

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

IN RE: AMENDMENT TO POWER PURCHASE OPERATING AGREEMENT BETWEEN PREPA AND AES PUERTO RICO, L.P.

CASE NO.: NEPR-AP-2023-0005

SUBJECT: Resolution and Order about *Petition for Approval of Third Amendment to Power Purchase Operating Agreement Between the Puerto Rico Electric Power Authority and AES Puerto Rico, L.P.*, filed by the Puerto Rico Electric Power Authority.

RESOLUTION AND ORDER

I. PROCEDURAL BACKGROUND

On October 11, 1994, the Puerto Rico Electric Power Authority ("PREPA") and AES Puerto Rico, L.P. ("AES-PR") executed a *Power Purchase and Operating Agreement between AES Puerto Rico, L.P., and Puerto Rico Electric Power Authority* (the "AES PPOA"). The AES PPOA was amended on November 16, 1999 (the "First Amendment-AES PPOA") and, on or about July 17, 2015 (the "Second Amendment-AES PPOA").¹ The AES PR facility subject to the AES PPOA is a coal-fired power generation facility located in Guayama with a capacity of 454 megawatts (the "AES-Facility"). The AES-Facility commenced commercial operation in 2001 and continues to provide PREPA with dependable capacity and energy under the terms of the AES PPOA. The AES PPOA is set to expire in December 2027. The AES-Facility has demonstrated a high level of reliability throughout its operational history and its performance has contributed to the stability of the power supply and reliability of the electrical grid in Puerto Rico. Notably, the AES-Facility has been recognized for its capability to provide electric power at a low cost. This has played, and continues to play, a crucial role in supporting PREPA's efforts to meet the energy needs of its customers, while also maintaining affordability for consumers.

On November 7, 2023, PREPA filed before the Energy Bureau of the Puerto Rico Public Service Regulatory Board ("Energy Bureau") a document titled *Petition for Approval of Third Amendment to Power Purchase Operating Agreement Between the Puerto Rico Electric Power Authority and AES Puerto Rico, L.P.* in which PREPA requests the approval of a third amendment to the AES PPOA ("November 7 Motion"). A confidential copy of the proposed third amendment was attached to the November 7 Motion as Exhibit B ("Proposed Amendment"). According to PREPA, the Proposed Amendment would facilitate a transition to green energy and safeguard the availability of dependable and cost-efficient baseload generation by keeping the AES-Facility financially viable.² PREPA asserts that following extended negotiations, it reached an agreement with AES-PR on the economic terms of the Proposed Amendment. The Proposed Amendment is set to take effect on December 1, 2023, subject to final review and approval by the Energy Bureau and the Financial Oversight & Management Board for Puerto Rico (FOMB).³ PREPA requested confidential treatment of Exhibit B, given it is pre-decisional, has yet to be executed, and is still subject to deliberations and approval of both the FOMB and the Energy Bureau.⁴ PREPA also submitted with the November 7 Motion, a heat rate study performed in connection with the AES-Facility that AES-PR provided to PREPA under a

¹ Unless otherwise stated, the AES PPOA, as amended by the First Amendment-AES PPOA, and the Second Amendment-AES PPOA are collectively referred to as the "AES PPOA".

² November 7 Motion, p. 4.

³ *Id.*

⁴ *Id.*, p. 9.



confidentiality and non-disclosure agreement as it allegedly contains AES-PR's proprietary information and trade secrets and includes critical energy infrastructure information. PREPA requested that the information given in Exhibits B and C be designated as confidential under the deliberative process privilege and the Energy Bureau's Policy of Management of Confidential Information.⁵

On November 13, 2023, the Energy Bureau granted confidential designation and treatment to Exhibits B and C of the November 7 Motion, ordered PREPA to file a redacted version of the Proposed Amendment, established a procedural calendar for the evaluation of the November 7 Motion, and scheduled a technical conference for November 21, 2023 ("Technical Conference").⁶

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On November 16, 2023, the Energy Bureau issued a *Resolution and Order* requesting information from PREPA in relation to the November 7 Motion ("ROI #1"). In the same day, PREPA filed a document titled *Motion in Compliance with Resolution and Order dated November 13, 2023 Requiring PREPA to File Redacted Version of the Proposed Amendment* in which included a redacted version of the Proposed Amendment ("November 16 Motion"). Acting upon PREPA's request, on November 17, 2023, the Energy Bureau issued a Resolution and Order through which it converted the Technical Conference from in-person to virtual. ("November 17 Resolution").

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On November 20, 2023, PREPA filed a document titled *Motion in Compliance with Resolution and Order dated November 16, 2023 requiring PREPA to file information Regarding the Proposed Amendment*, purporting to respond to the ROI #1, and request confidential treatment to it and to their supporting documents ("Response to ROI #1"). Relevant documentation and responses were attached to the Response to ROI #1, identified as:

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| Exhibit A: | <i>Confidential Responses to Requests for Information</i> |
| Exhibit 1 to Exhibit A: | Excel Worksheet including the following identified tabs: 2. <i>Energy and Capacity Payments</i> ; 3. <i>EAF Historical</i> ; 4. <i>Energy Production</i> ; 6. <i>EAF Forecast</i> ; 8. <i>Green Payment</i> ; 10. <i>Historical</i> ; 11. <i>Forecasts</i> ; <i>Demand Charge</i> ; <i>FO&M_VO&M</i> . |
| Exhibit 2 to Exhibit A: | <i>Amended PPOA Economics Including Green Transition Stabilization</i> presentation. |

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The Technical Conference took place on November 21, 2023. During the Technical Conference, PREPA received further requests for information. These requests were based on the testimonies provided by representatives and consultants of both PREPA and AES-PR, as well as on the questions posed by the Commissioners and the consultants of the Energy Bureau. Additionally, during the Technical Conference the Energy Bureau took official notice of the following documents that are part of case *In Re: Solicitud de Certificación AES Puerto Rico, Inc.*, Case No.: CEPR-CT-2016-0013: (1) AES-PR Gross Revenue Report and Financial Statements AES-PR from 2015 to 2022; (2) Letter dated August 11, 2021 from AES-PR addressed to Ralph A. Kreil Rivera of the Governing Board of PREPA, and its Exhibits; (3) Letter dated June 28, 2021 from AES-PR addressed to Eng. Efraín Paredes of PREPA; (4) Letter dated March 24 2021 from AES-PR addressed to Mr. Fernando Padilla of PREPA and; (5) AES-PR's Operational Reports from 2019 to 2022.

⁵ *Id.*, p. 9. See also, Resolution, *In Re: Policy on Management of Confidential Information in Procedures Before the Commission*, Case No.: CEPR-MI-2016-0009, August 31, 2016.

⁶ See Resolution and Order, *In re: Amendment to Power Purchase Agreement between PREPA and AES Puerto Rico L.P.*, Case No.: NEPR-AP-2023-0005, November 13, 2023 ("November 13 Resolution").



On November 27, 2023, the Energy Bureau held a public hearing during which the parties who appeared before the Energy Bureau (both in person and remotely) asked for additional days to provide comments regarding the Proposed Amendment ("November 27 Hearing"). Members of the public also objected to the approval of the Proposed Amendment. During the November 27 Hearing, the Energy Bureau received Memorandums from Alianza Comunitaria Ambiental del Sureste ("ACASE") and Red Continental Cristiana por la Paz ("Reconpaz"). On November 29, 2023, Ruth Santiago filed her comments and suggestions regarding the Proposed Amendment ("Santiago's Comments").

In response to the additional information requested during the Technical Conference, on November 30, 2023, PREPA submitted a document titled *Motion in Compliance with Energy Bureau Request for PREPA to File Information Regarding the Proposed Amendment* ("Responses to TC-ROI"). Relevant documentation and responses were attached to the Responses to TC-ROI and identified as:

Exhibit A-1: *PPOA Amendments-Summary Chart* (marked as confidential);

Exhibit A-2: *Executed Restructuring Support Agreement*;

Exhibit A-3: *EPA Letters*;

(*PREPA Letter to EPA* dated May 30, 2023; *PREPA Letter to DRNA* dated May 30, 2023; *EPA Letter to PREPA* dated June 15, 2023; *Email from AES to PREPA* dated October 16, 2023 includes *PREPA Letter to AES* dated October 4, 2023; *Email from DRNA to PREPA* dated October 18, 2023; *PREPA Letter to AES* dated November 9, 2023).

Exhibit A-4: *Credit Rating Agency Info* (marked as confidential);

Exhibit A-5: *Financial Information and Calculations* (marked as confidential);
and

Exhibit A-6: *AES-PR Decommissioning Cost Estimate* (marked as confidential).

On December 1, 2023, the Energy Bureau announced through a Resolution and Order that the deadline for public comments on the Proposed Amendment is extended to December 7, 2023. Concurrently, another Resolution and Order was issued on the same date, directing PREPA to submit its position on the declassification and public release of the Virtual Confidential Hearing's recording by December 4, 2023, as stipulated in the ("December 1 Resolution"). Additionally, the December 1 Resolution ordered the Energy Bureau's Clerk to grant PREPA access to the hearing recording, along with the notification of the December 1 Resolution.

On December 4, 2023, PREPA filed a document titled *Motion in Compliance with Energy Bureau December 1st, 2023 Resolution and Order* requesting confidential treatment of limited portions of the Virtual Confidential Hearing included as Exhibit A of such document ("December 4 Motion").

On December 5, 2023, the Energy Bureau issued a *Resolution and Order* requesting additional information from PREPA in relation to the November 7 Motion, Response to ROI #1 and Response to TC-ROI ("ROI #2").

On December 6, 2023, Comité Diálogo Ambiental, Inc., Acción Social y Protección Ambiental, Campamento Contra las Cenizas en Peñuelas, Inc., Casa Tallaboña de Formación Comunitaria y Resiliencia, Inc., El Puente-Enlace Latino de Acción Climática, Sierra Club Puerto Rico, Coalición Anti-Incineración y Amigos del Río



Guaynabo⁷ filed their comments regarding the Proposed Amendment (“Environmental Organizations’ Comments”). On December 7, 2023, Honorable María de Lourdes Santiago Negrón filed her comments and suggestions regarding the Proposed Amendment (“Santiago Negrón’s Comments”). Also, on the same date, the Independent Consumer Protection Office (“OIPC, for its Spanish acronym”) filed its comments regarding the Proposed Amendment (“OIPC’s Comments”).

On December 7, 2023, PREPA filed a document titled *Motion in Compliance with Energy Bureau Request for PREPA to File Information Regarding the Proposed Amendment* (“Response to ROI #2”). Relevant documentation and responses were attached to the Response to ROI #2 and PREPA requested confidential treatment. The exhibits are identified as follows:

Exhibit A-1: *AEE-Meta Excel Worksheet*;

Exhibit A-4: *Indirect Agremax Costs from 2015-2023*;

Exhibit A-5: *Letter from AES to PREPA dated December 13, 2022, RE: Challenges Threatening AES Puerto Rico, L.P.’s Continued Operations*;

Exhibit A-8: *Unaudited Financial Statements as of end for the nine months ended September 30, 2023 and 2022 and an AES Trial Balance-Consolidations-Full Year (Excel Worksheet)*;

Exhibit A-9a: *AES Financial Situation, Challenges Threatening AES PR Cash Situation* dated February 8th, 2023, and *PR Expense Support* (Excel Worksheet);

Exhibit A-9b: *AES-PR PPOA Amendments* presentation dated November 3, 2023;
AES-PR Negotiations Update presentation dated August 22, 2023;
Governing Board Memo dated February 25, 2023;
PREPA AES-PR Situation Overview, Next Steps and Legal Considerations presentation dated February 27, 2023; and
PREPA AES-PR Situation Overview, Next Steps and Legal Considerations presentation dated March 15, 2023;

Exhibit A-10: *Excel Worksheet in Response to Request No. 10*; and

Exhibit A-11: *AES Puerto Rico, L.P.-Regulatory Communications Regarding Effects of Puerto Rico Act 5-2020*.

On December 8, 2023, the Energy Bureau issued a *Resolution and Order* in which declassified and made available to the public the audio of the Virtual Hearing consistent with PREPA’s December 4 Motion; denied PREPA’s request to grant AES-PR standing and an additional opportunity to review the recording of the Technical Hearing (“December 8 Resolution”). Also, in the December 8 Resolution, the Energy Bureau allowed PREPA until December 15, 2023, to provide the information requested from Genera in ROI #2; and further extended the deadline for public comments to December 18, 2023.

Relevant to this case, LUMA filed a corrected version of the Puerto Rico Electrical System Resource Adequacy Study (“Adequacy Study”) on December 11, 2023⁸, and

⁷ Collectively referred to as the “Environmental Organizations”.

⁸ See, In RE: *LUMA Resource Adequacy Study*, Case No.: NEPR-MI-2022-0002, *Motion to Submit Corrected Exhibit 1 of the Motion to Submit LUMA’s 2024 Resource Adequacy Study* filed on November 14, 2023, filed by LUMA on December 11, 2023.



an updated version of the Puerto Rico's Path to Power Stabilization report ("Updated Power Stabilization Report") on December 15, 2023.⁹

On December 13, 2023, the Energy Bureau issued a *Resolution and Order* requesting additional information from PREPA in relation with the November 7 Motion, Technical Conference, Response to ROI #1, Response to Technical Conference ROI and Response to ROI #2 ("ROI #3").

