



PREPA Privatization Will Hurt Consumers and Slow Economic Recovery

Plan Will Raise Rates While Missing Opportunity to Transition to Renewables

Executive Summary

Many promises have been made regarding the benefits of privatizing the Puerto Rico Electric Power Authority (PREPA). Despite these promises, there has been no public assessment of how much privatization will cost Puerto Rico's people. This report asks and answers the question: How much will electricity prices change under a newly privatized system?

The privatization plan will impose an unnecessary burden at an unreasonable cost. If implemented the current plans to privatize Puerto Rico's electricity system will result in 2024 electricity prices for consumers of 27 cents/kWh. That is 18% higher than 2018 levels and 35% higher than the 20 cents/kWh goal established by PREPA's financial plan. The system would risk future price increases tied largely to volatility in the natural gas markets. The result will be a step backwards for affordable electricity, an economically uncompetitive system and a lost opportunity to maximize least cost renewable energy.

During the last several years, as debate has continued over PREPA and its future, key stakeholders have made several critical points regarding affordable electricity:

- PREPA and the Financial Oversight and Management Board (FOMB) have set a long-term goal of electricity at 20 cents per kWh.
- Business groups have pressed for electricity rates at 16 cents/kWh in order to make Puerto Rico economically competitive.
- The biggest costs to the system are fuel and debt service. These must be substantially reduced to achieve affordability objectives.
- Under current conditions, electricity rates are likely to rise to nearly 30 cents per kWh, according to the PREPA Fiscal Plan certified by the FOMB, if legacy debt is paid in full.
- PREPA has failed to prioritize renewable energy and energy efficiency investments that can help bring down costs. This is the finding of the Puerto Rico Energy Bureau, the FOMB, and business and labor organizations. The Puerto Rico Senate recently passed a law calling for 100% renewable energy by 2050, but there is no plan for PREPA to meet that goal.

If implemented, the existing and ever-changing framework for privatization of the Puerto Rico Electric Power Authority would achieve none of the affordability objectives articulated by government entities and stakeholders. It would instead result in a system that is more expensive, less accountable and fraught with uncertainty for any investor. As designed, the privatization projects are likely to receive approval outside of Puerto Rico's formal Integrated Resource Plan (IRP), a practice that only further underscores the lack of planning and controls and the continued reliance on political processes to award large government contracts with significant health and safety implications for the public.

IEEFA's modeling of a future system uses the following conservative assumptions, which are based largely on the statements of Puerto Rico's public officials and the evolving laws and regulations regarding privatization.

- By 2024, generation will consist of 67% natural gas, 13% coal and 20% renewable energy.
- The economy of Puerto Rico will continue to show negative or flat growth and electricity demand will decline due to depressed economic activity and rising use of distributed renewable generation among businesses and households.
- Natural gas prices will not rise beyond \$5/MMBTU (in real dollars) through 2050.
- The cost of capital to be charged by private developers to Puerto Rico will be 11% for debt and 17% for equity contributions. Puerto Rico's emergence from bankruptcy will constitute a high risk investment environment for the foreseeable future.
- The pending restructuring agreement for PREPA's legacy debt, which calls for substantial repayment of bond principal at an initial cost of 2.6 cents/kWh, will be adopted.
- PREPA and Puerto Rico's current procurement processes as outlined in the statutes for privatization do not require competitive bidding. The system as designed includes no reforms from past abuses and preserves the Governor's prerogative to award contracts without adequate oversight. Therefore, we assume a 10% "corruption tax" based on PREPA's documented history of mismanagement of the annual \$1-2 billion fuel procurement budget, the Whitefish contract, excessive political hiring, misuse of proceeds from prior bond issuances, weak regulatory oversight, failure to produce mandated audits on a timely basis and the lack of controls over financial, legal and accounting advisory costs.

There are two significant risks that if realized would cause substantial damage to PREPA and Puerto Rico more generally.

1. The failure to adopt a modern electricity system that is reliable, resilient, affordable and both financially and environmentally sustainable will undermine Puerto Rico's economic growth plans. The energy market

worldwide is relying increasingly on technological advantages provided by a growing renewable energy industry. Puerto Rico's ideal geographic positioning for solar makes it imperative that these energy technologies achieve a high degree of market penetration.

2. The current privatization arrangement runs a very high risk of triggering another round of defaults. Puerto Rico's economy cannot sustain paying for its legacy debt and the capital costs of a new system. Another round of defaults will cause investment to falter still further and require an ongoing struggle over the use of federal resources to meet the needs of the electricity system and Puerto Rico's other social and economic needs.

In the final section of the report, we discuss alternative options for finance and governance under a public ownership model.

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Background

Current Status of Electrical System Privatization in Puerto Rico

In January 2018, Governor Rosselló announced plans to privatize PREPA through a series of asset sales and contracts:

- PREPA's existing power plants would be retired or sold to third parties from whom PREPA would purchase electricity under long-term contracts.
- New power plants would be privately owned and would sell electricity under long-term contracts.
- The transmission and distribution system would be leased to a third party via a concession agreement.

In June 2018, Rosselló signed Law 120-2018 to create the legal framework for an expedited privatization process.

As of the end of 2018, the Puerto Rico Public-Private Partnerships Authority had issued requests for qualifications for a battery energy storage project and for the transmission & distribution system concession.¹ Four companies have expressed interest and been prequalified for the concession.² Documents filed in PREPA's bankruptcy case in federal court have also referenced plans to outsource call center operations and requests for proposals for smart meter and vegetation management projects.³ PREPA has also initiated a process for converting two units at the San Juan power plant to natural gas and announced that it would award the contract for this project to New Fortress Energy.⁴

In this report, we use the term "privatization" to refer to the specific contracting processes authorized by Law 120-2018. However, we note that contracting with private companies is not new for PREPA, which currently purchases about a third of its generation through contracts with private coal, natural gas and renewable energy providers.⁵ In addition, PREPA has contracted out key aspects of its operations and management, including a previous \$45 million contract with Chief

¹ Puerto Rico Public Private Partnerships Authority, RFQ: Puerto Rico Electric Power Transmission and Distribution System. Issued October 31, 2018 and RFQ for the Puerto Rico Electric Power Authority Utility Scale Energy Storage System Project. Issued June 22, 2018.

² "Cualifican a cuatro proponentes para operar el día a día en la AEE," El Nuevo Día, January 17, 2019.

³ See Interim Fee Applications of Filsinger Energy Partners filed with the U.S. District Court for the District of Puerto Rico, Case No. 17-04780-LTS.

⁴ Gerardo Alvarado León, "AEE otorga contrato a NFEnergía para suplido de gas natural," El Nuevo Día, November 30, 2018.

⁵ From July-October 2018, PREPA purchased 33% of its electricity from these sources. (PREPA Monthly Report to the Governing Board, October 2018)

Restructuring Advisor AlixPartners and a current \$21.6 million contract with Chief Financial Advisor Filsinger Energy Partners.⁶

In this paper, we first describe the legal and institutional framework under which the privatization transactions are to take place. We then construct a financial model of the cost of the privatization of PREPA's generation, transmission and distribution systems and consider several sensitivities. We argue that the Law 120 privatization model will not solve the fundamental problems facing Puerto Rico's electrical system and suggest an alternative approach to the transformation of PREPA.

