

## Policy Brief

# Connecting the Dots of the Puerto Rico Electric Power System

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## INTRODUCTION

The performance of Puerto Rico’s electric power system has been deficient for many years now. For decades, the electric service provided by the Puerto Rico Electric Power Authority (“PREPA”) was inefficient, unreliable, and expensive, due to serial mismanagement, chronic corruption, rampant partisan politics, and the deferral of required maintenance and capital expenditures. The poor performance of the electric system intensified after PREPA’s bankruptcy and the widespread damage inflicted on the transmission and distribution network by Hurricane Maria, both in 2017.

During the last seven years the government of Puerto Rico has undertaken a massive effort to rebuild and modernize the system; privatize the operation and management of both the transmission and distribution grid and PREPA’s legacy generation assets; begin the twenty-five-year transition to generate 100% of the island’s electricity from renewable sources; and restructure PREPA’s financial obligations. Yet during the summer of 2024, most of these efforts to transform the electric power system appear to have been derailed, as the island was hit by rolling blackouts in the middle of one of the hottest summers in recent memory. Indeed, progress has slowed down almost to a standstill in some areas and, perhaps more worrisome, the government appears to be unable to discern a way to get out of the current quagmire.

Part of the problem is due to the sheer number of actors that have jurisdiction over at least one area of Puerto Rico’s energy system. As shown below, and in further detail [in this webpage](#), we have identified at least 14 entities at the federal and state government levels and from the private sector that have some influence or control over at least a part of the transformation process. The coordination and synchronization of work efforts among and between these entities has proven difficult and continues to be a challenge, even seven years after PREPA’s bankruptcy and Hurricane Maria.



Another factor that has contributed to the slowdown of the system’s transformation is that such transformation consists in reality of several, complex, in many cases multi-billion dollar projects, each with many moving parts and which, in many cases, partially interlock and overlap with the others.

## SHORT-TERM STABILIZATION

First on this complicated agenda is the current effort to stabilize the system in the short term. As the U.S. Department of Energy (“DOE”), and others, have noted, Puerto Rico’s electric system is functional but fragile. On the generation side, Genera PR states that on any given day as much as 57% of the island’s generation capacity could be unavailable due to either forced outages (many due to time use limitations for lack of compliance with environmental rules and regulations) or for scheduled maintenance. In fact, in its PR100 Final Report, the DOE found that “additional generation capacity is needed immediately—on the scale of hundreds of megawatts—to achieve system adequacy and minimize outages.” (PR 100 Final Report, p. xxxvi). On the transmission and distribution side, it is well known that a lot of work remains to be done and that there are significant deficiencies in the lower-voltage (38kv) transmission network and with voltage control in some geographic areas, among other critical issues.

Stabilizing the system is the number one priority in the short term because, as things stand today, a cascading power system failure cannot be ruled out in the immediate future. Just to be clear, we are not saying that such a failure will occur but rather that it cannot be ruled out at this time. Therefore, all efforts should be directed at eliminating or least minimizing that catastrophic risk in the short term.

## PERMANENT WORK TO REBUILD THE SYSTEM

At the same time that LUMA, Genera, and PREPA are working on stabilizing the system, projects to execute the permanent work to rebuild the damage caused by Hurricane Maria have been funded by FEMA (that is, FEMA has obligated funds for their execution) and according to COR3, at least 352 energy-related reconstruction projects are in some stage of execution. Yet, according to data also provided by COR3, while a total of \$13.5 billion has been obligated by FEMA for the permanent reconstruction of the system, only \$3.6 billion, or 27%, had been disbursed (spent) as of mid-September 2024. The situation is even worse with respect to the \$1.9 billion allocated by Congress to HUD’s CDBG-DR program for use in the reconstruction of the transmission and distribution system. According to recent press reports less than 1% of those funds have been spent.

To be fair, nobody expected this process to be finished in one or two years. However, according to most experts who have analyzed the execution of the reconstruction of the system, progress seems to have taken place at an unduly slow pace. We remind readers that this is due to several factors such as unduly burdensome bureaucratic requirements imposed on Puerto Rico by the Trump administration; FEMA’s decision to use an unproven process under section 428 of the Stafford Act to identify and approve funding for reconstruction projects; and the lack of coordination among and between federal and Puerto Rico government agencies, among other factors.

It is estimated that completing the permanent work to reconstruct the grid according to industry standards will take between 8 to 10 years and cost approximately \$21 billion. We note that according to the DOE, only \$15.4 billion of the \$21 billion required have been identified as of March 2024 (PR100 Final Report, p. 408). That \$15.4 billion amount includes spending for generation, transmission, and distribution system repairs and replacements, as well as on the Tranche 1 transmission network upgrades required to

connect the first group of utility-scale renewable generation providers. The source of financing for the difference of approximately \$6 billion is unknown as of the date of this document.

## TRANSITION TO 100% RENEWABLE GENERATION

The Puerto Rico Energy Public Policy Act of 2019 (“Act 17 of 2019”) requires that Puerto Rico meet 100% of its electricity needs with renewable energy by 2050. In order to reach that objective, Act 17 set the interim goals of 40% renewable generation by 2025; 60% renewable generation by 2040; the phaseout of coal-fired generation by 2028; and a 30% increase in energy efficiency by 2040.