On December 14, 2023, Marta M. Ortiz Figueroa ("Ortiz Figueroa") and Lourdes Navas ("Navas") filed their comments regarding the Proposed Amendment.

On December 15, 2023, PREPA filed a document titled *Motion in Compliance with Resolution and Order dated December 13, 2023 Requiring PREPA to File Information Regarding the Proposed Amendment, and Resolution and Order dated December 8, 2023 requiring PREPA to File Information gathered from Genera* which includes as Exhibit A the *Responses to December 13 Order's Requests for Information* ("Response to ROI #3") and as Exhibit B the *Responses to December 8 Order's Request for Information from Genera* ("Supplemental Response to ROI #2"). Relevant documentation and responses were attached to the Response to ROI #3 and the Supplemental Response to ROI #2, for which PREPA requested confidential treatment, and were identified as follows:

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- Exhibit A-1(i): *Trust Agreement;*
- Exhibit A-1(iii): *AES Guayama Holding Trial Balance-Consolidations-Full Year Worksheets for 2016 to 2023 period;*
- Exhibit A-1(iv) and (v): *AES Organizational Chart;*
- Exhibit A-2: *Reconciliation of Historical Financials to Audited Financials;*
- JMA*
- Exhibit A-3: *Agremax Disposal Variance;*
- Exhibit A-4: *Agremax Costs from 2015;*
- Exhibit A-6: *Heat Rate Chart;*
- Exhibit A-7: *AES-PR Situation Overview, Next Steps and Legal Considerations presentation, dated March 20, 2023;*
- SM*
- Exhibit A-8: *PREPA-AES Confidentiality Agreement and draft of PREB Joinder of PREPA Confidentiality Agreement;*
- SM*
- Exhibit A-10: *Additional Costs, Outages due to Loss in Transmission Lines, PR Coal RFP 2024 and 2025 Draft, Fuel Agreement, Fuel Suppliers List, Financial Statements, Price Inputs, Freight Rates, Letter from AES address to PREPA dated December 13, 2022 in re: Challenges Threatening AES Puerto Rico, L.P.'s Continued Operations; and a Letter from PREPA address to AES dated December 9, 2022;*

⁹ See *In Re: LUMA's Response to Hurricane Fiona*, Case No. NEPR-MI-2022-0003, *Motion Submitting Report Titled "Puerto Rico's Path to Power Stabilization"* filed by LUMA on December 15, 2023.



Exhibit A-11(i) and (ii): *Letter from AES address to LUMA Energy Puerto Rico dated January 20, 2023 in re: Impact of 2022 System Interruptions on AES Puerto Rico, LP's Units, AES Puerto Rico Cycling Issues, and a Letter from AES address to LUMA Energy Puerto Rico dated June 30, 2023 in re: Power Purchase and Operating Agreement – Outstanding Balance 2022 & 2023 Invoices.*

Exhibit B: *Letter from Genera address to PREPA dated December 15, 2023, and Excel worksheet identified as December 15, 2023 System Capacity (MW) for 2024-2027.*

On December 20, 2023, PREPA filed a document titled *Informative Motion* in which submits the *Exhibit A-9 Proof of Claim*, related to the Response to ROI #3, which by oversight was not included in the Response to ROI #3 (“December 20 Motion”).

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On December 22, 2023, the Energy Bureau issued a *Resolution and Order* requesting additional information from PREPA in relation with the November 7 Motion, Technical Conference, Response to ROI #1, Response to TC-ROI, Response to ROI #2 and Response to ROI #3 (“ROI #4”).

On December 29, 2023, PREPA filed a document titled *Motion in Compliance with Resolution and Order dated December 22, 2023 Requesting PREPA File Unredacted Proposed Amendment* in which, as requested by the Energy Bureau, submits a unredacted proposed amendment (“December 29 Motion”).

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On January 8, 2024, an informal technical conference was held with the participation of representatives and consultants from AES-PR, PREPA's consultants, and the Energy Bureau's consultants (“January 8 Technical Conference”). This conference focused on discussing issues related to the upcoming response to ROI #4.

On January 9, 2024, PREPA filed a document titled *Motion in Compliance with Resolution and Order Dated December 22, 2023 Requesting Information Regarding the Proposed Amendment* (“Response to ROI #4”) and request confidential treatment to the documentation attached. The exhibits attached to the Response to ROI #4 are identified as follows:

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Exhibit A-1 Confidential: Excel Worksheet including the following identified tabs: 1. *Historical CCR Costs*; 2. *CCR Cost Forecast*; 6. *EAF Reset*; 8. *FRC Calculation*; 9. *Energy and Capacity Payment*; 11. *PPA Heat Rate Corrected*; 17. *Heat Rate Adjustment*.

John

According to PREPA, the Proposed Amendment would facilitate a transition to green energy and safeguard the availability of dependable and cost-efficient baseload generation by keeping AES PR's facility financially viable.¹⁰ PREPA and AES-PR agreed to the economic terms in the Proposed Amendment, to be effective on December 1, 2023, upon final consideration and approval by the Energy Bureau and the Financial Oversight & Management Board for Puerto Rico (“FOMB”).¹¹

PREPA's request, described as centered around the transition to renewable energy encompasses provisions for, (i) a payment related to the stabilization of the system (Green Transition Stabilization Payment), (ii) a payment related to heat rate increase,

¹⁰ November 7 Motion, p. 4.

¹¹ *Id.* Anticipating that the Energy Bureau and the FOMB may not reach a final determination on the Proposed Amendment before December 1, 2023, PREPA and AES-PR emphasized during the Technical Conference the necessity for additional modifications to ensure retroactivity to December 1, 2023.



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(iii) a payment related to the adjustment of the equivalent availability of AES-Facility and (iv) a non-binding commitment by AES-PR encompassing 300 MW in renewable energy end storage resources, labelled as the “Green Energy Commitment”.¹² As detailed in this Resolution and Order, while the Energy Bureau acknowledges PREPA’s request and rationale, it finds, based on the information available in the record, that one of the principal motivations for the proposed modifications is more accurately attributed to the financial impacts faced by AES-PR in managing the Coal Combustion Residuals (“CCR”)¹³ resulting from the operation of the AES-Facility. This is particularly pertinent given the escalated costs resulting from changes in law, specifically Act 40-2017¹⁴ and Act 5-2020¹⁵. PREPA asserts that a substantial financial impact has resulted in AES-PR’s default with its bondholders and a depletion of its cash flows, which compromises its ability to sustain the operation of the AES-Facility until the term of the AES PPOA in December 2027. PREPA also argues that in the event the AES-Facility becomes unavailable at any point within the term of the AES PPOA, its customers will face considerable negative impacts. First, there would be a significant increase in Loss of Load Expectation (“LOLE”) for its customers, and second, there would be a substantial increase in the cost of electric service due to the need to operate more expensive generation units.

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The Energy Bureau has thoroughly evaluated PREPA’s petition in accordance with the applicable law and considering the information in the record. For the reasons stated below, it **CONDITIONALLY** approves the Proposed Amendment.

II. APPLICABLE LEGAL FRAMEWORK

A. Energy Bureau’s Authority

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The Energy Bureau is the regulatory body responsible for overseeing and ensuring the proper execution and implementation of public policy regarding electricity service in Puerto Rico.¹⁶ It has the authority to (i) implement regulations and regulatory actions necessary to ensure capacity, reliability, safety, efficiency, and reasonableness in rate tariffs of the Puerto Rican electrical system; and (ii) establish guidelines, standards, practices, and processes for PREPA’s procurement of energy from other electric service companies and for modernizing its power plants or energy-generating facilities.¹⁷

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The Energy Bureau has the power to establish by regulation the public policy rules and standards for electric service companies. This includes oversight of any transaction, action, or omission that impacts the electrical grid and electrical

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¹² The Proposed Amendment also included additional provisions concerning environmental issues, escrow accounts, insurance, and other related matters.

¹³ CCR means the materials resulting from the combustion of coal in power generating plants; including fly ash, bottom, or heavy ash (bottom ash); boiler slag; and flue gas desulfurization gypsum. See Article 2-A(i) of Act 40-17, *infra*.

¹⁴ *Ley para prohibir el depósito y la disposición de cenizas de carbón o residuos de combustión de carbón en Puerto Rico*, Act No. 40-2017 (“Act 40-2017”).

¹⁵ *Ley para enmendar el Artículo 2, añadir un nuevo Artículo 2-A y enmendar el Artículo 3 de la Ley Núm. 40 de 2017, Ley para prohibir el depósito y la disposición de cenizas de carbón o residuos de combustión de carbón en Puerto Rico*, Act No. 5-2020 (“Act 5-2020”).

¹⁶ *Puerto Rico Energy Transformation and RELIEF Act*, as amended (“Act 57-2014”) and *Puerto Rico Energy Public Policy Act* (“Act 17-2019”).

¹⁷ *Id.*



infrastructure in Puerto Rico.¹⁸ The Energy Bureau will enforce public policy standards in alignment with the Energy Public Policy as declared by legislation.¹⁹

B. Criteria for the Evaluation of Power Purchase Agreements

Article 1.11(b) of Act 17-2019 stipulates 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 shall be executed pursuant to the provisions of Article 6.32 of Act 57-2014 and the regulations adopted thereunder by the Energy Bureau. 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. Additionally, Article 6.32(c) of Act 57-2014 empowers the Energy Bureau to adopt the necessary guidelines for the evaluation and approval of energy purchase and sale contracts.²⁰

Act-17-2019 adopted as public policy the reduction in dependence on fossil fuels, aiming to eradicate energy generation based on coal, petroleum derivatives, and gas. Specifically, Act 17-2019 modified the Renewable Energy Portfolio standards established in Act 82-2010.²¹ This amendment increased the requirement for energy generation from renewable sources to forty percent (40%) by 2025, sixty percent (60%) by 2040, and one hundred percent (100%) by 2050.²² Similarly, Act 33-2019²³ established the goal of twenty percent (20%) for the year 2022. Consequently, Power Purchase Agreements shall be awarded considering 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.

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 AES-PR. 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. Article 6.32 (b) 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.

Consistent with the foregoing, Article 6.32 empowers the Energy Bureau to adopt and promulgate regulations that provide: (i) the standards and requirements with which the Power Purchase Agreements; (ii) the terms and conditions to be included in any power purchase agreement and interconnection agreement, including reasonable costs per kilowatt hour (kWh) per type of generation technology;²⁴ (iii) the guidelines

¹⁸ See Article 6.3(b) of act 57-2014.

¹⁹ *Id.*

²⁰ *Id.*, Article 6.32(c).

²¹ *Public Policy Act on Energy Diversification through Sustainable and Alternative Renewable Energy in Puerto Rico*, as amended ("Act 82-2010").

²² See Act 17-2019, Article 1.6 (7) and Article 4.2 (which amends Article 2.3 of Act 82-2010).

²³ *Puerto Rico Climate Change Mitigation, Adoption and Resilience Act* ("Act 33-2019").

²⁴ On October 19, 2020, the Energy Bureau initiated regulatory proceedings aimed at adopting the regulations provided for in Section 6.32 of Act 57-2014 in *In re: Regulation for the Evaluation and Approval of Agreements between Electric Service Companies*, Case No.: NEPR-MI-2020-0014. That



and standards established by the Energy Bureau through such regulations shall be intended to ensure compliance with the principles of Act 57-2014, Act 83²⁵ and Act 17-2019.²⁶

When evaluating a power purchase agreement or proposal thereto, each contract proposal between electric utility companies, the Energy Bureau must ensure that it is consistent with the public energy policy established in Law 17-2019,²⁷ as well as with the Integrated Resources ("IRP") approved.²⁸ The Energy Bureau shall not approve any contract that is inconsistent with the IRP, especially with regard to the renewable energy, distributed generation, conservation, and efficiency goals established in both the IRP and the public energy policy.²⁹

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The Energy Bureau shall ensure that the interconnection of any proposed project does not threaten the reliability and safety of the electric grid and shall require the removal of any terms or conditions in the proposed contract that are contrary to or threaten the safe and reliable operation of the electric grid. The Energy Bureau shall not approve a contract when there is technical evidence demonstrating that the project in question or the contractual conditions of a project would undermine the reliability and security of Puerto Rico's electric grid.³⁰

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The Energy Bureau shall also ensure that tariffs, duties, rents, or charges paid to independent power producers are fair and reasonable and protect the public interest and the treasury. Likewise, the transmission and distribution grid interconnection tariff, including construction charges, transshipment tariffs, as well as any other requirements applicable to independent power producers or other electric utilities wishing to interconnect to the transmission and distribution system, are also fair and reasonable. In this process, the Energy Bureau must ensure that the rates allow for an interconnection that does not affect the reliability of the electric service and promotes environmental protection, compliance with legal mandates, and does not adversely impact customers.³¹

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Likewise, the Energy Bureau will require the electric utility company responsible for the operation of the Electric System to submit a "Supplementary Study" for the project that is the subject of the proposed contract or the corresponding technical analysis that supports the contract. In the event that a project does not require a "Supplementary Study" to be carried out, the electric utility company responsible for the operation of the Electric System shall issue to the Energy Bureau a certification to that effect, in which it shall state the reasons why the circumstances and characteristics of the project make a "Supplementary Study" or a technical evaluation unnecessary.³²

Therefore, in evaluating the Proposed Amendment, the Energy Bureau must primarily determine: (i) whether the proposal is consistent with the approved IRP; (ii) whether

proceeding is pending, so the principles set forth therein do not apply directly to the evaluation of the Amended Agreement that is followed in the case under this heading.