Legal Framework for Privatization Opens Door for Non-transparent and Poorly Planned Contracts

Law 120-2018 created the legal framework for an expedited series of PREPA privatization contracts. Law 120 relies heavily on Puerto Rico's existing framework for public-private partnerships created by Law 29-2009⁷ and further developed through regulations issued by the Public-Private Partnerships Authority (P3 Authority). The PREPA privatization process will be run through the P3 Authority, which will have complete control over the selection of privatization projects to pursue (new power plants to build, existing plants to sell, operations to outsource, etc.).⁸ Law 29 requires the P3 Authority to perform a "desirability and convenience study" to evaluate whether or not to pursue a project, but Law 120 exempts PREPA privatization transactions from this step. Once a project has been decided upon, the P3 Authority will establish a committee that includes at least one representative

⁶ Filsinger's original contract was for \$5 million from December 2017 through June 2018. The contract was amended several times and Filsinger billed \$9.2 million for that period. (Filsinger's billings have to be approved by the bankruptcy court, but the court has thus far approved 95% of the billed fees.) The latest amendment to the contract extended Filsinger's term to June 30, 2019 and allows for total compensation of \$21.63 million. If the results of the first seven months are any indication, Filsinger will ultimately bill PREPA's ratepayers significantly more than that. (Original contract: <https://acepr.com/es-pr/QuienesSomos/Contratos%20Generales/2018-P00091%20FILSINGER%20ENERGY%20PARTNERS,%20INC.pdf>; amended contract and interim fee applications filed with the U.S. District Court for the District of Puerto Rico, Case No. 17-04780-LTS).

⁷ Law 29-2009 itself had created an expedited process for public-private partnerships by exempting the Public-Private Partnerships Authority from Puerto Rico's Uniform Administrative Procedures Act. (Law 29-2009 Section 19(c)).

⁸ "The [P3] Authority is hereby designated as the sole Government Entity authorized to and responsible for (1) implementing the public policy on PREPA Transactions conducted in accordance with this Act; (2) determining the Functions, Services, or Facilities for which such Partnerships shall be established, subject to the priorities, objectives, and principles established in the energy policy and the regulatory framework to be developed pursuant to Section 9 of this Act; and (3) determining which PREPA Assets related to electric power generation shall be sold or transferred through Sales Contracts ... PREPA may only sell and dispose of PREPA Assets related to electric power generation through the process established in this Act and may only conduct transactions that are related to electric power generation, distribution, and transmission, metering, and any other PREPA function, service, or facility through Partnership Contracts." (Law 120, Section 5(b)).

from PREPA to select the private partner (through a competitive solicitation or otherwise, at the discretion of the P3 Authority⁹) and negotiate a contract.

Law 120 also required that the privatization process comply with a yet-to-be-written energy policy bill that would be passed by the end of 2018.¹⁰ While the Senate passed a bill (P.S. 1121) in November 2018, it was not taken up by the Puerto Rico House of Representatives before the end of the year.

The privatization process outlined by Law 29 and Law 120 is not consistent with a well-planned transformation of Puerto Rico's electrical system. Instead, it is a non-transparent process that will facilitate a series of politically-driven deals. The decision of which projects to pursue, and whether or not to pursue them through competitive bidding, is to be decided behind closed doors without public input. The independent energy regulator, the Puerto Rico Energy Bureau, is also largely written out of the process. The Bureau has no role in the selection of projects, design of RFPs or negotiation of contracts and, under Law 120, is given only 15 days to review information provided by the P3 Authority and approve or disapprove the final contract before it is executed.¹¹ There is no public input required for the Bureau's process.

Law 120 allows PREPA privatization transactions to be exempted from PREPA's long-term Integrated Resource Plan, with the "advice" of the Energy Bureau.¹² If passed, PS 1121 would expand this exemption to include any statutory requirement applicable to PREPA, with the approval of the Energy Bureau.¹³

Finally, Law 120, Law 29 and the regulations of the P3 Authority have few provisions for the monitoring and enforcement of contracts after they are signed. Law 29 gives the P3 Authority, PREPA and the Puerto Rico Fiscal Agency and Financial Advisory Authority the responsibility to "oversee the performance and compliance of the Contractor," but does not define this responsibility beyond the production of annual reports to the Governor and Legislature on contract compliance.¹⁴ It is also unclear how the enforcement responsibility would be split among the three agencies. Law 120 provides the Puerto Rico Energy Bureau with authority to regulate any changes to rates and fees charged by the contractor to ensure they are in the public interest, although it is unclear how much latitude the

⁹ Law 29-2009, Section 9(b).

¹⁰ Law 120-2018, Section 9.

¹¹ Law 120-2018, Section 5(g). P.S. 1121 would extend this to 30 days (P.S. 1121 Section 6.2).

¹² Law 120-2018, Section 6(d)(ii). We note that there is some ambiguity arising from Section 11 of Law 120-2018 which gives PREPA the power "To conduct competitive request for proposals processes or execute Public-Private Partnership agreements, in accordance with the 'Puerto Rico Electric Power System Transformation Act,' and Act No. 29-2009, as amended, known as the 'Public-Private Partnership Act,' or the parameters established in this Act, to develop, finance, build, operate, and provide maintenance, in whole or in part, to the electric power grid and the power plants and other facilities and infrastructure thereof, as well as to promote new generation, transmission, distribution, customer service optimization projects, and any other necessary project consistent with the Integrated Resource Plan."

¹³ P.S. 1121, Section 6.3

¹⁴ Law 29-2009, Section 10(d)

Bureau would have to do this given its lack of authority over the terms of the original contract.¹⁵

This lack of clarity over monitoring and enforcement is in contrast with the example of the Long Island Power Authority, whose long-term operating agreement with the private utility PSEG has often been referenced as a model for PREPA. New York law mandates a comprehensive management and operations audit every five years. The most recent such audit emphasized that “effective oversight is critical when contracting virtually all utility operations and maintenance.” The audit noted the importance of LIPA maintaining the managerial competence necessary to oversee PSEG’s operations.¹⁶

Conflicts and vagaries in the law and weak monitoring and oversight of the contracts increase the risk that investors in any privatization contract in Puerto Rico will be subjected to changing contract terms, tariffs and other operating conditions based upon political considerations. It weakens the ability of energy regulators to establish constructive working relationships with the outside investors and the providers of the technical support necessary to rebuild Puerto Rico. This undermines the element of certainty needed to establish and maintain investment confidence in Puerto Rico at a time when both its economic performance and the perception of its governmental competence are considered high risk.

The non-transparent privatization contracting process enabled by Law 120 continues PREPA’s long history of contracting irregularities and poor contract oversight, which has resulted in higher costs for customers. This includes a multi-decade, multi-billion dollar oil purchasing scandal, in which PREPA paid a premium for low-quality oil.¹⁷ PREPA has also been faulted by the Energy Bureau for signing above-market contracts for renewable energy projects. The Energy Bureau also noted the insufficient oversight over fees for PREPA’s team of restructuring consultants, who were essentially in charge of policing the reasonableness of their own fees.¹⁸ The consultants’ billings were massively over-budget and they produced

¹⁵ It is unclear how to reconcile subsection 8(d) of Law 120, which states that the Bureau “shall have no authority to alter or amend the Partnership or Sales Contract, and shall not interfere in operational or contractual matters, except as provided in subsection (f) of this Section,” with subsection 8(f), which would appear to give the Bureau extensive jurisdiction over operational and contractual matters in order to “ensure that any modification renders the duties, rents, and rates, and any other types of fees charged by a Contractor under a Partnership or Sales Contract executed in connection with a PREPA Transaction, just and reasonable, and consistent with good fiscal and operating practices that provide for reliable services at the lowest cost possible.”

¹⁶ “LIPA is separated from daily utility operations, information and experience by a formal contract with its service provider – PSEG LI. For a utility operating with this business model, the need for strong management skills and a deep understanding of the nuances of utility operations is critical to provide effective oversight and continuous improvement.” (NorthStar Consulting Group, “Comprehensive and Regular Management and Operations Audit of Long Island Power Authority and PSEG Long Island, LLC,” New York Department of Public Service Matter No. 16-01248, June 29, 2018).

¹⁷ Sanzillo and Kunkel, “Multibillion-dollar oil scandal goes unaddressed in PREPA contract reform and privatization,” Institute for Energy Economics and Financial Analysis, July 2018.