By mid-2023, notwithstanding a significant increase in distributed solar PV generation (as opposed to utility-scale solar), only approximately 4% of the generation capacity available for the grid was from renewable sources. Furthermore, “achieving the 40% target by 2025 would represent an increase of at least 3 GW of additional renewable energy capacity if met with utility-scale solar” (PR100 Summary, p.1). According to the DOE, “deployment of renewables at a rate to achieve the 40% RPS goal would require a rapid rate of procurement of over 100 MW per month through 2025 from a level of minimal utility-scale build-out in recent years.” (PR 100 Final report, p. 229) This means that Puerto Rico is significantly behind schedule to meet the interim target of 40% renewable generation by 2025 and it is highly likely that Puerto Rico will miss this target.

Achieving this ambitious goal will require significant new investment to expand the transmission system; upgrade the distribution system; and replace all fossil fuel generation capacity with renewable generation during the next 25 years.

### Transmission System Expansion to Integrate Renewable Generation

In terms of the transmission system, the interconnection of new renewable resources will require the construction of new tie lines to the bulk power system in Puerto Rico. The DOE assumed different entities would be responsible for funding those costs:

1. As stated above, the Tranche 1 transmission network upgrade will be paid for with federal funds.
2. For subsequent tranches “transmission costs were assumed to be financed by third-party renewable development sponsors and thus included in power purchase and operating agreements (PPOAs) until 2028.”
3. Finally, commencing in 2028 PREPA **“was assumed to be in a position to finance these investments due to its exit from bankruptcy and ability to access capital markets.”** (PR100 Final Report, p. 408)

This means that private financing will have to be secured either via PPOAs or debt to be issued by PREPA. In both instances, these costs would be passed on to end customers through their bills. We also note that there is significant uncertainty regarding PREPA’s ability to issue new debt in the short to medium term. Right now PREPA does not have access to the capital markets as it is still undergoing a bankruptcy process. Given that situation, the DOE assumes PREPA will exit bankruptcy in 2024 and will have access

to the capital markets by 2028 and, thus, the ability to finance upgrades to the transmission and distribution system going forward from 2028.

In our view, this assumption could be overly optimistic for several reasons. First, it is by no means clear that PREPA will exit bankruptcy in 2024. Even if a Plan of Adjustment of PREPA's debt is certified by the Federal Court this year, several creditors have already indicated they will appeal such certification, potentially adding several years of litigation to this process.

Second, a restructured PREPA probably will be limited in its ability to issue new debt until the bonds issued as part of the current restructuring are paid in full. We don't know yet what legal and financial conditions PREPA will have to satisfy (in the form of financial covenants limiting new debt issuance and/or legal or structural subordination requirements) in order to issue new debt after 2028. Finally, any announcement regarding the issuance of new debt by PREPA will probably face significant backlash from customers and other stakeholders who remember waste and mismanagement at the old PREPA.

## **Distribution System Upgrades**

With respect to the upgrades to the distribution system, the DOE has stated that as new distributed energy resources ("DERs") and electric vehicles ("EVs") are deployed it will become necessary to upgrade parts of the distribution system. The DOE estimates there will be excess capacity and energy that cannot be integrated into the distribution system starting in 2037. For each scenario analyzed by the DOE, it assumed that these integration challenges would be mitigated by increasing the amount of bulk storage (batteries) on an incremental basis as renewable capacity expanded. This investment in incremental storage, which is expensive, was assumed to be procured via PPOAs. (PR100 Final Report, p. 409) This means that these costs will eventually be passed on to end customers through their bills.

## **Renewable Generation Capacity**

Finally, with respect to new generation capacity, utility-scale generation as well as bulk storage resources are expected to be procured via PPOAs. (PR100 Final Report, p. 416) With respect to rooftop systems, the DOE "did not assume how those systems would be paid for or whether any public or federal funds would be allocated to pay for them." (PR100 Final Report, p. 185)

Furthermore, we note that the DOE did not "examine any futures in which there is no central grid," even under the scenario that assumes the maximum adoption of DERs. (PR100 Final Report, p. 184) This means that in the world analyzed by the PR100 Study, there will always be fixed and variable costs that will have to be paid or financed by all ratepayers in connection with the operation, maintenance, and future upgrading of a central grid.

This last point is important in the context of deciding how much to compensate net metering customers for the electricity they export to the system. While it may be true that the massive adoption of solar rooftop systems would probably generate significant positive non-cash externalities due to the reduction of fossil fuel emissions, the fact remains that LUMA would have to incur cash expenditures to maintain and

operate the grid. Those costs should be allocated reasonably and fairly among all parties connected to the grid.

## Rooftop Solar and Utility-Scale Solar Generation

The points regarding rooftop solar systems and the viability of a fully decentralized grid are important because some environmental groups in Puerto Rico have advocated for executing the transition to 100% renewable generation using only rooftop solar systems with no central grid, essentially creating an island-wide network of independently-owned and managed mini-grids. Adopting that model could increase the risks of inducing delays and increasing the cost of the transition to 100% renewable power for at least two reasons.

First, according to Bent Flyvbjerg, Oxford University professor and author of *How Big Things Get Done* (Macmillan Business, 2023), using proven, reliable off-the-shelf technology is one of the keys to executing big infrastructure projects on time and within budget. Newer unproven technology is not necessarily better. As far as we know, no jurisdiction with Puerto Rico's population and industrial footprint has successfully accomplished a transition to 100% renewable power generation installing only rooftop solar systems on a decentralized grid (basically a grid made up of many mini-grids). Attempting to do so in Puerto Rico would increase the risk of execution failure significantly, as both delays and costs would probably increase over time and unexpected or unforeseen events occur along the way.

