

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

NEPR

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IN RE: IMPLEMENTATION OF THE
PUERTO RICO ELECTRIC POWER
AUTHORITY INTEGRATED RESOURCE
PLAN AND MODIFIED ACTION PLAN

CASE NO.: NEPR-MI-2020-0012

SUBJECT: Draft Procurement Plan

**MOTION FOR RECONSIDERATION OF RESOLUTION
AND ORDER ON DRAFT PROCUREMENT PLAN**

TO THE HONORABLE PUERTO RICO ENERGY BUREAU:

COMES NOW the Puerto Rico Electric Power Authority through the undersigned legal representation and respectfully submits and requests as follows:

I. INTRODUCTION

The Energy Bureau's¹ Order entered in the captioned case on December 8, 2020, requires that PREPA implement a fast-track procurement process that leaves insufficient time to address and resolve essential technical matters, system constraints and market considerations that will unfortunately set the stage for the failure of the procurement process. The Energy Bureau's Order imposing an accelerated timeline of forty-five (45) days for the evaluation of proposals tendered in response to the Renewable Energy and Storage RFP is entirely unrealistic, in that it does not afford PREPA anywhere near the time needed to evaluate the yet unknown proposals that will respond to the RFP and to assess the related interconnection impacts that will have to be independently evaluated depending on the scope and complexity of those proposals.

Accordingly, and through this motion, PREPA requests the Energy Bureau to reconsider the Order to allow PREPA the time it will need to adequately evaluate the proposals that will result

¹ Capitalized terms not defined herein shall be ascribed the meaning provided to them in the subsequent sections.

from the RFP process. Once the proposals are submitted, PREPA can file informative motions with the Energy Bureau to inform it of the extent and particulars of a proposal and apprise it of the project-specific evaluations that would be needed as a function of a particular project and its location. This mechanism will allow both PREPA and the Energy Bureau to adequately evaluate the true viability and likely costs of the projects that will be submitted.

II. PROCEDURAL BACKGROUND

On August 24, 2020, the Energy Bureau of the Public Service Regulatory Board (the “Energy Bureau”) entered the *Final Resolution and Order on the Puerto Rico Electric Power Authority’s Integrated Resource Plan* (the “IRP Order”).² The IRP Order provided that the Puerto Rico Electric Power Authority (“PREPA” or the “Authority”) must submit a draft renewable resource and battery energy storage resource procurement plan to the Energy Bureau. The Energy Bureau further ordered PREPA to file a status report on the development of its draft Procurement Plan and associated Request for Proposals (“RFP”) no later than thirty (30) days from the notification date of the IRP Order. The Authority thoroughly complied with these provisions of the IRP Order.

On September 23, 2020, PREPA submitted a status report on the development of its Draft Procurement Plan (the “Status Report”) and requested the scheduling of a technical conference which the Energy Bureau granted and held on October 9, 2020. During the technical conference, the Authority’s officers and consultants had the opportunity to exchange information and receive feedback from the Energy Bureau’s Commissioners and its consultants regarding the draft Procurement Plan and draft RFP filings.

² IRP Order, pags. 266-269, ¶¶ 860-867

The feedback received during the technical conference allowed the Authority to submit the Draft Procurement Plan.³ Notwithstanding, and considering that the Draft Procurement Plan is a very complex document that included different processes and technologies that the Authority has not procured before, during the development of the Draft Procurement Plan, the Authority had several concerns regarding what was being asked of PREPA and thus expected that it would be productive to further discuss these concerns with the Energy Bureau.

As a result, on November 5, 2020, the Authority filed a *Request for Technical Conference* and informed the Energy Bureau that such a conference would be beneficial and also an opportunity for PREPA personnel and consultants to present the Energy Bureau with additional matters for which the Authority would have liked to receive feedback. Further, the Authority noted, a technical conference would have also served to address any questions that the Energy Bureau might have regarding the Draft Procurement Plan. In furtherance of the above, on November 17, 2020, the Authority filed a *Motion to Submit Presentation for Technical Conference* and with it submitting a presentation to be discussed during the technical conference.⁴ At the time, the Energy Bureau had neither noted the filing of the Draft Procurement Plan, nor granted the *Request for Technical Conference*, and PREPA was concerned that it did not have concrete guidelines for the execution of the RFP tranches which, pursuant to the IRP Order, required the release of the first tranche during December 2020. This, in addition to the technical concerns PREPA wished to discuss with the Energy Bureau during the technical conference. Accordingly, on November 23, 2020 and then again on December 2, 2020 the Authority filed a *Motion to Reiterate Request for Technical*

³ *Motion Submitting Draft Procurement Plan* filed by the Authority on October 23, 2020.

