION

**THE PUERTO RICO ELECTRIC POWER AUTHORITY ADDITIONAL RESPONSES  
TO THE PUERTO RICO ENERGY BUREAU NINTH  
REQUIREMENT OF INFORMATION**

TO ALL PARTIES:

COMES NOW the Puerto Rico Electric Power Authority and hereby submits additional responses to the *Puerto Rico Energy Bureau 9<sup>th</sup> Requirement of Information*, dated October 29<sup>th</sup>, 2019. The responses are submitted pursuant to the provisions of Article VIII of Regulation No. 8543, *Regulation on Adjudicative, Notice of Noncompliance, Rate Review and Investigation Proceedings*.

In San Juan, Puerto Rico, this 6<sup>th</sup> day of December 2019.

/s/ Katuska Bolaños  
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**COMMONWEALTH OF PUERTO RICO  
PUBLIC SERVICE REGULATORY BOARD  
PUERTO RICO ENERGY BUREAU**

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

NO. CEPR-AP-2018-0001

**SUBJECT: REQUIREMENTS OF  
INFORMATION**

**PREPA'S RESPONSES TO THE ENERGY BUREAU'S  
NINTH SET OF REQUIREMENTS OF INFORMATION**

**TO: THE PUERTO RICO ENERGY BUREAU**

Through:

viacaron@energia.pr.gov

secretaria@energia.pr.gov

legal@energia.pr.gov

**FROM: PUERTO RICO ELECTRIC POWER AUTHORITY**

Through its Counsel of record

PREPA objects to any Requirement of Information ("ROI") that calls for information or documents that are not in the possession, custody, or control of PREPA.

For ease of reference, the questions and requirements as set forth in the Request are herein transcribed and shown in bold previous to each answer.

**PREB-PREPA-09-01**

**This ROI refers to quantifying the of energy efficiency o ratepayers costs and capital decision on two alternated futures for customer demand (after accounting for customers owned generation) that reflect no energy efficiency and low energy efficiency equal to 1/3 of the energy efficiency gains in the Base Case (please refer to PREB ROI 9 for complete description.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting, Marcelo Saenz, Engagement Manager and Jack Henry, PE, Senior Staff Consultant of Siemens PTI. Nelson Bacalao, Marcelo Saenz and Jack Henry certify that, to the best of their information and belief, all answers provided by them are true and no false or misleading information has been provided

**Responses:**

## 1. Introduction

The response below provides a summary of the assumptions and results of the analysis of for scenario 3, 4 and the ESM under no energy efficiency gains and low energy efficiency gains as requested by the Energy Bureau. A follow up response will update this response including the Scenario 1 and Scenario 5.

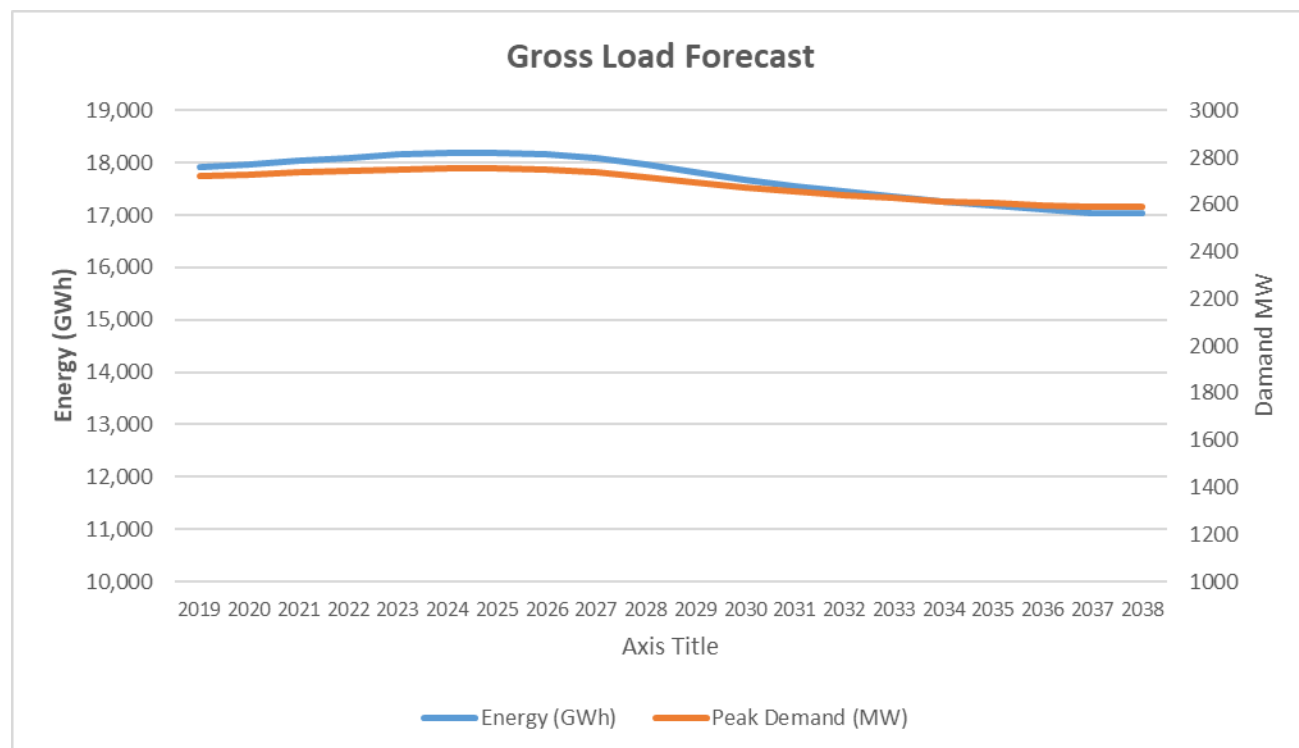
## 2. Modeling Assumptions

### 2.1 Energy Demand Assumptions

#### 2.1.1 No Energy Efficiency

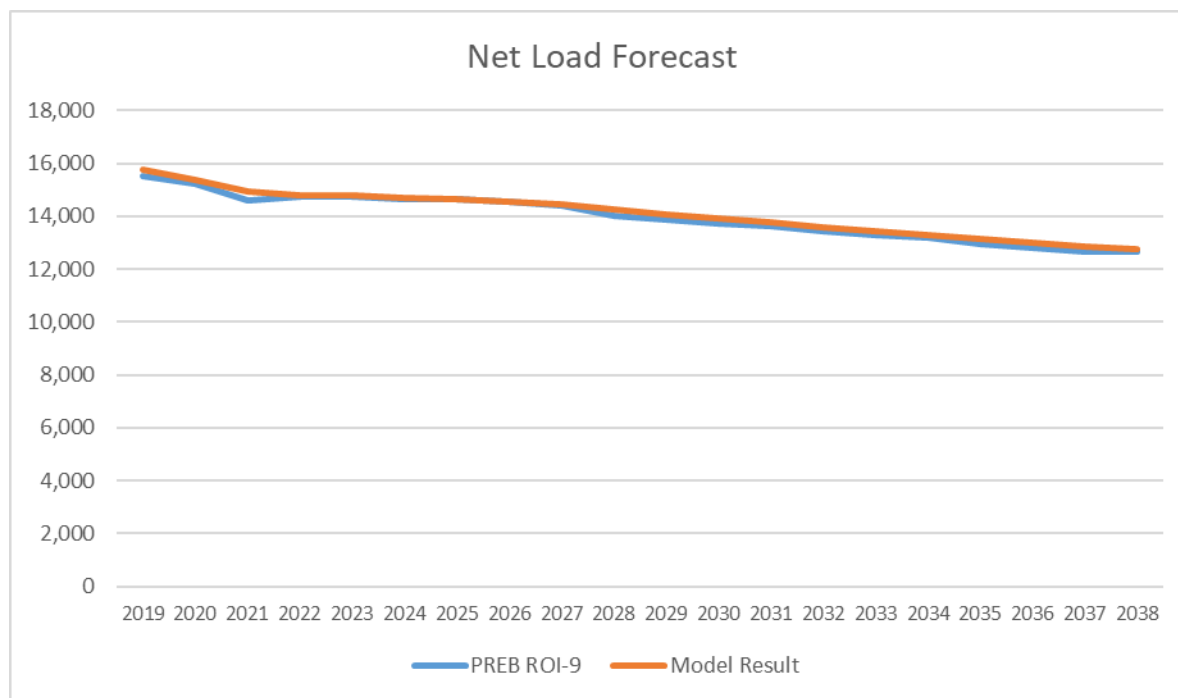
The no energy efficiency case was modeled removing this effect from the load forecast and the figure below shows the modeled total energy consumption before customer owned generation (that is modeled explicitly) by year and the resulting peak load. As can be observed once energy efficiency is removed the load forecast is largely flat with the end load being about 5% lower than the current 2019 values.

**Figure 1: Gross Load Forecast, no EE and before customer owned generation.**



Once customer owned generation is taken into consideration as well as the change on the distribution losses, there is a 19% drop in the energy to be supplied by utility side resources by the end of the forecast period as can be observed in the figure below.

**Figure 2: Net Load Forecast no EE including effect of customer owned generation.**



In this figure we also the values provided in ROI 9 and there is an slight difference due to the impact of the actual CHP dispatch and losses.

### 2.1.2 Low Energy Efficiency

Siemens reviewed the energy efficiency (EE) programs used in the main IRP and adjusted to achieve approximately 1/3 of the Base Case EE gains. Note that as actual programs were considered so that the costs could be identified, there was a small difference with the values requested in the ROI-9, due to the timing of the programs combined with the CHP actual generation and losses impact.

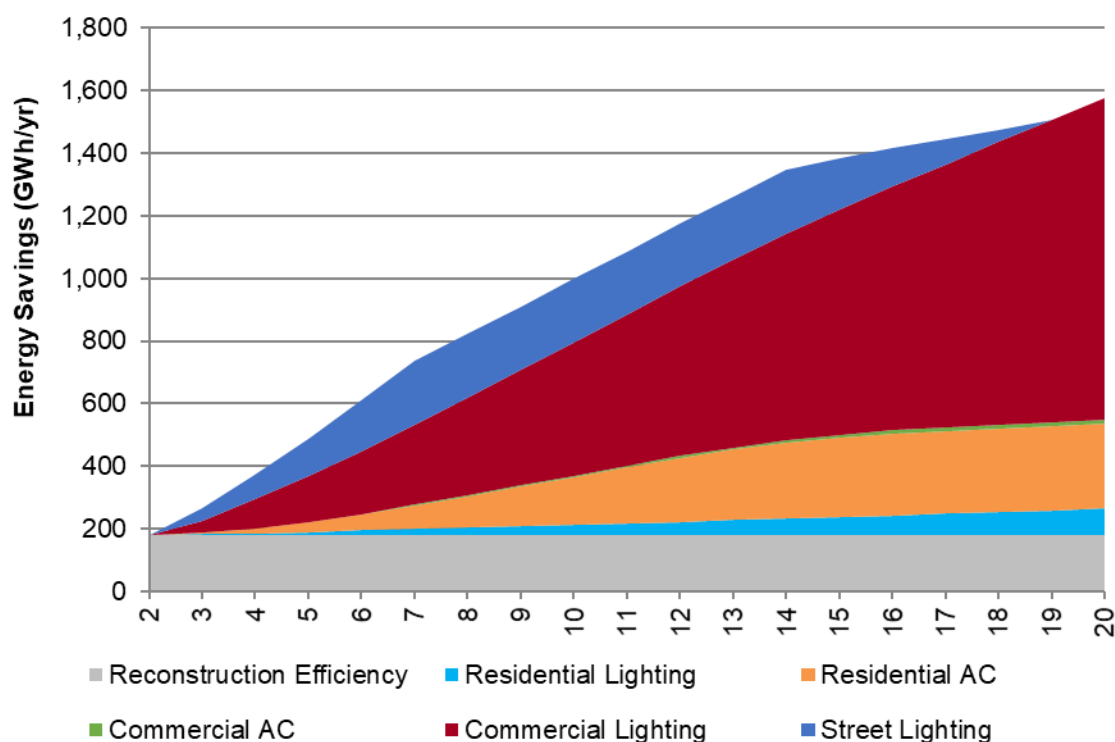
The forecasted energy efficiency was developed using the assumptions and procedure detailed below. Please refer to file PREB-PREPA ROI\_9\_01 Attach 1.xlsx (EE-DSM Cost Calculation-v5.xlsx).

- No change to reconstruction efficiency was considered.
- Begin all other DSM programs in 2021 as a realistic assumption
- Program lives across are documented and implies that savings retire over time as they become the baseline. We did not assume they will be replaced by a more efficient technology.

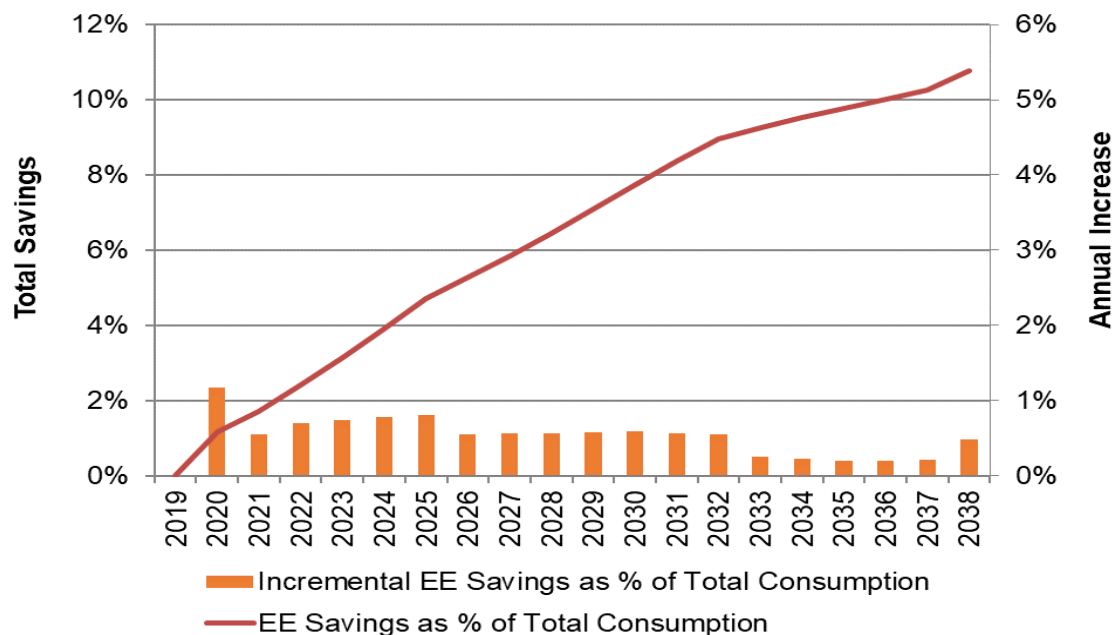
- Develop, validate, and document unit energy consumption savings estimates.
- Ramp up all programs over a 2-5 year period depending on the program and based on our experience. Note that DSM programs are always managed to an annual cap—even during the ramping years. We ramped adoption conservatively to ensure market demand would likely exceed supply.
- Scale all programs to a smaller cap to optimize to the revised targets. Again, caps were applied according to our judgement and based on a conservative assumption of market response. For example, we scaled the commercial Lighting up proportionately higher than the 33% target. From our experience, those programs take off very quickly and persist at high adoption. On the other hand, we scaled the commercial AC program back because, in our experience, the market responds very slowly to the program incentives.

The figures below show the contribution of the different programs to the energy efficiency and the targets achieved overtime.