²⁵ Act No. 83 of May 2, 1941, as amended, known as the *Puerto Rico Electric Power Authority Act* ("Act 83").

²⁶ See Article 6.32(c) of Act 57-2014.

²⁷ *Id.*, Section 6.32(b).

²⁸ *Id.*, Section 6.32(d).

²⁹ *Id.*

³⁰ *Id.*, Article 6.32(f).

³¹ *Id.*, Section 6.32(g).

³² *Id.*, Section 6.32(h).



Jim

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the proposal is consistent with Puerto Rico's public energy policy; (iii) whether the proposed fee structure is fair, reasonable, and protects the public interest and the treasury; (iv) if the interconnection of the proposed project jeopardizes the reliability and stability of the system; and (v) whether the profit parameters and price escalators are based on parameters normally used by the industry.

In this case, the Energy Bureau is considering a petition to examine modifications to a power purchase agreement ("AES PPOA") that was finalized before the enactment of Act 57-2014. Consequently, the proposed amendment is subject to evaluation in accordance with the provisions of Article 6.32 of Act 57-2014, as discussed above, and to the extent that they are applicable.³³

C. *Relevant Legal Framework Applicable to the Management of CCR*

Act 40-2017 as originally enacted addresses the management of coal ash and CCR in Puerto Rico. This act primarily focuses on the regulation and management of coal ash and CCR, including procedures for its disposal and handling, and establishes specific guidelines to ensure environmental safety and public health in coal ash and CCR management.³⁴ Relevant to this case, Act 40-2017 prohibits the deposit and disposal of coal ash and CCR in Puerto Rico, defining "deposit and disposal" as the final discarding of coal ash or CCR that is not intended for beneficial commercial uses.³⁵ As a consequence of this prohibition, most of the CCR produced in Puerto Rico from coal combustion now needs to be disposed off-island. Act 40-2017 also prohibits the storage of coal ash or CCR within the territory of Puerto Rico for a period longer than one hundred and eighty (180) days from the moment of their production.³⁶

Act 5-2020, an amendment to Act 40-2017, adopts a stricter approach by completely banning the deposit of coal ash and CCR in landfills within Puerto Rico.³⁷ This prohibition also includes the use of non-encapsulated CCR, regardless of whether it is considered a beneficial use.³⁸ Consequently, the aggregates produced from coal combustion at AES-PR ("AGREMAX")³⁹ can no longer be used as such and must be disposed of off-island.⁴⁰ Additionally, they are subject to the 180-day storage limitation starting from the day of their production. Due to this prohibition, all CCR produced at AES-PR now needs to be disposed of off-island.

On May 11, 2021, the Puerto Rico Department of Natural and Environmental Resources ("DNER") promulgated Regulation No. 9283, *Regulation for the Management of Coal Combustion Residues* ("Regulation No. 9283"), which also imposes significant restrictions on the storage, disposal, and management of CCR. The AES-Facility is also subject to the EPA's 2015 CCR Rule.⁴¹ This comprehensive set of regulations is aimed at ensuring the safe disposal of coal combustion residuals from coal-fired power plants.

³³ Note that this case involves a facility that was developed, built, and has been in commercial operation since 2001. Therefore, the evaluation of the interconnection, profit parameters, and price escalators is out of scope. Still, the Energy Bureau will evaluate whether the proposed fees subject to modification are fair, reasonable, and protect the public interest.

³⁴ See, in general, Act 40-2017.

³⁵ See Article 3 of Act 40-2017.

³⁶ See Article 3(b) of Act 40-2017.

³⁷ See Article 2-A(f) and Article 3 of Act 5-2020.

³⁸ See Articles 2-A(f), 2-A(K), and 3 of Act 5-2020.

³⁹ AGREMAX is considered a non-encapsulated CCR.

⁴⁰ *Id.*

⁴¹ See Title 40, Part 257 of the Code of Federal Regulations (40 CFR Part 257). Specifically, the relevant sections are in Subparts D and E, which pertain to the disposal of coal combustion residuals.



III. DISCUSSION AND FINDINGS

A. AES-Facility Relevant Description

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AES-PR operates a 454 MW coal-fired power plant located in Guayama which produces roughly 19% of the Puerto Rico base load electricity.⁴² In the process of generating electricity, AES-Facility also produces CCR. Historically AES-PR found certain beneficial uses for CCR on the island, particularly in the production of AGREMAX. This manufactured aggregate has been utilized for various purposes such as landfill daily cover and road construction, which are considered *beneficial uses* of CCRs.⁴³ Additionally, when permitted, AES-PR has disposed of surplus AGREMAX in both on-island and off-island landfills regulated by the United States Environmental Protection Agency (“EPA”) under Subtitle D.⁴⁴ Prior to use or other off-site disposition, AES-PR’s inventory of CCR (AGREMAX) has been stored in a temporary stockpile area (“Stockpile Area”) located behind the generating station at the AES-Facility. AES-PR has used the Stockpile Area to store its aggregate product since beginning operations in 2001. Initially, AES-PR maintained its inventory of produced CCR (AGREMAX) in the Stockpile Area, pending its use or disposal. Following the prohibition of use and disposal of CCR (including AGREMAX) in Puerto Rico, AES-PR maintained its inventory of produced CCR in the Stockpile Area, pending its removal for off-island disposal.

B. Proposed Amendment Consistency with the Approved IRP and the Energy Public Policy

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An integrated resource plan (“IRP”) takes into consideration all reasonable resources needed to supply demand over a given planning period, which in our case is twenty (20) years.⁴⁵ As requested by the Energy Bureau, on June 7, 2019, PREPA submitted to the Energy Bureau an updated proposed integrated resources plan.⁴⁶ The Proposed IRP was evaluated by the Energy Bureau in a comprehensive adjudicative proceeding under *In re: Review of the Puerto Rico Electric Power Authority Integrated Resource*

⁴² See Approved IRP, pp. 90-91. The AES-Facility consist of two (2) two bituminous coal-fired circulating fluidized bed boilers (CFB) with cyclones, which supply superheated steam to two extraction/condensing turbines to drive electric generators. See, in general, *Informe Operacional Compañías de Servicio Eléctrico*, filed by AES-PR on March 8, 2022, in case *In re Solicitud de Certificación de AES Puerto Rico, LP*, Case No.: CEPR-CT-2016-0013.

⁴³ See Response to ROI #4, Exhibit A-1, *Historical CCR Cost*.

⁴⁴ A “Subtitle D landfill”, according to the EPA, is designed for the management of nonhazardous solid waste, such as household garbage and nonhazardous industrial solid waste. These landfills must comply with specific federal regulations to ensure they do not harm the environment, particularly regarding groundwater contamination and gas emissions. Subtitle D landfills include Municipal Solid Waste Landfills (MSWLFs), which are primarily for household waste, and special categories like Bioreactor Landfills and Coal Combustion Residual (CCR) landfills, the latter being specifically for managing coal ash. See *Basic Information About Landfills*, EPA Website, <https://www.epa.gov/landfills/basic-information-about-landfills> (last visit, January 31, 2024).

⁴⁵ Article 1.9 of Act 17-2019 and Article 6.23 of Act 57-2014.

⁴⁶ See PREPA’s *Motion to Leave File IRP Main Report “ERRATA” Version*, dated June 14, 2019, which included a corrected version of the Main IRP Report submitted on June 7, 2019, and is titled *Integrated Resource Plan 2018-2019, Draft for the Review of the Puerto Rico Energy Bureau, Prepared for the Puerto Rico Electric Power Authority, June 7, 2019 (Rev. 2.1)*, *In re. Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001 (“Proposed IRP”).



Plan, Case No.: CEPR-AP-2018-0001. On August 24, 2020, the Energy Bureau issued a final resolution and order, approving in part the Proposed IRP.⁴⁷

As stated before, the principal modifications of the Proposed Amendment hinge on: (i) a Green Transition Stabilization Payment, which purports to support the financial stabilization of the AES-Facility; (ii) a payment related to heat rate increase; (iii) a payment related to the adjustment of the equivalent availability of the AES-Facility; and (iv) a non-binding commitment by AES-PR to develop renewable energy and storage resources (Green Energy Commitment). The Proposed Amendment also contemplates other minor modifications regarding environmental issues, escrow accounts, insurance, risk allocation, and other related matters. It intends the continued operation of the AES-Facility until the termination of the AES PPOA in December 2027, with no modification in capacity requested.

PREPA's Proposed IRP included the AES PPOA that runs through December 2027.⁴⁸ That is, PREPA did not model the renewal of the AES PPOA for the AES-Facility when it expires at the end of 2027.⁴⁹ Accordingly, the Energy Bureau approved PREPA's plans for the continued operation and the scheduled retirement of the AES-Facility by the end of year 2027, in accordance with Act 17-2019, which prohibits coal-fired generation starting in 2028.⁵⁰

On the other hand, as part of the IRP process, PREPA modeled scenarios in which the AES-Facility closes before the expiration of the AES PPOA (2020).⁵¹ These models indicate that such an early retirement would increase costs for ratepayers. Notably, PREPA recognized that this retirement would have a negative impact on ratepayers, leading to an increase in the net present value of revenue requirements by over \$900 million.⁵² Based on the foregoing, the early retirement of the AES-Facility is not a scenario considered favorable in the Approved IRP.

As mentioned, the Proposed Amendment **does not contemplate the early retirement nor an extension of the AES PPOA**, instead it considers the operation of the AES-Facility until the end of December 2027, **as established in the Approved IRP, and consistent with the Energy Public Policy which prohibits coal-fired generation after December 2027**. Therefore, the Energy Bureau **DETERMINES** that the Proposed Amendment is consistent with the Approved IRP and the Energy Public Policy.

The Energy Bureau recognizes that for the IRP purposes, the proposed increase in payments included in the Proposed Amendment was not considered. The net present value of this increase is approximately 150 million (based on a total payment of 185 million in a period of four years). However, its impact is minimal compared to the effect of the early retirement of the AES-Facility, **as calculated for the purposes of the Approved IRP, which is roughly \$900 million**. It is also minimal when

⁴⁷ *Final Resolution and Order on the Puerto Rico Electric Power Authority's Integrated Resource Plan, In re. Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001, August 24, 2020 ("Approved IRP"). Minor modifications and/or clarifications to the Approved IRP were introduced through a *Resolution and Order on Reconsiderations* issued by the Energy Bureau on December 2, 2020, in case: *In re. Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001.

⁴⁸ See Approved IRP, ¶293, p. 76.

⁴⁹ See Approved IRP, ¶277, pp. 71-72 and Section 1.6(3) of Act 17-2019 which prohibits the generation of electricity from coal after December 31, 2027.

⁵⁰ See Approved IRP, ¶106, p. 17.

⁵¹ See *In re. Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001, Approved IRP, ¶788, p. 242 and *AES-PR, Final Brief*, filed on March 6, 2020, pp. 9-12.

⁵² See, *In re. Review of the Puerto Rico Electric Power Authority Integrated Resource Plan*, Case No. CEPR-AP-2018-0001, *Rebuttal Testimony of Nelson Bacalao, PhD in Support of PREPA's Draft Integrated Resources Plan*, filed on December 20, 2019, p. 15.



compared with the net present value calculated in Part III(C), *infra*, if the AES-Facility is retired by the end of 2023, which is approximately 730 million (based on a cost to ratepayers of 900 million in a period of four years).

C. *AES Facility's Availability Impacts in the Electric System Reliability*

1. Reliability Considerations

Jim
MA
The impact on the PR Electric System's reliability with respect to the availability (or unavailability) of the AES-Facility is a significant element for the approval of the Proposed Amendment. An assessment of the Puerto Rico Electric System's Resource Adequacy is a threshold analysis to evaluate the impact of the potential unavailability of AES-Facility in the Electric System ("Resource Adequacy"). Any reliable electric system must have Resource Adequacy, which refers to a system that has enough generated electricity available to supply the demand.⁵³ To determine the Resource Adequacy, a technical assessment of whether the current, or projected, electrical generation system portfolio is adequate to meet hourly customers' electricity requirements is performed.⁵⁴ The Resource Adequacy measurement serves as an indicator of how well the electrical system can reliably serve the electrical needs of its customers and the probability of shedding customers due to generation issues. One of the most important metrics to determine Resource Adequacy is the LOLE, which quantifies the probability over the period of one year that the available generation capacity would be insufficient to serve the customers' needs, thereby leading to power outages.