Second, according to Professor Flyvbjerg, *modularity* is another key to successfully executing large-scale infrastructure projects. Modularity, says Flyvbjerg, "is a clunky word for the elegant idea of big things made from small things. A block of Lego is a small thing, but by assembling more than nine thousand of them, you can build a scale model of the Colosseum in Rome. That's modularity." (How Big Things Get Done, p. 162) Modularity allows projects to get to scale fast, getting better, bigger, and cheaper as they do. It also enables experimentation. If something works, you keep it in the plan. If it doesn't you "fail fast" and adjust the plan. You get smarter, designs improve. It also radically reduces execution risk. (How Big Things Get Done, p. 163 and 187)

The idea, then, is to start with "a small thing, a basic building block. Combine it with another and another until you have what you need. **That's how a single solar cell becomes a solar panel, which becomes a solar array, which becomes a megawatt solar farm.**" (How Big Things Get Done, p. 157)

In this context, the idea of building out 700,000 rooftop solar systems to achieve the goal of 100% renewable generation *is the opposite of modularity*, as *each* rooftop system has to be custom-designed and built for each roof. Getting to scale will take longer, cost more, and eventually be subject to greater execution risk relative to using a modular approach.

To be clear, we not advocating for the elimination of rooftop solar systems from the portfolio of technologies to achieve the 100% goal. Rather, we are arguing for finding the right balance between rooftop solar systems and large utility-scale solar generation as Puerto Rico transitions to 100% renewable generation. In this respect, we note that the rollout of large-scale solar projects is currently about two (close to three) years behind schedule. This delay in turn impacts the decommissioning of the PREPA legacy fossil fuel generation as large units cannot be taken offline until their replacement is ready.

## FINANCIAL RESTRUCTURING

In July 2017, at the request of the Government of Puerto Rico, the Oversight Board filed a voluntary petition on behalf of PREPA for protection under Title III of PROMESA with the U.S. District Court. PREPA owes about \$9 billion in outstanding bonds, has an unfunded pension liability of \$3.8 billion, owes an additional \$700 million to fuel line lenders, and several million more to many unsecured creditors.

According to the PREPA 2023 Fiscal Plan, “without restructuring its debt and other liabilities, PREPA would need to repay approximately \$2.62 billion of scheduled legacy debt obligations over four years from FY2024 to FY2027 in addition to the roughly \$4.83 billion of unpaid past and currently due amounts through the end of FY2023.” (PREPA 2023 Fiscal Plan, p. 140) **Bringing PREPA’s unstructured debt obligations to funded status in the near term would require rate increases of approximately 6 to 7 ¢/kWh in real dollars in the FY24- 27 period.**

In the longer term, without any restructuring, PREPA’s estimated annual debt service obligation is approximately \$1 billion per year based on amortization of all long-term financial liabilities at a 5.25% interest rate over 20 years.” (PREPA 2023 Fiscal Plan, p. 140) **Under that scenario, the average residential customer who consumes 425 kWh per month would see its bill increase by approximately 26%.**

In June 2023, the judge presiding over the proceedings determined that (1) bondholders had a lien only on certain PREPA revenues that had been deposited in debt service accounts and (2) there were significant risks associated with other remedies they may seek (for example, the appointment of a receiver). Therefore, she reduced the amount of their claim to \$2.38 billion. About 25% of their original claim.

As expected a group of bondholders and other creditors appealed to the U.S. Court of Appeals for the First Circuit in Boston. The Court issued its opinion on June 12, 2024, and held that:

1. Bondholders have a non-recourse claim on PREPA’s estate for the full principal [face] amount of the bonds, plus matured interest; and
2. This claim is secured by PREPA’s Net Revenues — as that term is defined by the underlying bond agreement — and by liens on certain funds created by that bond agreement.

The Court did not decide what effect, if any, confirmation of a plan of reorganization will have on the bondholders’ security interest, nor did it attempt to estimate the economic value of that security interest.

Thus, the value of the bondholders’ *claim* is \$8.5 billion plus matured interest. However, the Court went on to state that “this is NOT to say that the Bondholders must be paid \$8.5 billion.” “Rather, it is to say that the Bondholders’ allowed claim on PREPA’s estate is in the order of \$8.5 billion.” (FOMB v. Cortland Capital, p. 58)

The Court was quite clear that the Bondholders’ claim is secured only to the extent of the value of the Bondholders’ interest in the Net Revenues and the Sinking and Subordinate Funds. They own “Special Revenue Bonds.” This means that when a default occurs the Bondholders have NO claim (recourse)

against the municipality's [Puerto Rico's] general fund or other non-pledged revenues or assets of the debtor (Section 927 Bankruptcy Code). **Thus, if the value of Bondholders' liens is less than the allowed claim amount, then the Bondholders are undersecured and they assume the risk that the revenues will not be enough to pay the bonds.** (FOMB v. Cortland Capital p. 61)

## **Paying PREPA Bondholders with Money from the General Fund is a Bad Idea**

This last point is why the proposal to pay off bondholders using funds from Puerto Rico's general fund is a bad idea for at least two reasons. First, under that scenario, Bondholders would be paid using funds to which they have no right either under the bond offering documents or Section 927 of the U.S. Bankruptcy Code, which was incorporated by reference into PROMESA through Section 301(a) of that law. Second, such payment would set a dangerous precedent that could be used by other public utility creditors to demand repayment by claiming funds to which they do not have legal rights or recourse.