**Figure 3: Contribution of programs to Energy Efficiency (includes phase out)**

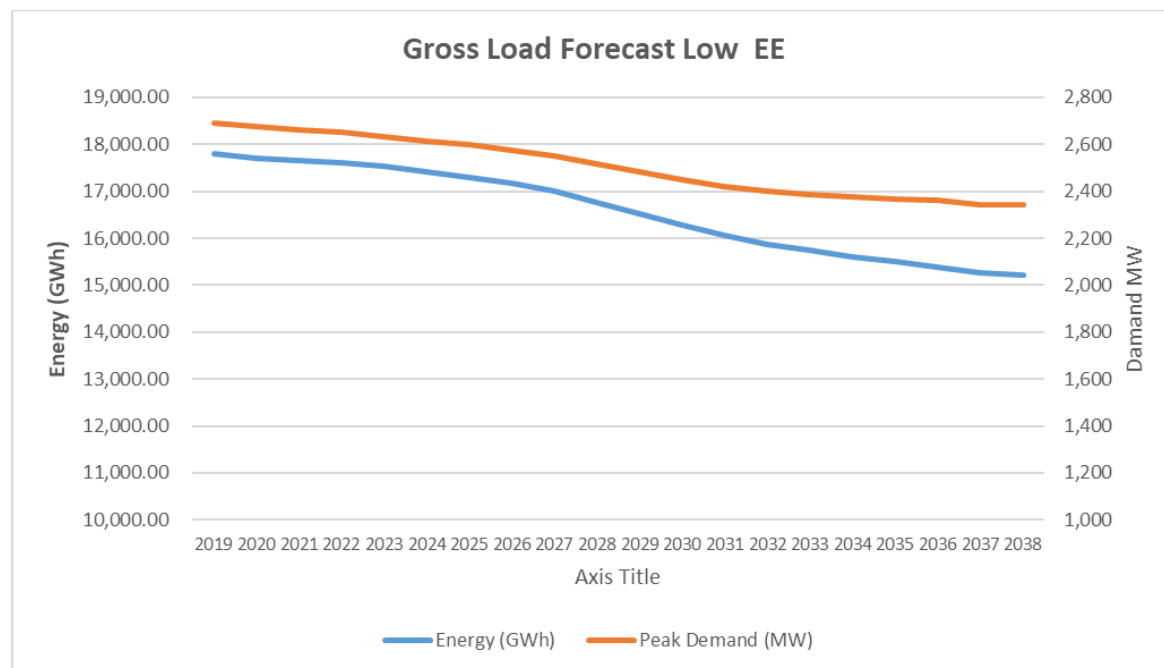


**Figure 4: Energy Efficiency Gains.**



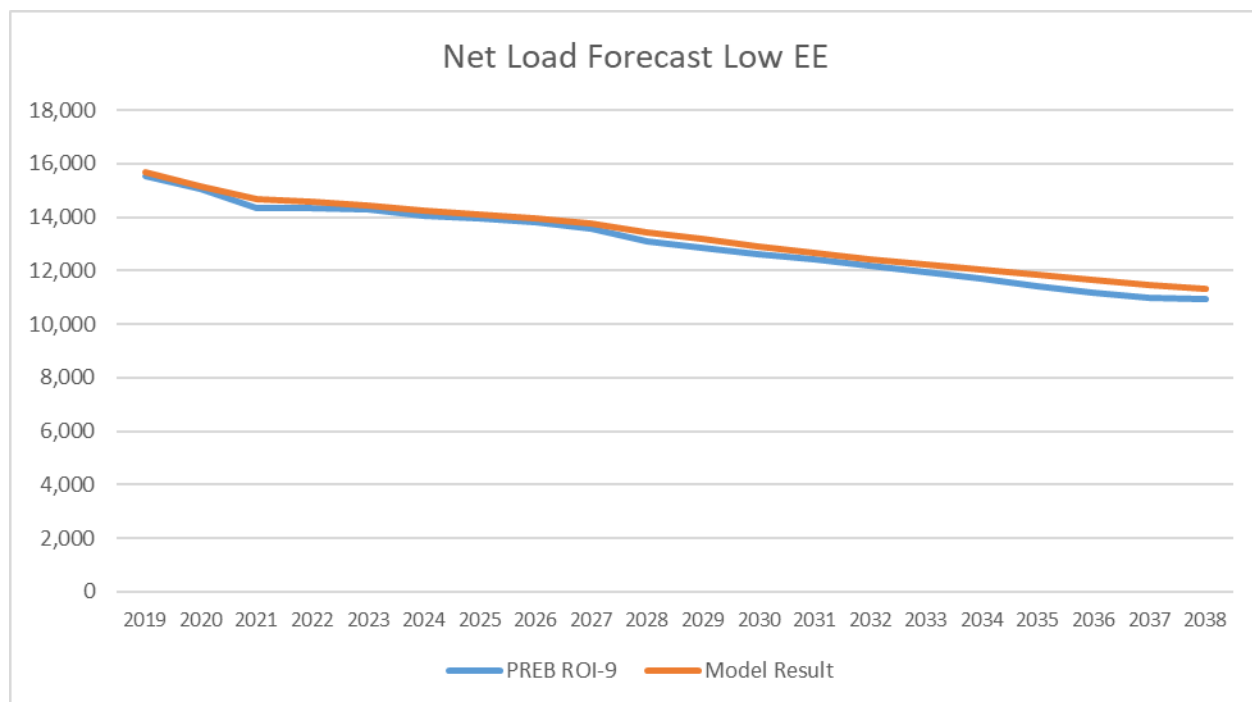
The EE gains result in a drop of 85% of the energy consumption and 87% of the peak demand from 2019 to 2038 (see figures below).

**Figure 5: Gross Load Forecast with Low EE and before customer owned generation.**



Accounting for behind the meter generation and losses, the drop in the energy demand is 28% as shown below. In this figure we also added the values provided in the ROI-9 where we note that there is a small difference as actual programs were considered in our forecast.

**Figure 6: Gross Load Forecast with Low EE including effect of customer owned generation.**



## 2.2 Other assumptions for modeling of the Scenarios.

We summarize below the main assumptions considered for the modeling of the scenarios. These assumptions were selected considering the most up to date information on the PREPA's system and thus making the results presented here representative of future conditions as seen at this moment in time.

- EcoEléctrica was assumed to remain in service considering the conditions stated in the contract renegotiation underway the is expected to result in the extension of the operation of this plant. The new contract includes reduced capacity prices and delivered costs of LNG gas to EcoEléctrica and Costa Sur. The restated PPOA is negotiated to start on January 1st, 2020 and the term of the PPOA will be extended to Sept 30, 2032.
- After expiration of the PPOA in 2032, capacity payments (FOM and Demand Charges) are modeled to be reduced to 33% of the re-negotiated capacity payments. This amount will cover at least the fixed operation and maintenance costs of the LNG terminal serving EcoEléctrica and the fixed operational cost of the plant. It is also assumed that PREPA will be charged the VOM costs of a typical CCGT post 2032. The program was free to retire the plant after 2032.



- San Juan 5&6 gas supply were modeled according to the conditions in the contract with New Fortress Energy (NFE), which is effective for 5 years starting on January 1, 2020.
- It is assumed no waiver of the Jones Act for LNG cargos. This results in a higher delivered gas price to the island as stated below.
  - For EcoEléctrica and Costa Sur the LNG is priced as: Henry Hub \* 1.15 + Adder \$/MMBTU. Where adder has the following values: \$5.8/MMBtu for 2020, \$5.7/MMBtu for 2021, \$5.6/MMBtu for 2022, and \$5.5/MMBtu for 2023 until the end of the contract
  - For the rest of the LNG terminals the LNG is priced as: Henry Hub \* 1.15 + \$5.5/MMBtu and applicable from 2022 onwards.
- A land-based LNG at San Juan can be developed from 2025 onwards including serving a potential CCGT at Palo Seco.
- AES assumed to be retired after contract expiration by the end of 2027.
- A correction was made for the VOM and FOM costs for gas and diesel peakers in nominal terms, instead of a constant value in real dollars.
- Reduced CapEx of the LNG at San Juan was considered, accounting for possible economies of scale with the infrastructure already built by NFE. The costs are shown in the table below. As on the second filing the Land based LNG Cost at San Juan was sized for the new CCGT F class built in the North at Palo Seco (Bayamon plus the San Juan 5&6 conversions to gas. The table below also illustrates the potential maximum volume at the terminal based on dispatching at maximum capacity the new F Class unit and the San Juan conversion.

**Table 1: LNG Costs Modeled**

Infrastructure Option	CAPEX \$MM (2018\$)	Annual OPEX \$MM (2018\$)	Max Daily Gas Volume (MMcf/d)	Max Gas Volume (MMBtu/month)	Max Capacity MW	CAPEX \$/kW (2018\$)	Annual OPEX \$/kW (2018\$)	CAPEX + Annual OPEX \$/kW (2018\$)
Land-based LNG at San Juan Port (w/o pipeline)	\$ 247.74	\$ 12.88	125.9	3,924,711	702	42	18	61
Ship-based LNG at Mayaguez (west)	\$ 185.00	\$ 9.62	53.4	1,642,116	302	74	32	106
Ship-based LNG at Yabucoa (east)	\$ 185.00	\$ 9.62	53.4	1,642,116	302	74	32	106
Ship-based LNG (FSRU) at San Juan Port (supply to San Juan only)	\$ 185.00	\$ 9.62	50.4	1,549,815	350	64	27	91

	San Juan 5 Peak Fuel Consumption	San Juan 6 Peak Fuel Consumption	F-Class Consumption	Total
Capacity	200	200	302	702
Capacity Factor (used to determine peak consumption)	100%	100%	100%	100%
Heat Rate BTU/kWh	7625	7853	7552	
Fuel MMcf/day	35.71	36.77	53.40	125.88
Max Gas Volume (MMBtu/month)	1,113,250	1,146,538	1,664,923	3,924,711

- Reduced CapEx of the LNG at San Juan was considered, accounting for possible economies of scale with the infrastructure already built by NFE. The costs are shown in the table below.

All other assumptions are the same as the IRP filed on June 2019, including:

- San Juan Units 5 & 6 are converted to gas in June 2019. The cost of the conversion is assumed to be structured as a capacity payment of \$5 million on an annual basis per unit ending on 06/30/2024.
- San Juan units are subjected to fuel constraints of delivery to San Juan; ship-based fuel constraints for July 2019-June 2024, and land-based LNG constraints from July 2024 through the end of the forecast period.
- The Scenario 1,4,5 and ESM assumes solar and storage costs and availability based on reference case assumptions. New PV installations are limited to 360 MW in 2020 and 600 MW annually thereafter. Storage installations are limited to 40 MW in 2019, 200 MW in 2020 and 600 MW annually thereafter. Scenario 3 assumes low cost of renewable and greater installation rates;
- The plan reflects Act 17-2019 with RPS targets of 20% by 2022, 40% by 2025 and 60% renewable penetration by 2040.
- Improved capacity factors for Wind based on NREL ATB TRG-8, mid case and add this as an option to the LTCE selection and offered as a resource to the Aurora LTCE calculations. New wind turbine generation was not selected under either the Low EE or the No EE cases.
- Any non-renewable generator is modeled as fully depreciated by 2050 and ready for retirement by then, when according to Act-17-2019 Puerto Rico is to be supplied by 100% renewable generation.

### **3. Results.**

Siemens conducted the Aurora long term capacity expansion modeling of the requested scenarios and the results are included in the following files attached to this response:

- PREB-PREPA ROI\_9\_01 Attach 2. xlsx (S3S2B No EE) that contains the results for Scenario 3 with No EE.
- PREB-PREPA ROI\_9\_01 Attach 3.xlsx (S4S2B No EE) that contains the results for Scenario 4 with No EE.
- PREB-PREPA ROI\_9\_01 Attach 4.xlsx (ESM-No\_EE) that contains the results for the ESM with No EE.
- PREB-PREPA ROI\_9\_01 Attach 5.xlsx (S3S2B Low EE) that contains the results for Scenario 3 with Low EE.

- PREB-PREPA ROI\_9\_01 Attach 6.xlsx (S4S2B Low EE) that contains the results for Scenario 4 with Low EE.
- PREB-PREPA ROI\_9-01 Attach 7.xlsx (ESM-Low EE) that contains the results for the ESM with No EE.
- PREB-PREPA ROI\_9\_01 Attach 8 (S1S2B No EE) that contains the results for Scenario 1 with No EE.
- PREB-PREPA ROI\_9\_01 Attach 9 (S1S2B Low EE) that contains the results for Scenario 1 with Low EE.
- PREB-PREPA ROI\_9-01 Attach 10 (S5S1B No EE) that contains the results for Scenario 5 with No EE.
- PREB-PREPA ROI\_9-01 Attach11 (S5S1B Low EE) that contains the results for Scenario 5 with Low EE.

In general, the results confirmed the findings of the second filing that pointed towards the ESM being a preferred plan in case that the demand did not drop as expected (the difference between the Scenario 4 and the ESM was minimized for increases in load). Table 2 below shows the main metrics for all cases analyzed and, as expected the minimum NPV of the revenue requirements occurs for Scenario 3 and the highest for Scenario 1. In the case of Scenario 3, as in prior analysis, it reaches the highest level of solar development with over 5,600 MW of photovoltaic generation by 2038 (see Table 3), which might be difficult to integrate in the system, equivalent to more than twice the peak demand. It also depends on renewable generation following a cost decline in line with NREL's low cost.

On the other hand, the ESM under both Low EE and No EE has lower NPV of the revenue requirements than Scenario 4 (1% to 1.7% below) with the difference increasing if the cost of the deemed energy not served is considered. Scenario 5 has a slightly higher NPV compared to Scenario 4, under both load forecasts, however this case provides less reliability and resiliency at the mini-grid level. All cases reach levels of renewable integration exceeding the 60% target by 2038, with Scenario 3 on track to achieve 100% renewable ahead of the 2050 target. The highest NPV is for Scenario 1 driven by higher consumption of fuel oil and higher renewable installations (compared to the ESM or Scenarios 4 or 5).

**Table 2: Main Metrics Results for All Scenarios**

EE Level	Metric	S4S2	ESM	S3S2B	S1S2B	S5S1B
Low	NPV before ENS	\$16,555,636	\$16,393,013	\$16,585,288	\$17,176,251	\$16,585,288
No	NPV before ENS	\$17,633,201	\$17,328,147	\$16,495,437	\$18,120,500	\$17,676,430
Low	NPV + ENS	\$17,055,430	\$16,802,158	\$17,266,729	\$17,700,652	\$17,266,729
No	NPV + ENS	\$18,127,482	\$17,521,981	\$16,895,979	\$18,785,718	\$18,411,964
Low	RPS 2038	61%	62%	63%	61%	63%
No	RPS 2038	63%	67%	81%	69%	68%
Low	PV/peak demand	164%	164%	241%	179%	164%
No	PV/peak demand	162%	162%	213%	178%	162%

**Differences across Scenarios**

EE Level					S4S2 - ESM	S3S2 - ESM	S1S2 - S4S2	S5S1 - S4S2
		Difference	Difference %	Difference	Difference %	Difference %	Difference	Difference %
Low		\$162,623	1.0%	\$192,275	1.2%	\$620,615	\$29,652	0.2%
No		\$305,054	1.7%	(\$832,710)	-5.0%	\$487,299	\$43,229	0.2%
Low		\$253,272	1.5%	\$464,571	2.7%	\$645,221	\$211,298	1.2%
No		\$605,501	3.3%	(\$626,001)	-3.7%	\$658,236	\$284,483	1.6%
Low		-1%	-1%	1%	2%	0%	2%	3%
No		-4%	-6%	14%	18%	6%	6%	9%

Table 3 provides a summary of the capacity additions by each plan and we observe that under Scenario 4, the LNG's at Mayaguez and Yabucoa were not developed resulting in effectively the same conditions as Scenario 2.

Under both the ESM and Scenario 4 a F Class CCGT was added in Palo Seco, with the difference that under Scenario 4 this unit was added in 2028 (after the retirement of AES Coal) and the larger F-Class CCGT was selected (369 MW) instead of the smaller F-Class (303 MW) selected under the ESM. All plans have similar levels of Solar PV installed by 2025 reaching very close to the limits by year and installing over 3,000 MW of photovoltaics. This is a clear indication of the adequacy of maximizing the rate of adoption of this generation.

**Table 3: Summary of Capacity Additions All Scenarios**

Case ID	Large & Medium CCGTs and Peakers							Renewable and Storage				
	F - Class Palo Seco 2025	F - Class Costa Sur 2025	San Juan 5&6 Conversion	F-Class Yabucoa 2025	Mayaguez Peker Conversion	Other	Peakers 2025 (MW)	New Solar 2025 (MW)	BESS 2025 (MW)	New Solar 2038 (MW)	BESS 2038 (MW)	Customer Owned Generation 2038 (MW)
ESM No EE	2025	Eco instead New PPOA	✓	✓	✓	X	621	3,060	1,160	4,200	2,040	1,176
ESM Low EE	2025	Eco instead New PPOA	✓	✓	✓	X	621	3,060	1,480	3,840	1,960	1,176
S4S2B No EE	2028	Eco instead New PPOA	✓	NO	NO	X	474	3,300	1,520	4,200	2,120	1,176
S4S2B Low EE	2028	Eco instead New PPOA	✓	NO	NO	X	410	3,300	1,480	3,840	1,920	1,176
S3S2B No EE	NO	Eco instead New PPOA	✓	NO	NO	X	450	3,900	1,640	5,520	3,040	1,176
S3S2B Low EE	NO	Eco instead New PPOA	✓	NO	NO	X	387	3,900	1,480	5,640	3,040	1,176
S1S2B No EE	NO	Eco instead New PPOA	✓	NO	NO	X	524	3,480	1,520	4,620	2,320	1,176
S1S2B Low EE	NO	Eco instead New PPOA	✓	NO	NO	X	380	3,300	1,480	4,200	1,840	1,176
S5S1B No EE	NO	Eco instead New PPOA	✓	NO	NO	Costa Sur CCGT	524	3,480	1,520	4,200	2,120	1,176
S5S1B Low EE	NO	Eco instead New PPOA	✓	NO	NO	Costa Sur CCGT	426	3,360	1,480	3,840	2,080	1,176

Table 4 shows the retirements under each of the scenarios analyzed and it can be observed that in all cases the units at Aguirre are retired early in the analysis period (2019 to 2020 in the ESM and Scenario 4 for example), Costa Sur are also retired in the same timeframe (except for Scenario 1 under No EE load with unit 6 staying online. The Palo Seco Units in some cases are maintained until 2025 when they have to retire due to MATS requirements and San Juan units 7&8 are retired before 2023. The San Juan Unit 6 Converted is retired early in some cases as this unit has worse heat rate of than San Juan 5.