⁴ *Motion to Submit Presentation for Technical Conference* filed by the Authority on November 17, 2020.

Conference and its *Third Motion Reiterating Request for Technical Conference*, respectively, to no avail.

On December 8, 2020, without the benefit of the technical conferences requested by PREPA and without any discussion of the concerns PREPA had regarding the Energy Bureau's expectations, the Energy Bureau entered a *Resolution and Order* denying the request for technical conference and ordering PREPA to revise its Draft Procurement Plan in accordance with the findings and orders in such order (the "Order"). Further, it ordered PREPA to file the Final Procurement Plan and responses to technical questions set forth in Part I of Appendix B of the Order by December 22, 2020. Order, p. 12.

As will be discussed below, PREPA has supported and concrete concerns about the timelines dictated by the *Resolution and Order* and that document's failure to acknowledge critically important technical considerations and the need for specific interconnection studies. PREPA fears that rigid adherence to these timelines could potentially affect the viability of the procurement process. Therefore, PREPA understands that a reconsideration of the Order is warranted.

III. MOTIONS FOR RECONSIDERATION PURSUANT TO THE UNIFORM ADMINISTRATIVE PROCEDURE ACT OF THE GOVERNMENT OF PUERTO RICO

The Uniform Administrative Procedure Act of the Government of Puerto Rico, approved on June 30, 2017, as amended ("Act 38-2017"), regulates adjudicative administrative proceedings within agencies and corporations in the Government of Puerto Rico. Pursuant to Section 3.15 of Chapter III "the party adversely affected by an order or a partial or final judgment may file a motion for reconsideration of such order or judgment." Said section states:

The party adversely affected by an order or a partial or final judgment may file a motion for reconsideration of such order or judgment within twenty

(20) days from the filing date of the order or judgment. The agency shall consider the motion within fifteen (15) days from its filing. Should it deny it outright or fail to act on it within fifteen (15) days, the term to request review shall begin to elapse again from the date of notice of such denial or from the expiration of the fifteen (15)-day term, as the case may be. 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. Such judgment shall be issued and filed in the case record within ninety (90) days after the motion for reconsideration has been filed. If the agency accepts the motion for reconsideration but fails to act on it within ninety (90) days from its filing, it shall lose jurisdiction over the motion and the term to request judicial review shall begin to elapse once said ninety (90)-day term elapses, unless the agency, for just cause and within those ninety (90) days, extends the term to issue a judgment for a term that shall not exceed thirty (30) additional days.

If the filing date of the copy of the notice of entry of judgment or order differ from the date of mailing of said notice, the term shall be calculated from the mailing date.” (Emphasis provided.)

The Energy Bureau entered its Order on December 8, 2020, and PREPA has until December 28, 2020 to file a motion for reconsideration of that decision. Accordingly, the present motion is submitted to Energy Bureau within the time allowed by the Act 38-2017.

IV. THE ORDER AND MODIFICATIONS TO THE DRAFT PROCUREMENT PLAN

The Order entered by the Energy Bureau sets forth changes that PREPA must incorporate into a final Procurement Plan and

order[ed] PREPA to make the necessary changes to the associated Request for Proposal (“RFP”) in order to align the Final Procurement Plan and associated RFPs with the Energy Bureau’s IRP Order, applicable regulations and laws. [The] Resolution and Order approve[d] some of the core elements of PREPA's Draft Procurement Plan, modifie[d] other elements and include[d] two Technical Appendices. Order, p. 2.