## **OPERATIONAL RESTRUCTURING — LUMA**

On June 22, 2020, PREPA and the Puerto Rico Public-Private Partnerships Authority (the "P3A" or "Administrator") entered into an agreement for the Operation and Maintenance ("O&M" Agreement) of PREPA's Transmission and Distribution System ("T&D System") with LUMA Energy, LLC, ("ManagementCo") and LUMA Energy Servco, LLC ("ServCo", and together with ManagementCo, the "Operator").

Pursuant to the terms and conditions of the O&M Agreement, LUMA, among other things, is responsible for all electric transmission, distribution, load serving, and related activities for the safe and reliable operation and maintenance of the T&D system. These include system operator activities, engineering activities, maintenance of technical documentation, energy efficiency activities, planning, environmental and regulatory, legal services, and managing insurance and claims.

In exchange for providing those services, LUMA is entitled to receive certain compensation, depending on the execution phase of the O&M Agreement, as set forth in the chart below:

Compensation structure	Front-End Transition (FET)	Interim Period Operations under Title III Annual Fees	Initial Term (15 years) Annual Fees	Back-End Transition (BET) <sup>1</sup>
<b>Fixed Fee</b> Payable in monthly installments of 1/12 <sup>th</sup> of total fee	\$60 million <i>One-time fee</i>	\$115 million	\$70 million (Year 1) \$90 million (Year 2) \$100 million (Year 3) \$105 million (Year 4+)	None
<b>Incentive Fee</b> Annual cap with eligibility based on ability to achieve or exceed performance metrics	None		\$13 million (Year 1) \$17 million (Year 2) \$19 million (Year 3) \$20 million (Year 4+)	None
<b>Cost reimbursement</b> Invoiced monthly based on labor hours and reasonable and documented expenses	Costs associated with providing FET services: <ul style="list-style-type: none"> <li>Fully allocated labor costs and hours</li> <li>Reasonable and documented expenses incurred</li> </ul>	None	None	Costs associated with providing BET services: <ul style="list-style-type: none"> <li>Fully allocated labor costs and hours plus a 10% adder on total labor costs</li> <li>Reasonable and documented expenses incurred</li> </ul>

1 Transition services required to complete the handover of O&M services back to Owner or other successor operator upon expiration or early termination of the Term

Source: FOMB, PREPA Certified Fiscal Plan for Fiscal Year 2021, p. 55

## Effect of Supplemental Agreement

Right now, LUMA is operating in what is called the “Interim Period”, which will last, essentially, until the Title III case is finished. One of the conditions precedent to the effectiveness of the LUMA O&M Agreement is that PREPA’s debt restructuring be completed in a satisfactory manner. While the parties to the O&M Agreement could have agreed to waive that condition, the FOMB insisted on executing a Supplemental Agreement that provided for such waiver and other relatively technical amendments to the LUMA O&M Agreement.

The execution of the Supplemental Agreement and the creation of an “Interim Period” of operation apparently has caused some confusion among the public, leading some people to believe that the LUMA O&M Agreement is currently not in effect and LUMA is operating solely pursuant to the terms and conditions of the Supplemental Agreement. This is incorrect. Section 2.1 of the Supplemental Agreement states in the relevant part that:

**“The O&M Agreement, except as supplemented and amended by this Supplemental Agreement, is in full force and effect and is in all respects hereby ratified and confirmed.”**

You will rarely find a clearer sentence written by a corporate lawyer.

Furthermore, Section 3.1 clarifies that **“Operator shall perform all services with respect to the T&D System constituting O&M Services under the O&M Agreement (the “Interim Period Services”), notwithstanding the fact that the Service Commencement Date has not yet occurred.”**

Finally, another clause in that same Section 3.1 of the Supplemental Agreement, reiterates LUMA's obligation to perform all the O&M services in accordance with the terms and conditions of the LUMA O&M Agreement: **“Operator shall perform the Interim Period Services subject to the terms and conditions of the O&M Agreement, except as the same may be amended or supplemented by this Supplemental Agreement.”**

Given the clarity of the language of the Supplemental Agreement, it is simply baffling to us why people keep repeating the falsehood that the LUMA O&M Agreement is not currently in full force and effect.

Second, we note that LUMA's fixed annual fee is significantly higher under the Supplemental Agreement. For example, during FY21 it was \$115 million (see chart above), while under the LUMA O&M Agreement, it would have been \$70 million. The reason for this difference has never been made clear to us. In both cases, however, the annual fee is indexed to inflation using the CPI for the United States. Thus, the annual fee for FY24 should be approximately \$135 million.

## Failure to Define Key Metrics in the O&M Agreement

LUMA also could receive an Incentive Fee payment to the extent it achieves certain key performance metrics, as shown in the chart above. Unfortunately, these key performance metrics were not fully negotiated before the LUMA O&M Agreement was executed and entered into full force and effect. For some unknown reason, this crucial issue was left open and kicked down the road. Well, more than four years after the execution of the LUMA O&M Agreement, LUMA and the Puerto Rico Energy Bureau (“PREB”) have not yet reached an agreement on this important issue. CNE warned about the risks this scenario entailed when we published our [initial analysis of the LUMA O&M Agreement](#) back in August 2020.