**Table 4: Retirements All Scenarios**

Case ID	Large Thermal Retirements (last year in service shown)								
	AES 1 & 2	Aguirre Steam 1 & 2	Aguirre CC 1 & 2	Costa Sur 5 & 6	EcoElectrica	Palo Seco 3 & 4	San Juan 5 & 6	San Juan 5 & 6 Conv	San Juan 7 & 8
ESM No EE	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025 2 - 2025	5 - 2021 6 - 2020	not retired	3 - 2025 4 - 2025	5 - 2019 6 - 2019	not retired	7 - 2023 8 - 2023
ESM Low EE	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025 2 - 2025	5 - 2021 6 - 2020	not retired	3 - 2023 4 - 2024	5 - 2019 6 - 2019	6 - 2025	7 - 2021 8 - 2023
S4S2B No EE	1 - 2027 2 - 2027	1 - 2019 2 - 2020	1 - 2025	5 - 2021 6 - 2020	not retired	3 - 2023 4 - 2021	5 - 2019 6 - 2019	6 - 2025	7 - 2023 8 - 2022
S4S2B Low EE	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	5 - 2020 6 - 2020	not retired	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2025	7 - 2022 8 - 2023
S3S2B No EE	1 - 2027 2 - 2027	1 - 2020 2 - 2019	1 - 2019	5 - 2021 6 - 2020	not retired	3 - 2023 4 - 2021	5 - 2019 6 - 2019	6 - 2034	7 - 2023 8 - 2022
S3S2B Low EE	1 - 2027 2 - 2027	1 - 2022 2 - 2022	1 - 2019 2 - 2020	5 - 2020 6 - 2019	not retired	3 - 2022 4 - 2023	5 - 2019 6 - 2019	5 - 2030 6 - 2025	7 - 2021 8 - 2023
S1S2B No EE	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	6 - 2020	not retired	3 - 2024 4 - 2021	5 - 2019 6 - 2019	6 - 2025	7 - 2025 8 - 2022
S1S2B Low EE	1 - 2027 2 - 2027	1 - 2020 2 - 2021	1 - 2025	5 - 2020 6 - 2019	not retired	3 - 2021 4 - 2023	5 - 2019 6 - 2019	not retired	7 - 2022 8 - 2023
S5S1B No EE	1 - 2027 2 - 2027	1 - 2019 2 - 2021	1 - 2025	5 - 2023 6 - 2019	not retired	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2029	7 - 2023 8 - 2022
S5S1B Low EE	1 - 2027 2 - 2027	1 - 2019 2 - 2020	1 - 2025 2 - 2025	5 - 2021 6 - 2020	not retired	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2025	7 - 2022 8 - 2023

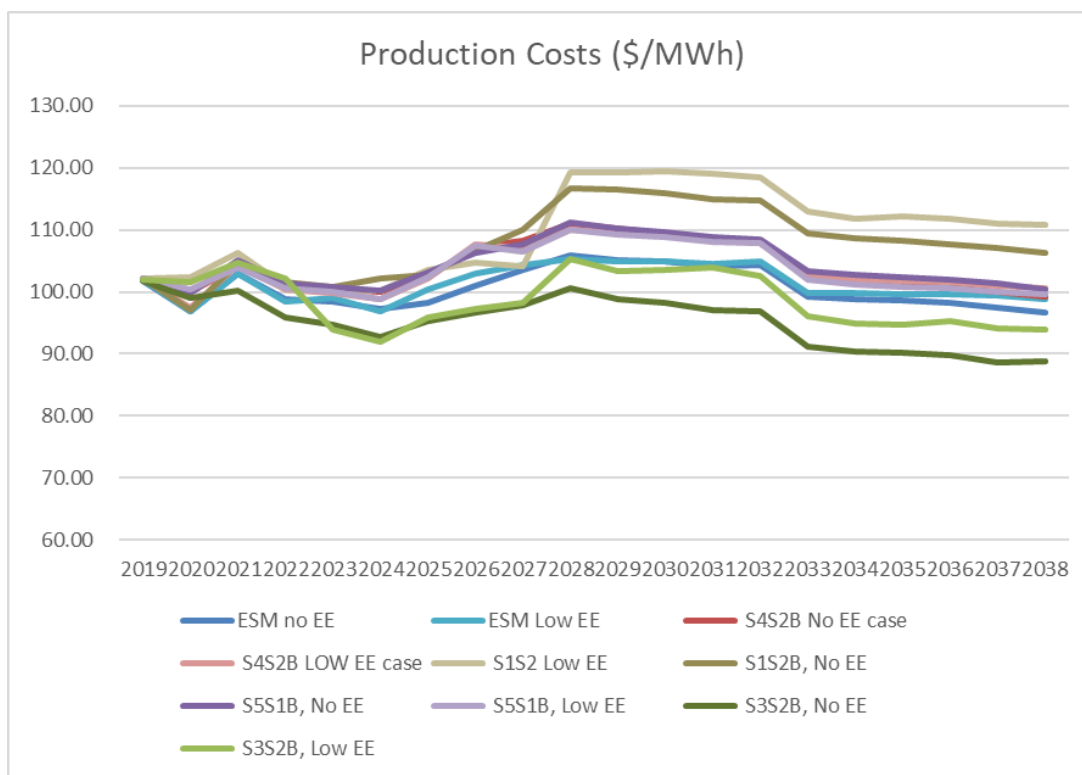
Finally Table below provides a summary of other relevant metrics including the average cost of energy for the period 2019 and 2028 where we observe that the ESM has lower costs than Scenario 4. Most plans achieve similar levels of emission reductions, except for Scenario 1 with lower emissions reductions due to higher utilization of fuel oil for thermal dispatch in absence of new natural gas-fired units across the island. In addition, for all plans the planning reserve margin of 30% was not found to be binding with the reserve margins staying above this target.

**Table 5: Other Metrics All Scenarios**

Case ID	Average 2019-2028 2018\$/MWh	NPV Deemed Energy Not Served k\$ (1)	Lowest Reserve Margin	Emissions Reductions	Capital Investment Costs (\$ Millions)
ESM No EE	100.5	193,834	47%	87%	9,002
ESM Low EE	100.8	409,145	50%	89%	8,053
S4S2B No EE	103.7	494,281	44%	81%	8,505
S4S2B Low EE	103.0	499,794	49%	84%	7,362
S3S2B No EE	97.5	400,542	53%	89%	10,399
S3S2B Low EE	99.3	601,300	44%	90%	10,635
S1S2B No EE	104.5	665,218	47%	69%	9,010
S1S2B Low EE	104.4	524,401	42%	75%	7,806
S5S1B No EE	103.7	735,535	37%	80%	8,131
S5S1B Low EE	103.2	681,441	39%	85%	7,522

To complement the above, Figure 7 shows a comparison of the cost of energy per MWh across all cases and all years. It can be noted that the ESM is consistently below the Scenario 4 with Scenario 3 having the lowest cost in \$/MWh. Scenario 1 has consistently the highest costs after AES retirement in 2027, and Scenario 5 stays head to head with Scenario 4.

**Figure 7: Production costs in \$/MWh (real 2018)**



## 4. Action Plan.

This section provides the recommended updates on the Action Plan based on the results of the scenarios assessed above. The Action Plan that covers the first 5 year and we present it below extending it to 2024.

### 4.1 Solar Photovoltaics (install 2,760 MW)

The plan calls to install 2,760 MW of PV by 2024 (first 5 years not counting 2019). The plan under the ESM and Scenario 4 as well as under No and Low EE, both have the same recommendation as shown in the table below and coincides with the maximum yearly amounts that we allowed the model to build. Thus, the action plan in this respect can be summarized in install the maximum amounts of PV in the first five years of the plan with a target of 2,760 MW at or before 2024. This value is increased with respect of the second filing that did not hit the installation limit on all years and by 2023 there were 1,380 MW of PV added to the system



**Table 6: Annual Solar PV Additions (ESM and Scenario 4 No and low EE)**

	2019	2020	2021	2022	2023	2024
Solar PV Additions (MW)	-	360	600	600	600	600
Cumulative Additions (MW)	-	360	960	1,560	2,160	2,760
Capital Expenditures (\$M)	-	\$542	\$857	\$848	\$838	\$829

## 4.2 Battery Energy Storage (install 1,440 MW)

The plan calls to install 1,440 MW of BESS by 2024 as shown in the table below which has the same results for the ESM and Scenario 4 under Low EE and practically the same results under No EE. In this last case the ESM had the same installations in the table below, but the optimization did not add the 200 MW in 2023 and 160 MW less in 2022. We based our recommendations on the Low EE case. As before the installations are greater than in the second filing, which had 920 MW by 2023.

**Table 7: Annual BESS Additions (ESM and Scenario 4 No and low EE)**

	2019	2020	2021	2022	2023	2024
BESS Additions (MW)	40	200	600	320	200	80
Cumulative Additions (MW)	40	240	840	1,160	1,360	1,440
Capital Expenditures (\$M)	\$43	\$195	\$550	\$274	\$165	\$64

### 4.2.1 San Juan 5&6 Combined Cycle (CC) Conversion to Natural Gas (2x200MW)

As in the second filing, the conversion of the existing San Juan 5&6 CC units to natural gas was a committed action in developing this IRP and was undated to reflect the current contract.

### 4.2.2 EcoEléctrica Contract Renegotiation and Extension

The PPOA contract renegotiation with EcoEléctrica was modeled as a committed decision using the contract as is expected to be implemented and that believed to be a better decision than letting the contract elapse and not renegotiate.

### 4.2.3 San Juan, Aguirre 1 & 2 and Palo Seco 3 or 4 Generator Conversions to Synchronous Condensers

The need for additional synchronous condensers was not carried out at this time, however with the increased values of photovoltaics and storage, the need to convert these units become even more important.

### 4.2.4 Palo Seco CCGT (302 MW or 369 MW F-Class) and Land Base LNG terminal

The ESM develops as before a new natural gas fueled 302 MW CCGT at Palo Seco by January 2025, which is also the earliest practical date the unit could be in service. Scenario 4 delays this decision to 2028 and install a larger 389 MW CCGT. This last scenario however had larger costs

than the ESM. Thus, the analysis confirms de convenience of installing a CCGT of approximately 300 MW at Palo Seco by 2025 or as early as possible. The estimated capital expenditure for this project is \$ 291 million for the 302 MW F-Class.

The LNG Terminal is projected to require a capital expenditure of \$248 Million for capacity of 125.9 MMcf/day considering some synergies with the infrastructure being installed for San Juan 5&6. To this cost \$ 25 million needs to be added for the pipeline from San Juan to Palo Seco.

#### **4.2.5 Yabucoa CCGT (302 MW F-Class)**

The ESM also develops a 302 MW CCGT at Yabucoa, which was identified as the practical least cost plan both under No EE and Low EE. This confirmed what was expressed under the second filing that the development of Yabucoa CCGT was a good hedge against uncertainties like higher load. The commercial operation for this unit is estimated to be January 2025 and an estimated capital expenditure of \$291 million. Siemens maintains its recommendation that PREPA proceeds with the permitting and engineering to preserve the ability to meet 2025 operation date. Siemens estimates the capital expenditures for ship-based LNG delivery to Yabucoa to be \$185 million with a capacity of 53.4 MMcf/d.

#### **4.3 Mayagüez Ship-Based LNG Terminal, Peaker Conversion to LNG Natural Gas (4x50MW) and CCGT (302 MW F-Class)**

The addition of an LNG terminal at Mayagüez, and the associated conversion of the existing LM6000 CT to natural gas is in the ESM that is considered the practical least cost plan for the No EE and Low EE. The recommended commercial operation date for this facility is January 2023 for the LNG infrastructure and the GT conversion. The estimated capital expenditures are \$185 million for the ship-based LNG infrastructure (53.4 MMcf/d) and \$5 million for the conversion of the CTs. Siemens maintains its recommendation that PREPA proceeds with the permitting and engineering for the projects for this site to preserve the ability to meet the 2025 operation date.

#### **4.4 Costa Sur CCGT (302 MW F-Class)**

This project is dropped as EcoEléctrica is expected to remain in service with a renegotiated contract.

#### **4.5 Mobile Gas Turbine Peaking Units (18x23 MW)**

The ESM plan calls for installation of 18 GTs, of 23 MW each, distributed at five different plant locations around the island with preference for those locations where the exiting 21 MW Frame 5 units are located. This plan was not changed with the increased load and in fact the ESM has reduced deemed ENS.

#### **4.6 Summary Capital Expenditures and Timetable**

Table 8 below shows a summary of the capital expenditures discussed above and Figure 8 shows a summary timetable with the construction projects for the generation, batteries synchronous

condensers and the natural gas infrastructure. The new projects include the CCGT projects at Yabucoa and the conversion of the LM 6000 at Mayaguez that are part of the practical least cost plan under the No EE and Low EE. The Solar and Battery project additions indicate on the schedules and timetable legend that since multiple projects will be continuously proceeding on different schedules, EPC will be occurring on some projects while others will still be in the preliminary permitting and engineering phase.

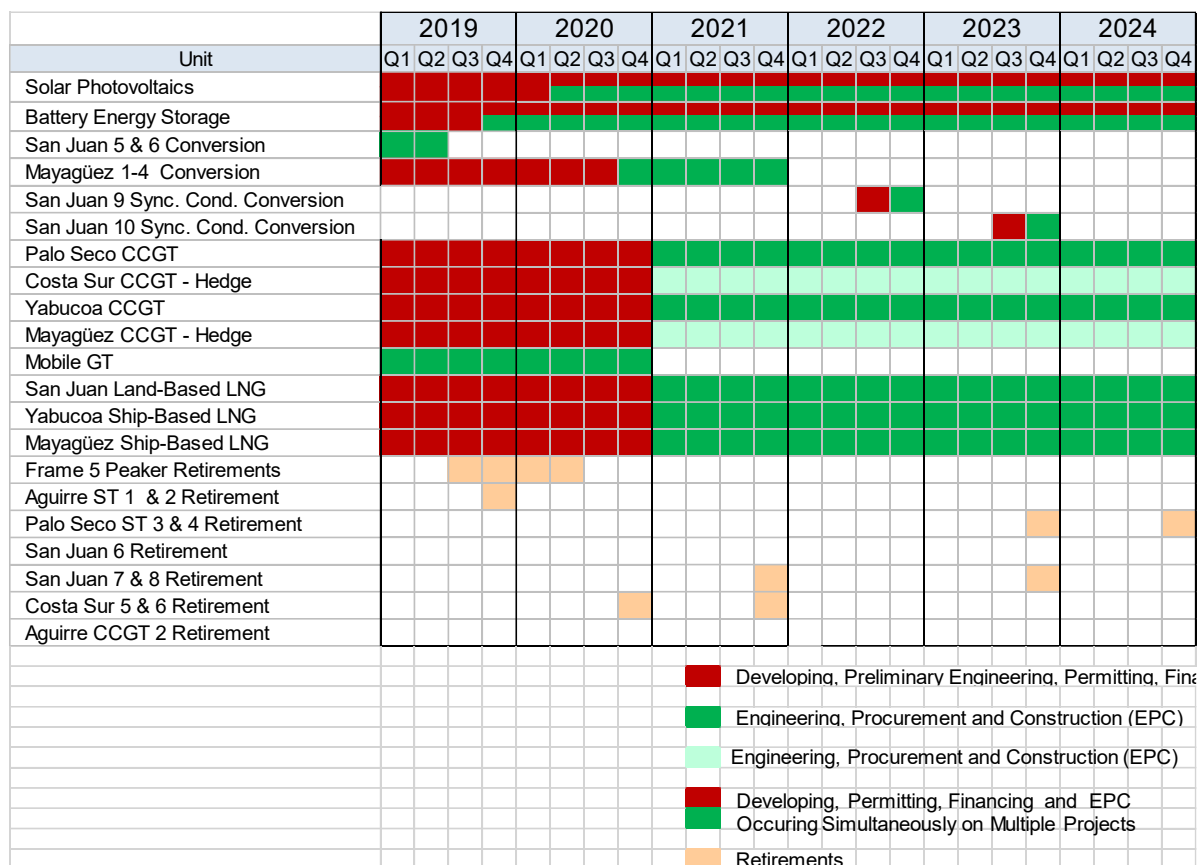
Finally, the expected retirements are also shown in the timetable. Note that the actual retirement dates may shift if any of the new generation projects are delayed or other circumstances dictate the continuing need for the units.