As the Energy Bureau noted, PREPA's Draft Procurement Plan contained a plan description and additional details including: PREPA’s intentions for addressing counter-party risk, an RFP template, a PPOA template, planned installation, timeline and circumstances under which PREPA

will be flexible with that timeline, an RFP schedule, proposed adjustments to its plan to reflect distributed generation (DG) evaluation parameters and other considerations. However, the Energy Bureau identified six (6) key aspects of the Draft Procurement Plan which it considered essential to the purpose of the IRP and that were to be modified or approved as per Part IV and Appendix A of the Order. These key aspects were the following:

1. Overall Process
2. Type and Quantities of Product to be Procured
3. Timeline for Installations
4. Minimum Technical Requirements (MTR)
5. Interconnection
6. Selection Criteria

Of these, PREPA is most concerned with the determinations by the Energy Bureau regarding the timeline for evaluation of RFP responses and its failure to take into account the time required for essential interconnection studies. Specifically, the Energy Bureau stated in its Order that the “RFP evaluation process should last no longer than forty-five (45) days, accelerated from the current Regulation 8815 timeline (which are 90 days).” Appendix A of Order, p. 4. This timeline is disconnected from PREPA’s submissions regarding the current state of the interconnection studies and the real-world experience of other utilities and transmission operators in the evaluation of renewable energy projects of the magnitude PREPA will confront. *See Exhibit A, Affidavit from Juan Diego Alvez Gandia.*

As recognized by the Energy Bureau, PREPA included in its Draft Procurement Plan a summary of its concerns regarding the pending interconnection studies and required system upgrades. Pointedly, PREPA stated in the Draft Procurement Plan that:

PREPA does not yet know whether the existing power grid can support 1,000 MWs of renewable energy capacity without significant system upgrades. Given this uncertainty, PREPA has engaged the services of Sargent & Lundy to evaluate system impacts associated with new renewable energy resources, identify needed system upgrades, determine an approximate capacity value that results in minimal system impacts, and provide an initial screening for preferred interconnection locations. PREPA will communicate the results of the studies with the Energy Bureau once they become available.

See Draft Procurement Plan, p.7 and Appendix A, Section V (1) of Order, p. 5.

Also, PREPA stated that:

It is expected that Respondents make their best effort to provide an accurate estimate of the transmission system interconnection and network upgrade costs." And, "PREPA will evaluate the impact of the proposed resource on the PREPA T&D systems and identify to the Respondent where additional network upgrades are required."

Draft Procurement Plan, p. 33-34.

In response, the Energy Bureau directed PREPA, among other things, to:

[C]arefully consider the synergies and the timing of (a) new battery storage resources; (b) staged transmission reinforcements whose initial components can be completed in advance of an entire transmission project; (c) complementary retirement of existing older thermal resources, and (d) operational guidance that can allow a project to proceed in stages, or with operational limitations based on system needs for curtailment under certain conditions. The Energy Bureau DIRECTS PREPA to consider the way in which combinations of the system changes noted above may help mitigate constraints that may otherwise indicate a need to delay renewable energy deployments. The Energy Bureau DIRECTS PREPA to carefully consider the assumptions used in interconnection analyses that account for the factors noted above.

Appendix A, Section V (4) of Order, p. 6.

The Energy Bureau DIRECTS PREPA to incorporate into its planned assessments of the impact of resources on its T&D system an efficient and time-saving method of analyzing clusters of potential projects. This type of cluster analysis can be similar to forms of cluster analysis used in the electric power industry but should be based at least on an initial selection of RFP responses that PREPA would rank relatively high on its list of projects for contracting in the first and then subsequent tranches.

Appendix A, Section V (15) of Order, p. 9.

The Energy Bureau also DIRECTS PREPA to incorporate into its planned assessments of Respondents' proposals the ability for multiple projects to share the same interconnecting facility, if reasonable and applicable for any given set of Respondent proposals. The purpose of such assessments is to be efficient in both (a) the time required to conduct interconnection analysis of multiple projects in close proximity; and (b) to consider optimal interconnection arrangements where multiple projects utilize the same new interconnecting facilities.

Appendix A, Section V (16) of Order, p. 9-10.

Appendix B to the Resolution and Order indicates that one area of ongoing technical concern is how to efficiently work through a myriad of potential interconnection issues that could arise as Puerto Rico works towards meeting its renewable energy installation goals. The Energy Bureau notes that forthcoming Regulations will continue to address the interconnection-related concerns and needs expressed in the Resolution and Order.

Appendix A, Section V (17) of Order, p. 10.