¹⁸ Puerto Rico Energy Commission Case No. CEPR-AP-2015-0002, Commission Order, September 23, 2016, pp. 59-60. And Puerto Rico Energy Commission Case No. CEPR-AP-2016-0001, Commission Order, June 21, 2016, paragraph 271.

a debt deal that ultimately was rejected by the FOMB. Most recently, PREPA's contract with its Chief Financial Advisor, Filsinger Energy Partners, has been over budget and amended to more than four times the original contract amount.¹⁹ Additionally, the promised audit of the Whitefish contracting scandal, in which PREPA signed an expensive rebuilding contract with a tiny, unknown company, has been suppressed.²⁰

PREPA is currently in the process of contracting to convert two of the units at the San Juan power plant to natural gas. Although this process is not considered part of the PREPA privatization and is being conducted through PREPA and not the P3 Authority, it is indicative of the contracting problems that we expect to see. First, it is arguably a violation of Law 120 for PREPA to be moving forward with this project at all, given that Law 120 broadly requires that PREPA "may only conduct transactions that are related to electric power generation, distribution, and transmission, metering, and any other PREPA function, service, or facility through Partnership Contracts,"²¹ i.e. under the auspices of the P3 Authority. Secondly, as noted by Energy Bureau commissioner Angel Rivera, the contracting structure that PREPA has proposed to the Energy Bureau, in which the capital costs of the unit conversion would be recovered as part of a contract for fuel, appears to be in conflict with existing Puerto Rico law.²²

And finally, the conversion of two of the San Juan units to natural gas is moving forward outside of PREPA's long-term resource planning process. The project was not approved as part of PREPA's 2016 Integrated Resource Plan, and the Energy Bureau allowed PREPA to move forward with it before the release of PREPA's next Integrated Resource Plan. In a dissenting opinion, Commissioner Rivera noted, "the implementation of this project will result in the [operational] reconfiguration of the generation assets located in the north and, most likely, the reconfiguration of several other assets throughout the electric system... Without an integrated analysis of these effects, it cannot be concluded that the conversion of San Juan Units 5 and 6 will result in the least-cost option to supply Puerto Rico's long-term energy demand. PREPA's fragmented approach to resource analysis and acquisition is what the public policy of integrated resource planning seeks to avoid."²³

¹⁹ See footnote 6, above.

²⁰ The audit, which was promised for October 2018, has never been released. (See: Amanda Pérez Pintado, "La contralora no encuentra irregularidades en la contratación de Whitefish", *El Nuevo Día*, September 22, 2018).

²¹ Law 120-2018, Section 5(b)

²² "It is important to point out that Subsection (c) of Section 6A of Act 83 establishes that the adjustment fee established to recover fuel costs 'shall only include the costs directly related to the purchase of fuel'. Therefore, it is unclear at this point how PREPA's intended plan to recover the costs associated with the modernization of San Juan Units 5 and 6 through a fuel purchase agreement, will meet the requirement established in Section 6A of Act 83 regarding the prohibition of including in the fuel fee, costs that are not directly related to the purchase of fuel." (Dissenting Opinion of Commissioner Angel Rivera, Case No. CEPR-AI-2018-0001, October 4, 2018).

²³ Dissenting Opinion of Commissioner Angel Rivera, Case No. CEPR-AI-2018-0001, October 4, 2018

In short, contracts which are entered into without regard for the long-term least-cost plan for the electrical system will result in a poorly planned and unnecessarily expensive system. Given PREPA's recent history and the fact that there is no evidence that promised reforms²⁴ have been successful, we anticipate that the PREPA privatization process will produce contracts that are above-market and favorable to private interests at the expense of PREPA ratepayers.

Privatization Process Likely to Facilitate Natural Gas Development

The privatization effort appears likely to facilitate a major push for natural gas development on the island. PREPA's executive director Jose Ortiz, a proponent of investment in natural gas, has stated his goal is achieving 60% of the island's power generation from natural gas by 2024, with the remaining 40% from renewable energy.²⁵ This goal is at odds with the fact that PREPA has a contract through 2028 with a coal plant that produces about 15% of the island's electricity.²⁶ Director Ortiz's position is not supported by any published reports, studies or technical treatments that are available to the public. Aside from the conversion of the San Juan units to natural gas, it is unclear what natural gas projects are under consideration because of the lack of transparency in the privatization process.²⁷ Newspaper articles have referenced the possibility of new natural gas import terminals at Mayaguez and Yabucoa, as well as new natural gas power plants at Cataño (near San Juan) and Yabucoa. This is in spite of the fact that recent large-scale natural gas projects (the Via Verde pipeline, Gasoducto de Sur, and the Aguirre Offshore Gas Port) were all first substantially delayed and then ultimately cancelled.

Indeed, preliminary results released in October 2018 for PREPA's long-term resource planning contradict the near-term rush to sign natural gas contracts. The preliminary results show, across a range of scenarios, that the most cost-effective priority for short-term investment in the electrical system is solar energy and battery storage. PREPA presented preliminary results for several scenarios. In the scenario that included the choice to build new natural gas terminals at Yabucoa and Mayaguez, the model did not select those resources, indicating that those options are not cost-effective.²⁸

²⁴ PREPA Fiscal Plan, August 1, 2018 at p. 13. As of the date of this report PREPA, and most Commonwealth reporting entities have not submitted even the most minimal financial and program reports required by the FOMB related to progress in achieving revenue and expense initiatives approved in their certified financial plans. (See: [Letter from FOMB to Governor Ricardo Rosselló](#), January 14, 2019).

²⁵ Nydia Bauzá, "Gas natural para bajar costo de luz," *Primera Hora*, August 30, 2018.

²⁶ There has been no public discussion of early termination of the contract.

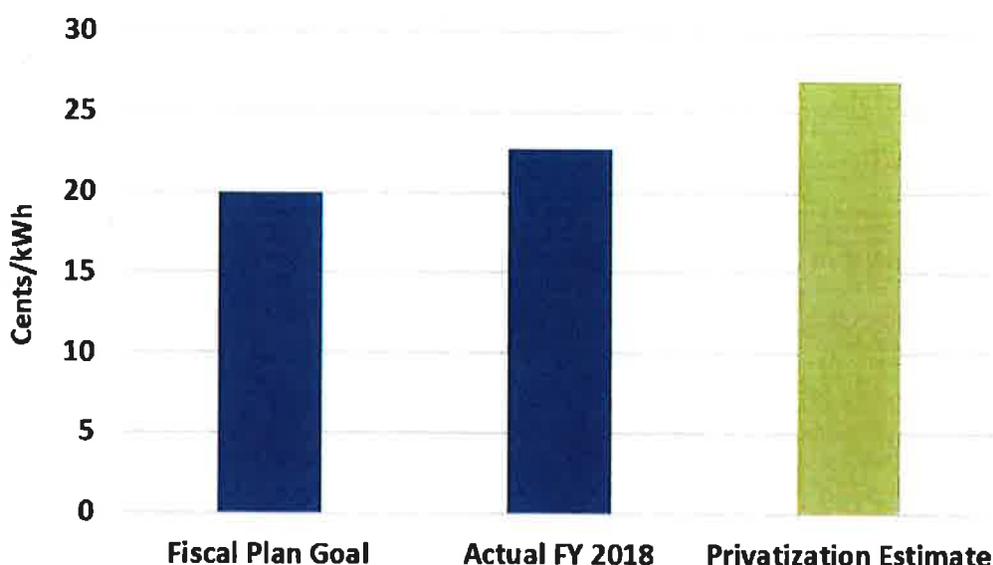
²⁷ On November 2, 2018, IEEFA and Cambio PR requested communications from the Public-Private Partnership Authority and the Puerto Rico Fiscal Agency and Financial Advisory Authority regarding responses to a market-sounding document issued by those agencies for the privatization. The request was denied on the basis of confidentiality under Law 29-2009.