**Table 8: Summary of Capital Expenditures**

Project	2019	2020	2021	2022	2023	2024
Solar Photovoltaics	-	\$542	\$857	\$848	\$838	\$829
Battery Energy Storage	\$43	\$195	\$550	\$274	\$165	\$64
San Juan 10 Sync. Cond. Conversion	-	-	-	\$9	-	-
San Juan 9 Sync. Cond. Conversion	-	-	-	-	\$9	-
Palo Seco CCGT	-	-	-	-	-	-
Costa Sur CCGT	-	-	-	-	-	-
New Peaking GTs	-	-	\$419	-	-	-
San Juan Land-Based LNG	-	-	-	-	-	-
Yabucoa Ship-Based LNG	-	-	-	-	-	-
Yabucoa CCGT	-	-	-	-	-	-
Mayagüez Ship-Based LNG	-	-	\$185	-	-	-
Mayagüez Peaker Gas Conversion	-	-	\$5	-	-	-
Mayagüez CCGT	-	-	-	-	-	-
Total	\$43	\$738	\$2,016	\$1,131	\$1,012	\$892
<b>Total for all Projects 2019 to 2024</b>	<b>\$5,831</b>					

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### Figure 8: Summary Schedule



**PREB-PREPA-09-02**

**Regarding the 18 Frame 5 Gas Turbines – 21 MW each, as listed in “resource year” tab of metrics file, e.g., as seen below for S4S2B.**

Time Period	Zone	Name	Nameplate Capacity	Primary Fuel	End Date	Forced Outage	Maint Outage	Rpt_REM Fueltype	Total Cost	REM_Fuel BESS
2019	BAYAMON	PALO SECO CT11	42	No. 2 Fuel Oil PREPA	12/31/2019	5.31616449	6.558904	GT_Old	1,137	GT_Old
2019	BAYAMON	PALO SECO CT12	42	No. 2 Fuel Oil PREPA	12/31/2020	5.31616449	6.558904	GT_Old	1,137	GT_Old
2019	BAYAMON	PALO SECO CT31	42	No. 2 Fuel Oil PREPA	12/31/2019	5.523288	5.178082	GT_Old	1,282	GT_Old
2019	CAROLINA	DAGUAO GT11 & GT12	42	No. 2 Fuel Oil PREPA	12/31/2019	5.523288	5.178082	GT_Old	1,137	GT_Old
2019	CAGUAS	YABUCOA GT11 & GT12	42	No. 2 Fuel Oil PREPA	12/31/2020	6.3	0	GT_Old	1,137	GT_Old
2019	PONCE ES	Jobos GT11 & GT12	42	No. 2 Fuel Oil PREPA	12/31/2019	6.3	0	GT_Old	1,137	GT_Old

2019	BAYAMON	Vega Baja GT11 & GT12	42	No. 2 Fuel Oil PREPA	12/31/2019	6.3	0	GT_Old	1,137	GT_Old
2019	PONCE ES	Aguirre GT21 & GT22	42	AG Fuel Oil PREPA	12/31/2019	6.3	0	GT_Old	1,137	GT_Old
2019	PONCE OE	Costa Sur GT11 & GT12	42	No. 2 Fuel Oil PREPA	12/31/2024	6.3	0	GT_Old	1,283	GT_Old

- a) Does the “end date” field listed above illustrate that PREPA/Siemens hard-coded in the retirement of these units at the listed end date, or that the model run economically retired these units at that end date? Please explain.
- b) Please indicate if PREPA conducted any analyses that delayed the 2019-2021 retirement timeframe for any of the existing 18 Frame 5 gas turbines (excepting Costa Sur GT 11 & 12). If so, provide a copy of the analysis. If not, explain why not.
- c) Please identify which Frame 5 gas turbine units may be candidates to supply power within PREPA’s proposed minigrids.
- d) If PREPA believes that some of the existing Frame 5 gas turbines may be candidates to supply power within the proposed minigrids, provide a ranking on a unit-specific basis for the “best to worst” units in terms of readiness to operate. Describe in detail PREPA’s best understanding of the relative operability of these units at this time.
- e) If PREPA believes that none of the existing Frame 5 gas turbines may be retained for any the proposed minigrids, please explain and provide supporting analyses for PREPA’s conclusion.
- f) Please explain the source of the forced outage and maintenance outage rates listed in the table above and discuss the extent to which these outage rates are accurate at this time.
- g) Please describe what capital investments and ongoing operational expenses would be required to maintain any Frame 5 gas turbines within PREPA’s proposed minigrids.

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting of Siemens PTI and Daniel Hernandez Morales, Director of Generation, PREPA. Nelson Bacalao and Daniel Hernández certify that, to the best of their information and belief, all answers provided by them herein are true and no false or misleading information has been provided.

**Response:**

PREB-PREPA-09-02:

Before we enter to answer each of the questions in this section it is important to point out the following:

The Frame 5 Gas Turbines are units that were put in service around 1972, this means that these units have been in service for almost 48 years. This is an extraordinary length of time for this type of units and they should have been retired in the early 2000's.

Gas Turbine economic life is considered to be about 25 years considering their operating conditions characterized by frequent starts and stops, the design and technological obsolescence, thus these units have been in service for about twice their economic life and moreover, they have operated under harsh conditions both from an environmental point of view (marine environment) and the electric system point of view due to frequency excursions voltage fluctuations typical of smaller systems. These facts make these units unreliable (all components are well beyond their design life), inefficient which can be a factor when fuel deliveries are limited due to post hurricane conditions and in general not worth investing in extending further its life due to its obsolescence and general condition of the units.

In spite the opinion of some of our experts that these units should not be considered available for the IRP, they were included and we let the Aurora Optimization retire them as necessary, which happened in most cases early on the case (typically in 2019 extending to 2024). The only exception to these economic retirements were the existing units at Yabucoa, Dagua and Jobos that had a maximum retirement date of 2021 as the new CTs to be installed in those substations were assumed to use the same positions as the existing units, for this reason had reduced capital costs and the existing units must be removed.

PREB-PREPA-09-02-a: No, the end date was the date that Aurora optimization retired the units. see our comments at the beginning this section on the maximum date for units at Dagua, Yabucoa and Jobos.

PREB-PREPA-09-02-b: See our answer above, it was the Aurora optimization. However, we (Siemens) are of the opinion that these units should have been retired a long time ago. PREPA has not performed useful service life studies on the current fleet of Frame

5 units, as they are already well past their service life as per industry standards. They are being kept in service and maintained due to their need in the electric grid, while their replacement takes place. Enclosed is an updated report on availability and estimated operation years before their next major overhaul, based on their actual usage per year – Please refer to file PREPA ROI\_09\_02 Attach 1.pdf.

PREB-PREPA-09-02-c: None, given their unreliable condition we (Siemens) think it would be imprudent to depend on these units to confront critical grid operations after a major event. PREPA understands that existing Frame 5 gas turbine units may be able to supply power within PREPA's proposed minigrids, (as per their location within the minigrid boundaries). However, as stated above, and in concurrence with Siemen's opinion, these units are well past their service life and thus their reliability could be compromised. Please refer to PREPA ROI\_09\_02 Attach 1.pdf for the current status of the Frame 5 gas turbine units.

PREB-PREPA-09-02-d: Please see our answer above.

PREB-PREPA-09-02-e: PREB-PREPA-09-02-d: Please refer to answer PREPA-ROI-09-02 c) above and to file PREPA ROI\_09\_02 Attach 1.pdf. Siemens and PREPA concur that these units should not be depended upon to supply power to the minigrids. However, these units can be ranked based on their operational status, estimated remaining years before major outage, and hours for next major overhaul. As such, we can say that the ranking could be as follows:

Gas Turbine	
Unit	Ranking
AG 2-2	1
YB 1-1	2
DG 1-2	3
VB 1-1	4
DG 1-1	5
PS 1-1	6
PS 1-2	7
PS 2-1	8
JB 1-2	9
CS 1-1	10
YB 1-2	11
VB 1-2	12
JB 1-1	13
AG 2-1	14

CS 1-2	15
PS 2-2	16
PS 3-1	17
PS 3-2	18

Please note that if the units ranked 10-12 are placed in service, their ranking would increase based on their estimated remaining years before major outage. However, as stated above, PREPA and Siemens believe these units need to be retired and replaced with modern units.

PREB-PREPA-09-02-e: As stated above, these units are already well past their service life as per industry standards and are being kept in service and maintained due to their need in the electric grid, while their replacement takes place. The MiniGrids are proposed to be served with new reliable and efficient units and the GTs were economically retired by the Aurora optimization. To override these recommendations by maintaining the Frame 5 turbines with almost double its operational life would be running unacceptable risks.

PREB-PREPA-09-02-f: This forced outage rates was based on historical data, but it has not been updated recently. These were the same values used in the first IRP. No major effort was dedicated to update these values as the units were expected to be retired early. It should be noted that these values are possibly optimistic given the age of the units.

PREB-PREPA-09-02-g: PREPA has not conducted such analysis. The plan is to replace these units as soon as practical.

PREB-PREPA-09-03      **The Energy Bureau has identified the following errors in the Siemens' modeling:**

- **The S3S2S8 calculations adjust the solar PV costs to the reference level costs, but do not adjust the storage costs. The March 14, 2019 Resolution and Order in the instant case required PREPA to “use reference level costs for the solar PV and BESS resources” (emphasis added).**
- **The modeling analysis appears to use the real costs, rather than nominal costs for the resource capital costs for gas peakers. As a result, gas peakers appear less expensive than they should be, with the error rising over time.**
- **The S3S2 case, which deploys wind in 2038, has a zero fixed cost for the wind resource in that year. As a result, a substantial amount of wind is selected in that year and displaces/curtails solar PV.**



**a) Please provide Metrics files for each Scenario 3, Sensitivity 8 case that PREPA has already run, with the reference costs for BESS resources.**

**b) Please re-run the S4S2 case with the corrected gas peaker costs. Provide the corrected Metrics file for this re-run.**

**c) Please re-run the S3S2 case with the corrected gas peaker costs and wind resource fixed costs. Provide the corrected Metrics file for this re-run.**

The following response was provided by Marcelo Saenz, Engagement Manager at Siemens EBA. Mr. Saenz certifies that, to the best of their information and belief, all answers provided by them herein are true and no false or misleading information has been provided.

PREB-PREPA-09-03-a: Please see attached: PREB-PREPA ROI\_9\_03 Attach 1.xlsx (S3S2S8B\_Metrics\_Base\_Case\_Adjusted.xlsx)

PREB-PREPA-09-03-b: The capital costs for gas peakers or any other new generation is in nominal dollars with a fixed amount per year. The levelized capital costs is calculated using a nominal Capital Charge Rate and the reason for not increasing over time. It is an annuity, in other words. However, the FOM and VOM costs should increase through time.

Please see attached: PREB-PREPA ROI\_9\_03 Attach 2.xlsx (S4S2B\_Metrics\_Base Case Adjusted.xlsx)

PREB-PREPA-09-03-c: Please see attached: PREB-PREPA ROI\_9\_03 Attach 3.xlsx (S3S2B\_Metrics\_Base\_Case\_Adjusted.xlsx)

Exhibit B

PREB 10<sup>th</sup> ROI



## GOVERNMENT OF PUERTO RICO

Public Service Regulatory Board  
Puerto Rico Energy Bureau

December 13, 2019

**VIA ELECTRONIC MAIL:**

astrid.rodriguez@prepa.com; jorge.ruiz@prepa.com; n-vazquez@aeep.com;  
c-aquino@prepa.com; kbolanos@diazvaz.law; mvazquez@diazvaz.law

Astrid I. Rodríguez Cruz, Esq.  
General Counsel  
Puerto Rico Electric Power Authority (PREPA)  
PO Box 363928  
San Juan, PR 00936-3928

**Re: *In re*: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan, Case No. CEPR-AP-2018-0001; 10th Requirement of Information to PREPA**

Dear Ms. Rodríguez,

Pursuant to the provisions in Article VIII of Regulation No. 8543, known as the *Regulation on Adjudicative, Notice of Noncompliance, Rate Review and Investigation Proceedings* ("Regulation 8543"), the staff of the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("Energy Bureau Staff") is conducting discovery in the matter *In re*: Review of the Puerto Rico Electric Power Authority Integrated Resource Plan, Case No. CEPR-AP-2018-0001.

For such purposes, the Puerto Rico Electric Power Authority ("PREPA") shall submit, **on or before January 15, 2020**, the information, data or documents, as appropriate, in digital format, required herein. PREPA shall submit such information, data or documents in accordance with the following instructions:

### **I. Instructions**

#### **A. In General**

1. Unless the context requires otherwise, all words used in the singular shall be deemed to also include the plural.
2. Responses to questions must be made in writing, separately. Questions should be answered by supplying any information which PREPA has knowledge of or information obtained by their representatives, employees, contractors or agents, or as a result of any investigation conducted. Each response shall state the person responsible for that response.



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3. Responses to discovery are not required to be physically signed and verified before notary public. Accordingly, responses shall be notified via email to the Energy Bureau in ***searchable portable document format (i.e. PDF)***. Any analysis prepared using an electronic program similar to *Microsoft Excel* must be provided in native format with formulas and references intact. Under no circumstances may a printed document, scanned and converted to an image PDF/JPEG format be presented if there is already a version in Word, searchable PDF or Excel. Any document submitted in violation of the foregoing shall be deemed not to have been submitted. The presentation of PDF images will only be allowed for those documents that do not exist in a digital version, or for which PREPA does not have a digital version.
4. Responses must clearly identify the person providing the answer and must include a certification regarding that all answers provided therein are true and no false or misleading information has been provided. Furthermore, all answers may only be notified by the responding party's authorized representative.
5. When production of a document is required, the response should identify the document produced, the format or formats in which the document was produced, and the method and date it was delivered to the Energy Bureau Staff and to intervenors. All documents shall be identified as follows:

**Text responses to questions:** AP-2018-0001 PREB ROI Set <Set Number> <Date of Submission>. In the event that, on a future date, answers to previously unanswered questions are submitted, the document shall be identified with the same name as the first filing, except changing the Date of Submission. In the event an update is made to an already answered question, the document shall be identified with the same name as the first filing adding 1st Supp. and so on, as necessary. (AP-2018-0001 PREB ROI Set <Set Number> <Date of Submission> <No. Sequence> Supp.) For example: AP-2018-0001 PREB ROI Set 5 07-15-2019 1st Supp.

**Attachments:** When submitting a document in response to a question, the document shall be identified as follows, <Party>, ROI\_<Set Number>\_<Question Number> Attach <Sequence>. For example: PREPA ROI\_1\_5 Attach 1.

6. If information, data or documents required for any requirement do not exist, the person to whom this request for information is directed shall so specify in his or her reply to that request.
7. Except where the context indicates otherwise, the term "any" includes "all," and vice versa.
8. PREPA shall have a continuing duty to update, correct or amend its answers and notify the Energy Bureau Staff of any additional information obtained after a response to any requirement provided herein is given.

9. For purposes of this requirement of information, the term “document” means any material, no matter the form, type, nature or description, whether electronic, handwritten or typed, printed, engraved, photographed or copied, and no matter by whom it was originated, prepared, produced, reproduced, published or disseminated. The term “document” includes all types of publications, reports, magazines, books, pamphlets, brochures, folders, records, and/or volume set of attached or unattached papers.
10. For purposes of this requirement of information, the term “information” includes data and documents.
11. If PREPA finds it necessary to request an extension of time for the production of part of the required information, it shall do so in writing and submit its request to the Energy Bureau Staff on or before the due date for the submission of information, as specified above. In its request, PREPA shall state the efforts undertaken thus far in order to produce the required information, and the reasons pursuant to which it will not be able to produce it within the original period, and which, according to PREPA, justify the granting of the requested extension, along with the specific date by which PREPA commits to provide a full response. However, on or before the due date for the submission of information, as specified above, PREPA shall produce all the required information that, up until that date, it has been diligently able to obtain, organize, and process in accordance with the instructions established herein.

#### **B. Allegedly Confidential or Privileged Information and Documents**

The Energy Bureau Staff recognizes that PREPA may assert that some of the documents responsive to these questions warrant confidential treatment. Section 1.15 of Regulation No. 8543, together with the provisions of Articles 1.4 and 6.15 of Act 57-2014, as amended, govern the information that may be unavailable for public access because it is privileged or confidential, as well as the general guidelines for the Energy Bureau to determine what information is privileged and confidential and the treatment to be given to protect such information.

Specifically, Section 1.15 of Regulation 8543 provides that when a person has the duty to submit to the Energy Bureau information that, in his or her view is privileged or confidential, that person shall (i) identify the information which he or she considers to be privileged or confidential, (ii) request the Energy Bureau to protect this information, and (iii) state in writing the arguments in support of his or her request for protection. Once the matter is submitted to the Energy Bureau, it shall proceed as provided in Article 6.15 of Act 57-2014 if the Energy Bureau determines that the information produced and identified deserves protection.

With this background, if any of the requirements of information require PREPA to submit information it understands is confidential or privileged, PREPA shall follow the procedures set forth in the Energy Bureau’s August 31, 2016 Resolution regarding confidentiality, CEPR-MI-2016-0009.

### **C. Questions about the Requirements**

If PREPA has any question about any of the requirements of information made in this letter, it shall state its question or need for clarification in writing and submit it by electronic mail to the Energy Bureau Staff.