By their very nature, the interconnection studies and evaluation process, as recognized by the Energy Bureau, take time and thus the allotted forty-five (45) days required for PREPA to evaluate the proposals offered in response to the RFP is entirely inadequate given the tasks PREPA and its consultants must perform, and will not afford PREPA and its consultants an amount of time which their experience and prudent utility practice establish as necessary to address and resolve interconnection issues. In further support of this position, PREPA hereby submits the testimony of Juan Diego Alvez Gandia, Senior Energy Consultant from Sargent & Lundy, LLC who details the process needed to evaluate proposals for the interconnection of new generating facilities and energy storage facilities in a responsible and adequate manner. *See Exhibit A, Affidavit from Juan Diego Alvez Gandia.*

V. TECHNICAL CONSIDERATIONS FOR THE INTERCONNECTION STUDIES

The interconnection process outlined in the attached affidavit describes the Interconnection Studies that need to be performed as to each project proposal based on the request for interconnection of new generating facilities and energy storage facilities. The objective is to

identify the necessary upgrades to the existing transmission system facilities in the power grid to successfully integrate the new renewable energy and energy storage projects.

a. Studies Overview

The interconnection studies process PREPA and its consultants propose to follow is similar to the process followed by other large system operators in the United States. The process includes the following analytical stages:

Stage 1: Feasibility Study

Stage 2: System Impact Study

Stage 3: Facilities Study

i. Stage 1: Feasibility Study

The Feasibility Study assesses the practicality of integrating the proposed renewable energy projects into the PREPA power grid. This study will be a valuable input for PREPA and the potential developers, because it will give them a better understanding of the order of magnitude of potential additional interconnection costs.

The Feasibility Study is an initial assessment of the adequacy of the transmission system to accommodate the request for network integration of new projects. The study includes short circuit analysis and load flow analysis. The study focuses on determining preliminary scope for the necessary modifications at the interconnection facility (point of interconnection owned by PREPA) and other network upgrades required to integrate the renewable projects.

ii. Stage 2: System Impact Study

The System Impact Study is a comprehensive analysis of the impact of adding a new renewable generation or energy storage facility to the system. It provides an evaluation of their impact on the region of the grid where the generator and/or energy storage facility would be located. This study

identifies the system constraints relating to the project and the necessary local and network upgrades. The analyses refine the scope for upgrades of facilities.

For purposes of determining the necessary modifications of the interconnection facilities and network upgrades, the System Impact Study considers the technical details provided by the developers. The system impact study includes power flow analysis, short circuit analysis, and stability analysis. The analysis will consider different load levels.

iii. Stage 3: Facilities Study

During the Facilities Study stage, the System Impact Study results are used as necessary to reflect the changes to the power grid needed to interconnect and integrate the proposed new resource. This stage explores the solution options for constraints based on the findings of the analyses performed during the previous stages. The study will determine the necessary to remove thermal, short circuit, and stability constraints, including complementary equipment and modifications to accommodate those upgrades. When concluded, the Facilities Study will document the engineering design work necessary to upgrade the interconnection facilities and provide a good-faith estimate of the cost to be charged to the developer for the necessary local and network upgrades.

b. Typical Interconnection Study Process Timeline in United States

The interconnection studies PREPA plans to perform follow processes similar to those followed by large U.S. utility system operators for the interconnection of new generation, transmission and energy storage facilities or the modification of existing facilities. The following timeline is based on the timeline followed by PJM, one of the largest regional transmission organizations (RTO) in the United States.

c. Typical Interconnection Process Duration: 20 months

1. *New Service Customers submit & PJM receives New Service Request*: 6 months
2. *Scoping Meeting & System Model*: 1 month
3. PJM Completes Feasibility Studies: 3 months
4. Developer Opportunity Window to Terminate and Withdraw Project: 1 month
5. Executes System Impact Study Agreement → Model Build: 2 months
6. PJM Completes System Impact Studies: 4 Months
7. Terminate and Withdraw & Project → Customer Executes Facility Study Agreement: 1 month
8. PJM Complete Facility Studies (varies by complexity): 6 months
9. Developer *Opportunity Window to Terminate and Withdraw Project*: 2 months