What is clear is that the parties to the LUMA O&M Agreement entered into that Agreement based on certain premises shared by the parties and to achieve certain objectives that each of the parties wanted to realize. On the side of the Government of Puerto Rico, it is clear that it entered into the Agreement based on the premise that LUMA would be a more efficient operator of the T&D system (when compared to PREPA) and that such increased efficiency would generate significant savings for ratepayers in Puerto Rico. Specifically, the Government of Puerto Rico expected, at a minimum, that LUMA would:

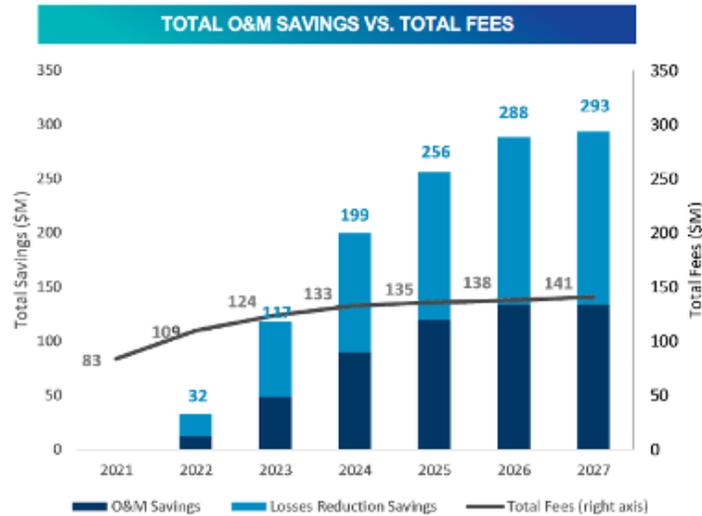
- Reduce the amount of energy lost during transmission and distribution;
- Reduce the costs of operating the grid;
- Reduce the frequency of service interruptions; and
- Reduce the duration of service interruptions.

With respect to the first two objectives, the P3A estimated significant savings to be achieved by fiscal year 2024, as shown in the chart below:

## FORECASTED LUMA SAVINGS (CONT'D)



- LUMA's total savings, from both O&M cost reductions and improvements in losses, are projected to reach \$293M annually by 2027 compared to an annual fee of \$141M, resulting in significant net savings to Puerto Rico on both an annual and cumulative basis.
- Cumulative net O&M savings total \$323M by 2027.
- Additional possible savings from better capital planning and management, and system operations – in addition to improved reliability and resiliency



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Source: P3 Presentation, June 2020

According to the P3A, LUMA would generate \$293 million in savings by FY27, compared to an annual fee of \$141 million, resulting in a net benefit to Puerto Rico of approximately \$150 million. **As of this writing, more than three years after LUMA took over the management of the T&D system, we are not aware of any analysis confirming or verifying whether LUMA has in effect generated the forecasted savings.**

Nor do we know of any statements by either the P3A or LUMA with regard to this issue, which in our view was the principal motivation to enter into the LUMA O&M Agreement, at least from the perspective of the Government of Puerto Rico. In the absence of the relevant information, we cannot reach any conclusions about this issue. But it is important to highlight that it is possible, if not outright probable, that LUMA may have failed to generate the forecasted savings, or any net savings [net of the annual Fixed Fee] for that matter, as of this writing.

With respect to the frequency and duration of outages, the most recent data published by the PREB indicates that both increased during FY23. In other words, the quality of the service, at least as measured by these two indicators, has gotten worse. In our view, this is the reason why there is so much frustration with LUMA at this moment. Just as in the case of the reconstruction after Hurricane Maria, we don't think any objective observer would have concluded that LUMA would solve Puerto Rico's transmission and distribution system problems in six months. But three years out (the first year was a transition period) people probably expected to see some progress, even if at a slow pace. Yet, the needle on these basic indicators appears to be moving in the other direction, that is, things are getting worse. **Therefore, as of this writing, it appears that the objectives the Government of Puerto Rico wanted to achieve with the LUMA O&M Agreement are not being realized.**

## Events of Default Under the LUMA O&M Agreement

It is in this context then, when (1) we don't know if LUMA has been able to operate the system more efficiently, reduce energy losses, and generate savings managing the T&D system; and (2) the quality of the service appears to be worsening, that some elected officials and other stakeholders have called for the cancellation or termination of the LUMA O&M Agreement.

Contracts usually can be terminated upon the occurrence of an event of default. In the case of the LUMA O&M Agreement, Section 14.1 describes each of the following as an Operator (LUMA) Event of Default:

1. Involuntary Bankruptcy;
2. Voluntary Bankruptcy;
3. Failure to Provide or Maintain the Guarantee (if not cured within five days of notification by the Administrator);
4. Failure to Perform a Material obligation (if not cured within 90 days of notification by the Administrator; but if the failure to perform is not curable then, under certain circumstances, it shall not constitute an event of default);
5. Failure to Pay (if not cured within 60 days of notification by the Administrator);
6. False or Inaccurate Representation or Warranty;
7. Failure to Obtain or Maintain Insurance (if not cured within 10 business days of notification by the Administrator);
8. Change of Control (not otherwise permitted by the O&M Agreement);
9. Illegal Transfer (not otherwise in accordance with the O&M Agreement);
10. Violation of Law (Operator is found or pleads guilty to certain crimes); or
11. Failure to Meet a Minimum Performance Threshold for three or more consecutive years (unless failure to perform is excused by Force Majeure, an Outage Event, or Owner's (PREPA's) fault)