### **II. Requirements of Information**

- PREB-PREPA-10-01    EcoEléctrica and Costa Sur 5&6 historical fuel consumption; and historical and projected cost/price information. Provide this information in Excel file format with any formulas used intact.
- a) Provide actual monthly and annual net generation (MWh) and monthly and annual fuel input (mmBTU or MCF of gas, and gallons of fuel oil if applicable for Costa Sur 5&6) and average monthly and annual actual heat rate for each of EcoEléctrica (combined cycle total), Costa Sur unit 5, and Costa Sur unit 6 for 2015-2018; and provide the same information for 2019 to date as available. If applicable, provide both fuel oil and gas inputs separately for the Costa Sur units.
  - b) Separately, for each of EcoEléctrica (combined cycle total), Costa Sur 5, and Costa Sur 6: Provide the total \$ payments for gas and (for Costa Sur 5 and 6) oil, for each month and year 2015-2018, and 2019 to date as available.
  - c) Separately, for each of EcoEléctrica (combined cycle total), Costa Sur 5, and Costa Sur 6: Provide the average \$/mmBTU cost of gas for each of years 2015-2018, and 2019 to-date as available.
  - d) Under the existing contract for operation for EcoEléctrica, provide projected gas cost on a \$/mmBTU for each and all months in 2020, 2021, and 2022, through the 2022 end date (month) for the contract. Explain if there is any discrepancy between these projected values and the fuel cost inputs included in the original IRP runs to date (e.g., S4, S3, ESM).
  - e) Confirm, or fully explain otherwise, that the gas pricing for EcoEléctrica under the existing contract, as reflected in Exhibit 7-14 and in the text at Section 4.2.1.5 ( page 4-9) of the IRP, is based on the capacity factor seen at the plant on an hourly dispatched basis, as opposed to an average daily, weekly, monthly, or annual capacity factor basis.
  - f) Compare the actual average heat rate performance at EcoEléctrica in 2015-2019 (to date) with the modeled heat rate for EcoEléctrica in the IRP model runs to date and explain any differences.
- PREB-PREPA-10-02    Take or pay considerations in the Amended and Restated Power Purchase and Operating Agreement between EcoEléctrica, and PREPA, and the Amended and Restated Natural Gas Sale and Purchase Agreement between Naturgy and PREPA, (together the "Agreements").

- a) Provide PREPA's analysis, including all Excel workpapers, of the year-by-year monetary effect of all take-or-pay considerations included in the Agreements' terms, if any, under the "base load" scenarios for ESM, S4S2, S3S2, S1S2, S5S1, and also under the "no EE" scenarios as requested and provided in response to ROI 9-1. Complete this assessment assuming all gas is delivered only to the South terminal at the EcoEléctrica facility to supply EcoEléctrica and Costa Sur.
  - b) Provide the same analysis as indicated above assuming that gas requirements as indicated by IRP modeling results at facilities other than EcoEléctrica and Costa Sur could be served by the proposed contract.
- PREB-PREPA-10-03 Confirm or explain otherwise that take-or-pay considerations in the Agreements, if any, are not part of the optimization logic used in the Aurora LTCE runs. If they are not part of the optimization logic, explain how their economic effect (*i.e.*, cost) is considered when determining a Preferred Resource Plan.
- PREB-PREPA-10-04 Confirm or explain otherwise that there are no model runs already in the IRP record that contain fully the terms and assumptions in line with the proposed Agreements.
- PREB-PREPA-10-05 New Agreements' terms effect on IRP runs; requests for new runs.
- Provide new Aurora model runs (LTCE required) and provide the summary NPV and NPV+ENS metrics comparable to those presented in Exhibit 8-3 of the IRP Main Report and provide a Metrics file (as provided for all of the other cases) for each of the following runs. Include in the runs two resource options associated with EcoEléctrica: (1) Aurora allows for the existing contract to expire in 2022 under current provisions, or (2) the new Agreements are implemented commencing in 2020, and the existing contract is retired at the same time. In no case should the proposed Agreements be applied to EcoEléctrica and offered as a "fixed decision" in any of the below model run requests.
- a) As requested originally in ROI 9-1, provide "No EE" and "Low EE" load level LTCE runs for S1S2, S2S2, S3S2, S4S2, and S5S1.
  - b) Provide an original "base load" (with original, full EE) LTCE run using the new PPOA terms (for capacity payment and fuel price) for S4S2 and S3S2.
  - c) Provide "No EE" and "Low EE" load level LTCE runs for S4S2 and S3S2 with solar PV and BESS buildout assumptions as asked in ROI 7-2 a), namely, with current BESS/solar PV limitations up to and through 2021, but with no limitation at all on BESS and solar PV resource builds for all years starting in 2022.
  - d) For all new requested model runs, use consistent pricing for the fuel for the converted San Juan 5 & 6 CC units.

- e) Confirm that all model runs will use the actual New Fortress Energy (NFE) contract terms for natural gas supply for San Juan 5 & 6 converted, and state what pricing terms will be used after expiration of that contract for those units.
- f) Confirm that the “resource year” tab in each of the metrics files developed contain an accurate representation of the fuel price associated with each existing or new resource.

PREB-PREPA-10-06 Minimum contract quantities.

- a) In general, provide the start year for any potential minimum contract quantity reductions and any supporting quantitative rationale. Explain why it cannot be an earlier year.
- b) Explain the underlying basis for any minimum contract quantity baseline. If there are minimum contract quantity baselines, explain why the Agreements cannot have lower minimum take quantities, if that is the case. If not the case, state feasible lower minimum-take quantities.
- c) Can PREPA reduce minimum contract quantities in accordance with consistency of economic dispatch? Explain more fully.
- d) Explain any abilities to reduce contract quantities, including, but not limited to, RPS achievement and the year they can be applied.
- e) Are there any conditions under which PREPA can reduce its minimum take amount? If so, explain the rationale and basis for each condition, including any thresholds.
- f) Explain any lower limit for the reduced minimum take amount under these conditions.
- g) To the extent that it has not been done before, explain fully how the minimum take amount can reduce from the minimum contract quantity baseline to the absolute minimum take amount, and if there are steps along the continuum of such a reduction.

PREB-PREPA-10-07 Dispatch Limits.

- a) Describe the dispatch limits for EcoEléctrica under the Agreements’ terms, including the capacity rating they are based upon?
- b) If there is a minimum operation capacity, describe the reasons for such restriction.
- c) Is there any constraint on daily cycling range for the EcoEléctrica Units under the proposed Agreements? If so, describe such constraints



- d) Is there any constraint on the availability of daily cycling over the course of any year, during normal operations? E.g., could the unit cycle daily between the minimum operation capacity, if any, and 100% of rated operation, if dispatch conditions called for daily operation at midday at its lower operating limit?

PREB-PREPA-10-08 Capacity Costs and underlying contract price.

- a) What is the underlying cost basis for the existing and proposed modified capacity payments for the EcoEléctrica PPOA?
- b) What are the underlying revenue requirements for the EcoEléctrica facility under the Agreements' terms and how do the proposed contract modifications result in meeting such requirements?
- c) Provide any underlying financial analyses which support the proposed revisions to the capacity payment structure. Include how changes in gas pricing under the Agreements' terms effects the overall revenue requirements for the EcoEléctrica facility.

PREB-PREPA-10-09 Fuel Price.

- a) Explain in detail the cost basis (e.g., liquefaction, transport, and margin) for the \$5.80/mmBtu (year 2020) "adder" associated with the gas price formula, as provided in the answers to ROI 9.
- b) Explain in detail the cost basis for the 115% multiplier to Henry Hub gas price within the gas price formula.
- c) Provide a summary projection of annual delivered gas prices for gas use at EcoEléctrica and Costa Sur 5&6 under the proposed Agreements' terms. Provide the underlying source for projection of Henry Hub gas prices.

**Responses to the requirements of information shall be submitted electronically to the following addresses: [viacaron@energia.pr.gov](mailto:viacaron@energia.pr.gov), [secretaria@energia.pr.gov](mailto:secretaria@energia.pr.gov) & [legal@energia.pr.gov](mailto:legal@energia.pr.gov).** If responses are too voluminous to be sent by electronic mail, the responses shall be delivered to the Energy Bureau and intervenors through a USB drive sent via regular mail or through a cloud-based storage service (e.g. Dropbox, OneDrive, Google Drive, WeTransfer, etc.).

Cordially,

/s/ Vanessa Acarón Toro, PE

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

**IN RE:**

**REVIEW OF THE PUERTO RICO  
ELECTRIC POWER AUTHORITY  
INTEGRATED RESOURCE PLAN**

NO. CEPR-AP-2018-0001

SUBJECT:  
REQUIREMENTS OF  
INFORMATION

**THE PUERTO RICO ELECTRIC POWER AUTHORITY'S SUPPLEMENTAL  
RESPONSES TO THE PUERTO RICO ENERGY BUREAU'S TENTH REQUIREMENT  
OF INFORMATION**

TO THE PUERTO RICO ENERGY BUREAU:

COMES NOW the Puerto Rico Electric Power Authority and hereby submits its supplemental responses to the Puerto Rico Energy Bureau of the Public Service Regulatory Board's 10<sup>th</sup> *Requirement of Information to PREPA*, dated December 13, 2020. The responses are submitted pursuant to the provisions of Article VIII of Regulation No. 8543, *Regulation on Adjudicative, Notice of Noncompliance, Rate Review and Investigation Proceedings* and also pursuant to the discovery proceedings established in the *Resolution and Order* entered on July 3, 2019.

In San Juan, Puerto Rico, this 29<sup>th</sup> day of January 2020.

/s/ Katuska Bolaños

Katuska Bolaños

[kbolanos@diazvaz.law](mailto:kbolanos@diazvaz.law)

TSPR 18888

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

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

NO. CEPR-AP-2018-0001

**SUBJECT:** REQUIREMENTS OF  
INFORMATION

**PREPA'S RESPONSES TO THE ENERGY BUREAU'S  
TENTH SET OF REQUIREMENTS OF INFORMATION**

**TO: THE PUERTO RICO ENERGY BUREAU**

Through:

viacaron@energia.pr.gov

secretaria@energia.pr.gov

legal@energia.pr.gov

**FROM: PUERTO RICO ELECTRIC POWER AUTHORITY**

Through its Counsel of record

PREPA objects to any Requirement of Information ("ROI") that calls for information or documents that are not in the possession, custody, or control of PREPA.

For ease of reference, the questions and requirements as set forth in the Request are herein transcribed and shown in bold previous to each answer.

**PREB-PREPA-10-01- f**

**Compare the actual average heat rate performance at EcoEléctrica in 2015-2019 (to date) with the modeled heat rate for EcoEléctrica in the IRP model runs to date and explain any differences.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

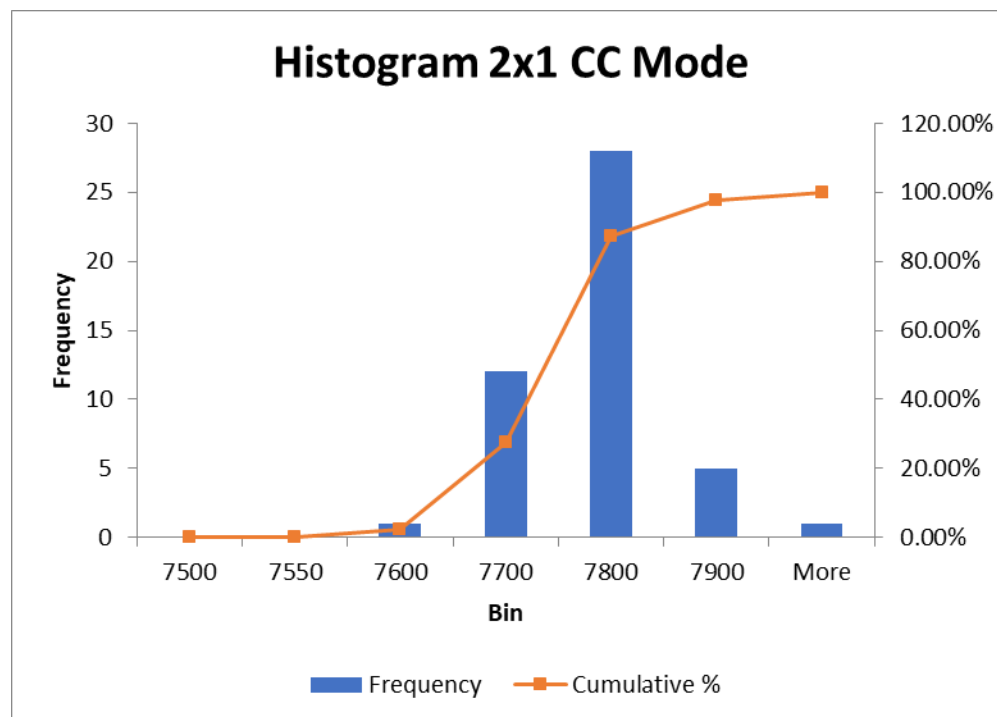
**Response:**

The Siemens team using data provided by PREPA analyzed the historical heat rate for the plant from January 2015 to December 2019. PREPA provided the data by

month along with configuration the plant was run mostly during the month. EcoEléctrica can be run in 5 modes: 1) One CT Simple Cycle, 2) Two CT Simple Cycle, 3) 1x1 Combined Cycle, 4) 2x1 Combined Cycle and 5) CT Simple Cycle plus 1x1 Combined Cycle. In the Siemens simulations, it is assumed a 2x1 Combined Cycle mode (4) for all the scenarios. As shown in Table 1, the heat rate on a 2x1 Combined Cycle was mostly in the range of 7,700 to 7,800 Btu/kWh with an average of 7,741 Btu/kWh in 2015-2019. That compares to an assumed heat rate in the Aurora model of 7,500 Btu/kWh, which is 3.2% lower. Please refer to *PREPA ROI 10\_1 Attach 4.xl/sx* with the historical heat rate data.

The Siemens team also evaluated the impact on fuel costs from the discrepancy in the assumed heat rate of the plant and found that using the historical heat rate would have increased fuel costs by about \$60 million dollars in present value for most cases. Please see *PREPA ROI 10\_1 Attach 5.xl/sx* with the estimates for some of the core scenarios.

**Table 1: Histogram - Historical Heat Rate for EcoEléctrica 2x1 CC mode (2015-2019)**



**Supplemental. Correction to Table 2 of the ROI 10-05 Response.**

The table below shows corrected values for the comparison of the NPV of all cases requested under ROI 10-05. The values below reflect the Metrix results provided for each of the cases filed on January 22, 2020.

**Table 2: ROI 10 Cases - NPV Comparison (\$000) \***

Case	Eco PPOA LTCE	No PPOA LTCE	Eco PPOA with Storage Refined (Final) **	Difference New PPOA - No PPOA
<b>Base Load</b>				
S4S2B Base	14,835,355	15,530,875	14,824,335	(695,520)
S3S2B Base	14,632,303	14,784,301	14,144,101	(151,998)
<b>Low EE Load</b>				
S4S2B Low EE	16,679,347	17,182,909	16,679,347	(503,562)
S4S2B Low EE, No Solar limits	17,404,212	17,283,587	17,283,426	120,625
S1S2B Low EE	17,754,462	18,534,994	17,464,845	(780,532)
S3S2B Low EE	16,788,793	16,931,283	15,978,394	(142,490)
S3S2B Low EE, No Solar Limits	16,981,989	17,222,885	16,124,669	(240,896)
S5S1B Low EE	16,844,085	17,019,617	16,736,222	(175,532)
<b>No EE Load</b>				
S4S2B NO EE	17,739,315	17,980,578	17,739,315	(241,263)
S4S2B NO EE, No Solar limits	18,741,757	18,672,746	18,552,371	69,011
S1S2B NO EE	18,805,782	19,591,382	18,805,782	(785,600)
S3S2B NO EE	17,687,306	17,775,846	16,741,505	(88,540)
S3S2B NO EE, No Solar Limits	17,917,995	18,182,591	16,961,018	(264,596)
S5S1B No EE	17,506,111	17,719,873	17,463,626	(213,762)

\* NPV @ 9% 2019-2038. \* Does not include ENS impact

\* Storage refined as needed

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

**IN RE:**

**REVIEW OF THE PUERTO RICO  
ELECTRIC POWER AUTHORITY  
INTEGRATED RESOURCE PLAN**

NO. CEPR-AP-2018-0001

SUBJECT:  
REQUIREMENTS OF  
INFORMATION

**THE PUERTO RICO ELECTRIC POWER AUTHORITY'S RESPONSES TO THE  
PUERTO RICO ENERGY BUREAU'S TENTH REQUIREMENT OF INFORMATION**

TO THE PUERTO RICO ENERGY BUREAU:

COMES NOW the Puerto Rico Electric Power Authority and hereby submits its responses to the Puerto Rico Energy Bureau of the Public Service Regulatory Board's *10<sup>th</sup> Requirement of Information to PREPA*, dated December 13, 2019. The responses are submitted pursuant to the provisions of Article VIII of Regulation No. 8543, *Regulation on Adjudicative, Notice of Noncompliance, Rate Review and Investigation Proceedings* and also pursuant to the discovery proceedings established in the *Resolution and Order* entered on July 3, 2019.

In San Juan, Puerto Rico, this 22<sup>nd</sup> day of January 2020.

/s/ Katuska Bolaños  
Katuska Bolaños  
[kbolanos@diazvaz.law](mailto:kbolanos@diazvaz.law)  
TSPR 18888

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

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

NO. CEPR-AP-2018-0001

**SUBJECT: REQUIREMENTS OF  
INFORMATION**

**PREPA'S RESPONSES TO THE ENERGY BUREAU'S  
TENTH SET OF REQUIREMENTS OF INFORMATION**

**TO: THE PUERTO RICO ENERGY BUREAU**

Through:

viacaron@energia.pr.gov

secretaria@energia.pr.gov

legal@energia.pr.gov

**FROM: PUERTO RICO ELECTRIC POWER AUTHORITY**

Through its Counsel of record

PREPA objects to any Requirement of Information ("ROI") that calls for information or documents that are not in the possession, custody, or control of PREPA.