²⁸ PREPA's January 23, 2019 IRP, which IEEFA is currently evaluating, included more scenarios, some of which build terminals at Yabucoa and/or Mayaguez.

Cost of Privatization

In this section, we model the cost of the privatization plan over the next five years. We assume that new generation facilities are built under private ownership to sell electricity via long-term power purchase agreements. We also assume that the transmission and distribution system is leased under a forty-year concession. Our baseline scenario results in an all-in electricity price in 2024 of 27 cents/kWh (in 2018 dollars).²⁹

Figure 1: Cost of Electricity Under Privatization vs. Current Rate and Target Rate



IEEFA finds that the current plans to privatize Puerto Rico’s electricity system will result in 2024 electricity prices for consumers of 27 cents/kWh (in constant 2018 dollars). That is 18% higher than 2018 levels and 35% higher than the 20 cents/kWh goal established by PREPA’s financial plan. The system would risk future price increases tied largely to volatility in the natural gas markets. The result will be a step backwards for affordable electricity, an economically uncompetitive system and a lost opportunity to maximize least cost renewable energy.

Our model generates annual power purchase agreement costs for power plants, and the annual fee to the transmission and distribution concessionaire, to achieve the desired return to investors. We have then integrated those financial findings into the broader electricity system to establish the full impact on the final rate that consumers will have to pay in order to support the privatization decisions made by the Legislature and the Governor.

²⁹ The date of 2024 was chosen to allow lead-time for constructing new plants and natural gas import terminal infrastructure.

Generation Assumptions

The basis for our generation scenario is a presentation given by Fernando Padilla, director of PREPA's Restructuring Office, at the Southern States Energy Board meeting in Puerto Rico in November 2018. This scenario calls for the conversion of San Juan units 5&6 to natural gas (already underway), 800 MW from four new combined cycle power plants (at Palo Seco and at unspecified locations in the north and east), 450 MW of new combustion turbines, 1500 MW of renewable energy, and 1000 MW of new storage. It assumes the continuation of generation at the privately owned AES coal plant and EcoElectrica natural gas plant, the units at PREPA's Costa Sur plant that currently run on natural gas and the conversion of the Mayaguez power plant to natural gas.³⁰ With our assumed capacity factors, this buildout results in 67% electricity from natural gas, 13% from coal and 20% from renewables.^{31,32}

Our baseline scenario uses the PREPA Fiscal Plan's FY 2019-2023 sales forecast and assumes that FY 2024 sales are the same as FY 2023 sales (13,290 GWh), an estimate that breaks with the trend of declining sales in the Fiscal Plan from FY 2019 to FY 2023. We conservatively assume that PREPA (or its successor) does not improve the system's approximately 15% loss rate, so that FY 2024 generation would be 15,300 GWh.³³

Upfront capital costs, as well as operation and maintenance costs, for new power plants are based on data provided by the National Renewable Energy Laboratory and Lazard.³⁴ The total upfront capital investment in new generation is

³⁰ It is not clear exactly what projects are under serious consideration as part of PREPA's privatization process. The scenario assumed here is broadly consistent with public statements favoring natural gas. Newspaper articles have also referenced proposals for an RFP for 540 MW of natural gas combustion turbines, new natural gas plants at Cataño (near San Juan) and Yabucoa (in eastern Puerto Rico), natural gas imports to Mayaguez, and for 1000 MW of renewable energy projects in the next five years (See: Nydia Buazá, "Gas natural para bajar costo de luz," *Primera Hora*, August 30, 2018; Gerardo Alvarado León, "La AEE hará plantas de generación "eficientes" en Cataño y Yabucoa," *El Nuevo Día*, July 21, 2018; Ronald Avila Claudio, "AEE llevará gas natural a Mayaguez," *Metro PR*, August 31, 2018; Gerardo Alvarado León, "Energía Eléctrica define su plan para bajar el costo de la electricidad," *El Nuevo Día*, November 5, 2018).

³¹ We assume a 21% capacity factor for new renewable energy (consistent with PREPA's 2015 Integrated Resource Plan). Because this scenario overbuilds the generation system, in order to meet our FY 2024 forecast, the coal plant dispatches at a 50% capacity factor, natural gas combustion turbines have a 6% capacity factor, and natural gas combined cycle plants have a 45% capacity factor.

³² PREPA's August 1, 2018 Fiscal Plan (at p. 44) articulates an "aspirational least-cost" generation scenario that achieves 32% renewable energy generation by FY 2023.

³³ PREPA experienced losses of 15.5% in FY 2017 (PREPA, Monthly Report to the Governing Board, June 2017).

³⁴ Specifically, we assume a range of gas combined cycle costs from \$1,070/kW to \$1400/kW, depending on size. We assume new natural gas combustion turbine costs of \$910/kW and new utility-scale renewables at \$1060/kW, based on the National Renewable Energy Laboratory's Annual Technology Baseline (<https://atb.nrel.gov/>), converted to 2018 dollars. Storage costs are consistent with Lazard's Levelized Cost of Storage Analysis, November 2018. We use PREPA's current costs for operation and maintenance for existing power plants (See: Siemens, "PREPA PREC Technical Conference" presentation, Puerto Rico Energy Bureau Case CEPR-AP-2018-0001, August 14, 2018). We further assume, consistent with PREPA's existing contract with

approximately \$4 billion. We assume that this generation build-out will require new natural gas import facilities in San Juan and on the eastern coast of Puerto Rico; we assume that the small amount of natural gas needed to convert the existing combustion turbines at Mayaguez could be trucked from San Juan. Based on previous PREPA estimates, we assume that a natural gas import terminal of sufficient scale at San Juan would cost at least \$525 million.³⁵ We assume \$350 million for the eastern natural gas infrastructure.³⁶

We assume that natural gas prices are indexed to the Henry Hub, and we use the Energy Information Administration's 2018 Annual Energy Outlook forecast for Henry Hub prices through 2050. To account for the costs of gasification, shipping and the restrictions of the Jones Act, we increase the Henry Hub price by 15% and add \$6 per MMBTU.³⁷ This results in a price of \$10.50 per MMBTU in 2020, in line with the \$10/MMBTU price that PREPA expects to pay for natural gas at San Juan in 2019.³⁸

We assume that the existing power purchase contracts for the AES coal plant, the EcoElectrica natural gas plant, and various renewable energy facilities continue at current pricing levels.³⁹

EcoElectrica, that there is a minimum dispatch level of 54% for contracted natural gas combined cycle power plants.

³⁵ If the import terminal is designed so that the natural gas plants proposed for the north (including the converted units at San Juan and assuming that natural gas is transported from the north to Mayaguez) can be operated at 75% capacity factor, 135,000 MMBTU per day of natural gas delivery would be required. PREPA estimates the cost of a 130,000 MMBTU per day terminal at \$525 million, plus annual operation and maintenance of \$45 million. (See: Siemens, "PREPA PREC Technical Conference" presentation, Puerto Rico Energy Bureau Case CEPR-AP-2018-0001, August 14, 2018)

³⁶ PREPA estimates that the cost of a natural gas pipeline from Costa Sur to Aguirre would be \$184 million; based on distance, we estimate approximately double the cost to build a pipeline to Yabucoa. (See: Siemens, "PREPA PREC Technical Conference" presentation, Puerto Rico Energy Bureau Case CEPR-AP-2018-0001, August 14, 2018)

³⁷ PREPA modeled natural gas costs for the Aguirre Offshore Gas Port at $1.15 \times \text{HH} + \$4/\text{MMBTU}$. These adders are consistent with recent U.S.-based LNG prices plus transportation to Puerto Rico. However, PREPA currently pays more for natural gas from Trinidad because Jones Act restrictions effectively prohibit importation of natural gas from the United States. (José Javier Pérez, "José Ortiz alega que es posible bajar la factura eléctrica en un 40%", *El Nuevo Día*, August 9, 2018.)