## Termination of the O&M Agreement

Section 14.2, in turn, provides for the termination of the LUMA O&M Agreement in the case of a LUMA Event of Default. In general, this Section states that:

1. Upon the occurrence of an Event of Default due to involuntary bankruptcy, a voluntary bankruptcy, or a violation of law, the O&M Agreement **shall immediately terminate without further action by Administrator**; and
2. In the case of the occurrence of any other Event of Default by the Operator, the **Administrator** [the P3A] *"may terminate this Agreement upon not less than one hundred twenty (120) days prior written notice to Operator, subject, to the extent required by Applicable Law, to the prior approval of PREB or the FOMB (if then in existence)."*

3. However, the termination of the O&M Agreement pursuant to Section 14.2 does not limit or impair LUMA's "right to contest, pursuant to Article 15 (Dispute Resolution), whether an Operator Event of Default has occurred, or any of its other rights."

In our view, termination of the LUMA O&M Agreement upon a LUMA Event of Default, except in the case of a voluntary or involuntary bankruptcy or a violation of law by LUMA, would require the prior approval of the FOMB as long as (1) the FOMB is in existence and (2) PREPA continues to be a "Covered Territorial Instrumentality", as such term is defined in PROMESA, which, in turn, is expressly included in the definition of "Applicable Law" in the LUMA O&M Agreement.

## Additional Termination Rights

Section 14.5 provides additional termination rights to each of the P3A and LUMA in the following cases:

1. The Sale of the T&D System (upon 120-day prior written notice);
2. The Failure to Satisfy the Service Commencement Date Conditions;
3. A Force Majeure Event extends for more than 18 consecutive months (upon 120-day prior written notice); or
4. The Failure to Agree on a Budget during three or more consecutive years (upon 120-day prior written notice).

Finally, (1) **PREPA** has the right to terminate the O&M Agreement (upon 120-day prior written notice by PREPA) in the event that LUMA exceeds the approved Operating Budget during three or more consecutive years; and (2) **LUMA** has the right to terminate the O&M Agreement (upon 120-day prior written notice by the Operator) in the event of a change in Regulatory Law.

## Termination Fee

The O&M Agreement also provides for the payment of a termination fee by PREPA to LUMA in the event of:

1. The Commonwealth Puerto Rico enacts a law canceling or terminating the LUMA O&M Agreement;
2. Termination of the O&M Agreement by either LUMA or the P3A due to the sale of the T&D System; or
3. LUMA terminates the O&M Agreement due to certain changes in the applicable Regulatory Law.

In each of these cases, the termination fee to be paid would be equal to the sum of (a) the annual Fixed Fee and (b) the maximum Incentive Fee applicable for the Contract Year during which the O&M Agreement is terminated.

Section 14.6(c)(i) is clear, however, that **PREPA shall have no obligation to pay the termination fee in any case other than in the three cases described in the prior paragraph.** So it is not true that PREPA would have to pay a termination fee to LUMA in any and all cases if the O&M Agreement were to be

terminated by the Government of Puerto Rico. Such fee would be payable only in the three limited circumstances described in the immediately preceding paragraph.

Some stakeholders have argued that no termination would be payable to LUMA, even in the cases covered by Section 14.6(c)(i) of the O&M Agreement, because such payment would be subject to PROMESA's stay of creditor claims against PREPA.

In our view, this argument is incorrect for the following reason. Section 3.5 of the Supplemental Agreement states that:

**“All amounts payable by Owner to Operator hereunder and under the O&M Agreement during the Interim Period shall be deemed to be administrative expenses of Owner.”**

This is important because claims for administrative expenses, which are necessary to keep PREPA in operation, are not covered by the PROMESA stay. For example, EcoElectrica can charge and has a right to get paid for the electricity it may sell to PREPA on any given month.

Now let's assume, for argument purposes, that early in 2025 the Puerto Rico Legislative Assembly passes a bill terminating the O&M Agreement and the new governor signs it into law. In that case, if the Title III case is still ongoing and the Interim Period is still in effect, then LUMA's claim against PREPA for payment of the termination fee would not be covered by the PROMESA stay because (1) it would be an amount payable by the Owner pursuant to the O&M Agreement; (2) the claim would arise during the Interim Period; and (3) it would be deemed an administrative expense of the Owner pursuant to Section 3.5 of the Supplemental Agreement. Therefore, PREPA would have to pay the termination fee.

If on the other hand, PREPA has exited the Title III process by the time the hypothetical law terminating the O&M Agreement comes into effect, then the question regarding the applicability of the PROMESA stay would be moot, and PREPA would have to pay the termination fee as required by the plain text of Section 14.6(c)(i) of the LUMA O&M Agreement.