For ease of reference, the questions and requirements as set forth in the Request are herein transcribed and shown in bold previous to each answer.

**PREB-PREPA-10-01**

**EcoEléctrica and Costa Sur 5&6 historical fuel consumption; and historical and projected cost/price information. Provide this information in Excel file format with any formulas used intact.**

- a) Provide actual monthly and annual net generation (MWh) and monthly and annual fuel input (mmBTU or MCF of gas, and gallons of fuel oil if applicable for Costa Sur 5&6) and average monthly and annual actual heat rate for each of EcoEléctrica (combined cycle total), Costa Sur unit 5, and Costa Sur unit 6 for 2015-2018; and provide the same information for 2019 to date as available. If applicable, provide both fuel oil and gas inputs separately for the Costa Sur units.**
- b) Separately, for each of EcoEléctrica (combined cycle total), Costa Sur 5, and Costa Sur 6: Provide**

**the total \$ payments for gas and (for Costa Sur 5 and 6) oil, for each month and year 2015-2018, and 2019 to date as available.**

- c) Separately, for each of EcoEléctrica (combined cycle total), Costa Sur 5, and Costa Sur 6: Provide the average \$/mmBTU cost of gas for each of years 2015-2018, and 2019 to-date as available.**
- d) Under the existing contract for operation for EcoEléctrica, provide projected gas cost on a \$/mmBTU for each and all months in 2020, 2021, and 2022, through the 2022 end date (month) for the contract. Explain if there is any discrepancy between these projected values and the fuel cost inputs included in the original IRP runs to date (e.g., S4, S3, ESM).**
- e) Confirm, or fully explain otherwise, that the gas pricing for EcoEléctrica under the existing contract, as reflected in Exhibit 7-14 and in the text at Section 4.2.1.5 (page 4-9) of the IRP, is based on the capacity factor seen at the plant on an hourly dispatched basis, as opposed to an average daily, weekly, monthly, or annual capacity factor basis.**
- f) Compare the actual average heat rate performance at EcoEléctrica in 2015-2019 (to date) with the modeled heat rate for EcoEléctrica in the IRP model runs to date and explain any differences.**

The following response was provided by Hugal Ríos, Executive Advisor, and Edwin Barbosa Viera, Administrator, PREPA. Hugal Ríos and Edwin Barbosa Viera certify that, to the best of their information and belief, all answers provided by them are true and no false or misleading information has been provided.

**Responses:** PREB-PREPA 10-01 a) Please refer to file PREPA ROI\_10\_1 Attach 1.xlsx

PREB-PREPA 10-01 b) Please refer to files PREPA ROI\_10\_1 Attach 2.xlsx and PREPA ROI\_10\_1 Attach 3.xlsx.

PREB-PREPA 10-01 c) Please refer to files PREPA ROI\_10\_1 Attach 2.xlsx PREPA ROI\_10\_1 Attach 3.xlsx.

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao



and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

PREB-PREPA 10-01 d) The cost is only a function of the contract and not of the IRP plan. However, the gas projections used by PREPA may be different from those in the IRP. Please reference EcoEléctrica for additional information.

PREB-PREPA 10-01 e) The limits on gas volumes and pricing are assessed on a monthly basis. This implies that the pricing for capacity factors > 76% are determined on an aggregate and when the lower cost fuel is used up the balance of the gas consumption is assessed at the higher price. We understand that this is consistent with the way the plant is currently being dispatched and fuel paid for.

PREB-PREPA 10-01 f) The information requested is not available at this moment; PREPA is working to provide it as soon as possible.

**PREB-PREPA-10-02**

**Take or pay considerations in the Amended and Restated Power Purchase and Operating Agreement between EcoEléctrica, and PREPA, and the Amended and Restated Natural Gas Sale and Purchase Agreement between Naturgy and PREPA, (together the "Agreements").**

- a) Provide PREPA's analysis, including all Excel workpapers, of the year-by-year monetary effect of all take-or-pay considerations included in the Agreements' terms, if any, under the "base load" scenarios for ESM, S4S2, S3S2, S1S2, S5S1, and also under the "no EE" scenarios as requested and provided in response to ROI 9-1. Complete this assessment assuming all gas is delivered only to the South terminal at the EcoEléctrica facility to supply EcoEléctrica and Costa Sur.**
- b) Provide the same analysis as indicated above assuming that gas requirements as indicated by IRP modeling results at facilities other than EcoEléctrica and Costa Sur could be served by the proposed contract.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

**Responses:** PREB-PREPA-10-02 a) EcoEléctrica under the new contract has high capacity factors until approximately 2025 that place the consumption far from the applicable minimum Take or Pay (ToP) conditions. After 2025, there can be drops in the gas consumption due for example a combination of renewable generation and the entry of other efficient thermal generation. However, at this time, the penetration of renewable is well over 15% (15% reached by 2021) and in many cases at least one unit at Costa Sur has retired. Either of these conditions independently would allow PREPA to schedule a yearly minimum contractual quantity of 19.0 TBTU/yr. and only when the total consumption falls under 90% of this minimum Take or Pay (ToP) makeup payments are triggered. Therefore, our analysis here and elsewhere in this document are based on payments when the annual consumption drops under  $90\% \times 19 \text{ TBTU/yr.} = 17.1 \text{ TBTU/yr.}$

The results of the Base Load cases, i.e. full energy efficiency consideration for the Scenarios S4S2 and S3S2, are presented below under the responses to question 10-05 and the impact of consumption under the minimum ToP ( $90\% \times 19 \text{ TBTU/yr.} = 17.1 \text{ TBTU/yr.}$ ) is discussed. However, as shown in file PREPA ROI\_10\_2 Attach 1.xlsx, only one case S3S2 hits this limit on 3 years (2027, 2031 and 2032) with present value of the cost impact (at 9% discount) of \$22.3 million.

The ESM, S1S2 and S5S1 with Base Load, have not been assessed under the EcoEléctrica new contract and full LTCE calculations would be required. However, in PREPA ROI\_10\_2 Attach 1.xlsx we provide the results that would have been observed considering the dispatch levels presented in the second filing of the IRP (see Metrics workpapers for each case for supporting information). The ESM shows that for 2027 the limits would be hit by a small amount (present value under \$ 1 million).

For the S5S1 the results are provided until 2024 as after that year EcoEléctrica is retired in the case and the limits are not hit. However, after 2025 we provide the results for the CCGTs installed at Costa Sur that would make up for this consumption until 2032 (two 369 MW F-class). In this case from 2025 to 2027 the limits are hit as there is only one CCGT, once the second CCGT enters in service in 2028, the limits are never hit again. Under S1S2 as expected the limits are not hit.

The results for ESM, S4S2, S3S2, S1S2, S5S1 under the “no EE” are also included in the workpaper PREPA ROI\_10\_2 Attach 1.xlsx. For the ESM case the results correspond to those presented in the workpapers of ROI-09, for the rest are the results of the evaluations done under the responses to question 10-05. As can be observed in no case the minimum limits are hit.

PREB-PREPA-10-02 b) For those cases that the limits were hit, we assessed if the gas at San Juan CCGT counted towards the consumption, if the lower limit would be hit. As can be observed in PREPA ROI\_10\_2 Attach 1.xlsx, only in the case of S3S2 Base Case, there would be still some penalties for low consumption in the last year of the contract 2033, with a present value of \$ 5.6 million.

**PREB-PREPA-10-03**

**Confirm or explain otherwise that take-or-pay considerations in the Agreements, if any, are not part of the optimization logic used in the Aurora LTCE runs. If they are not part of the optimization logic, explain how their economic effect (i.e., cost) is considered when determining a Preferred Resource Plan.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

**Responses:** Take-or-pay considerations were not used explicitly as part of the optimization in the runs. A test case was run with the limits imposed as part of the optimization and no significant difference in the total operating costs was identified with respect of a case run first without the limits and then post-processing the cost as added VOM. Thus, the approach was to run without the limits and then post-processing and adding cost if necessary. This only happened in a few cases and this approach allowed identifying when the violations occurred and by how much.

**PREB-PREPA-10-04**

**Confirm or explain otherwise that there are no model runs already in the IRP record that contain fully the terms and assumptions in line with the proposed Agreements.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

**Responses:** The ROI-9 responses include some of the terms of the EcoEléctrica proposed contracts. No verification on the take-or-pay (ToP) limits was done at the time and a high level assumption was made for the contract extension after 2032 with reductions on the capacity payments.

**PREB-PREPA-10-05**

**New Agreements' terms effect on IRP runs; requests for new runs.**

**Provide new Aurora model runs (LTCE required) and provide the summary NPV and NPV+ENS metrics comparable to those presented in Exhibit 8-3 of the IRP Main Report and provide a Metrics file (as provided for all of the other cases) for each of the following runs. Include in the runs two resource options associated with EcoEléctrica: (1) Aurora allows for the existing contract to expire in 2022 under current provisions, or (2) the new Agreements are implemented commencing in 2020, and the existing contract is retired at the same time. In no case should the proposed Agreements be applied to EcoEléctrica and offered as a "fixed decision" in any of the below model run requests.**

- a) As requested originally in ROI 9-1, provide "No EE" and "Low EE" load level LTCE runs for S1S2, S2S2, S3S2, S4S2, and S5S1.**
- b) Provide an original "base load" (with original, full EE) LTCE run using the new PPOA terms (for capacity payment and fuel price) for S4S2 and S3S2.**
- c) Provide "No EE" and "Low EE" load level LTCE runs for S4S2 and S3S2 with solar PV and BESS buildout assumptions as asked in ROI 7-2 a), namely, with current BESS/solar PV limitations up to and through 2021, but with no limitation at all on BESS and solar PV resource builds for all years starting in 2022.**
- d) For all new requested model runs, use consistent pricing for the fuel for the converted San Juan 5 & 6 CC units.**
- e) Confirm that all model runs will use the actual New Fortress Energy (NFE) contract terms for natural gas supply for San Juan 5 & 6 converted, and state what pricing terms will be used after expiration of that contract for those units.**

- f) Confirm that the “resource year” tab in each of the metrics files developed contain an accurate representation of the fuel price associated with each existing or new resource.**

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certifies that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

## **Responses:**

### **1. Introduction**

The Siemens team simulated three load scenarios, base, Low EE and No EE, as requested in the order for Scenarios 4, 3, 1 and 5. Scenario 2 was not needed to be simulated independently with no new gas units in the east or west selected by the model under Scenario 4. In addition, the Siemens team run two additional set of cases without imposing any solar development limits after 2021 for Scenario 4 and Scenario 3 with Low EE and No EE load.

Due to the technical limitations of the Aurora model to simulate the dependency of Costa Sur gas delivered costs to the selection of the new PPOA, the Siemens team had to run at least two simulations for every case requested (14 in total). That is, if the new PPOA is selected, the natural gas supply to Costa Sur will be delivered at the same costs of the new PPOA for Ecoeléctrica. However, if the new PPOA is not selected by the model, regasification costs and delivered gas for Costa Sur units 5 and 6 (CS 5&6) will be more costly, reflecting the fact that CS 5&6 would have to cover the entirety of the costs of the LNG terminal that would need to be retrofitted to make up for the loss of the steam from Ecoeléctrica. This cost is approximated with the costs of a new ship-based LNG terminal on the South sized for Costa Sur consumption. The Aurora model cannot capture this interdependency and more than one simulation was needed to find the optimal solution by direct comparison of the resulting NPVs.

As such, the best solution was to run two simulations for every case, one without the new PPOA with Ecoeléctrica coming offline by the end of 2021 under the existing contract terms, and another case with the restated and renegotiated PPOA starting in 2020. The NPV of system costs for the two runs are compared with the lowest NPV reflecting the most economical option, as shown for every case in Table 2. In general, the results confirmed previous analysis that the renegotiated PPOA is the most economical option for PREPA's system and rate payers.

### **2. Modeling Assumptions**

We summarize below the main assumptions considered for the modeling of the scenarios. These assumptions were selected considering the most up to date information on the

PREPA's system and thus making the results presented here representative of future conditions as seen at this moment in time.

- The cases that assumed EcoEléctrica to remain in service considered the conditions stated in the contract renegotiation underway. The new contract includes reduced capacity prices and delivered costs of LNG gas to EcoEléctrica and Costa Sur. The restated PPOA is negotiated to start on January 1st, 2020 and the term of the PPOA will be extended to Sept 30, 2032.
- After expiration of the new PPOA in 2032, the plant is retired. Under Scenario 1, we gave the model the option to simulate an extension of the PPOA post 2032, considering the limitations to build new gas under that scenario. It was modeled under the same terms of the renegotiated PPOA, but not with reduced energy charges as in ROI 9
- San Juan 5&6 gas supply were modeled according to the conditions in the contract with New Fortress Energy (NFE), which is effective for 5 years starting on January 1, 2020.
- It is assumed no waiver of the Jones Act for LNG cargos. This results in a higher delivered gas price to the island as stated below.
  - For EcoEléctrica and Costa Sur the LNG is priced as:  $\text{Henry Hub} * 1.15 + \text{Adder } \$/\text{MMBTU}$ . Where adder has the following values: \$5.8/MMBtu for 2020, \$5.7/MMBtu for 2021, \$5.6/MMBtu for 2022, and \$5.5/MMBtu for 2023 until the end of the contract. This is directly from the terms in the contract.
  - For the rest of the LNG terminals the LNG is priced as:  $\text{Henry Hub} * 1.15 + \$5.5/\text{MMBTU}$  and applicable from 2022 onwards.
  - If the new PPOA is not selected, Costa Sur gas is modeled at a premium of \$2.58/MMBtu over the projected natural gas prices under the renegotiated PPOA with Naturgy Aprovevisionamientos for EcoEléctrica to reflect the incremental regasification costs.
- A land-based LNG at San Juan can be developed from 2025 onwards including serving a potential CCGT at Palo Seco.
- AES assumed to be retired after contract expiration by the end of 2027.
- Reduced CapEx of the LNG at San Juan was considered, accounting for possible economies of scale with the infrastructure already built by NFE. The costs are shown in Table 1. As on the second filing the Land based LNG Cost at San Juan was sized for the new CCGT F class built in the North at Palo Seco (Bayamon plus the San Juan 5&6 conversions to gas). The table below also illustrates the potential maximum

volume at the terminal based on dispatching at maximum capacity the new F Class unit and the San Juan conversion.

All other assumptions are the same as the IRP filled on June 2019

**Table 1: LNG Costs Modeled**

Infrastructure Option	CAPEX \$MM (2018\$)	Annual OPEX \$MM (2018\$)	Max Daily Gas Volume (MMcf/d)	Max Gas Volume (MMBtu/month)	Max Capacity MW	CAPEX \$/kW (2018\$)	Annual OPEX \$/kW (2018\$)	CAPEX + Annual OPEX \$/kW (2018\$)
Land-based LNG at San Juan Port (w/o pipeline)	\$ 247.74	\$ 12.88	125.9	3,924,711	702	42	18	61
Ship-based LNG at Mayaguez (west)	\$ 185.00	\$ 9.62	53.4	1,642,116	302	74	32	106
Ship-based LNG at Yabucoa (east)	\$ 185.00	\$ 9.62	53.4	1,642,116	302	74	32	106
Ship-based LNG (FSRU) at San Juan Port (supply to San Juan only)	\$ 185.00	\$ 9.62	50.4	1,549,815	350	64	27	91

	San Juan 5 Peak Fuel Consumption	San Juan 6 Peak Fuel Consumption	F-Class Consumption	Total
Capacity	200	200	302	702
Capacity Factor (used to determine peak consumption)	100%	100%	100%	100%
Heat Rate BTU/kWh	7625	7853	7552	
Fuel MMcf/day	35.71	36.77	53.40	125.88
Max Gas Volume (MMBtu/month)	1,113,250	1,146,538	1,664,923	3,924,711

### 3. Results.

Table 1 shows the results for all cases simulated comparing the NPV of system costs with and without the PPOA, resulting from the LTCE (capacity expansion) in Aurora. The first and second columns and are the direct result of the LTCE optimization with (PPOA) respectively and the fourth column is the difference. The third column (from left to right) has the results with the new PPOA for all cases with battery storage refined, as applicable depending on the case. This is part of the expert review for every case, in which the amount of storage is increased in order to reduce solar curtailments, which are very large for some of these cases coming from the raw LTCE simulation. The Aurora model do not have a full visibility of the impact of solar curtailments on system costs and the reason for the refinement on storage. The 3<sup>rd</sup> column is included so the results of the cases can be compared to previous filings, such as ROI 9.