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The Adequacy Study performed by LUMA,⁵⁵ clearly demonstrates an increase in the expected LOLE under a scenario where the AES-Facility was not available in 2024. In addition, although the Adequacy Study does not extend beyond 2024,⁵⁶ the Updated Power Stabilization Report, also prepared by LUMA, contains a "path to stabilization" that not surprisingly includes the AES-Facility.⁵⁷

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Given the continuing shortage of capacity resources resulting in loss of load events throughout 2023,⁵⁸ it remains imperative to retain the AES-Facility throughout 2024 and beyond to minimize the risk of firm load shed under contingency conditions such as the forced outage of a generation plant. Even with the improvement (i.e., reduction) in system outages seen with the installation of the 350 MW of FEMA-funded emergency generation at San Juan and Palo Seco in June and September of 2023, the AES-Facility is still required to help minimize the risk of outages.⁵⁹

Jim
A reliable electric system's reliability is one that ensures electricity generation meets the demand of its customers, including for those periods of high demand, or peak loads, as well as the required operational reserve. The outlook for 2024 and beyond demonstrates that, even having the AES-Facility, the Puerto Rico Electric System will likely be short of any surplus reserve beyond that required to meet minimum needs.

Jim
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⁵³ See Updated Power Stabilization Report at p. 9.

⁵⁴ *Id.*

⁵⁵ See Adequacy Study, Appendix 18. *Sensitivity Analysis – Early Retirement of the AES Coal Power Plant.*

⁵⁶ The actual timeline of the analysis is Fiscal Year 2024, from July 1, 2023 to June 30, 2024. See Adequacy Study, Executive Summary at p. 10.

⁵⁷ See, e.g., Updated Power Stabilization Report.

⁵⁸ See *In re: LUMA's Response to Hurricane Fiona*, Case No.: NEPR-MI-2022-0003, *Motion Submitting Final Update on Stabilization Plan for Temporary Emergency Generation Capacity, Request for Confidential Treatment of Portions Thereof and Request for Release from Requirement to File Bi-Weekly Reports*, including *Exhibit 1, Twenty-Fourth Update on Stabilization Report*, filed by LUMA on November 1, 2023, ("Generation Stabilization Plan"), at slides 4-5.

⁵⁹ See Updated Power Stabilization Report, pages 37-38.



Essentially, should the AES-Facility be unavailable for 2024, the system will likely be in short supply even for the minimum generation demands.

PREPA and Genera provided a response to a ROI #2 asking for a projection of the capacity availability of legacy units in Puerto Rico through the 2027 period.⁶⁰ The information provided in the Response to ROI #2 is useful to gauge the overall trend of electric system resource availability through the end of the AES-Facility operation period in 2027, and to gauge the relative reliability importance of ensuring availability of the AES-Facility through that period. After accounting for planned and forced outages of existing units, and after including the need for 675 MW of required operational reserve in addition to capacity to meet peak loads, even with the AES-Facility units, during much of 2024 the system will likely be short of any surplus reserve beyond that required to meet minimum needs.⁶¹ While this does not necessarily imply that there will be sustained firm load shed or outages during this period, it does provide a relative picture of the Resource Adequacy outlook. For 2025, the system improves overall, but a shortage of "surplus margin" is still seen during periods of the summer of 2025. Beyond the summer of 2025, the electric system is foreseen to be in surplus for almost all the remaining weeks. A slow improvement in the availability of legacy generation units is foreseen. However, the Resource Adequacy remains slim until the end of the term of the AES PPOA, year 2027.⁶²

On the other hand, contemplating the possibility AES-Facility was not available, there would be a shortage of the reserve (operating margin surplus) until the end of the 2027. For the last two years, 2026 and 2027, there would be a noticeable improvement, provided that new units are introduced to the system. However, although there is an expected improvement for the years 2026-2027 there is also an expected shortage for many weeks of those years.

Neither PREPA's operating margin forecasts, nor the Adequacy Report, accounts for any effect from distributed battery resources that are or will be deployed under the new emergency demand response program. The effect of such deployments on overall Resource Adequacy could be significant, since there are potentially hundreds of MW of battery energy storage resources that could respond to third-party aggregator deployment signals (*i.e.*, discharge) during peak periods and thus lower requirements for capacity from the existing bulk system supplies.

However, in the near term through 2025, or even through 2027, even under the most optimistic deployment scenarios Puerto Rico's resource adequacy margin is slim at best. Considerable uncertainty remains for the availability of legacy units, PREPA's promising availability-improvement trajectory notwithstanding.⁶³

Therefore, the inclusion of AES-Facility until the term of the AES PPOA, year 2027, has a positive impact on the projection of the operating margin despite the projected inclusion of other generating units. The potential benefit of AES-Facility remaining until the end of the AES PPOA during year 2027 could allow the system to lower the LOLE and generate an operating reserve. Given the continuing shortage of capacity

⁶⁰ See Response to ROI #2, Exhibit A, Item #7.

⁶¹ Based on the peak load trajectory used in PREPA's analysis, and PREPA-assumed planned and forced outage rates for existing units. No consideration is given for potential peak load reduction through the just-established emergency demand response (*i.e.*, third-party aggregation of deployment of distributed battery resources) program.

⁶² Genera also rightly caveats its support of PREPA in the preparation of the response to the Energy Bureau's request to estimate monthly availability by unit, for the legacy generation. See Response to ROI #3, Confidential Exhibit B (December 15, 2023 Genera letter to PREPA concerning the assumptions contained in the Excel file "System Capacity (MW) 2024@2027_b"). Considerable uncertainty remains for the availability of legacy units, PREPA's promising availability-improvement trajectory notwithstanding.

⁶³ *Id.*



resources resulting in loss of load events throughout 2023,⁶⁴ it remains imperative to retain the AES-Facility throughout 2024 to minimize the risk of firm load shed under contingency conditions such as the forced outage of a generation plant, and likely beyond 2024 and 2025 as well. Even with the improvement (*i.e.*, reduction) in system outages seen with the installation of the 350 MW of FEMA-funded emergency generation at San Juan and Palo Seco in June and September of 2023, the AES-Facility is still required to help minimize the risk of outages.⁶⁵

Given the overall Resource Adequacy circumstances present in the Puerto Rico electric system, the analysis and projections reveal the suitability that AES-Facility units remain available to support the Puerto Rico system through the end of the AES PPOA period.

2. Electricity Costs Increase without AES-Facility

The presence of the AES-Facility for the remaining of the AES PPOA period avoids the need to utilize higher-variable-cost units burning diesel, residual fuel, or natural gas. While the running cost for these oil and gas fueled alternatives vary with market prices for oil and gas, and the projected per-unit fuel cost for the AES-Facility for 2024 through 2027 is higher than seen historically,⁶⁶ the running cost for the AES-Facility is always lower than the alternative fossil-fueled options. Most importantly, as illustrated in the November 7 Motion at page 8, the increase in marginal generation costs necessary if the AES-Facility was not available would increase the overall fuel costs seen by PREPA's customers.

The range of cost increase that could result if the AES-Facility was not available, will range between roughly \$25/MWh to \$75/MWh yearly, depending at what point the system demand lies, and on the specific makeup of available generation units at any time. Essentially, a rough estimate of the range of costs (*i.e.*, absent AES-Facility) can be determined by using the \$25/MWh to \$75/MWh unit variable cost difference,⁶⁷ multiplied by the roughly 3 million MWh per year of generation seen with the AES-Facility. The cost difference using this gauge would range roughly from \$75 million per year to \$225 million per year, that is between \$300 million and \$900 million for the remaining period of the AES PPOA. Noticeably, the cost increase to supply the units currently supplied by the AES-Facility, even at the lower end exceeds the Proposed Amendment's cost increase request (\$185 million for the four-year period).⁶⁸ Moreover, this impact does not further consider the potential for increased resource outages in Puerto Rico in the absence of the AES-Facility.

This economic dispatch effect could be muted over time, as solar PV and battery energy storage is added to the system, reducing the difference in costs otherwise reflected in the next-higher-cost marginal generation source. However, through 2027 at least Puerto Rico will still be very much reliant on fossil-fuel generation, certainly for the order of at least 50% of its energy, if not considerably more than 50% of its needs. This trajectory of reduced reliance on higher marginal cost fossil generation will depend on the speed at which tranches of renewable energy, and ongoing distributed solar PV is installed on the Island. Neither PREPA's operating margin forecasts, nor LUMA's resource adequacy analysis, accounts for any effect from

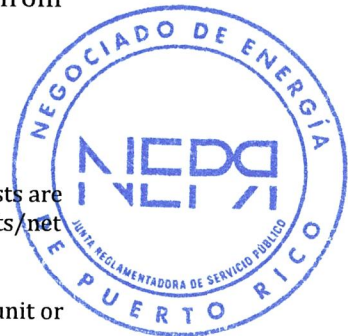
⁶⁴ See Generation Stabilization Plan, at slides 4-5.

⁶⁵ LUMA, Puerto Rico's Path to Power Stabilization, pages 37-38.

⁶⁶ See Response to TC-ROI, Confidential Exhibit A-5, *Forecast Annual Costs*. Projected coal fuel costs are seen to increase from the 2023 level of roughly 4.1 cents/net kWh, to a range of 5.9 to 6.8 cents/net kWh during the 2024-2027 period.

⁶⁷ The absence of the AES-Facility would cause a need for generation from the next-higher cost unit or units on the margin, to make up the AES-Facility energy otherwise available.

⁶⁸ A more careful production cost analysis would be needed to comprehensively gauge this difference, and to consider the sensitivity of the computation to all reasonable factors.



distributed battery resources that are or will be deployed under the new emergency demand response program. The effect of such deployments on overall resource adequacy could be significant, since there are potentially hundreds of MW of battery energy storage resources that could respond to third-party aggregator deployment signals (i.e., discharge) during peak periods and thus lower requirements for capacity from the existing bulk system supplies.

However, in the near term through 2025 or even through 2027, Puerto Rico's resource adequacy margin is slim. Considerable uncertainty remains for the availability of legacy units, PREPA's promising availability-improvement trajectory notwithstanding.⁶⁹

Therefore, the economic benefits to customers of retaining the AES-Facility – i.e., avoiding higher per unit fuel costs for alternative available capacity – supports maintaining availability of the AES-Facility through the end of the AES PPOA Term.

D. Heat Rate Related Payments

The AES PPOA has an energy payment heat rate of 9,800 Btu/kWh.⁷⁰ AES-PR requests a net heat rate increase from the contractual baseline of 9,800 BTU/kWh to 11,000 BTU/kWh.⁷¹ This will directly increase the variable fuel costs of energy sales (MWh) to PREPA by 12.2%, all else being equal. AES-PR's fuel costs are collected through the fuel related charge ("FRC"), stipulated in Section 11.1 of the AES PPOA, and are computed as equal to the cost of fuel (on a \$/MMBtu basis) multiplied by the Fuel Cost Determination Factor ("FCDF"), on a BTU per net kWh produced basis, as stated in Section 7.3 of the AES PPOA.

The 9,800 BTU/kWh factor in Section 7.3 of the AES PPOA is proposed to be changed to 11,000 BTU/kWh.⁷² AES-PR offers various justifications for its request, generally based on the premise that if the boiler's actual performance requires 11,000 BTU of purchased coal fuel to generate a net kWh, then AES-PR is effectively unable to recover the full cost of the fuel when operating based on a rate of 9,800 BTU/kWh. Although AES-PR is expected to recover the cost of the fuel used in energy production sold to PREPA, this expectation hinges on the efficient operation of the AES Facility. PREPA's proposal to increase heat rates ignores this principle, to the detriment of the public interest and the necessity of securing just and reasonable rates. AES-PR cannot expect to operate inefficiently and still recover the additional fuel costs resulting from inefficiency. Therefore, for the reasons discussed below, the Energy Bureau **REJECTS** PREPA's proposed increase in heat rate.

In support of the petition for a heat rate increase, AES-PR submitted a heat rate audit conducted at the AES-Facility by *McHale & Associates* on November 2022, and reported on January 2023.⁷³ The Heat Rate Study indicates that as of the end of year 2022 the AES-Facility exhibits a heat rate performance that is roughly 11,000

⁶⁹ Genera also rightly caveats its support of PREPA in the preparation of the response to the Energy Bureau's request to estimate monthly availability by unit, for the legacy generation. See Response to ROI #3, Confidential Exhibit B (December 15, 2023 Genera letter to PREPA concerning the assumptions contained in the Excel file "System Capacity (MW) 2024@2027_b").

⁷⁰ See Article 7.3 of the AES PPOA.

⁷¹ Based on net kWh of electricity produced in both cases. Net heat rate is a specific measure of power plant efficiency which considers not only the energy used in generating electricity but also the energy consumed by the plant in its own operations – known as auxiliary power use. Net heat rate is calculated by subtracting the auxiliary power used from the total electricity generated before calculating the efficiency. As a result, net heat rate typically yields a higher number than the basic heat rate because it accounts for this additional power consumption.

⁷² See Article 7.3 of AES PPOA and Section 2(i) of the Proposed Amendment.

⁷³ See *Heat Rate Survey Report*, prepared by *McHale & Associates*, dated January 20, 2023 ("Heat Rate Study"), November 7 Motion, Exhibit C.