## Dispute Resolution

Finally, it is important to remember that in the case the Government of Puerto Rico claims that LUMA has incurred in an Event of Default, LUMA has the right to contest, pursuant to a Dispute Resolution mechanism set forth in Article 15 of the O&M Agreement, whether an Event of Default has actually occurred. In general:

- The Article 15 Dispute Resolution Process begins with a Notice of Dispute setting forth the subject of the Dispute Resolution Process. Once the Notice of Dispute is delivered, the Designated Persons of the parties have **30 days** to negotiate in good faith a solution to the dispute.
- If after 30 days of negotiations the dispute is still unresolved, then the parties have two options: (1) if it is a “Technical Dispute”, they must submit it to an independent expert who shall have **60 days** to make his determination, which shall be binding upon the parties; or (2) if it is a dispute other than a Technical Dispute, then the dispute could be referred to Mediation by either the Administrator or the Operator.

- If the parties choose Mediation, then the parties shall appoint a mediator, who shall have **90 days** to mediate the dispute. If the dispute is not resolved within 90 days, then the Mediation process shall be terminated.
- At this point either party may file a civil action seeking relief in the courts of the Commonwealth of Puerto Rico. It is not possible to forecast the duration of any civil litigation case, but it is safe to assume that any litigation regarding the termination of the LUMA O&M Agreement could last anywhere from several months to various years.
- If the government of Puerto Rico obtains a decision in its favor, subject to any appeals, then it could proceed to terminate the O&M Agreement.

If the government of Puerto Rico successfully terminates the O&M Agreement due to an Operator Event of Default it is entitled, depending on the reason for the termination, to receive payment from LUMA of the Owner Termination Fee, which is equal to \$20,000,000 in 2020 dollars, adjusted for inflation, if the termination occurs during the first five years of the term of the contract, or \$10,000,000 in 2020 dollars, adjusted for inflation, if the termination occurs on any other year thereafter.

The termination of the LUMA O&M Agreement pursuant to Article 14 would also trigger the clock on the Back-End Transition period, **which could last up to twelve months** and during which LUMA would wind up its operations and transfer them to a successor operator. PREPA would also be responsible for paying a Back-End Transition Fee to cover the cost of LUMA's operations during this period.

## OPERATIONAL RESTRUCTURING — GENERA

On January 24, 2023, the Puerto Rico Power Electric Authority ("PREPA" or the "Owner"), the Puerto Rico Public-Private Partnerships Authority (the "P3 Authority" or the "Administrator"), and Genera PR LLC (the "Operator" or "Genera"), executed the Puerto Rico Thermal Generation Facilities Operation and Maintenance Agreement (the "Generation O&M Agreement") setting forth the terms and conditions pursuant to which the Operator will operate, maintain, and eventually decommission certain Legacy Generation Assets owned by PREPA.

Genera is a wholly-owned subsidiary of New Fortress Energy ("NFE"). NFE, in turn, is "an integrated gas-to-power energy infrastructure company", whose "business model spans the entire production and delivery chain from natural gas procurement and liquefaction to shipping, logistics, facilities and conversion or development of natural gas-fired power generation."

Genera is being hired by PREPA, as owner of the Legacy Generation Assets, to provide (either directly or through subcontractors) four classes of services, namely: (i) the Mobilization Services, (ii) the O&M Services commencing on the Service Commencement Date, (iii) the Decommissioning Services, and (iv) the Demobilization Services. In exchange for providing those services, the Operator is entitled to receive certain compensation, subject to any applicable Incentive Payments or Penalties, during the term of the Generation O&M Agreement, which is initially expected to last ten (10) years.

The Generation O&M Agreement contains a fairly well-developed set of incentives, penalties, and performance metrics to evaluate the performance of the Operator. In this sense, the Generation O&M Agreement is an improvement over the LUMA O&M Agreement.

Indeed, the inclusion of measurable benchmarks, the requirement to engage in good faith negotiations with current PREPA employees, the cap on the fees that the Operator can earn during the Mobilization Period, and other requirements set forth in the Scope of O&M Services, for example, the obligation to develop a fully fleshed out communications plan *prior* to the handover of operations to the Operator, demonstrates that governments can and indeed do learn from prior experiences, notwithstanding what some critics may say or think to the contrary.

## Expected Savings from the Generation O&M Agreement

That being said, though, the fact remains that executing and entering into the Generation O&M Agreement makes sense only if the expected savings to be generated exceed the expected costs of the agreement. The government of Puerto Rico has stated that it expects to generate “significant savings” from transferring the operation and management of the Legacy Generation Assets to Genera. However, the evidence it offers to back up that assertion is rather thin.

According to a report prepared by FTI Consulting (Exhibit B to the P3 Report), Genera estimates achievable O&M savings of \$19 million per year, mostly from labor and more efficient maintenance activities. Genera also estimates fuel savings (without plant conversions or equipment replacement) of approximately \$85 million per year, which would come from:

- “Optimizing existing fuel contracts” (\$56 million);
- “Achieving better risk and credit terms on the existing oil contracts” (\$20 million); and
- “Making operational changes at the Legacy Generation Assets to increase fuel efficiency” (\$9 million).

Genera also “believes” that, subject to PREB approval, “there are additional fuel savings”, in excess of \$100 million, “achievable through fuel conversion of units”. . . These “conversions would involve commissioning of gas fuel operation for units that are dual fuel capable or conversions of units that are able to be converted.”

The “combined estimated savings from O&M and fuel range from \$100 million to \$200 million annually (including conversion savings if approved by PREB).” Those “savings would be shared 50%/50% between Genera and the electric ratepayers of Puerto Rico. That would result in \$50 million to \$100 million per year to Puerto Rico electric system customers.”