**Table 2: ROI 10 Cases - NPV Comparison (\$000) \***

Case	Eco PPOA LTCE	No PPOA LTCE	Eco PPOA with Storage Refined (Final) **	Difference New PPOA - No PPOA
<b>Base Load</b>				
S4S2B Base	14,835,355	15,530,875	14,835,355	(695,520)
S3S2B Base	14,632,303	14,784,301	14,154,905	(151,998)
<b>Low EE Load</b>				
S4S2B Low EE	16,612,437	17,182,909	16,612,437	(570,472)
S4S2B Low EE, No Solar limits	17,404,212	17,283,587	17,283,426	120,625
S1S2B Low EE	17,754,462	18,534,994	17,464,845	(780,532)
S3S2B Low EE	16,788,793	16,931,283	15,989,256	(142,490)
S3S2B Low EE, No Solar Limits	16,981,989	17,222,885	16,135,612	(240,896)
S5S1B Low EE	16,844,085	17,019,617	16,736,222	(175,532)
<b>No EE Load</b>				
S4S2B NO EE	17,665,457	17,980,578	17,665,457	(315,121)
S4S2B NO EE, No Solar limits	18,741,757	18,672,746	18,552,371	69,011
S1S2B NO EE	18,805,782	19,591,382	18,805,782	(785,600)
S3S2B NO EE	17,687,306	17,775,846	16,752,377	(88,540)
S3S2B NO EE, No Solar Limits	17,917,995	18,182,591	16,961,018	(264,596)
S5S1B No EE	17,506,111	17,719,873	Pending	(213,762)

\* NPV @ 9% 2019-2038. \* Does not include ENS impact

\* Storage refined as needed

**The primary conclusion is that the renegotiated PPOA reduced the NPV of system costs across most of the scenarios.** The differences are large for some of the cases, in particular Scenario 4 base, low and No EE load cases, and Scenario 1 low and No EE load cases. The exception is for Scenario 4 without solar limits, in which the NPV without the PPOA is lower compared both cases with the PPOA. However, the Siemens team believes the model is not optimizing solar properly for these cases with a significant increase in solar builds. As stated earlier, the model has difficulty evaluating the true impact of solar curtailments on system costs and builds more solar than optimal and the NPV is higher than the case with limits imposed, which is contrary to an optimization where the release of a binding constraint should result in better (lower in our case) value for the objective, not higher. A rational planner would never build solar excess renewable generation, only to see the than those required for a properly designed incurring in higher system costs, if it is already meeting RPS targets and managing the system optimally.



Table 1 also shows that optimizing the build out of storage reduce solar curtailments and the overall NPV of system costs for all cases; the cost of the storage added is more than compensated by the reduction in curtailment.

Table 3 provides a summary of the capacity additions for each plan. We observe that under Scenario 4, the LNG's at Mayaguez and Yabucoa were not developed resulting in effectively the same conditions as Scenario 2.

Under Scenario 4, a new CCGT comes online at Costa Sur to replace Ecoeléctrica in 2033 under the No EE and low EE cases, and the No EE without solar limits. That is not the case under the base load or the low EE case without solar limit. The CCGT in Palo Seco is a fixed decision for Scenario 4, coming online in 2028 under the low and No EE cases, and online in 2025 with a smaller 302 MW under the base load. Previous analysis showed the Palo Seco CCGT to be a least cost economic decision. For the cases without the PPOAs, the Palo Seco and Costa Sur CCGTs are also selected by the model, but Palo Seco starts operation earlier in 2025, instead of 2033. For Scenario 3, the CCGT at Palo Seco is not selected by the model under any load case. In Scenario 5, the timing changes, with an additional unit built at Yabucoa in 2025, under the No EE case.

**Table 3: Summary of Capacity Additions All Scenarios**

Case ID	F - Class Palo Seco	F - Class Costa Sur	San Juan 5&6 Conversion	F-Class Yabucoa 2025	Mayaguez Peker Conversion	Other	Peakers 2025 (MW)	New Solar 2025 (MW)	BESS 2025 (MW)	New Solar 2038 (MW)	BESS 2038 (MW)	Customer Owned Generation 2038 (MW)
S4S2B NO EE w/ PPOA	2028	✓ (2033)	✓	X	X	X	458	3,300	1,520	4,200	2,040	1,176
S4S2B Low EE w/ PPOA	2028	✓ (2033)	✓	X	X	X	403	3,300	1,480	3,840	1,920	1,176
S4S2B Base w/ PPOA	2025	X	✓	X	X	X	394	2,580	1,360	3,060	1,560	1,176
S4S2B NO EE w/ PPOA, No Solar limits	2028	✓ (2033)	✓	X	X	X	490	4,680	2,000	5,280	2,640	1,176
S4S2B Low EE w/ PPOA, No Solar limits	2028	X	✓	X	X	X	415	4,380	1,760	4,620	2,320	1,176
S1S2B Low EE w/ PPOA	X	X	✓	X	X	X	380	3,480	1,560	5,160	2,600	1,176
S1S2B NO EE w/ PPOA	X	X	✓	X	X	X	515	3,480	1,520	5,580	2,000	1,176
S3S2B_Base_w/ PPOA	X	X	✓	X	X	X	371	3,060	1,360	4,440	3,040	1,176
S3S2B NO EE w/ PPOA	X	✓ (2033)	✓	X	X	X	394	3,900	1,520	5,580	3,040	1,176
S3S2B Low EE w/ PPOA	X	✓ (2033)	✓	X	X	X	371	3,540	1,480	5,640	3,040	1,176
S3S2B Low EE w/ PPOA_no Solar Limits	X	✓ (2033)	✓	X	X	X	418	5,220	1,720	5,760	3,040	1,176
S3S2B NO EE w/ PPOA no Solar Limits	X	✓ (2033)	✓	X	X	X	418	5,220	1,720	5,760	3,040	1,176
S5S1B Low EE w PPOA	2034	✓ (2033)	✓	X	X	X	348	3,300	1,360	4,200	1,720	1,176
S5S1B No EE w PPOA (r1)	2025	✓ (2033)	✓	2028	X	X	348	3,060	1,400	4,200	1,920	1,176

Table 4 shows the retirements under each of the scenarios analyzed. It can be observed that in all cases the units at Aguirre are retired early in the study period, Costa Sur are also retired in the same timeframe (except for Scenario 5 under the Low EE load with unit 5 staying online through 2033). The Palo Seco Units in some cases are maintained until 2023 when they have to retire due to MATS requirements along with San Juan units 7&8. The San Juan Unit 6 converted is retired in the mid-2020s for most cases with this unit having a worse heat rate than San Juan 5. In the cases without the PPOA, one of the Costa Sur units are retired in the mid to late 2020s to provide capacity and energy in absence of Ecoeléctrica prior to the operation of the new CCGT at Costa Sur.

**Table 4: Retirements All Scenarios**

Case ID	AES 1 & 2	Aguirre Steam 1 & 2	Aguirre CC 1 & 2	Costa Sur 5 & 6	EcoElectrica	Palo Seco 3 & 4	San Juan 5 & 6	San Juan 5 & 6 Conv	San Juan 7 & 8
S4S2B NO EE w/ PPOA	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	5 - 2020 6 - 2020	Retire 2032	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2034	7 - 2023 8 - 2023
S4S2B Low EE w/ PPOA	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	5 - 2020 6 - 2020	Retire 2032	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2025	7 - 2022 8 - 2023
S4S2B Base w/ PPOA	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025 2 - 2025	5 - 2020 6 - 2020	Retire 2032	3 - 2023 4 - 2021	5 - 2019 6 - 2019	not retired	7 - 2023 8 - 2022
S4S2B NO EE w/ PPOA, No Solar limits	1 - 2027 2 - 2027	1 - 2020 2 - 2021	1 - 2025	5 - 2020 6 - 2019	Retire 2032	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2025	7 - 2021 8 - 2023
S4S2B Low EE w/ PPOA, No Solar limits	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	5 - 2020 6 - 2020	Retire 2032	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2025	7 - 2022 8 - 2023
S1S2B Low EE w/ PPOA	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	5 - 2020 6 - 2020	Not Retired	3 - 2021 4 - 2023	5 - 2019 6 - 2019	6 - 2034	7 - 2022 8 - 2023
S1S2B NO EE w/ PPOA	1 - 2027 2 - 2027	1 - 2019 2 - 2019	1 - 2025	6 - 2021	Retire 2032	3 - 2023 4 - 2021	5 - 2019 6 - 2019	not retired	7 - 2024 8 - 2021
S3S2B_Base_w/ PPOA	1 - 2027 2 - 2027	1 - 2023 2 - 2019	1 - 2021 2 - 2019	5 - 2020 6 - 2020	Retire 2032	3 - 2023 4 - 2021	5 - 2019 6 - 2019	5 - 2034 6 - 2025	7 - 2023 8 - 2021
S3S2B NO EE w/ PPOA	1 - 2027 2 - 2027	1 - 2020 2 - 2019	1 - 2019	5 - 2021 6 - 2020	Retire 2032	3 - 2023 4 - 2022	5 - 2019 6 - 2019	5 - 2035 6 - 2025	7 - 2023 8 - 2021
S3S2B Low EE w/ PPOA	1 - 2027 2 - 2027	1 - 2020 2 - 2022	1 - 2019 2 - 2021	5 - 2020 6 - 2019	Retire 2032	3 - 2022 4 - 2023	5 - 2019 6 - 2019	5 - 2035 6 - 2025	7 - 2021 8 - 2023
S3S2B Low EE w/ PPOA_no Solar Limits	1 - 2027 2 - 2027	1 - 2020 2 - 2020	1 - 2019 2 - 2021	5 - 2021 6 - 2019	Retire 2032	3 - 2023 4 - 2021	5 - 2019 6 - 2019	5 - 2034 6 - 2025	7 - 2022 8 - 2021
S3S2B NO EE w/ PPOA no Solar Limits	1 - 2027 2 - 2027	1 - 2020 2 - 2019	1 - 2019	5 - 2021 6 - 2020	Retire 2032	3 - 2023 4 - 2021	5 - 2019 6 - 2019	5 - 2034 6 - 2025	7 - 2022 8 - 2021
S5S1B Low EE w PPOA	1 - 2027 2 - 2027	1 - 2020 2 - 2019	1 - 2029 2 - 2025	5 - 2033 6 - 2020	Retire 2032	3 - 2019 4 - 2019	5 - 2019 6 - 2019	6 - 2025	7 - 2019 8 - 2019
S5S1B No EE w PPOA	1 - 2027 2 - 2027	1 - 2024 2 - 2019	1 - 2034 2 - 2028	5 - 2022 6 - 2020	Retire 2032	3 - 2019 4 - 2019	5 - 2019 6 - 2019	5 - 2028 6 - 2025	7 - 2019 8 - 2019

Table 5 below provides a summary of other relevant metrics including the average cost of energy for the period 2019 and 2028 and energy not served. Most plans achieve similar levels of emission reductions, except for Scenario 1 with lower emissions reductions due to higher utilization of fuel oil for thermal dispatch in absence of new natural gas-fired units across the island. In addition, for all plans the planning reserve margin of 30% was not found to be binding with the reserve margins staying above this target.

**Table 5: Other Metrics All Scenarios**

Case ID	Average 2019-2028 2018\$/MWh	RPS 2038	NPV Deemed Energy Not Served k\$ (1)	Lowest Reserve Margin	Emissions Reductions	Capital Investment Costs (\$ Millions)
S4S2B NO EE w/ PPOA	103.1	60%	386,084	47%	79%	8,195
S4S2B Low EE w/ PPOA	103.0	60%	493,774	49%	83%	7,674
S4S2B Base w/ PPOA	101.8	68%	154,746	53%	84%	6,601
S4S2B NO EE w/ PPOA, No Solar limits	108.1	69%	431,476	54%	83%	10,285
S4S2B Low EE w/ PPOA, No Solar limits	106.5	67%	423,017	50%	83%	8,837
S1S2B Low EE w/ PPOA	104.8	72%	511,430	50%	88%	9,336
S1S2B NO EE w/ PPOA	104.9	65%	548,339	42%	63%	9,976
S3S2B_Base_ w/ PPOA	97.7	72%	645,991	49%	97%	9,131
S3S2B NO EE w/ PPOA	98.3	91%	608,031	50%	88%	11,481
S3S2B Low EE w/ PPOA	98.4	91%	564,376	46%	90%	10,918
S3S2B Low EE w/ PPOA_no Solar Limits	100.6	92%	372,689	55%	90%	11,449
S3S2B NO EE w/ PPOA no Solar Limits	100.4	93%	397,300	52%	88%	11,951
S5S1B Low EE w PPOA	101.9	54%	1,050,378	30%	73%	8,131
S5S1B No EE w PPOA	100.1	63%	981,978	32%	71%	8,650

#### 4. Metrics Results

##### PREB-PREPA-10-05-a)

Metrix files for this request are included in the following files attached to this response:

- PREB\_ROI\_10-5\_Attach\_1\_Eco PPOA S4S2B\_Low EE.xlsx that contains the results for Scenario 4 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 1.xlsx
- PREB\_ROI\_10-5\_Attach\_2\_Eco PPOA S1S2B\_Low EE.xlsx that contains the results for Scenario 1 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 2.xlsx
- PREB\_ROI\_10-5\_Attach\_3\_Eco PPOA S3S2B\_Low EE.xlsx that contains the results for Scenario 3 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 3.xlsx
- PREB\_ROI\_10-5\_Attach\_4\_Eco PPOA S5S1B\_Low EE.xlsx that contains the results for Scenario 3 with Low EE. -- Please refer to PREPA ROI\_10\_5 Attach 4.xlsx

- PREB\_ROI\_10-5\_Attach\_5\_Eco PPOA S4S2B\_No EE.xlsx that contains the results for Scenario 4 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 5.xlsx
- PREB\_ROI\_10-5\_Attach\_6\_Eco PPOA S1S2B\_No EE.xlsx that contains the results for Scenario 1 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 6.xlsx
- PREB\_ROI\_10-5\_Attach\_7\_Eco PPOA S3S2B\_No EE.xlsx that contains the results for Scenario 3 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 7.xlsx
- PREB\_ROI\_10-5\_Attach\_8\_Eco PPOA S5S1B\_No EE.xlsx that contains the results for Scenario 3 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 8.xlsx

### **PREB-PREPA-10-05-b)**

Metrix files for this request are included in the following files attached to this response:

- PREB\_ROI\_10-5\_Attach\_9\_Eco PPOA S2S4B\_Base.xlsx that contains the results for Scenario 2 with Base Load. – Please refer to PREPA ROI\_10\_5 Attach 9.xlsx
- PREB\_ROI\_10-5\_Attach\_10\_Eco PPOA S3S2B\_Base.xlsx that contains the results for Scenario 3 with Base Load. – Please refer to PREPA ROI\_10\_5 Attach 10.xlsx

### **PREB-PREPA-10-05-c)**

Metrix files for this request are included in the following files attached to this response:

- PREB\_ROI\_10-5\_Attach\_11\_Eco PPOA S4S2B\_Low EE\_No Solar Limits.xlsx that contains the results for Scenario 4 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 11.xlsx
- PREB\_ROI\_10-5\_Attach\_12\_Eco PPOA S3S2B\_Low EE\_No Solar Limits.xlsx that contains the results for Scenario 3 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 12.xlsx
- PREB\_ROI\_10-5\_Attach\_13\_Eco PPOA S4S2B\_No EE\_No Solar Limits.xlsx that contains the results for Scenario 4 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 13.xlsx
- PREB\_ROI\_10-5\_Attach\_14\_Eco PPOA S3S2B\_NO EE\_No Solar Limits.xlsx that contains the results for Scenario 3 with Low EE. – Please refer to PREPA ROI\_10\_5 Attach 14.xlsx

A supplementary set of spreadsheets will be provided with all the cases without PPOAs.

### **PREB-PREPA-10-05-d) Response:**

That is correct. Consistent fuel for the conversions is used as indicated above in the assumptions used for the modeling.

**PREB-PREPA-10-05-e) Response:**

That is correct, as indicated above in the assumptions used for modeling. After the expiration of the contract, San Juan has the same pricing as the rest of the LNG terminals in the island priced as: Henry Hub \* 1.15 + \$5.5/MMBtu and applicable from 2025 onwards.

**PREB-PREPA-10-05-f) Response:**

That is correct. Please see the *Resource year* tab of the Metrix files and filter for any resource and look for column Fuel\_Cost (Column AJ for most). That column lists the fuel price in \$/MMBtu used for each plant.

**PREB-PREPA-10-06**

**Minimum contract quantities.**

- a) In general, provide the start year for any potential minimum contract quantity reductions and any supporting quantitative rationale. Explain why it cannot be an earlier year.
- b) Explain the underlying basis for any minimum contract quantity baseline. If there are minimum contract quantity baselines, explain why the Agreements cannot have lower minimum take quantities, if that is the case. If not the case, state feasible lower minimum-take quantities.
- c) Can PREPA reduce minimum contract quantities in accordance with consistency of economic dispatch? Explain more fully.
- d) Explain any abilities to reduce contract quantities, including, but not limited to, RPS achievement and the year they can be applied.
- e) Are there any conditions under which PREPA can reduce its minimum take amount? If so, explain the rationale and basis for each condition, including any thresholds.
- f) Explain any lower limit for the reduced minimum take amount under these conditions.

- g) To the extent that it has not been done before, explain fully how the minimum take amount can reduce from the minimum contract quantity baseline to the absolute minimum take amount, and if there are steps along the continuum of such a reduction.**

The following responses were provided by (i) Terrence Coyne, Principal Consultant, and Argenis Zabala, Principal Advisor, of Sargent & Lundy, and (ii) Kelly Malone, Partner, and David Lang, Partner, of King & Spalding LLP. Messrs Coyne, Zabala, Malone and Lang each certify that, to the best of his information and belief: (A) all answers provided by him herein are true, and (B) no false or misleading information has been provided.