³⁸ PREPA, Motion in Compliance with Order, Puerto Rico Energy Bureau Case No. CEPR-2018-AI-2018-0001, August 16, 2018.

³⁹ Data on contract costs per kWh from January 2017 through May 2018 were obtained from PREPA's 2019 rate case filings. Over this period, the AES coal plant averaged 10.8 cents/kWh, the EcoElectrica gas plant averaged 12.2 cents/kWh, and the renewable energy contracts averaged 17 cents/kWh. (Puerto Rico Energy Bureau Case No. CEPR-AP-2018-0002, "PREPA's Compliance Filing for Items Due July 13, 2018," August 24, 2018). Although the certified Fiscal Plan calls for PREPA to achieve savings from its current power generation and renewable contracts through processes of renegotiation, the lack of any regular reporting on PREPA's progress to achieve its budgetary goals makes those initiatives at high risk of not materializing at the dollar level or within stated timeframes.

Transmission and Distribution Concession Assumptions

We assume \$9.4 billion in capital expenditures are required for the transmission and distribution (T&D) system, of which \$2.4 billion will be provided by the concessionaire over the next five years. The remainder will be federally funded.⁴⁰ We also assume \$260 million in annual expenses for transmission and distribution system maintenance, and a 2% operational fee to the concessionaire.⁴¹

The results of our T&D modeling are a cost of 2.2 cents/kWh for the T&D capital expenditures, which is consistent with the PREPA Fiscal Plan.⁴²

Financial Assumptions

Financial Risks

IEEFA assumes that a developer seeking financing for a public private partnership deal in Puerto Rico as it comes out of bankruptcy would achieve a CCC rating for the project.

The CCC rating assumes a high likelihood that interest payments will not be made. To establish a stronger rating, some or all of the following credit criteria would need to be met: a reasonable expectation of economic growth; professional management and evidence of constructive relations with a strong independent regulator; budgetary controls and a track record of achieving targets and regular, transparent reporting on progress toward goals; no or highly restricted covenants on legacy debt; and the participation of a AA or AAA rated utility with a first lien on revenue willing to take a risk. The partnership contracts face the following financial risks:

- Puerto Rico's economy is weak and likely to remain so for most of the next decade.⁴³
- Puerto Rico's electricity demand is likely to decline as more residents and businesses turn to renewable energy as a more reliable and affordable source of electricity.
- PREPA or its successors' debt capacity will be constrained by the priority treatment accorded its legacy debt.⁴⁴ The most recent agreement calls for

⁴⁰ This is consistent with PREPA's August 1, 2018 Fiscal Plan at p. 48.

⁴¹ PREPA spent an average of \$260 million a year on T&D maintenance from FY 2012 to FY 2016. While expenditures declined over this period, we also note that the transmission and distribution system was in a state of extreme disrepair prior to Hurricane Maria. (Expert Report of Jeremy Fisher and Ariel Horowitz, Puerto Rico Energy Bureau Case No. CEPR-AP-2015-0001, November 23, 2016).

⁴² PREPA certified Fiscal Plan, August 1, 2018 at page 48, footnote 4.

⁴³ Antonio Weiss, Brad Setser, and Desmond Lachman, "Puerto Rico Needs a Better Debt Deal," Bloomberg, October 8, 2018.

⁴⁴ See Financial Oversight and Management Board for Puerto Rico, "Unanimous Written Consent Approving Execution of Preliminary Restructuring Agreement of Puerto Rico Electric Power Authority," July 30, 2018. Furthermore the actual relationship between any first lien covenants attached to the transition charge for legacy debt and any new private equity agreements is fraught. The private equity sector is experiencing its own internal weaknesses, which may

the first 2.636 cents/kWh of every rate dollar to go to past debt, with debt costs rising to more than 4 cents per kWh in the future. This plan, if approved has a high likelihood of default. In July 2018, Moody's Investor Service estimated that PREPA's creditors would achieve a recovery rate of less than 35%.⁴⁵

- PREPA's strategy compounds Puerto Rico's, PREPA's and investor risk by piling on a set of new liabilities using a very sketchy privatization mechanism. A future event of default⁴⁶ by PREPA will deepen the political and legal quagmire of creditor claims for both privatization investors and bondholders. In normal corporate transactions considerable time and attention is paid to instances of cross-default and other potential default complexities stemming from future distress.⁴⁷ There has been virtually no public discussion of what will actually occur when PREPA defaults again on its bonds or on a privatization agreement. The presumed protections offered to legacy bond holders through a first lien Transition Charge⁴⁸ may be an insufficient protection. An event of default would create another politically charged environment. A court would have to weigh whether to pay legacy bondholders or risk a humanitarian crisis by cutting payments to those providing a basic necessity that is a matter of life and death. Market confidence in Puerto Rico and PREPA's adherence to written agreements⁴⁹ have been shattered by the multiple defaults involved in the current crisis.
- Puerto Rico's fiscal operations are currently governed by the Financial Oversight and Management Board. The Commonwealth and its subsidiaries have certified fiscal plans monitored by the board. The relationship between

actually serve to weaken any privatization transaction and any future bond deals for PREPA. See discussion in: Moody's Investor Service, *LBO credit quality is weak, bodes ill for next downturn*, Sector-In-Depth, October 18, 2018. (PBC: 1142403)

⁴⁵ Moody's Investor Service, *U.S. Municipal Bond Defaults and Recoveries 1970-2017*, July 31, 2018, (PBM 1110152), pg. 84.

⁴⁶ Moody's has kept PREPA on negative outlook even after the recent agreement with some of its bondholders. The deal faces execution risks related to creditor acceptance and the weakness of the Puerto Rico economy. Moody's Investor Service, Opinion, Puerto Rico Power Authority, Update Credit Analysis, December 14, 2018 (PBM # 1154806).

⁴⁷ There are a plethora of issues that require time and attention when there are relatively simple debt relationships. See, for example: B. Erens, S. Friedman, K. Mayerfield, "Bankrupt Subsidiaries: The challenges to the parent of legal separation," *Emory Bankruptcy Developments Journal*, Vol. 25, 2008.

⁴⁸ Moody's Investor Services, Puerto Rico's Energy Commission Approves PREPA Rate Hike, A Credit Positive, Issuer Comment, June 30, 2016 (PBM # 190790).

⁴⁹ See the specific references made to the Puerto Rico situation in: Moody's Investor Service, *U.S. Municipal Bond Defaults and Recoveries, 1970-2017*, Data Report, July 2018 (PBC # 1110152). "We have now seen several significant situations where municipal bonds, although secured by formal legal pledges of revenue, are displaced in bankruptcy, receivership or simple default in favor of pensions that have no such formal pledge or revenue claim. The evidence of the few large municipal bankruptcies to date suggests that pledge still matters by providing bondholders a seat at the restructuring table. The stronger the pledge, the stronger the negotiating position as the bankruptcy settlement proceeds, and the stronger the ability to minimize any loss. The fact that creditors for Puerto Rico COFINA and general obligation bondholders must argue and negotiate with each other should lay to rest any notion that legal pledge provides a priori protection", p.10.

the board and the leaders of the Commonwealth has been divisive and contentious. There is likely to be substantial slippage of both the revenue and expense initiatives in the fiscal plan. The inability to achieve fiscal balance will weigh negatively on Puerto Rico's economic recovery.

- The Island's governance has produced a privatization structure that ensures minimal long term regulation and maximum political interference, as discussed in Section 2 of this report. The risk of significant political interference in established tariffs or other terms of agreement are high,⁵⁰ even after the deals are signed. The Commonwealth has recently weakened its utility regulatory apparatus to ensure that political control takes precedence over sound professional management.⁵¹

Debt

We assume that private investors finance generation and transmission infrastructure with a 60/40 debt/equity split.