BTU/kWh. PREPA also submitted an AES-Facility's historical heat rate performance.⁷⁴ The AES-Facility heat rate varied, ranging from 10,361 BTU/kWh in 2010 to 11,023 BTU/kWh in 2022.⁷⁵ The average heat rate of the AES-Facility for the four-year period between 2019 and 2022 is 10,776 BTU/kWh, compared to the industry average of 10,619 BTU/kWh for the same period.⁷⁶ Below is a table showing the industry heat rates and AES heat rates for the years 2010-2023.

Heat Rates Summary (Btu/kWh)		
Year	EIA ⁷⁷	AES-PR ⁷⁸
2010	10,415	10,361
2011	10,415	10,111
2012	10,498	10,280
2013	10,459	10,232
2014	10,428	10,301
2015	10,495	10,279
2016	10,493	10,358
2017	10,465	10,500
2018	10,481	10,373
2019	10,551	10,685
2020	10,655	10,562
2021	10,583	10,753
2022	10,689	11,023
2023	N/A	>11,000 ⁷⁹

AES-PR states that the cause of the degradation of the heat rate over a ten (10) year period, and consequently the decrease in the AES-PR Facility efficiency, is due to (i) lack of availability of higher-quality coal, (ii) lack of financial resources, and (iii) delayed maintenance (in many cases requested by PREPA or LUMA).⁸⁰ However, AES-PR did not describe in detail or quantify the extent to which each asserted cause contributed to the heat rate degradation. Additionally, AES-PR did not provide a detailed estimation of how much of the heat rate degradation was directly attributable to the alleged maintenance delays requested by PREPA or Luma.⁸¹ AES-PR asserts that any maintenance delay in a coal plant will result in some heat rate degradation and negatively impact the overall efficiency of the plant. Nevertheless, they stated that quantifying this impact would require a detailed technical study performed by third-party consultants, which has not been conducted by AES-PR at

⁷⁴ See Item 6, Response to ROI #2, Exhibit A-9a, *Annual Average Net Heat Rate, Challenges Threatening AES PR Cash Situation* dated February 8th, 2023, p. 16 ("Annual Average Heat Rate Report").

⁷⁵ *Id.* No heat rate data for the AES Facility were provided for the period between the Commercial Operational Date (2001) and 2009. Moreover, the Energy Bureau did not perform an independent assessment of the heat rate data submitted by AES-PR; instead, it relied on PREPA's evaluation of the same, conducted during its due diligence and negotiation phase of the Proposed Amendment, as testified by PREPA's representatives during the Technical Conference.

⁷⁶ The industry heat rate average for the period between 2010-2022, would be even lower, at 10,448 Btu/kWh. See Table A6. *Approximate Heat Rates for Electricity, and Heat Content of Electricity, Selected Years, 1949-2011*, U.S. Energy Information Administration, Annual Energy Review 2011, page 326, https://www.eia.gov/totalenergy/data/annual/pdf/sec12_6.pdf, (last visit, January 31, 2024) and Table 8.1 *Average Operating Heat Rate for Selected Energy Sources, 2012 through 2022*, Electric Power Annual 2022, U.S. Energy Information Administration, page 169, https://www.eia.gov/electricity/annual/html/epa_08_01.html (last visit, January 31, 2024).

⁷⁷ *Id.*

⁷⁸ See *Annual Average Net Heat Rate*, Response to ROI #2, Exhibit A-9a, *Challenges Threatening AES PR Cash Situation* dated February 8th, 2023, page 16.

⁷⁹ See Response to ROI #3, Confidential Exhibit A-6.

⁸⁰ See Item 6, Response ROI #2, p.3.

⁸¹ See Item 6, Response ROI #3, p.4.



this time.⁸² In summary, it is not clear from the information provided what proportion of the increase in heat rate exhibited by the AES-Facility over time (relative to the contract value) is due to each of the causes indicated, and more specifically which are attributable to PREPA or LUMA.

The heat rate, which measures the efficiency of fuel use in power generation, is a crucial factor in determining fuel payments to power producers, in this case AES-PR. PREPA's proposal to increase AES-PR heat rate for payment calculations is problematic for several reasons, especially when the proposed rate is above the industry average for the four-year average period between 2019 and 2022 (see table above).

Jim
An increase in heat rate signifies a decrease in operational efficiency. Higher heat rates indicate that more fuel is needed to generate the same amount of electricity. Recognizing and compensating for a higher heat rate effectively means paying more for less efficient energy production. A higher heat rate translates to increased fuel consumption for the same electricity output, which leads to more adverse environmental impacts. This includes higher emissions of greenhouse gases and other pollutants. In an era where environmental concerns are paramount, rewarding less efficient operations with higher payments contradicts efforts to reduce carbon footprints and combat climate change.

Jim
and
Increasing the heat rate for payment calculations at the levels proposed by PREPA (11,000 Btu/kWh) could be perceived as incentivizing AES-PR to operate less efficiently. This situation may lead to higher costs for consumers and could discourage AES-PR from investing in more efficient technology or practices. In the long run, this could hinder progress towards more sustainable and cost-effective energy production, contrary to the Energy Public Policy adopted in Act 17-2019. Moreover, the proposal to increase AES-PR's heat rate above the industry average undermines the benchmarking against industry standards. Maintaining heat rates within or better than the industry average is essential to ensure competitive, efficient, and environmentally sustainable operations.

To summarize, increasing AES-PR's heat rate used for fuel payment calculations to a level above the industry average would not only recognize and potentially reward less efficient energy production, but it would also have negative environmental impacts and economic implications. It goes against the trend of encouraging efficiency and environmental responsibility in the energy sector. Therefore, although the Energy Bureau determines, it is reasonable to increase the AES PPOA heat rate. The record does not support the level of increase proposed by PREPA.

Jim
The Energy Bureau acknowledges that the AES PPOA includes a provision for adjusting the heat rate based on specific tests outlined in the contract.⁸³ This contractual allowance recognizes the inherent complexities in designing, constructing, and operating a 454 MW coal-fired power plant. It considers that the actual heat rate might differ from the initial estimates made at the time of executing the contract. However, the AES PPOA stipulated that this heat rate assessment should have been conducted within one hundred and twenty (120) days of the AES-Facility's Commercial Operational Date.⁸⁴ This deadline passed without the test being performed, **a situation that arose not due to any fault of PREPA** but -to certain extent- to the detriment of AES-PR. Throughout the duration of the contract, AES-PR has been compensated based on a heat rate that did not enable full recovery of their operational costs, notable the fuel cost, potentially leading to significant financial losses. Based on the data in the record, for the period covering years 2010 to 2023,

⁸² See *Id.*

⁸³ See Article 7.3 and Article 22 of the AES PPOA.

⁸⁴ *Id.*



those amounts not recovered by AES-PR might have been in the range of \$120 million (nominal).⁸⁵

Additionally, it is noteworthy that the AES-Facility has operated, at least in the last decade, with a heat rate that aligns with industry benchmarks.⁸⁶ Moreover, although not determined by AES-PR, some degradation in the AES-Facility possibly will be attributable to PREPA, especially due to delayed maintenance following the 2020 earthquakes and issues with transmission line losses.⁸⁷

Considering these factors, the Energy Bureau finds it reasonable to allow a modification of the AES PPOA to increase the heat rate. However, due to the reasons previously stated, this increase should not exceed the four-year industry average, that is **10,620 Btu/per net kWh**.

Jm
This adjustment to PREPA's proposed heat rate payment is estimated to result in savings of roughly \$35.23 million for the ratepayers over the period from 2024 to 2027. This decision strikes a balance between acknowledging the operational and financial challenges faced by AES-PR, maintaining standards in line with industry benchmarks, and ensuring fair and reasonable energy rates. We reiterate that PREPA's proposed increase above the industry average is contrary to the public interest and represents the imposition of rates on its customers that are not just and reasonable.

JM
am
The AES-Facility heat rate for the years 2022-2023 has been roughly above 11,000 Btu/kWh, indicating a decrease in operational efficiency compared to previous years. For example, the average heat rate for AES-PR from 2018-2021 was 10,593 Btu/kWh. The lack of proper maintenance during 2022-2023 may have contributed to this decrease in the AES Facility's operational efficiency. Given the increased heat rate payment allowed for AES-PR, and the additional funds it represents, the AES Facility is expected to improve its heat rate over the next four (4) years. Accordingly, the Energy Bureau **ORDERS** AES-PR to submit annual reports concerning heat rates in Case No.: CEPR-CT-2016-0013, starting on March 1st, 2025. These reports shall include: (i) detailed data on the annual heat rate (in Btu/net kWh) to evaluate the efficiency of converting coal to electricity, (ii) information on the amount and type of coal consumed, including calorific value (energy content per unit), (iii) total megawatt-hours (MWh) of electricity generated annually, (iv) a detailed description of activities implemented during the preceding year to improve the heat rate, including without limitation details of any technological upgrades or retrofits implemented to improve efficiency, (v) data on operational costs, including fuel, maintenance, and labor costs, to correlate heat rate efficiency with economic

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⁸⁵ This rough estimate has been developed using available data in the record and/or reasonable estimations of heat rates, net MWh production, and cost of fuel per MWh, among other factors. See, Annual Average Heat Rate Report and Response to ROI#1, Exhibit 1 to Exhibit A.

⁸⁶ See Annual Average Heat Rate Report and Table A6. *Approximate Heat Rates for Electricity, and Heat Content of Electricity, Selected Years, 1949-2011*, U.S. Energy Information Administration, Annual Energy Review 2011, page 326, https://www.eia.gov/totalenergy/data/annual/pdf/sec12_6.pdf (last visit, January 31, 2024).

⁸⁷ The record of this case includes various communications (and exhibits thereof) from AES-PR to PREPA, either directly or via LUMA, relating to maintenance delays following the 2020 earthquakes and complications arising from LUMA's transmission line losses. These factors allegedly led to substantial losses for AES-PR, amounting to approximately \$9 million from transmission line losses (including EAF's Penalties) and \$10 million (including EAF's Penalties) from delayed maintenance due to the 2020 earthquakes. See Response to ROI #3, Item 5. It is important to clarify that the Energy Bureau's decision to consider these issues as part of the comprehensive circumstances informing its decision in this case does not constitute an endorsement or a judgment on the merits of the claims presented by AES-PR. The action of the Energy Bureau simply indicates that, within the context of negotiating the Proposed Amendment, it finds it reasonable to give some weight to these claims. This approach is particularly pragmatic to the extent that it potentially avoids the need for protracted and costly litigation between the parties, along with the associated expenses and risks such litigation entails.



performance, (vi) comparative analysis with industry benchmarks and best practices in heat rate efficiency, (vii) an explanation of the reasons for any improvement or degradation in the heat rate, (viii) the activities proposed for the current calendar year to improve the heat rate, and (ix) any other information AES-PR considers relevant to the facility's heat rate and its operational performance.

E. GTS Payment and CCR's Management Costs Increase Due to Change in Law

1. Proposed GTS Payment

The AES PPOA establishes a Demand Charge of \$14/kW-month average for the 2023-2027 period (reduced from \$21/kW-month average for the 2013-2022 period).⁸⁸ AES-PR and PREPA propose to add a new charge component to the Demand Charge, denominated as the Green Transition Stabilization Payment ("GTS Payment").⁸⁹ The GTS Payment provides that for the period commencing on December 1, 2023, and continuing until November 30, 2024, AES-PR shall be paid a GTS Payment equal to \$8.00/kW of Dependable Capacity per month.⁹⁰ For the period commencing on December 1, 2024, and continuing for the remainder of the term of the AES PPOA, AES-PR shall be paid a GTS Payment equal to \$1.75/kW of Dependable Capacity per month.⁹¹ The total amount of the GTS Payment, through the end of the AES PPOA in December 2027, is \$72,548,438.⁹² AES-PR proposes that the GTS Payment shall not be subject to any EAF downward adjustment.⁹³

The GTS Payment is a mechanism designed to partly alleviate AES-PR's financial burdens by increasing revenues, although it is not necessarily tied to specific parameters of the AES-PR operation. According to AES-PR, the economic components of the Proposed PPOA, which include the GTS Payment, the heat rate adjustment, and the EAF reset, are intended to address the issue of increased CCR costs to the extent that they provide sufficient financial resources to cover the heightened operational costs.⁹⁴

While not directly calculated based on increased CCR management costs, this payment helps to partially offset the cost pressures associated with off-island disposal. As stated before, the principal motivation for the proposed modifications to the AES PPOA is to address the financial impacts faced by AES-PR in managing the CCR given the escalated costs resulting from changes in law, specifically Act 40-2017 and Act 5-2020. The extensive record of this case, along with the testimony of PREPA's and AES-PR's representatives and consultants, confirms that the severe financial situation faced by AES-PR, which jeopardizes its ability to continue operations until the end of the AES PPOA term, has been largely caused by the implementation of Act 140-2017 and Act 5-2020.⁹⁵

2. Evaluation Criteria

To conduct the required evaluation under these circumstances, the Energy Bureau will initially examine how the change in law affects AES-PR's operational costs,

⁸⁸ See Article 11.1(b)(1) and Exhibit J of the AES PPOA.

⁸⁹ See Sections 2(k) and 2(l) of the Proposed Amendment.