**Responses:** PREB-PREPA 10-06 a) Based on Section 6.2 of the draft Amended & Restated Natural Gas Sale & Purchase Agreement (the “GSPA”), which sets forth the circumstances under which PREPA may reduce the Minimum Annual Contract Quantity (“MACQ”) of 55 TBtu, we set forth our responses in the Matrix below:

CONTRACTUAL BASIS FOR MACQ REDUCTION	PROPOSED START YEAR	QUANTITATIVE RATIONALE	EXPLANATION OF WHY PARTIES COULD NOT AGREE ON EARLIER START YEAR
Scheduled Maintenance, Forced Outages, Routine Maintenance, Unit Limitations or any Environmental Testing Period (§ 6.2(b))	Any Contract Year in which any such event occurs	Right of reduction (i) alleviates PREPA’s risk of Take-or-Pay Liability under the GSPA upon the occurrence of any such event, and (ii) downwardly adjusts MACQ only for the Contract Year in which such event occurs.	N/A
CONT.			
CONTRACTUAL BASIS FOR MACQ REDUCTION	PROPOSED START YEAR	QUANTITATIVE RATIONALE	EXPLANATION OF WHY PARTIES COULD NOT AGREE ON EARLIER START YEAR
Retirement of Costa Sur Unit (§ 6.2(c))	Any Contract Year in which retirement occurs w/ six months advance notice	Right of reduction (i) facilitates the planned retirement of Costa Sur Units 5 & 6 in 2020 under Draft IRP, which will reduce PREPA’s demand for Natural Gas (“NG”) by ~ 22 TBtu per Unit, and (ii) downwardly adjusts MACQ for the remaining Supply Term.	N/A
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CONTRACTUAL BASIS FOR MACQ REDUCTION	PROPOSED START YEAR	QUANTITATIVE RATIONALE	EXPLANATION OF WHY PARTIES COULD NOT AGREE ON EARLIER START YEAR
Peak Electricity Demand in PR falls below 2,300 MW (§ 6.2(d))	2024	<ol style="list-style-type: none"> <li>1. Right of reduction (i) mitigates PREPA's risk of Take-or-Pay Liability under the GSPA in the event that overall electricity demand in PR materially declines from the current peak electricity demand of approximately 2,800 MW, and (ii) downwardly adjusts MACQ for the remaining Supply Term.</li> <li>2. The quantity of reduced demand for NG at the Costa Sur and EcoElectrica Facilities will depend upon a number of factors including marginal cost of new generation, generator retirements, location of load decline and grid modernization efforts, among other items.</li> </ol>	The agreed Start Year of 2024 (i) occurs approximately three years into a 12 year extended Supply Term, and (ii) reflects a commercial compromise between PREPA's desire to commence Take-or-Pay relief as early as possible, and Naturgy's desire to postpone such relief as long as possible, during such Supply Term. To the extent that peak electricity demand in PR does decline on a long term basis, PREPA estimates that the period required for a decline of 500 MW (roughly 18 % of current peak demand) would not occur until after 2024.
Sources of renewable energy exceeds 15 % of total generation sources connected to Grid in PR (§ 6.2(e))	2024	Once renewable (primarily solar) energy sources start exceeding 15 % of the total generation sources connected to Grid, the mode of operation of the Costa Sur and EcoElectrica Facilities could potentially shift from base load 24 hours per day to cycling during daytime hours (which supports Grid balancing during intermittent renewable generation) and base load during night time hours. PREPA estimates that its demand for NG at such facilities would decline when operating in cycling mode during daytime hours. The specific amount of such decline depends upon a number of factors including marginal cost of new generation, generator retirements, duration of direct sunlight during daytime hours, location of renewable generation sources and grid modernization efforts, among other items.	Notwithstanding that the Energy Policy Act sets Renewable Energy Portfolio targets of 20 % by 2022 and 40 % by 2025, PREPA believes that a scale-up of renewable generation sources connected to the Grid, representing at least 15 % of total generation sources, will take more than four years due to protracted delays in (i) the build-out of the Permanent Grid and Distribution Systems in PR, caused by delays in FEMA Funding, and (ii) the renegotiation of, and award of new, Solar PPOAs, caused in part by the inability of Investors to raise debt financing for these projects due to PREPA's bankruptcy status. The agreed Start Year of 2024 (a) aligns with this view, and (b) reflects a commercial compromise between PREPA's desire to commence Take-or-Pay relief as early as possible, and Naturgy's desire to postpone such relief as long as possible, during such Supply Term.
Early Termination of EcoElectrica PPOA for Eco Default (§ 6.2(f))	Any Contract Year in which termination occurs	Right of reduction alleviates PREPA's risk of Take-or-Pay Liability under the GSPA in the event that the Eco Facility ceases to operate due to early termination of PPOA by PREPA. PREPA estimates that its demand for NG will decline by ~ 27 TBtu annually following such termination.	N/A

PREB-PREPA 10-06 b) Prior to the occurrence of the recent earthquakes, the Eco and Costa Sur Facilities collectively consumed approximately 71 TBtu of NG annually (the “Base NG Consumption Rate”), which assumes operation in base load mode 24 hours per day with an Average Capacity Factor of 75 % for the Eco Facility and 55 % for the Costa Sur Facility. PREPA set the MACQ baseline adopted in Section 6.2 of the GSPA, at the level of 55 TBtu (20 % less than the pre-earthquake Base NG Consumption Rate) with step-down mechanisms to downwardly adjust MACQ in the future for both planned events (i.e., retirement of the Costa Sur units, scale-up of renewable penetration to 15% of total generation by 2024, Scheduled Maintenance & Environmental Testing) and unplanned events, which may never occur (i.e., material decline of peak electricity demand in PR, early termination of the Eco PPOA, events of Force Majeure, Forced Outage at a Facility, etc.), in each case that could curtail the need for (or the ability to make available) generation from such facilities and consequently PREPA’s demand for NG during the extended term of the GSPA. The MACQ of 55 TBtu reflects a conservative number that allows PREPA to nominate volumes of NG during each Contract Year below the Base NG Consumption Rate without incurring Take-or-Pay Liability

PREB-PREPA 10-06 c) To the extent that PREPA can nominate Annual Contract Quantities below the Base NG Consumption Rate but above the MACQ of 55 TBtu to achieve the most economic dispatch of the Eco and Costa Sur Facilities, PREPA will not need to reduce the MACQ. To the extent such economic dispatch requires an Annual Contract Quantity below the MACQ of 55 TBtu, PREPA does not have a right to reduce MACQ to achieve such dispatch and will incur Take-or-Pay Liability for the difference of quantities. As the Eco and Costa Sur Facilities have historically produced 40 % of the total electricity distributed in Puerto Rico at some of the lowest marginal costs of generation available, PREPA views as unlikely a scenario where a more economic dispatch entails less than full utilization of such facilities prior to 2024 (the earliest projected year when daytime cycling of such Facilities commences as a result of renewable scale-up). PREPA will have a right to reduce MACQ under these circumstances from and after 2024 to adjust for reduced dispatch during daytime periods (as described above).

PREB-PREPA 10-06 d) Please see our response to (a) above. Section 6.2(c) effectively entitles PREPA to reduce MACQ upon achievement of Renewable Portfolio Standard objectives once renewable generation sources exceed 15 % of the total generation connected to the Grid in PR.

PREB-PREPA 10-06 e) Please see our response to (a) above.



PREB-PREPA 10-06 f) See Matrix below. In addition to the individual limitations on MACQ reductions set forth below, § 6.2(g) of the GSPA sets forth a limitation on cumulative reductions of MACQ arising out of Costa Sur Unit Retirements, Decline of Peak Electricity Demand and Scale-Up of Renewable Energy Sources of 12 TBtu, which reflects PREPA's anticipated demand for NG, assuming(i) the retirement of the Costa Sur Facility, and (ii) cycling up and down of the Eco Facility during daytime hours to track the increased availability of energy produced from renewable sources.

CONTRACTUAL BASIS FOR MACQ REDUCTION	LOWER LIMIT FOR REDUCED MACQ?	EXPLANATION FOR LOWER LIMIT
Scheduled Maintenance, Forced Outages, Routine Maintenance, Unit Limitations or any Environmental Testing Period (§ 6.2(b))	No fixed lower limit but quantity reductions limited by impact of event on Facility operations (and NG consumption)	Lower limit on quantity reduction sufficient to alleviate PREPA's Take-or-Pay Liability risk arising out of the occurrence of any such events
Retirement of Costa Sur Unit (§ 6.2(c))	19 TBtu	As background, Naturgy would only offer the NG prices on the condition that PREPA accepted a firm take-or-pay commitment for a minimum volume of NG during the entire extended 12 year Supply Period. PREPA agreed to set this minimum volume at 19 TBtu, which represents PREPA's estimate of NG consumption of the Eco Facility operating at a capacity factor of approximately 55 % -- significantly below such facility's historical capacity factor of 75 % -- following the retirement of the Costa Sur Facility (the " <b>19 TBtu Rationale</b> ").
Peak Electricity Demand in PR falls below 2300 MW (§ 6.2(d))	19 TBtu	See the 19 TBtu Rationale above. As further background, a 500 MW reduction in total electricity demand in PR would cause the same reduction of generation capacity from existing sources to achieve Grid balance. The Grid operator would curtail dispatch of the highest marginal cost sources of generation before curtailing dispatch of the Eco Facility (and if still in commercial operation) the Costa Sur Facility, operating at significantly lower marginal costs.
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CONTRACTUAL BASIS FOR MACQ REDUCTION	LOWER LIMIT FOR REDUCED MACQ?	EXPLANATION FOR LOWER LIMIT
Sources of renewable energy exceeds 15 % of total generation sources connected to Grid in PR (§ 6.2(e))	19 TBtu	See the 19 TBtu Rationale above. As further background, PREPA estimates that its demand for NG at the Eco and Costa Sur Facilities would decline when operating in cycling mode during daytime hours to balance the Grid during dispatch of intermittent renewable generation. The reduced demand for NG will depend upon a number of factors including marginal cost of new generation, generator retirements, duration of direct sunlight during daytime hours, location of renewable generation sources and grid modernization efforts, among other items.
Early Termination of EcoElectrica PPOA for Eco Default (§ 6.2(f))	<ol style="list-style-type: none"> <li>1. For termination prior to retirement of either Costa Sur Units 5 or 6, 12 TBtu; and</li> <li>2. Thereafter, 0 TBtu.</li> </ol>	As background (i) PREPA estimates that its demand for NG will decline by ~ 27 TBtu annually following such a termination, and (ii) the lower limit of 12 TBtu corresponds to a capacity factor of approximately 15 % for Costa Sur -- significantly lower than Costa Sur's historical capacity factor of 55 %.

PREB-PREPA 10-06 g) Please see our response to (b) above.

## PREB-PREPA-10-07

### Dispatch Limits.

- Describe the dispatch limits for EcoEléctrica under the Agreements' terms, including the capacity rating they are based upon?**
- If there is a minimum operation capacity, describe the reasons for such restriction.**
- Is there any constraint on daily cycling range for the EcoEléctrica Units under the proposed Agreements? If so, describe such constraints.**
- Is there any constraint on the availability of daily cycling over the course of any year, during normal operations? E.g., could the unit cycle daily between the minimum operation capacity, if any, and 100% of rated operation, if dispatch conditions**

**called for daily operation at midday at its lower operating limit?**

The following responses were provided by Gary Soto Fernández, Head of Electric System Operations Division, PREPA. Gary Soto Fernández certifies that, to the best of his information and belief, all answers provided by him herein are true and no false or misleading information has been provided.

**Responses:** PREB-PREPA 10-07 a) The only dispatch limit for EcoEléctrica under the Agreement's terms is the minimum 80 MW dispatch level when operating a single combustion turbine.

PREB-PREPA 10-07 b) There is a minimum operation capacity of 80 MW of the combustion turbine due to environmental limitations.

PREB-PREPA 10-07 c) The only constraint on daily cycling range is that the variable cost may increase if, due to operational requirements there are more than 100 starts.

PREB-PREPA 10-07 d) There are no limitations on cycling as long as the process does not call for shutting down and restarting a combustion turbine.

**PREB-PREPA-10-08**

**Capacity Costs and underlying contract price.**

- a) What is the underlying cost basis for the existing and proposed modified capacity payments for the EcoEléctrica PPOA?**
- b) What are the underlying revenue requirements for the EcoEléctrica facility under the Agreements' terms and how do the proposed contract modifications result in meeting such requirements?**
- c) Provide any underlying financial analyses which support the proposed revisions to the capacity payment structure. Include how changes in gas pricing under the Agreements' terms effects the overall revenue requirements for the EcoEléctrica facility.**

The following responses were provided by Terrence Coyne, Principal Consultant, and Argenis Zabala, Principal Advisor, of Sargent & Lundy. Messrs Coyne and Zabala each certify that, to the best of his information and belief: (A) all answers provided by him herein are true, and (B) no false or misleading information has been provided.

**Responses:** PREB-PREPA 10-08 a) Capacity payments generally cover the following cost items: O&M costs, capital expenditures, debt service, taxes, and return on investment. A significant portion of the capacity payments under the original PPOA signed in 1995 between EcoEléctrica (“Eco”) and PREPA funded Eco’s debt service for the \$614 million senior loans made available for the original facility construction. The existing capacity payment totals approximately \$225 million (2019 dollars) annually for 507 MW of plant capacity. EcoEléctrica prepaid the original construction debt in full on December 29, 2017.

While PREPA has almost no visibility into Eco’s financial information, Eco has reported to PREPA historic total O&M costs of approximately \$40 million per year in 2015, 2016, and 2017 and forecasted capital expenditures \$21 million per year between 2019 and 2032. Under the renegotiated PPOA, PREPA and Eco have agreed to an annual discount of approximately \$113 million to the capacity payments, subject to an availability bonus that Eco can potentially attain if it operates the facility at sufficiently high availability levels. Based on Eco historical and projected performance, PREPA estimates that the proposed capacity payment will average \$148 million (2019 dollars) annually under the renegotiated PPOA. PREPA also notes that the renegotiated PPOA adopts a contract capacity of 530 MW compared to 507 MW under the existing PPOA; thus, the new capacity payment also accounts for this increase in contracted capacity.

PREB-PREPA 10-08 b) PREPA does not have visibility on Eco’s underlying revenue requirements.

PREB-PREPA 10-08 c) Please see the financial analysis set forth in Sargent & Lundy’s report titled “CS-0022 Eco and Naturgy Renegotiation Report\_19 November 2019, attached as PREPA ROI\_10\_8 Attach 1.pdf.

**PREB-PREPA-10-09**

**Fuel Price.**

- a) Explain in detail the cost basis (e.g., liquefaction, transport, and margin) for the \$5.80/mmBtu (year 2020) “adder” associated with the gas price formula, as provided in the answers to ROI 9.
- b) Explain in detail the cost basis for the 115% multiplier to Henry Hub gas price within the gas price formula.
- c) Provide a summary projection of annual delivered gas prices for gas use at EcoEléctrica and Costa Sur 5&6 under the proposed Agreements’ terms. Provide the underlying source for projection of Henry Hub gas prices.

The following responses were provided by Terrence Coyne, Principal Consultant, and Argenis Zabala, Principal Advisor, of Sargent & Lundy. Messrs Coyne and Zabala each certify that, to the best of his information and belief: (A) all answers provided by him herein are true, and (B) no false or misleading information has been provided.

**Responses:** PREB-PREPA 10-09 a) The negotiated adder is as follows:

Year	Adder (\$/MMBtu)
2020	5.80
2021	5.70
2022	5.60
2023 - 2032	5.50

The adder is intended to cover operational, regasification, and transportation costs as well as Naturgy's profit. Naturgy did not provide detailed breakdown of the cost components. However, we note that the forecasted delivered cost of natural gas (115% \* Henry Hub + Adder) is similar to Siemens's estimate for the total cost of natural gas sourced from Trinidad & Tobago.

The Siemens IRP estimates that the cost components for LNG from Trinidad & Tobago range from \$2.50 to \$4.00/MMBtu for the commodity, from \$1.00 to \$2.70/MMBtu for liquefaction costs, from \$0.50 to \$1.00/MMBtu for transportation, and from \$1.00 to \$2.00/MMBtu for margin (see Section 7.2.5 of IRP). The sum of these ranges total \$5.0 (lower end) and \$9.70 (higher end) per MMBtu. Based upon these values, we believe the natural gas price adder offered by Naturgy is consistent with market averages.

PREB-PREPA 10-09 b) The 115% multiplier is an industry standard that is intended to cover the cost of getting gas liquefied and onto a vessel.

The following response was provided by Nelson Bacalao, PhD, Senior Manager Consulting and Marcelo Saenz, Engagement Manager of Siemens PTI. Nelson Bacalao and Marcelo Saenz certify that, to the best of their information and belief, all answers provided herein are true and no false or misleading information has been provided.

PREB-PREPA 10-09 c) As requested the attachment PREPA ROI\_10\_9 Attach 1.xlsx, contains the projections for the annual delivered gas prices as well as the underlying Henry Hub price forecast.