IEEFA assumes that the developer is likely to charge the Island and its ratepayers 11% for debt. Currently CCC rated debt interest rates fall within the range of 9.6% to 13.8%.⁵²

Puerto Rico could benefit from a partnership with a highly rated entity that could, under optimal investment conditions, bring the rate on a CCC bond down considerably, perhaps as much as 4 percentage points. The risks in Puerto Rico, however, mitigate against a reduction of this size. A strong financial partner is likely to protect its credit position with its own covenants, which could include a substantial premium on any money invested into the project.

The P3 Authority recently announced the four qualified bidders for the T&D system, three of whom are U.S.-based utilities (Duke, Exelon and PSEG). While these utilities have credit ratings ranging from BBB to A-, significantly higher than CCC, we anticipate that the parent utility would ring-fence its subsidiary doing business in Puerto Rico and lend to that subsidiary at a rate reflective of the risks in Puerto Rico.

Equity

IEEFA sets the return on equity at 17%, reflecting the potential of Puerto Rico to attract a developer with substantial assets of its own. Equity levels are set by developers based upon perceived risk. The risk of a new privatization energy project in Puerto Rico is high for all of the factors identified in this report. Some high risk developers have demanded as much as 25% return on equity for controversial projects in distressed economic conditions and a history of political instability.⁵³

⁵⁰ Reuters, "Bulgaria approves power price cut deal with ContourGlobal," August 27, 2015.

⁵¹ Kunkel and Sanzillo, "Latest Puerto Rico utility privatization plan is as flawed as the original," IEEFA, June 19, 2018. R. Slavin, "Puerto Rico's resistance may slow Oversight Board, restructuring," The Bond Buyer, January 3, 2019.

⁵² Wall Street Journal, "Tracking Bond Benchmarks," Retrieved on January 18, 2019.

⁵³ "Armenian model for 'New Kosovo'," Gazeta Express, February 5, 2015.

The project should receive some tariff support from the Puerto Rico government that could bring down the rate. Depending on the sponsor and the timing of the deal, the points could come down slightly.

IEEFA estimates that this investment would be speculative and potentially financeable as an opportunistic investment by the right company.⁵⁴ Such investments can range from approximately 17% to as high as 25%.

Corruption

Our model includes a 10% corruption tax⁵⁵ due to the non-transparent contracting process underway for the privatization of PREPA, a process that is consistent with the recent history of expensive contracting irregularities and poor contracting oversight at PREPA, as described in Section I.B of this report.

The oversight report by the FOMB's independent investigator Kobre and Kim also documents PREPA's excessive level of political hiring and the misuse of revenues received from bond issuances.⁵⁶

Given this history, we anticipate that the PREPA privatization process will produce contracts that are similarly above-market and favorable to private interests at the expense of PREPA ratepayers.

Other Cost Assumptions

To arrive at the final retail rate, we add costs of \$90 million for customer billing, \$150 million for administrative and general expenses, and \$50 million in bad debt expense, in line with PREPA's recent expenses for these line items.⁵⁷ We assume the

elimination of all contributions in lieu of taxes, which in FY 2018 amounted to \$316 million,⁵⁸ because private electric companies will be paying territorial taxes.⁵⁹

⁵⁴R. Della Croce and J. Paula, "Financing Trends in Infrastructure, Risk and Returns, the OECD Green Survey," OECD, November 3, 2016 at page. 10. See also discussion of opportunistic investments in BlackRock, "Infrastructure Rising," March 3, 2016 at p. 6.

⁵⁵ A 10% cost is relatively conservative. Studies show that actual cost savings are achieved from the introduction of procurement reforms. For example, one controlled study of government procurements that switched from negotiated bidding to competitive bidding have shown savings as high as 35%. (See: D. Newman, E. Barrette, K. McGraves-Lloyd, "Medicare competitive bidding program realized price savings for durable medical equipment purchases," *Health Affairs*, Vol. 36, No. 8, August 2017).

⁵⁶ Kobre & Kim, *Final Investigative Report to the Financial Oversight and Management Board of Puerto Rico*, August 20, 2018.

⁵⁷ In FY 2016, "customer billing expenses" were \$88 million and "Administrative and General Expenses" were \$154 million. Bad debt expense was \$56 million. (PREPA Exhibits E-6 and F-1, Puerto Rico Energy Bureau Case No. CEPR-AP-2015-0001, May 27, 2016).

⁵⁸ PREPA, *Monthly Report to the Governing Board*, June 2018, p. 21.

⁵⁹ We assume a territorial corporate tax rate of 18.5%.

Legacy Debt

PREPA has approximately \$9 billion in outstanding legacy debt, not counting its unfunded pension liability.⁶⁰ We assume that this debt is repaid with an initial surcharge of 2.6 cents/kWh, according to the most recent preliminary debt restructuring agreement released by the Federal Oversight and Management Board in July 2018.⁶¹ This agreement, if ratified, could push the legacy debt charge as high as 4.3 cents/kWh over time.

Table 1 summarizes the total cost of privatization under our base case scenario.

Table 1: Total 2024 All In System Costs Assuming Privatization Initiatives and Total Sales of 13,290 GWh

	Total Cost (\$M, 2018)	Cents/kWh
Generation	\$2,270	17.1
Transmission & Distribution	\$490	3.7
Administrative Operations	\$290	2.1
Legacy Debt	\$350	2.6
Corruption Tax	\$200	1.5
Total	\$3,590	27

Sensitivities

We considered several sensitivities around key model assumptions that could cause rates to be either lower or higher than our base case. Developments that could drive rates lower than our estimate are a smaller build-out of new generation and higher electricity sales. We also considered the possibility that higher natural gas prices could drive rates up. In all cases, rates are equal to or higher than the 20 cents/kWh guideline established by the FOMB for affordability, before including any payment for legacy debt.

Less Generation Build-out

Our model, following the assumptions described in Section II, significantly overbuilds the generation system. Under our base case scenario, Puerto Rico has about 4800 MW of generation available to meet peak demand and an estimated

⁶⁰ Puerto Rico Energy Commission Case No. CEPR-AP-2016-0001, "The PREPA Revitalization Corporation's submission of information in compliance with the Commission's resolution and order of April 18, 2016," April 25, 2016.

⁶¹ Financial Oversight and Management Board for Puerto Rico, "Unanimous Written Consent Approving Execution of Preliminary Restructuring Agreement of Puerto Rico Electric Power Authority," July 30, 2018.

peak demand in FY 2024 of 2400 MW, or a reserve margin of 100%. The result is that the new natural gas combined cycle plants are underutilized. This is a likely outcome of the privatization process currently underway. PREPA's Fiscal Plan projects declining electricity sales through FY 2023, a trend which is likely to continue if the Commonwealth Fiscal Plan's projection of negative GDP growth through the late 2020s proves accurate.⁶² Such a scenario requires careful planning for the retirement of existing generation and a build-out of new generation in small increments in order to minimize the risk of stranded costs. Such planning is unlikely, since the privatization process established by Law 120-2018 allows for privatization transactions to be exempted from PREPA's long-term Integrated Resource Plan. In addition, private companies looking to establish business in Puerto Rico would likely prefer new large-scale projects.

In an alternative scenario where less generation is built (approximately 3500 MW available to meet peak demand in 2024, but keeping the focus on building out natural gas), the overall rate is 24.3 cents per kWh including legacy debt (in 2018 dollars).

Higher Sales

The Fiscal Plan's sales forecast forms the basis for our baseline scenario. However, we note that actual FY 2018 sales were 7% higher than projected by the PREPA Fiscal Plan. It is highly uncertain whether these gains will persist in future years; we note that Moody's has a much more pessimistic outlook than the Puerto Rico Commonwealth Fiscal Plan. Nevertheless, we conducted a sensitivity analysis with 10% higher sales in 2024. This lowers the rate to 24.8 cents/kWh.