VI. RFP TIMELINE CONSIDERATIONS

In 2020 PREPA resumed the negotiation of power purchase and operating agreements (PPOAs) with developers of a number of renewable energy projects. The process included Non-Operating (“Shovel-Ready”) Projects and renegotiation of agreements with projects currently in operation (Operating Projects). During this negotiation process Sargent & Lundy evaluated the grid interconnection feasibility of the Non-Operating Projects and the Operating Projects seeking to increase their capacity. For the Non-Operating Projects, the evaluations included:

- (i) performing preliminary feasibility analysis that included power flow studies to evaluate the thermal impacts of the projects on the grid, and evaluation of Short

- Circuit Ratio (SCR)⁵ requirements (this is not the regular short circuit analysis). No system impact study was developed. Task (i) Duration: approximately 3 months;
- (ii) developing conceptual interconnection scope; and
 - (iii) cost feasibility study preparing AACE⁶ level 5 cost estimates for the planned interconnections. No full facilities study was developed. Task (ii) & Task (iii) Duration: approximately 3 months total.

The analysis included the following facilities:

- (i) 19 Non-Operating Projects (759 MW approx.)
- (ii) 7 Operating Projects uprating their contracted generating capacity (additional 54 MW approx.)

Based on PREPA and Sargent & Lundy's experience in evaluating interconnections required to accommodate the Non-Operating Projects and potential expansions of Operating Projects, an estimated timeline, assuming 20 projects are evaluated, should consider as a minimum:

Stage 1: Feasibility Study – 3 to 4 months

Stage 2: System Impact Study – 6 months

Stage 3: Facilities Study – 3 to 4 months

Thus, if PREPA is to proceed in the upcoming renewable and energy storage RFP process in a manner that is consistent with prudent utility practice, PREPA and its consultants will require

⁵ Short Circuit Ratio (SCR) is a metric to determine the relative strength of a grid. It is defined as the ratio between short circuit apparent power of the system at the point of interconnection and the power of the project connected to that location. This metric does not evaluate the short circuit level at each location of the system and the impact in the electrical equipment, which is done with the short circuit analysis.

⁶ Acronym for Association for the Advancement of Cost Engineering.

from 12 to 14 months to perform and complete interconnection studies for projects tendered in response to the RFP.

VII. INTERCONNECTION STUDIES AND EVALUATION PERIOD

The interconnection studies will support the initial selection of projects and the determination of the necessary network upgrades. The Feasibility Study will be performed to short-list candidate projects and assess the preliminary impact in the system. The System Impact Study and Facilities Study are essential to determine the responsibility of the developers to design, procure and install all the new equipment necessary to interconnect and integrate the new generating or energy storage facility. These studies are crucial to mitigate potential equipment failure risks. They will properly identify the necessary power grid enhancements and determine the responsible entity for these modifications, reducing technical and financial risks for PREPA.

The Order issued in this proceeding states that the RFP evaluation process should last no longer than forty-five (45) days. Based on the timelines described for a typical interconnection process followed by large system operators in the United States, and the experience PREPA and its consultants had just this year in evaluating impacts associated with interconnecting Non-Operating Projects and increasing the capacity of Operating Projects, it is simply not possible for PREPA to plan and perform the necessary interconnection studies (stages 1, 2 and 3) in the required forty-five (45)-day proposal evaluation period. If PREPA is not afforded the time required to complete these studies and RFP respondents are not afforded time to adjust their proposals to address the results of these studies, neither PREPA nor the project proponents will have a valid basis on which to contract.

VIII. CONCLUSION

The IRP Order describes the Competitive Procurement Process through which PREPA should issue new RFPs to comply with the Renewable Portfolio Standard (RPS) of 40% renewable energy by 2025, as required by the *Puerto Rico Energy Diversification Policy through Sustainable and Alternative Renewable Energy Act*⁷ and amended by *Puerto Rico Energy Public Policy Act*⁸ and based on the S3S2 Scenario presented by PREPA in the proposed IRP. Although this fast-paced development seems to be in line with Puerto Rico's energy public policy to add as much renewable and energy storage capacity to the Puerto Rico grid as possible, as quickly as possible, its hurried implementation will inevitably frustrate achievement of several of the main purposes of applicable laws and indeed is inconsistent with the purpose of the Energy Bureau itself. Act 57-2014 provides that "[a] key mission of the Energy [Bureau] shall be to evaluate the plans that PREPA is required submit to the new regulatory entity, in accordance with the provisions of this Act."⁹ In accordance with this,