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² See Response to ROI#1, Item #6, Exhibit 1, Tab 8, *Green Stabilization Payment Forecast*.

⁹³ *Id.*

⁹⁴ See Response to ROI#4, Confidential Exhibit A, Item #7.

⁹⁵ *Id.*



particularly any increase in the costs of managing CCR following the enactment of Act 40-2017. Subsequently, the Energy Bureau will review AES-PR's current financial status to verify whether, under the existing terms of the AES PPOA, continuing the operation of the AES-Facility until the end of the AES PPOA term in December 2027 is financially viable. Finally, the Energy Bureau will determine the amount that might be approved as an increase in AES PPOA payments to cover the increased operational costs. Throughout this evaluation, the Energy Bureau will consider that the Proposed Amendment is the result of a comprehensive, heavily negotiated transaction, involving PREPA, aimed at ensuring the continued operation of the AES-Facility. Therefore, to the extent that the economics of the Proposed Amendment provide a just and reasonable compensation for AES-PR while protecting the public interest, it will be respected as much as possible to facilitate a transaction that helps provide energy to PREPA's customers in a safe, reliable, and cost-efficient manner.

3. Change in Law

As explained in Part III(A), in the process of generating electricity, AES-Facility also produces CCR. Previously, AES-PR found certain beneficial uses for CCR, particularly in the production of AGREMAX, an aggregate primarily used as landfill daily cover and road construction. CCR that was not suitable for beneficial uses was sent to off-island landfills for disposal. Following the Second Amendment to the AES-PPOA in 2015, AES-PR expanded its practices to include using landfills within Puerto Rico for CCR disposal.

Act 40-2017, enacted in 2017, prohibited the deposit and disposal of CCR in Puerto Rico unless intended for beneficial commercial uses.⁹⁶ While Act 40-2017 did not prohibit the beneficial use of CCR as landfill daily cover, it did prohibit its disposal at landfills within Puerto Rico. This distinction may seem subtle, but in practice, most of AES-PR's CCR was disposed of as waste in landfills rather than being used as landfill cover.⁹⁷ Therefore, most of the CCR produced by AES-PR, now needs to be disposed of off-island.⁹⁸ Act 40-2017 also imposed a storage time limit of one hundred and eighty (180) days for CCR within Puerto Rico's territory.⁹⁹ In 2020, Act 5-2020 was enacted, completely banning the deposit of CCR in landfills within Puerto Rico.¹⁰⁰ Consequently, AES-PR's CCR can no longer be used as landfill cover and must be disposed of off-island.¹⁰¹

4. CCR Management Cost Increase

PREPA and AES-PR claim that the increased costs associated with the disposal of CCR are a primary driver of AES-PR's current distressed financial situation.¹⁰² Materials from AES-PR describing historical CCR disposal costs support this assertion.¹⁰³ AES's historical CCR disposal costs have risen considerably since the enactment of Act 40-

⁹⁶ See Article 3 of Act 40-2017.

⁹⁷ See Response to ROI #4, Items 1-3, and Confidential Exhibit A-1, *Historical CCR Cost*.

⁹⁸ *Id.*

⁹⁹ See Article 3(b) of Act 40-2017.

¹⁰⁰ See Article 2-A(f) and Article 3 of Act 5-2020.

¹⁰¹ *Id.*

¹⁰² See Response to ROI #1, Item 9.

¹⁰³ See Response to ROI #2, Item 9, Exhibit A-9(a), *AES Puerto Rico Financial Situation and PPOA Amendment Economics*; Response to TC-ROI, Exhibit A-5, *Historical Annual Cost*; Response to ROI#3, Exhibit A-3, *Agremax Disposal Cost Off-Island- Actual*; and Response to ROI#4, Exhibit A-1, *Historical CCR Cost*.



2017 and have increased even further after the enactment of Act 5-2020.¹⁰⁴ CCR disposal roughly increased as follows:

Year	2016	2017	2018	2019	2020	2021	2022 ¹⁰⁵
\$/metric ton	34	76	74	75	80	91	116

PREPA and AES-PR have also provided the projected CCR disposal costs off-island for the years 2024-2027, which are \$110 per metric ton.¹⁰⁶ This projected cost is based on a breakdown of the expenses associated with the management of CCR, which are in turn bound to an estimated annual volume of CCR projected to be disposed off-island.¹⁰⁷

According to the information provided by PREPA and AES-PR, the actual disposal costs per metric ton increased significantly between 2019 and 2023, as AES-PR continued to ship all CCR off-island, with a notable increase in volume shipped off-island starting in 2017 (earlier years saw some volume shipped off-island). Notably, the per metric ton cost in 2023 is higher due to several limitations AES-PR notes, including a much lower volume of disposed CCR, indicating high fixed costs. This implies that future costs may not reach the same per metric ton level as seen in 2023, but the volume of CCR disposed from 2019-2022 is more aligned with what is expected for future years. The data provided by AES-PR in the Response to ROI-#4 confirms this, as total future costs are estimated at roughly \$110/ metric ton versus the \$186/metric ton seen for the first ten (10) months of 2023.

AES-PR also presents historical information by each cost component in response to ROI#4. As seen in the data provided, isolating off-island component costs for CCR disposal shows a significant increase in average costs per metric ton beginning in 2020. However, these off-island disposal component costs are not reflective of incremental costs relative to on-island disposal, as some of the cost incurred to ship CCR off-island would have been incurred if the ash was disposed on island. Thus, AES-PR's response does not directly inform our inquiry into estimating the level of incremental costs historically. Nevertheless, AES-PR's response to ROI #4 confirms their December 2022 estimate of a range of \$22-\$25 million per year as the incremental cost (for the years 2019-2023), aligned with AES-PR's Response to ROI-#3.¹⁰⁸ In response to ROI#4, Item#2, AES-PR also provided in Exhibit A-1 this total cost breakdown forecast for off-island disposal, for 2024 to 2027.¹⁰⁹ It does not directly contain an estimate of incremental costs, but it does show the main components of cost.

5. AES-PR Current Financial Situation

Based on the information provided by PREPA, incremental CCR management costs have significantly increased for AES-PR since 2017, and this situation is represented

¹⁰⁴ See Response to ROI #2, Item 9, Exhibit A-9(a), *AES Puerto Rico Financial Situation and PPOA Amendment Economics*.

¹⁰⁵ AES-PR provided the actual off-island disposal cost for the year 2023, which is \$186 per metric ton. However, due to many unusual circumstances occurring in 2023, recognized by AES-PR, this amount is not representative of the typical cost of CCR disposal off-island. See Response to ROI#3, Exhibit A-3, *Agremax Disposal Cost Off-Island- Actual*.

¹⁰⁶ See Response to TC-ROI, Exhibit A-5, *Forecast Annual Costs* and Response to ROI#4, Exhibit A-1, *CCR Cost Forecast*.

¹⁰⁷ See Article 3 of Act 40-2017.

¹⁰⁸ See Response to ROI#3, Item 3.

¹⁰⁹ See Response to ROI#4, Exhibit A-1, *CCR Cost Forecast*.



within AES-PR audited financial statements.¹¹⁰ CCR management costs increased at a CAGR¹¹¹ of 22.7% since 2015. The average CCR management costs for the 2010-2019 period were \$6.7M; increasing by an average of \$38.6M for the 2019-2023 period. Even as AES-PR's audited and internal Income Statements from 2015-2023 year to date (YTD) reflect profits beyond 2017 and 2020, the Net Income through October 31, 2023 has decreased almost to the breakeven point for the first time between 2015-2023 year to date (YTD) (excluding the non-cash impairment of 2021).¹¹² This decrease is mainly driven by the incremental CCR management costs and higher than normal operating and management expenses. It is also important to highlight that total revenue for 2023 may be lower as compared with 2022 (-6% year over year (YoY) based on a straight-line projection for the November-December 2023 periods). Assuming this trend continues, there is a high risk that AES-PR will not be able to generate positive cash flows for 2023 and subsequent years.

6. Determination of Just and Reasonable Compensation

As established above, maintaining the current AES PPOA payment schedule seriously harms the public interest. This is not because the terms are unfair to AES-PR, but because, as discussed in Part III (B), without the AES Facility, PREPA's customers would face increased rates and a significantly higher LOLE. The current terms of the AES PPOA impair AES-PR's financial ability to continue its service, which would place an excessive burden on PREPA's customers. In conclusion, the current rate under the AES PPOA is detrimental to the public interest. The discussion above also supports the conclusion that the financial challenges facing AES-PR are directly attributable to changes in law, notably Act 40-2017 and Act 5-2020. Therefore, the Energy Bureau **DETERMINES** that it is in the best public interest to allow increased payments to AES-PR to compensate for the detrimental effects caused by these legal changes.

In making its determination, the Energy Bureau also considered that AES-PR agrees that the Proposed Amendment resolves any and all claims and causes of action it may have against PREPA or the Government of Puerto Rico, related to any change in law affecting the AES-Facility enacted prior to the effective day of the Proposed Amendment.¹¹³ Therefore, PREPA's ratepayers will not be at risk for the payment of potential claims related to the increased costs incurred by AES-PR in the management of CCR, potentially exceeding \$140 million, for the period from 2017 to 2023.¹¹⁴ Moreover, the prospective payment approved for the years 2024-2027 will be below the estimated incremental costs of managing CCR, with AES-PR assuming the difference. In this context, the Energy Bureau is also protecting ratepayers from potentially higher rates. As stated elsewhere, in the context of negotiating the Proposed Amendment, the Energy Bureau finds it reasonable to acknowledge the significance of AES-PR's potential past claims, which are attributable to changes in laws, and the resulting exposure faced by PREPA due to those claims. This approach potentially avoids the need for protracted and costly litigation between the parties, along with the associated expenses and risks that such litigation entails. Furthermore, it reduces the risk to ratepayers who might ultimately be responsible for any amount AES-PR is entitled to recover from PREPA.

To estimate the incremental costs of CCR per metric ton, the Energy Bureau considered an extrapolation of AES-PR's incremental cost projection. This was based on the 2022 on-island disposal costs as a baseline, considering the applicable inflation

¹¹⁰ See AES-PR Audited Financial Statements for years 2015-2022 in case *In Re: Solicitud de Certificación de AES Puerto Rico, LLC*, Case No. CEPR-CT-2016-0013.

¹¹¹ Compounded Annual Growth Rate ("CAGR").

¹¹² See also, Response to ROI #3, Exhibits A-1 and A-10.

¹¹³ See Section 3 of the Proposed Amendment.

¹¹⁴ See Response to ROI#3, Item #3, Exhibit A-3, *AGREMAX Disposal Cost-Actual* and Response to ROI#4, Item #2.



rate and extrapolating to the years 2024-2027.¹¹⁵ Below is a table with projection of incremental cost for CCR disposal off-island for the years 2024 through 2027, based on this method.

	2022	2023	2024	2025	2026	2027	Total
Incremental Cost \$/Metric Ton 2022 Base, Inflated for 24-27	\$74.95	\$77.80	\$79.75	\$81.74	\$83.78	\$85.88	
Inflation		3.8%	2.5%	2.5%	2.5%	2.5%	
Incremental Cost			\$27,217,252	\$35,009,018	\$35,884,243	\$29,890,879	\$128,001,393

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The total estimated incremental cost for CCR disposal during the 2024-2027 period is \$128,001,393. As stated previously, to the extent that the economics of the Proposed Amendment ensure just and reasonable compensation for AES-PR while protecting the public interest, the Energy Bureau will endeavor to respect and facilitate the transaction as negotiated by AES-PR and PREPA.

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Given the determination of the Energy Bureau in Part III(D) concerning the heat rate payment, the total amount requested by PREPA and AES-PR was adjusted downward by \$35,237,620. The combination of this adjustment (\$35,237,620) and the GTS Payment (\$72,233,700) add up to \$107,471,320, which is less than the \$128,001,393 (Energy Bureau's CCR incremental cost estimation). Consequently, the Energy Bureau determines to allow an increment in the payment to AES-PR of **\$107,471,320** under Section 2(l) of the Proposed Amendment. The Energy Bureau deems that it is reasonable to authorize this modification to the AES PPOA, recognizing the need for AES-PR to secure additional funds for the years 2024 to 2027. This adjustment aims to alleviate AES-PR's financial strains caused by the change in law, ensuring uninterrupted operation of the AES Facility until the end of the AES PPOA in December 2027. However, it is important to note that the amounts deemed appropriate for additional payment have been determined based on projected costs associated with the management of CCR during the 2024-2027 period.¹¹⁶ These forecasts also consider the handling of specific volumes of CCR. Notably, AES-PR has estimated the disposal of 341,300, 428,300, 428,300, and 348,064 metric tons of CCR for the years 2024, 2025, 2026, and 2027, respectively.¹¹⁷ Given these considerations, it is imperative to incorporate reasonable safeguards in the Proposed Amendment, to ensure that the annual volumes of CCR disposed aligns with the authorized payments. Due to the intricate nature of CCR management, PREPA and AES-PR may opt for a fixed monthly payment structure, as outlined in Section 2(l) of the Proposed Amendment. Nevertheless, they shall include contractual provisions to ensure that CCR management stays within reasonable bounds of the forecasted volume each year. The structure of the proposed GTS Payment includes higher payments in 2024 (a front-end-weighted increase in cash flows approach) and lower, evenly distributed payments from 2025-2027. This is for reasons established in the record, which the Energy Bureau deems reasonable.¹¹⁸ The Energy Bureau expects this structure to be respected as much as possible and, to the extent feasible, for payments under the

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¹¹⁵ See Response to ROI#3, Item #3, Exhibit A-3, *AGREMAX Disposal Cost-Actual*.