Fuel Prices

The EIA's scenario for Henry Hub natural gas prices, which forms the basis for our fuel price forecast, assumes a compound annual growth rate in real natural gas prices of 1.3% per year, with natural gas prices not exceeding \$5 per MMBTU until 2050. This is a very conservative assumption that does not appear to take into account the financial weaknesses of oil and gas exploration and production companies in the United States. As detailed at length elsewhere⁶³, shale gas drilling at current prices is not financially sustainable and depends on the willingness of Wall Street to continue lending to shale drilling operations, despite their inability to finance themselves through operations.⁶⁴ If U.S. interest rates rise significantly, or if lenders collectively step back from lending to the sector (as they have periodically threatened to do), there is a risk that prices could rise significantly.

⁶² Commonwealth October 23, 2018 Fiscal Plan at p. 32. PREPA August 1, 2018 Fiscal Plan at p. 32.

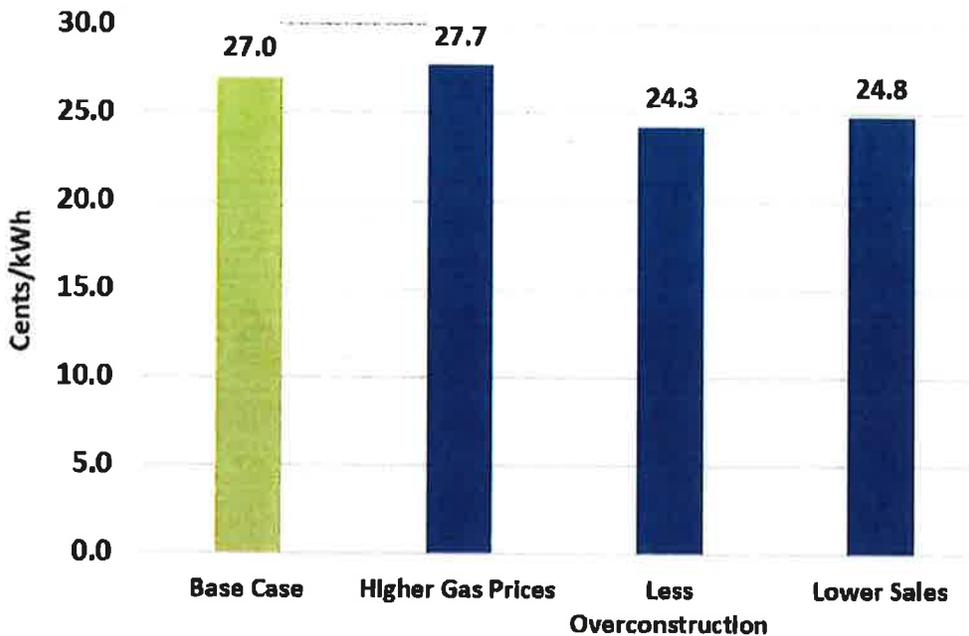
⁶³ K. Hipple, T. Sanzillo and C. Williams-Derry, "More red flags on fracking," IEEFA and Sightline Institute, December 2018.

⁶⁴ B. Olson and L. Cook, "Wall Street tells frackers to stop counting barrels, start making profits," Wall Street Journal, December 13, 2017.

As a sensitivity, we consider a scenario in which natural gas prices are 10% higher than the EIA forecast in FY 2024. This results in a higher overall rate in FY 2024 of 27.7 cents/kWh.

The following graph summarizes the results of our sensitivity analysis:

Figure 2: IEEFA Estimate of Cost of Privatization In Base Case and Sensitivities (In 2018 Dollars)



Other Risks of Privatization

Our financial model does not capture other risks in the current PREPA privatization process, including:

- 1. The risk of locking into fossil fuel infrastructure.**

Our baseline scenario builds two new natural gas import terminals and 1250 MW of new natural gas generation. Under thirty-year contracts, as assumed here, these contracts will expire around 2050, making it impossible for the government of Puerto Rico to achieve its stated goal of 100% renewable energy by 2050. Even if the contracts were shortened to twenty years, this would require transforming two-thirds of the island's electricity supply in the space of ten years— from 2040 to 2050— to achieve 100% renewable energy.

- 2. Crowding out of distributed energy.**

After Hurricane Maria, there is greater recognition of the value of microgrids and distributed generation to provide power in the aftermath of a catastrophic event. Micro- and mini-grids like those in Adjuntas and Mayaguez provided critical community services. In the year since Hurricane Maria, the installation of rooftop solar systems nearly doubled, and the majority of these systems included battery backup for resiliency.⁶⁵

Despite the widespread public consensus favoring microgrids and distributed renewable energy in the aftermath of Hurricane Maria, the privatization process underway favors the continued reliance on a centralized generation system. The projects that have been publicly mentioned as part of the privatization are all utility-scale projects. And by entering into long-term contracts with minimum dispatch levels, PREPA or its successor will have an incentive to maintain electricity consumption above those minimum levels, which could lead to erecting barriers to make it more difficult for customers to self-generate their own power.

Additionally, the proposed debt restructuring for PREPA, while independent of the privatization process, would likely also create incentives to discourage distributed generation. By imposing a per kWh charge to recover legacy debt, the proposed deal would create political pressure on PREPA or its successor to limit the amount of grid defection. Indeed, even the FOMB has recognized the difficulties inherent in this situation. In explaining their rejection of a prior deal that called for 85% repayment of the legacy debt, members of the FOMB pointed out that those legacy bondholders “would be guaranteed repayment of remaining debt through an electricity surcharge. If demand for electricity continues to decline, the surcharge will have to rise to compensate the creditors. The Prepa [sic] proposal and its guarantee to current creditors would increase costs to ratepayers while leaving new investors—the ones Prepa [sic] needs to transform its operations—assuming all the risk. Private investors would not involve themselves with Prepa [sic] on those terms, meaning the company would lack the capital to modernize.”⁶⁶

In other words, in addition to its high costs, the privatization threatens to undermine key long-term goals of resiliency and sustainability (as embodied in the 100% renewable energy by 2050 goal).

Limits to Law 120’s Privatization Approach

As noted in the introduction, there is ambiguity around the use of the word “privatization” in relation to Puerto Rico’s electrical system. A pure privatization of the electrical system is impossible; the public sector will always have a role. Even under the current privatization plan, the Fiscal Plan calls for \$7 billion of public (federal) investment in transmission and distribution infrastructure and continued public ownership of transmission and distribution assets. Electric rates will continue to be regulated by a state regulator. And it is likely that the state will grant

⁶⁵ R. Kern, “Rooftop solar nearly doubles in Puerto Rico after Hurricane Maria,” Bloomberg BNA, September 20, 2018.

⁶⁶ Andrew Biggs, Arthur Gonzalez, Ana Matosantos, and David Skeel, “Privatize Puerto Rico’s Power,” Wall Street Journal, June 29, 2017.

holders of legacy debt a first lien on rate dollars to ensure repayment. Meanwhile the current “public” model involves significant contracts with privately owned power plants.

The question therefore is not whether or not to “privatize” PREPA, but rather what ownership and governance structure(s) best results in modernizing and depoliticizing the electrical system to achieve the policy goals of affordability, resiliency and 100% renewable energy by 2050.

As detailed in the previous sections, the Law 120 privatization model is unlikely to achieve these ends. Our model suggests that the current privatization plan is likely to result in higher rates, unless there are additional public subsidies (in the form of loan guarantees, interest rate subsidies, or otherwise), which are not being publicly discussed. (It is telling that two recently proposed and abandoned private energy projects in Puerto Rico – the Energy Answers incinerator and the Aguirre Offshore Gas Port – both sought federal subsidies.⁶⁷) Moreover, the privatization model is likely to overbuild the centralized generation system, creating a barrier to the development of distributed energy resources. And, the emphasis on contracts for new natural gas infrastructure is inconsistent with the 100% by 2050 renewable energy goal.