PREPA shall submit for evaluation an integrated resource plan consisting of a twenty (20)-year planning period. By evaluating and following up on these plans, the Energy [Bureau] shall be able to guarantee the *orderly and integrated development* of our electrical system, thus ensuring the *reliability, efficiency*, and transparency thereof, and the provision of electric power services at reasonable prices.¹⁰

Compliance with the percentage of renewable goals required by the renewable energy portfolio cannot be the only guide for establishment of timelines related to the implementation of the IRP Order. Even though Act 57-2014 provides that "PREPA shall maximize the use of

⁷ *Puerto Rico Energy Diversification Policy through Sustainable and Alternative Renewable Energy Act*, approved on July 19, 2010, as amended.

⁸ *Puerto Rico Energy Public Policy Act*, approved on April 11, 2019.

⁹ *Transformation and Energy Relief Act*, approved on May 27, 2014, as amended ("Act 57-2014"), Statement of Motives.

¹⁰ *Id.*

renewable energy, in compliance with the applicable Commonwealth and Federal laws.”¹¹ it is also true that PREPA must ensure the “integration into the electric power grid in a *safe and reliable manner* [to guarantee] the stability of the Island’s energy transmission and distribution network, for example, by *installing the necessary equipment and technology* to ensure the connection of renewable energy sources to the electric power grid, or establishing alternate manners of operating the electric power grid, thus mitigating the instability that this type of energy may cause to such grid.”¹² Unfortunately, the Order’s deadlines for evaluation of responses to the renewables and energy storage RFP PREPA has been directed to pursue do not provide adequate time for completion of plans or studies that are necessary to guarantee that renewables and storage systems are integrated in a safe and reliable manner and that project risks are not shifted from developers to PREPA and its customers.

As stated above, the integration studies are crucial to enable PREPA and project developers to interconnect renewable and energy storage facilities in ways that will mitigate potential equipment failure risks and will ensure that project developers appropriately bear the costs of interconnecting their projects to the PREPA system. Dictating that PREPA complete its evaluation process and select projects within the current timeline of forty-five (45) days is unreasonable, in that it does not afford enough time for PREPA to conduct the project specific studies to confirm that implementation of individual projects can be done in a safe and reliable manner, as required by law. Adhering to this unrealistically short timeline and requiring PREPA to contract with project proponents in the absence of critically important interconnection studies will almost certainly lead to a failed procurement.

¹¹ *Id.*, Sec. 2.9(vii).

¹² *Id.*, Sec. 2.9(vii) (Emphasis provided).

WHEREFORE, PREPA requests the Energy Bureau to RECONSIDER its Order and AMEND the same to allow PREPA the necessary time needed to adequately evaluate the proposals that will result from the RFP process. Once the proposals are submitted, PREPA WILL submit informative motions with the Energy Bureau to inform it of the extent and particulars of a proposal and apprise it of the project specific evaluations and time that would be needed as a function of a particular project and its location. Further, the Energy Bureau should RECONSIDER the manner in which the Order addresses the subject of project evaluation timelines, and should CLARIFY that PREPA will not be obligated to execute a power purchase and operating agreement or energy storage services agreement with any project proponent until the required interconnection Feasibility Study, System Impact Study and Facilities Study have been completed, their results shared with the project proponent and the Energy Bureau, and the results of those studies reflected to the extent appropriate in the pricing and technical provisions of the relevant agreement.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 22nd day of December 2020.

/s Maralíz Vázquez-Marrero
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Exhibit A

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

IN RE:

**IMPLEMENTATION OF THE PUERTO
RICO ELECTRIC POWER AUTHORITY
INTEGRATED RESOURCE PLAN AND
MODIFIED ACTION PLAN**

CASE NO.: NEPR-MI-2020-0012

SUBJECT:

Draft Procurement Plan

AFFIDAVIT OF JUAN DIEGO ALVEZ GANDIA

I, Juan Diego Galvez Andía, of legal age 43, and Senior Consultant of Sargent & Lundy, LLC, and a resident of Chicago, Illinois, state under oath as follows:

THAT My personal circumstances are the ones stated above.

THAT I have been a Senior Consultant for Sargent & Lundy LLC since 2015 and currently hold that position.