In sum, concludes FTI, “Puerto Rico is guaranteed a benefit and Genera’s incentive compensation pays for itself. Given the low fixed fee, high incentive fee component and the 50%/50% sharing of [the savings], Genera is more than motivated to perform and operate the plants well and as fuel-efficiently as possible.”

So, according to FTI’s analysis, this transaction is a clear win-win situation. We note, however, that there is significant uncertainty as to whether those savings would actually be realized given that they depend

upon the execution of some rather vaguely defined “efficiencies” and the “optimization” of existing contracts. Furthermore, even if these savings are realized, are they, in fact, significant?

According to an unaudited financial report prepared by PREPA’s management for its governing board, it spent approximately \$2.1 billion on fuel during fiscal year 2022, while total expenses for that year added up to \$4 billion. **Therefore, savings of \$100 million are equivalent to 4.7% of fuel expense and 2.5% of total expenses for that period.**

Those savings are *worth something* but they do not by any means represent a paradigm-shattering change.

Expected annual savings of \$100 million probably will not be enough to even fully offset the debt service on PREPA’s restructured bonds, which we estimate as follows:

- \$5 billion in new bonds (@50% reduction)
- 6% interest rate
- \$300 million annual debt service

## Inherent Conflict of Interest

Furthermore, the Generation O&M Agreement is problematic for at least two reasons. First, the Agreement clearly allows the conversion of oil burning units to burn natural gas as a cost-saving initiative (subject to PREB approval), which would be contrary to the stated public policy goal of fully transitioning to renewable fuels by 2050 and creates an incentive for Genera to enter into related party transactions with its parent company for the purchase of natural gas. To be fair, the Agreement set forth a process to address conflicts of interest. It remains to be seen whether that mechanism will be implemented effectively.

Second, by allowing the switch to natural gas as a fuel cost-saving measure, the Generation O&M Agreement confronts Genera with a set of potentially incompatible incentives. On one hand, Genera gets to keep 50% of any fuel savings generated by its implementation of *any* Fuel Cost Savings Initiative. On the other hand, Genera keeps 50% of any savings it generates when the process of decommissioning a legacy asset ends up costing less than originally budgeted. **This creates a disincentive for Genera to move quickly on the decommissioning of legacy assets, which at the end of the day will be the principal source of savings from this Agreement over the medium to long term.**

However, we note that the Generation O&M Agreement has been in effect for only a little more than 18 months. So we don’t have enough data yet to pass judgment on Genera’s performance. Nonetheless, we need to keep an eye on how it addresses the conflict of interest inherent in the Generation O&M Agreement, under which a subsidiary of a fossil fuel company has been hired to decommission PREPA legacy assets and facilitate the build-out of large-scale renewable energy generation.

## CONCLUSIONS AND NET ASSESSMENT

Given all of the above, we reach the following conclusions:

- **First Priority:** The stabilization of the electric system should be the number one priority in the short term.
- **Risk of a Cascading Power System Failure:** given the current state of the system, the occurrence of a catastrophic event cannot be ruled out in the short term (2-3 years) unless drastic corrective measures are implemented soon.
- **LUMA O&M Agreement:** it appears that the objectives the Government of Puerto Rico wanted to achieve with the LUMA O&M Agreement are not being realized.
- **It is Complicated:** We are facing a cluster of complex multi-year, multi-billion dollar projects, each with many moving parts. **Successful completion is probably beyond the current execution capability of the Puerto Rico government.**
- **Who is in Charge?:** Coordination and execution problems remain with no real solution in sight.
- **There are Many Tradeoffs:** But it is unclear who makes the decisions and the criteria upon which they should be made to address these tradeoffs.
- **Cost:** All of these processes are very expensive and we are still missing about \$5 billion to finish the reconstruction of the grid and an additional \$8 to \$10 billion for the transition to 100% renewable generation.
- **Risk of Grid Defection/Death Spiral** – Under several of the scenarios modeled by the DOE, the volume of electricity sales declines faster than the total cost required to serve customers. This cycle is called a “utility death spiral” and while a complete utility death spiral has yet to be experienced in the U.S. electricity sector, in the case of Puerto Rico this risk cannot be ruled out.
- The DOE vaguely hinted as much when it stated that “PR100 analyzed a highly centralized utility in a future that was increasingly comprised of distributed and decentralized electricity resources which were neither owned nor controlled by the utility. Our analysis illustrates the implications of this seemingly dichotomous future: utility costs could not be reduced as quickly as retail sales resulting in higher retail rates.” (PR100 Final Report, p. 446)

The most likely scenario, in our view, is the following:

- Slow progress on grid reconstruction limits progress on the transition to renewables.
- Dependency on fossil fuels, mostly natural gas, increases just to keep the lights on.

- The combination of those factors creates a chain of delays in the transition to 100% renewable generation, followed by failed and expensive efforts to catch up, followed by more delays and more spending on failed efforts to catch up. The transition to renewable generation languishes.
- PREPA's debt restructuring results in a rate increase of 4 to 5 cents per kWh to pay legacy debts.
- Savings from LUMA and Genera O&M Agreements are not realized to the full extent of the original forecast, if at all.
- Grid defection increases due to higher rates and an unreliable grid.
- An increase in net metering customers further destabilizes the grid in certain areas of the island and leads to even higher rates.
- By 2027/28 average rates exceed 35 cents/kWh. Puerto Rico is far behind the milestones to reach the 100% goal by 2050.