Furthermore, Law 120 appears unlikely to result in the hoped for depoliticization of the electrical system. The management of the generation, transmission and distribution system by private entities will do little to depoliticize the system if the contracts themselves are entered into via a non-transparent, politically driven process, as Law 120 facilitates.

In short, while it is clear that the governance of the electrical system requires major reform at the same time as significant investments are made in physical infrastructure, the Law 120 privatization initiative – gutting the idea of a rationally planned electrical system in favor of a piecemeal series of contracts – looks more like a continuation of the current problems with PREPA rather than the needed introduction of professional, transparent and responsible management.

Alternative to Privatization

If the goal is to modernize and depoliticize the electrical system, there are other options besides Governor Rosselló’s privatization initiative. In particular, the current privatization plan fails to explore other potential low-cost sources of capital investment. Loans through the USDA’s Rural Utilities Service (RUS) are used across the United States to finance publicly owned power infrastructure. PREPA has used RUS as a source of financing in the past.⁶⁸ The proposed Energy Answers waste-to-energy incinerator in Puerto Rico also sought financing from RUS. Electric

⁶⁷ USDA Rural Development, “Arecibo Waste To Energy Generation and Resource Recovery Facility,” <https://www.rd.usda.gov/publications/environmental-studies/impact-statements/arecibo-waste-energy-generation-and-resource>; Eva Llorens Velez, “PREPA may be too deep in Aguirre Offshore Gas Port to look at other options,” Caribbean Business News, December 28, 2016.

⁶⁸ PREPA, Notes to Combined Financial Statements, June 30 2001 at p. 18.

cooperatives – recently authorized by 2018 legislation in Puerto Rico – would have access to RUS financing as well. Currently RUS loans have an interest rate of up to 5%, with programmatic repayment schedules up to 35 years.^{69,70} In addition to utilizing the RUS programs several co-lending institutions exist with other low interest lending opportunities, for example the National Rural Utility Finance Corporation, the Cooperative Finance Corporation and CoBank. Depending on loan size, credit quality of the borrower and general interest rate conditions, these lenders can provide financing in the range of 1.3% to over 8.0%.⁷¹

The Congressional Research Service also notes that at least some government entities in Puerto Rico are eligible for the USDA's High Energy Cost grant program, which provides grants for generation, transmission and distribution infrastructure, as well as energy efficiency.⁷² This could be particularly relevant to municipalities that are already attempting to create their own municipal electric utilities.

Financial cooperatives, which collectively in Puerto Rico have more than \$8 billion in assets, could be another source of financing. And reform of PREPA's subsidies (which amounted to an estimated \$170 million in FY 2017⁷³) could potentially free up a small amount of capital for energy investments.

Any alternative to the Law 120 privatization should establish a clear public policy priority for investment in renewable energy, distributed energy and energy storage to meet the 100% renewable energy by 2050 goal, supported by a professional energy planning process with a strong public participation component.⁷⁴

With regard to depoliticizing the governance of the electrical system, one approach would be a court-appointed independent private sector inspector general (IPSIG) charged with improving the management of the authority. An IPSIG would have be empowered to investigate PREPA's operations, implement reforms to eliminate wasteful and/or illegal activity, and report violations of law to enforcement

⁶⁹ USDA Rural Development, "Electric Infrastructure Loan & Loan Guarantee Program," <https://www.rd.usda.gov/programs-services/electric-infrastructure-loan-loan-guarantee-program>

⁷⁰ For a somewhat dated understanding of how the programs function and how high risk situations are addressed see: U.S. Government Accountability Office (GAO), "Rural Utilities Service: Loan origination policies and procedures for generation and transmission loans," February 10, 2000; U.S. GAO, "Rural Utilities Service: Status of electric loan portfolio," August 17, 1999; and U.S. GAO, "Rural Utilities Service: Risk assessment for the electric loan portfolio," March 30, 1998.

⁷¹ For a practical understanding of the rates charged, size of loans and how they fit into an overall debt portfolio of a BBB- Cooperative see: Oglethorpe Power Cooperative, 2017 Form 10-K.

⁷² USDA Rural Development, "High Energy Cost Grants," <https://www.rd.usda.gov/programs-services/high-energy-cost-grants>; Congressional Research Service, "Repair or Rebuild: Options for electric power in Puerto Rico," November 16, 2017.

⁷³ Expert Report of Paul Chernick, Puerto Rico Energy Bureau Case No. CEPR-AP-2015-0001, November 17, 2016, p. 81

⁷⁴ Preliminary modeling results released by PREPA in October 2018 indicate that the near-term priority for electrical system investment should be renewable energy and storage. Because of modeling limitations, the preliminary results focus on utility-scale renewable energy.

authorities.⁷⁵ Once PREPA has been stabilized as a functional utility, reforms would be needed to significantly curtail the governor's power to appoint Board members, and the executive director should be hired via an open and transparent hiring process conducted by the Board.

Finally, the repayment of PREPA's legacy debt at the level currently proposed is not financially viable and will seriously impede the transformation of the electrical system. Not only does imposing this ongoing legacy debt surcharge drive rates to unsustainably high levels, but it also locks PREPA into its centralized generation model, as described previously. Even under a privatization scenario, a scheme that prioritizes repayment of a large fraction of the outstanding legacy debt would be problematic for attracting private capital, as recognized by members of the FOMB. The likelihood of successfully transforming PREPA under any ownership and governance structure is greatly enhanced by eliminating the ratepayer obligation to repay legacy debt.⁷⁶

As with the issue of the Whitefish contract, the Governor of Puerto Rico is pursuing a highly expensive course of action to address the Commonwealth's problems. Rather than use lower costs options, the Governor has decided to opt for highly expensive forms of private capital, which also insure that the Governor has more say over the contractors selected for the project.

We modeled a hypothetical alternative scenario, based on the sensitivity described above in which the generation system is still heavily based on natural gas but less overbuilt than our base case scenario (which under the privatization financing assumptions of the previous section resulted in a rate of 24.3 cents/kWh). We assume elimination of the legacy debt and that investment is funded from low-interest federal loans. The result is an electricity cost to consumers of 19.5 cents/kWh. This rate could be lowered still further by a reconfiguration of the generation system to emphasize more investment in energy efficiency and renewables.⁷⁷ However, the determination of the least-cost generation mix should be modelled through an integrated resource planning analysis. Our alternative scenario here illustrates the importance of access to low-cost public financing to bring electric rates to affordable levels, as well as the elimination from rates of PREPA's legacy debt.

⁷⁵ Hon. Margaret Finerty, "Monitorships, IPSIGs and Independent Investigations," International Association of Independent Private Sector Inspectors General, October 19, 2005.

⁷⁶ Bondholders have additional options for pursuing partial recovery of the legacy debt, including from insurers (on the approximately \$2.4 billion of outstanding legacy debt that is insured) and from claims against legal advisors, underwriters and financial advisors on the debt deals.

⁷⁷ Not including the cost of natural gas import infrastructure, the levelized cost of new natural gas plants in this scenario is 13 cents/kWh, whereas the levelized cost of new utility-scale renewable energy is 5 cents/kWh.

Conclusion

The system put in place by the various laws and regulations covered under the term “privatization” will result in a 2024 rate of 27 cents/kWh. The 2018 rate for PREPA customers was 22.7 cents/kWh. The long-term goal established in PREPA’s certified Fiscal Plan is 20 cents/kWh, which is based on restoring the electrical system to economic competitiveness. Under the proposed privatization, rates will go up, not down, and be 18% higher than existing system and 35% beyond the Fiscal Plan’s goal.

Further, the privatization plan is likely to produce an energy mix reliant on centralized generation that is not a path toward 100% renewable energy by 2050. The current privatization model will make it all but impossible for Puerto Rico to achieve its goals on affordability, resiliency and sustainability.

About IEEFA

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