THAT my Background and Education is Electrical Engineering

THAT I have experience in Electrical Systems and Power System Analysis.

THAT in consideration of my background, education and experience I testify as follows in relation to the necessary studies and processes related to integration of renewable energy projects into the Puerto Rico Electric Power Authority (PREPA) transmission and distribution system.

THAT the statements set forth herein are my opinion as it directly relates to the consulting services that Sargent & Lundy is performing for PREPA and does not cover every possible situation or scenario.

THAT PREPA's consideration and selection of proposals for the development, construction and integration of new renewable and battery energy storage resources into the PREPA T&D system must incorporate a rigorous interconnection evaluation process. To be consistent with prudent utility practice, this process must include specific Interconnection Studies that will need to be performed based on the request for interconnection of new generating facilities and energy storage facilities. The objective is to identify the necessary upgrades to the existing transmission system facilities in the power grid to successfully integrate the new renewable energy and energy storage projects.

THAT the interconnection evaluation process generally followed in the U.S. electric utility industry, and which PREPA plans to follow, is as follows:

Studies Overview

The proposed interconnection study process PREPA outlines here is similar to the process followed by other large electric utility system operators in the United States. The process includes the following analytical stages:

Stage 1: Feasibility Study

Stage 2: System Impact Study

Stage 3: Facilities Study

Stage 1: Feasibility Study

The Feasibility Study assesses the practicality of integrating proposed renewable energy or energy storage project into the PREPA power grid. This study includes an initial assessment of the adequacy of the transmission system to accommodate the request for network integration of a new project. The study includes: short circuit analysis and load flow analysis. The study focuses on determining the preliminary scope for the necessary modifications at the interconnection facility (point of interconnection owned by PREPA) and other network upgrades required to integrate the renewable and storage projects.

This study will provide valuable initial input for PREPA and the project developers of renewable generation and battery energy storage resources as it will give them a better understanding of the order of magnitude scope and cost for the interconnection of the proposed projects. For purposes of determining the necessary modifications of the interconnection facilities and network limitations, the Feasibility Study shall consider the technical details provided by the developers of proposed renewable generation and storage projects.

Stage 2: System Impact Study

The System Impact Study is a comprehensive analysis of the impact of adding the proposed renewable energy or energy storage project to the system. It provides an evaluation of their impact on the region of the grid where the renewable energy or energy storage project would be located. This study identifies the system constraints caused by the project and the necessary local and network upgrades to avoid these constraints. The analyses defines the scope for required upgrades of facilities. For purposes of determining the necessary modifications of the interconnection facilities and network upgrades, the System Impact Study shall consider the technical details provided by the developers of proposed renewable generation and storage projects. The System Impact Study includes power flow analysis, short circuit analysis, and stability analysis.

Stage 3: Facilities Study

During the Facilities Study stage, the System Impact Study results are used as necessary to identify the changes to the power grid. This stage explores the options for removing the constraints based on the findings of the analyses performed during the previous stages. The Facilities Study will determine the upgrades that will be necessary to remove thermal, short circuit, and stability constraints, including complementary equipment and modifications to accommodate those upgrades. When concluded, the Facilities Study will document the engineering design work identifying the measures that will be necessary to upgrade the interconnection facilities and will also provide a good faith estimate of the cost to be charged to the developer for the necessary local and network upgrades.

Typical Process Timeline in the United States

The proposed interconnection studies I have just described follow similar processes undertaken by large system operators for the interconnection of new generation, transmission and energy storage facilities; or the modification of existing facilities, throughout the United States. The following timeline is based on the one followed by PJM, one of the largest regional transmission organizations (RTO) in the United States.