¹¹⁶ See Response to ROI#4, Item #2, Exhibit A-1, *CCR Cost Forecast*.

¹¹⁷ *Id.*

¹¹⁸ See Response to ROI#4, Item #7.



amended Section 2(l), in combination with the rest of the payments approved herein, to maintain consistent levels. That is, additional front-end-weighted increases in cash flows should not be included in 2024 or in other years of the remaining term of the AES PPOA. This approach strikes a balance between the financial needs of AES-PR and the operational and environmental responsibilities inherent in CCR management. The parties shall modify Section 2(l) to account for the payments approved herein and establish provisions to reconcile the payments with a reasonable estimation of the volumes of CCR managed each year.

F. *Reset of Equivalent Availability Factor (EAF)*

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The AES PPOA stipulates a Capacity Payment penalty, applied based on rolling 12-month availability factors, if the Equivalent Availability Factor (EAF) falls below 90%.¹¹⁹ Accordingly, the monthly capacity payment will be adjusted downward if the EAF over the last twelve billing periods ending with the current one (referred to as the "Twelve Month EAF") is less than ninety percent (90%).¹²⁰ This adjustment will be based on a range of EAF values starting at 90% and decreasing to 60%.¹²¹

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The Proposed Amendment seeks to reset the accumulated 12-month outage/derated hours as of October 1, 2023.¹²² This reset aims to indirectly recover a portion of capacity payments that were reduced due to maintenance delays in 2020 and 2021, as requested by PREPA. According to AES-PR, it also envisioned a "forward-looking adjustment that will eliminate past derated hours from EAF calculations going forward, thereby reducing penalties on a go-forward basis, while providing AES-PR an opportunity to ensure proper Plant maintenance."¹²³ Notably, AES-PR asserts that the EAF will mitigate the negative go-forward impact of the derated hours that were caused by system outages in 2022.¹²⁴ Those outages, AES-PR alleges caused substantial losses to AES-PR.¹²⁵

and
If AES PR maintains a high level of availability, potential penalties based on its performance prior to October 2023 will be mitigated. Consequently, AES PR may potentially reduce its penalties by \$1,545,349, which are the incremental penalties that AES-PR would incur going forward if the EAF is not reset.¹²⁶

Jim
AES-PR claims, albeit indirectly, that the lower reduced EAF partly resulted from PREPA's request to postpone maintenance due to system resource shortages following the January 2020 earthquakes. At the request of PREPA, AES PR delayed the AES Facility's required maintenance from January to June 2020.¹²⁷ AES-PR asserts the failure to service its facility in a timely manner during that period compromised its ability to maintain a 90% EAF in 2020 and 2021.¹²⁸ A decrease in EAF is directly seen

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¹¹⁹ See Article 11.2 (b) of the AES PPOA.

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² See Section 2(m) of the Proposed Amendment.

¹²³ See Response to ROI #4, Confidential Exhibit A, Item #6.

¹²⁴ *Id.*

¹²⁵ See Response to ROI #3, Item #11, Exhibit A-11 (i) to (iii): *Letter from AES-PR to LUMA Energy Puerto Rico* dated June 30, 2023, and its Exhibits; *AES Puerto Rico 2022 Unit Cycling Issues* dated January 19, 2023; *Letter from AES-PR to LUMA Energy Puerto Rico* dated January 20, 2023; *Impacts due to the Electric System Events* table.

¹²⁶ See Response to ROI #4, Confidential Exhibit A, Item #6.

¹²⁷ See Response to ROI #2, Confidential Exhibit A-5, Letter from AES-PR addressed to PREPA dated December 13, 2022.

¹²⁸ *Id.*



in the data provided by AES-PR during the 2020-2021 period.¹²⁹ Furthermore, the record suggests that AES-PR might have incurred additional losses due to transmission line issues in 2022.¹³⁰ **Moreover, PREPA's support of the proposed adjustment is indicative of its recognition of the effects of its request on AES-PR's performance during the years 2020, 2021 and 2022.** As previously stated, the delayed maintenance due to the 2020 earthquakes allegedly led to substantial losses for AES-PR, amounting to approximately \$10 million (including EAF's Penalties).

Also, AES-PR claim losses of approximately \$9 million from transmission line losses (including EAF's Penalties).¹³¹ The Energy Bureau finds that, in the context of a negotiation, it is reasonable to give some weight to the definitive resolution of AES-PR's claims. These claims are attributable to the impact of delayed maintenance of the AES Facility (requested by PREPA) and the potential losses incurred due to transmission line issues. The avoidance of protracted and costly litigation between the parties, along with the associated expenses and risks that such litigation entails, tips the balance in favor of giving some consideration to AES-PR's claims. Furthermore, the information in the record tends to support AES-PR's claims.¹³² Given the foregoing, the Energy Bureau **DETERMINES** that the proposed modification is reasonable and in the best public interest.

G. Green Energy Commitment

The Proposed Amendment includes a non-binding commitment from AES-PR to develop 300 MW of renewable energy and storage resources, which will be the subject of one or more power purchase agreements to be entered into with PREPA.¹³³ This commitment is considered by the parties to be a replacement of the AES-Facility with green energy and is labeled as the *Green Energy Commitment*.¹³⁴ The Proposed Amendment also includes a term sheet, which aims to summarize the major terms of the Green Energy Commitment, identified as the *Green Energy Commitment Term Sheet* ("Term Sheet").¹³⁵ After careful and thorough consideration, and based on the discussion below, the Energy Bureau **REJECTS** the inclusion of the Green Energy Commitment in the Proposed Amendment.

First, the Green Energy Commitment, which proposed allowing AES-PR to develop 300 MW in renewable energy and energy storage resources, lacked binding obligations for AES-PR to develop these resources. Not only is this evident from the language of the Proposed Agreement, but AES-PR's representatives and consultants also recognized the lack of binding terms during the Technical Conference. **This absence of enforceable commitment rendered the proposal largely symbolic and legally non-compelling for AES-PR.**

Second, **the Term Sheet contains terms that are not favorable to PREPA or the public interest.** For instance, it stipulates that the parties will exert their best efforts to ensure that the levelized cost of energy (LCOE) does not exceed the maximum price

¹²⁹ See Response to ROI #1, Confidential Exhibit 1 to Exhibit A, *EAF Historical*.

¹³⁰ See Response to ROI #3, Item #11, Exhibit A-11 (i) to (iii): *Letter from AES-PR to LUMA Energy Puerto Rico* dated June 30, 2023, and its Exhibits; *AES Puerto Rico 2022 Unit Cycling Issues* dates January 19, 2023; *Letter from AES-PR to LUMA Energy Puerto Rico* dated January 20, 2023; *Impacts due to the Electric System Events* table.

¹³¹ See Response to ROI#3, Item 5 and Response to ROI #2, Confidential Exhibit A-5, *Letter from AES-PR* addressed to PREPA dated December 13, 2022.

¹³² See Response to ROI #1, Confidential Exhibit 1 to Exhibit A, *EAF Historical*.

¹³³ See Section 2(h) and Section 2(x) of the Proposed Amendment.

¹³⁴ *Id.*

¹³⁵ See Exhibit 1 to the Proposed PPOA.



awarded in the most recent competitive solicitation procedure for solar photovoltaic (PV) and battery resources. This implies that the focus will be on securing maximum price benefits for AES-PR. Why not strive for minimum prices instead? Additionally, there are other conditions in the Term Sheet that seem to provide unjustified benefits to AES-PR. The Green Energy Commitment and the associated Term Sheet do not offer significant incremental value, considering that a competitive process already exists to secure new renewable and battery storage resources. These new resources are available in Puerto Rico and could potentially utilize the transmission infrastructure of the AES-Facility. **This can be achieved without the need to amend the AES PPOA to include such a separate Term Sheet, thereby avoiding providing AES-PR with benefits that other participants in the competitive process do not have.**¹³⁶

Jim

Third, Article 4.11 of Act 7-2019 pertains to amendments and/or extensions to agreements involving coal-fired generation facilities and includes provisions for replacing coal-fired units with non-coal-based sources. In the filings of this case neither AES-PR nor PREPA provided a comprehensive explanation regarding their respective rights and obligations under Article 4.11 of Act 17-2019. Therefore, **the record of the case lacks sufficient justification to bypass competitive procurement processes for renewable resources, as mandated by law and the Approved IRP.**

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Fourth, the Energy Bureau has recognized the financial situation of AES-PR and the significance of the Proposed Amendment in maintaining the financial viability of the AES-Facility, which, in turn, is in the best public interest. In consideration of the foregoing and for the reasons previously stated, the Energy Bureau has conditionally approved certain provisions of the Proposed Amendment, particularly those related to increased payments. However, the Energy Bureau notes that in its budget forecasts, AES-PR has not allocated funds for the development of facilities associated with the Green Energy Commitment. **This lack of investment raises questions about AES-PR's commitment and financial capability to move forward with this initiative.**

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Fifth, AES-PR appears to be gaining substantial advantages in potentially developing renewable resources through the Green Energy Commitment. This advantage is significant, particularly when compared to other participants in the competitive processes conducted by or on behalf of PREPA for securing these resources. The potential benefits that AES-PR enjoys pursuant to the Green Energy Commitment could be transferred to its affiliates. However, based on the available information, these affiliates seem unwilling to invest additional resources to alleviate AES-PR's financial strains.¹³⁷ In this context, it seems unfair and unreasonable for AES-PR's affiliates to gain the benefits that AES-PR may obtain from the Green Energy Commitment. **This situation poses a challenge to the principles of fairness and equitable distribution of resources and benefits within the renewable energy sector.**

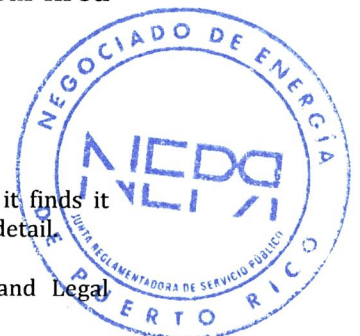
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Given the rejection of the Green Energy Commitment, Sections 2(h) and 2(x) of the Proposed Amendment shall be modified accordingly.

The Energy Bureau's decision to reject the Green Energy Commitment at this time, for the reasons stated above, should not be interpreted as an obstacle. **AES-PR and PREPA are encouraged to further explore their rights, obligations, and alternatives regarding the potential replacement of AES-PR's coal-fired generation, within the limits permitted by Article 4.11 of Act 17-2019.**

¹³⁶ Given the Energy Bureau's determination to reject the Green Energy Commitment, it finds it unnecessary at this time to consider the terms and conditions of the Term Sheet in further detail.

¹³⁷ See Response to ROI #3, Exhibit A-7, AES-PR Situation Overview, Next Steps and Legal Considerations dated March 20, 2023, page 6.



H. Permitted Coal Ash Stored on Site

Section 2(d) of the Proposed Amendment acknowledges that Act 17-2017 (as amended by Act 5-2020) no longer permits CCR and/or CCR-based products to be stored anywhere in Puerto Rico for a period exceeding one hundred and eighty (180) days from the date of their production, nor allows their disposal anywhere in Puerto Rico or its neighboring waters.¹³⁸ To set parameters for the storage of CCR, Section 2(d) stipulates that AES-PR shall: (i) use commercially reasonable efforts to reduce the CCR and CCR-based products stored at the Agremax Staging Area of the Facility to below 60 thousand metric tons by December 31, 2026, and (ii) thereafter, continue using commercially reasonable efforts to maintain storage below 60 thousand metric tons at the Agremax Staging Area for the remaining term.¹³⁹

Act 40-2017, along with Article 12F of Regulation 9283, establishes a specific time limitation on how long CCR can be stored in Puerto Rico prior to its disposal. However, Article 12G of Regulation 9283 introduces an additional constraint on the volume of CCR that can be stored, based on the historical average generation of CCR over two years and evaluated in 180-day periods.¹⁴⁰ **Therefore, Section 2(d) of the Proposed Amendment must explicitly state that, regardless of its current proposed wording, the storage of CCR must comply with Article 12G of Regulation 9283 or any other applicable regulation concerning CCR storage.** This ensures that storage practices are limited not only in duration but also in the total volume of CCR.