Typical Interconnection Application and Study Process Duration: 26 months

1. *New Service Customers submit & PJM receives New Service Request: 6 months*
2. *Scoping Meeting & System Model: 1 month*
3. *PJM Completes Feasibility Studies: 3 Months*
4. *Developer Opportunity Window to Terminate and Withdraw Project: 1 month*
5. *Developer Executes System Impact Study Agreement → Model Build: 2 months*
6. *PJM Completes System Impact Studies: 4 Months*
7. *Terminate and Withdraw Project or Customer Executes Facility Study Agreement: 1 month*
8. *PJM Complete Facility Studies (varies by complexity): 6 months*
9. *Developer Opportunity Window to Terminate and Withdraw Project: 2 months*

PREPA RFP Timeline Considerations

PREPA's Experience with Shovel Ready Projects

In 2020 PREPA devoted substantial time and resources to the negotiation of power purchase and operating agreements (PPOAs) with developers of numerous renewable energy projects. The process included Non-Operating ("Shovel-Ready") Projects and renegotiation of agreements with projects currently in operation (Operating Projects). During this negotiation process Sargent & Lundy evaluated the grid interconnection feasibility of the Non-Operating Projects and the Operating Projects seeking to increase their capacity. For the Non-Operating Projects, the evaluations included:

- (i) Performing preliminary feasibility analysis that included power flow studies to evaluate the thermal impacts of the projects on the grid, and evaluation of Short Circuit Ratio (SCR)¹ requirements (this is not the regular short circuit analysis). No System Impact Study was developed. *Task (i) Duration: approximately 3 months*
- (ii) developing conceptual interconnection scope; and
- (iii) cost feasibility study preparing AACE² level 5 cost estimates for the planned interconnections. No full Facilities Study was developed. *Task (ii) & Task (iii) Duration: approximately 3 months total*

The analysis included the following facilities:

- 19 Non-Operating Projects (759 MW approx.)
- 7 Operating Projects uprating their contracted generating capacity (additional 54 MW approx.)

Based on PREPA's and Sargent & Lundy's experience in performing the Shovel Ready projects work, an estimated timeline assuming 20 projects are evaluated should assume as a minimum:

Stage 1: Feasibility Study – 3 to 4 months

Stage 2: System Impact Study – 6 to 8 months

Stage 3: Facilities Study – 3 to 4 months

THAT the described interconnection studies will need to be completed in order to support the initial selection of renewable generation and battery energy storage projects and the determination of the necessary network upgrades.

THAT the Feasibility Study will need to be performed as part of the process to enable PREPA to short-list candidate projects and assess the preliminary impacts of interconnecting those projects and integrating them into the PREPA system.

¹ Short Circuit Ratio (SCR) is a metric to determine the relative strength of a grid. It is defined as the ratio between short circuit apparent power of the system at the point of interconnection and the power of the project connected to that location. This metric does not evaluate the short circuit level at each location of the system and the impact in the electrical equipment, which is done with the short circuit analysis.

² This acronym refers to the Association for the Advancement of Cost Engineering, which publishes standards for cost estimating.

THAT the System Impact Study and Facilities Study are essential to determine the responsibility of the renewable energy generation and energy storage project developers to design, procure and install all the equipment necessary to interconnect and integrate the new generating or energy storage facility.

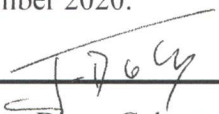
THAT these studies are crucial to mitigate potential equipment and network problems and limitations, and therefore to maintain system stability and reliability.

THAT these studies will identify the necessary power grid enhancements and determine the entity that should be responsible for these modifications, reducing technical and financial risks for PREPA.

THAT according to the latest Energy Bureau Resolution and Order in Case No. NEPR-MI-2020-0012, specifies that the RFP response evaluation process should last no longer than 45 days. Based on the timelines described for a typical interconnection process followed by large system operators in the United States, and the experience PREPA and Sargent & Lundy had in evaluating interconnection impacts associated with the Non-Operating Projects and Operating Projects in Puerto Rico, it is not possible to plan and perform the required interconnection studies (stages 1, 2 and 3) in the required 45-day proposal evaluation period. A final determination as to the feasibility and cost of interconnecting individual renewable generation and battery energy storage projects to the PREPA grid will have to await the completion of the necessary Feasibility, System Impact and Facilities Studies, which is likely to take between 12 and 16 months. Neither PREPA nor the project developer will have a sound basis on which to execute a power purchase and operating agreement or energy storage services agreement which incorporates anticipated interconnection costs and assigns responsibility for their payment until these studies have been completed.

The foregoing opinions are based upon my experience as set out above. In the preparation of this affidavit, I have made such inquiries as I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld from the Energy Bureau.

Executed in Chicago, Illinois on this 22nd day of December 2020.



Juan Diego Galvez Andia