I. Damages for Breach

The AES PPOA stipulates that each of the AES and PREPA shall be liable for all foreseeable damages suffered by the other as a necessary consequence of the AES-PR or PREPA's respective negligent performance or omissions or failure to perform its respective obligations under the AES PPOA.¹⁴¹ AES-PR proposes to modify this provision to further stipulate that:

*if PREPA permanently ceases to perform its obligations under or terminates this Agreement prior to the end of the Term (other than pursuant to Article 18) and any Bridge Notes or Senior Bonds remain outstanding, Operator's damages shall be the amounts required: (i) for the orderly shutdown of the Facility and its operations; (ii) to fund the Reserve; and (iii) to repay all amounts due under the Bridge Notes and the Senior Bonds, in each case net of the Facility's Cash, deposits and prepaid expenses before the payment of any dividends or equity return.*¹⁴²

Neither PREPA nor AES-PR offers any justification for the proposed modification. In a presentation describing the terms of the Proposed Amendment, the modification is

¹³⁸ See Section 2(d) of the Proposed Amendment.

¹³⁹ *Id.*

¹⁴⁰ Section 12(G) of Regulation 9283 provides in the pertinent part that:

*[t]he CCR generators will not deposit, accumulate, or temporarily store CCR in the designated outdoor area for these purposes at their facility in an amount **greater than the amount that these can be generated during a period of one hundred and eighty (180) days**; amount that will be determined by the DNER based on the data of the estimate provided by the generating facility, as required by subsection 5e of Rule 14B of this regulation... (Emphasis provided).*

¹⁴¹ See Article 14.2 of AES PPOA.

¹⁴² See Section 2(o) of the Proposed Amendment.



characterized as a “clarification” of Section 14.2 of the AES PPOA.¹⁴³ However, this is far from reality. **The added provisions impose additional obligations on PREPA without any corresponding benefit.** First, PREPA is not a party to AES-PR’s debt restructuring process and is unaware of the breadth and scope of these agreements. Second, PREPA does not operate the AES-Facility and is uninformed about the activities, costs, and other implications related to the facility’s shutdown. **The modification imposes a substantial burden and unbalanced risk on PREPA, which is contrary to both its interests and those of the ratepayers.** After all, any increase in PREPA’s risk ultimately becomes a burden that the ratepayers will have to bear.

Therefore, the Energy Bureau **DETERMINES** that this modification is not in the public interest and, as such, cannot be permitted. Section 2(o) of the Proposed Amendment shall be modified accordingly.

J. *Other Provisions of the Proposed Amendment*

Provisions in the Proposed PPOA that are not subject to the modifications outlined in this Resolution and Order, or those not explicitly addressed herein, are approved as proposed. This is unless incidental modifications are necessary to ensure consistency with the provisions for which the Energy Bureau has ordered modifications.

IV. **CONFIDENTIAL DESIGNATION AND TREATMENT**

Act 57-2014¹⁴⁴ establishes that any person having the obligation to submit information to the Energy Bureau, can request privilege or confidential treatment to any information that the party submitting understands deserves such protection.¹⁴⁵ Specifically, Act 57-2014 requires the Energy Bureau to treat as confidential the submitted information provided that “the Energy Bureau, after the appropriate evaluation, believes such information should be protected”.¹⁴⁶ In such case, the Energy Bureau “shall grant such protection in a manner that least affects the public interest, transparency, and the rights of the parties involved in the administrative procedure in which the allegedly confidential document is submitted.”¹⁴⁷

After a review of PREPA’s arguments and the applicable law, the Energy Bureau **GRANTS** confidential designation and treatment to the documents listed in Annex 1 of this Resolution and Order.¹⁴⁸

V. **CONCLUSION**

For the reasons stated above, the Energy Bureau:

- (a) **APPROVES** the Proposed Amendment, subject to the modifications set forth in Part III D, E, G, H, and I of this Resolution and Order.
- (b) **ORDERS** PREPA to provide, within one (1) business day following the notification of this Resolution and Order, a certification signed by an authorized officer confirming that, PREPA’s directors, employees, representatives, officers, and/or consultants (with the names of the

¹⁴³ See Response to TC-ROI, Exhibit A1, *PPOA Amendments – Summary Chart*.

¹⁴⁴ Known as *Puerto Rico Energy Transformation and RELIEF Act*, as amended.

¹⁴⁵ Section 6.15 of Act 57-2014.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.* (Emphasis added).

¹⁴⁸ Note that in this case, previous Resolutions and Orders have already granted confidential status to other documents.



relevant individuals in each case provided) have thoroughly reviewed and evaluated the financial, technical, and all other pertinent data provided by AES-PR in connection with the Proposed Amendment. It should also be stated that, to the best of their knowledge and professional abilities, they have negotiated the terms and conditions of the Proposed Amendment in a manner they believe to be reasonable, supported by the data evaluated, and in the best public interest.

- Smr*
- (c) **SCHEDULES** a Technical Conference for **February 2, 2024 at 1:00 p.m.** to afford PREPA (AES-PR) the opportunity to clarify any doubts they may have concerning the Resolution and Order, including, without limitation, the scope of the modifications to the Proposed PPOA herein required. If PREPA determines that the Technical Conference is unnecessary, it must inform the Energy Bureau of this decision **no later than February 2, 2024 at 9:00 a.m.**
- JMA*
- (d) **ORDERS** PREPA to submit an exact and true revised version of the Proposed Amendment **at least five (5) days before its proposed execution date.** This will allow the Energy Bureau the opportunity to verify that it aligns with the conditions set forth in this Resolution and Order.
- SM*
- (e) Without affecting the validity and/or enforceability of this Resolution and Order on the date of notification, **ORDERS** PREPA to inform, within two (2) days following its notification, whether any part thereof should remain confidential in accordance with applicable law. Should the specified period lapse without receipt of PREPA's position, the Clerk of the Energy Bureau shall proceed to publicly disclose this Resolution and Order.

SM

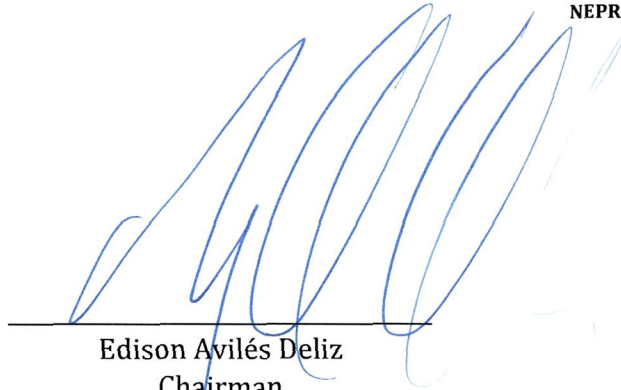
The Energy Bureau **WARNS** PREPA that any person who intentionally violates any provision of Act 57-2014, omits, neglects or refuses to obey, observe and comply with any rule or decision of the Energy Bureau shall incur a less serious and convicted offense that may be punished with imprisonment not exceeding six (6) months, or with a fine of not less than five hundred dollars (\$500) nor more than five thousand dollars (\$5,000), at the discretion of the Energy Bureau. In case of recidivism, the established penalty will increase to a fine of not less than ten thousand dollars (\$10,000) nor more than twenty thousand dollars (\$20,000), at the discretion of the Energy Bureau.

SM

THE CLERK OF THE ENERGY BUREAU SHALL NOTIFY THIS RESOLUTION AND ORDER TO PREPA ONLY AND SHALL KEEP IT CONFIDENTIAL UNTIL OTHERWISE INSTRUCTED BY THE ENERGY BUREAU.

BE IT NOTIFIED AND NOT PUBLISHED.

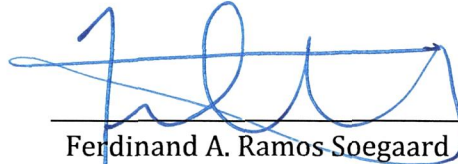




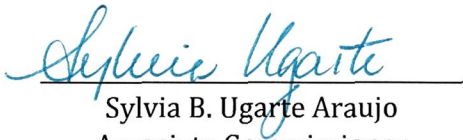
Edison Avilés Deliz
Chairman



Lillian Mateo Santos
Associate Commissioner



Ferdinand A. Ramos Soegaard
Associate Commissioner



Sylvia B. Ugarte Araujo
Associate Commissioner



Antonio Torres Miranda
Associate Commissioner

CERTIFICATION

I certify that the majority of the members of the Puerto Rico Energy Bureau agreed on February 1st, 2024. Also certify that on February 1st, 2024, I have proceeded with the filing of this Resolution and Order and was notified by email to arivera@gmlex.net; mvalle@gmlex.net.

For the record, I sign in San Juan, Puerto Rico, today, February 1st, 2024.



Sonia Seda Gaztambide
Clerk



Annex 1

Documents granted confidentiality by the Energy Bureau in this Resolution and Order include:

1. Exhibits included as part of the Response to ROI #1;
 - a. Exhibit A *Confidential Responses to Requests for Information*

Exhibit 1 to Exhibit A: Excel Worksheet including the following identified tabs: 2. *Energy and Capacity Payments*; 3. *EAF Historical*; 4. *Energy Production*; 6. *EAF Forecast*; 8. *Green Payment*; 10. *Historical*; 11. *Forecasts*; *Demand Charge*; *FO&M_VO&M*.

Exhibit 2 to Exhibit A: *Amended PPOA Economics Including Green Transition Stabilization* presentation.
2. Exhibits included as part of the Response to Technical Conference ROI:
 - a. Exhibit A-1 (*PPOA Amendments-Summary Chart*);
 - b. Exhibit A-4 (*Credit Rating Agency Info*);
 - c. Exhibit A-5 (*Financial Information and Calculations*);
 - d. Exhibit A-6 (*AES-PR Decommissioning Cost Estimate*);
3. Exhibits included as part of the Response to ROI #2:
 - a. Exhibit A-1 (*AEE-Meta Excel Worksheet*);
 - b. Exhibit A-4 (*Indirect Agremax Costs from 2015-2023*);
 - c. Exhibit A-5 (*Letter from AES to PREPA dated December 13, 2022, RE: Challenges Threatening AES Puerto Rico, L.P.'s Continued Operations*);
 - d. Exhibit A-8 (*Unaudited Financial Statements as of end for the nine months ended September 30, 2023 and 2022 and an AES Trial Balance-Consolidations-Full Year (Excel Worksheet)*);
 - e. Exhibit A-9a (*AES Financial Situation, Challenges Threatening AES PR Cash Situation* dated February 8th, 2023, and *PR Expense Support (Excel Worksheet)*);
 - f. Exhibit A-9b (*AES-PR PPOA Amendments* presentation dated November 3, 2023, *AES-PR Negotiations Update* presentation dated August 22, 2023, *Governing Board Memo* dated February 25, 2023, *PREPA AES-PR Situation Overview, Next Steps and Legal Considerations* presentation dated February 27, 2023; and *PREPA AES-PR Situation Overview, Next Steps and Legal Considerations* presentation dated March 15, 2023);
 - g. Exhibit A-10 (Excel Worksheet in Response to Request No. 10);
 - h. Exhibit A-11 (*AES Puerto Rico, L.P.-Regulatory Communications Regarding Effects of Puerto Rico Act 5-2020*).



4. Exhibits included as part of the Response to ROI #3:
- a. Exhibit A-1(i) (*Trust Agreement*);
 - b. Exhibit A-1(iii) (*AES Guayama Holding Trial Balance-Consolidations-Full Year Worksheets for 2016 to 2023 period*);
 - c. Exhibit A-1(iv) and (v) (*AES Organizational Chart*);
 - d. Exhibit A-2 (*Reconciliation of Historical Financials to Audited Financials*);
 - e. Exhibit A-3 (*Agremax Disposal Variance*);
 - f. Exhibit A-4 (*Agremax Costs from 2015*);
 - g. Exhibit A-6 (*Heat Rate Chart*);
 - h. Exhibit A-7 (*AES-PR Situation Overview, Next Steps and Legal Considerations presentation, dated March 20, 2023*);
 - i. Exhibit A-8 (*PREPA-AES Confidentiality Agreement and draft of PREB Joinder of PREPA Confidentiality Agreement*);
 - j. Exhibit A-10 (*Additional Costs, Outages due to Loss in Transmission Lines, PR Coal RFP 2024 and 2025 Draft, Fuel Agreement, Fuel Suppliers List, Financial Statements, Price Inputs, Freight Rates, Letter from AES address to PREPA dated December 13, 2022 in re: Challenges Threatening AES Puerto Rico, L.P.'s Continued Operations; and a Letter from PREPA address to AES dated December 9, 2022*);
 - k. Exhibit A-11(i) and (ii) (*Letter from AES address to LUMA Energy Puerto Rico dated January 20, 2023 in re: Impact of 2022 System Interruptions on AES Puerto Rico, LP's Units, AES Puerto Rico Cycling Issues, and a Letter from AES address to LUMA Energy Puerto Rico dated June 30, 2023 in re: Power Purchase and Operating Agreement – Outstanding Balance 2022 & 2023 Invoices*).
 - l. Exhibit B (*Letter from Genera address to PREPA dated December 15, 2023, and a December 15, 2023 System Capacity (MW) for 2024-2027 Excel Worksheet*).
5. Exhibits included as part of the Response to ROI #4:
- a. Exhibit A-1: Excel Worksheet including the following identified tabs:
1. Historical CCR Costs; 2. CCR Cost Forecast; 6. EAF Reset; 8. FRC Calculation; 9. Energy and Capacity Payment; 11. PPA Heat Rate Corrected; 17. Heat Rate Adjustment.

