October 4, 2021

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House Committee on Natural Resources
Congress of the United States
Washington, DC 20515

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Written Testimony for Hearing on the PREPA Post Implementation of the LUMA Transmission and Distribution Contract

Dear Chair Grijalva and Members of the House Committee on Natural Resources,

On behalf of the groups listed in the attachment to this letter, we appreciate the opportunity provided by the House Committee on Natural Resources to testify and submit written comments on the PREPA Post Implementation of the LUMA Transmission and Distribution Contract. As further explained below, the groups joining this testimony have substantial concerns with both the LUMA Energy operation of the electric system and the control that LUMA Energy proposes to wield over federal funds for electric system work in Puerto Rico.

We urge the House Committee on Natural Resources to investigate PREPA's Transmission and Distribution System Operation and Maintenance Agreement with LUMA Energy, LLC and the role of the Federal Oversight and Management Board in the imposition of the LUMA contract and the Puerto Rico electric crisis. We ask this Committee to urge the Federal government to earmark the historic and once-in-a-lifetime amount of Federal Emergency Management Agency ("FEMA") funds allocated for the Puerto Rico electric system for on-site and rooftop solar and battery systems and energy efficiency programs that will provide life-saving electric service to the residents of Puerto Rico. Multiple studies have shown the viability,

reliability and economic benefits of rooftop solar and storage in Puerto Rico.[1] Last year, the National Renewable Energy Laboratory concluded that is rooftop solar more than sufficient to power local areas, solar energy sited on rooftops are offsets and reduce the overall amount of energy needing transmission and distribution. According to that study, Puerto Rico has the potential to produce four to five times as much solar energy than is needed to meet its current residential demand. More than a decade ago, the University of Puerto Rico found that solar is "the least environmentally intrusive." Because Puerto Rico followed the Los Angeles model of development and urbanization, with housing sprawl and shopping malls, we have what we call "rooftop resource." The report recommended generating power locally through solar and, in certain cases, creating microgrids, such as for high-rise buildings. More recently, Cambio PR and the Institute for Energy, Economics and Financial Analysis set out a plan to achieve 75 percent renewable power generation in 15 years. Solar energy deployment in Puerto Rico is expected to create nearly 20,000 jobs by 2030.[2]

The Government of Puerto Rico has $9.6B allocated by FEMA at its disposal to solve the current energy crisis in Puerto Rico by deploying rooftop solar and storage. Instead, in the 10 Year Infrastructure Plan, the Government of Puerto Rico is requesting around $14B in federal funds for the electric system, most of which would be for transmission and new gas-fired plants and nothing for renewables.[3]

I. "Hurricane LUMA", LUMA's generation numbers don't add up

The Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement dated June 22, 2020 between the Puerto Rico Electric Power Authority as Owner, the Puerto Rico Public-Private Partnerships Authority as Administrator, Luma Energy, LLC as

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[1] Meghan Mooney & Katy Waechter, *Puerto Rico Low-to-Moderate Income Rooftop PV and Solar Savings Potential*, National Renewable Energy Laboratory (2020), https://www.nrel.gov/docs/fy21osti/78756.pdf; *Estudio de Integración de Recurso Solar Distribuido en Puerto Rico, Sol + Techos*, Cambio PR (2021), https://cambiopr.org/solmastechos/#downloads; Ingrid M.Vila Biaggi et al., *We Want Sun and We Want More (Summary)* (2021), https://cambiopr.org/wp-content/uploads/2021/03/Modeling-Study-Fact-Sheet-03_21.pdf; *Puerto Rico Distributed Energy Resource Integration Study: Archieving a Renewable, Reliable, and Resilient Distributed Grid*, Telos Energy (December 2020), https://cambiopr.org/wp-content/uploads/2021/03/Puerto-Rico-Distributed-Energy-Resource-Integration-Study-Telos-Energy.pdf; *Puerto Rico Distribution Modeling*, EE Plus (2021), https://cambiopr.org/wp-content/uploads/2021/03/Puerto-Rico-Distribution-Modeling-EE-Plus.pdf; Puerto Rico Distributed Energy Resource Integration Study: Load, Energy Efficiency, and System Cost, Energy Futures Group (2021), https://cambiopr.org/wp-content/uploads/2021/03/Puerto-Rico-Distributed-Energy-Resource-Integration-Study-Energy-Futures-Group.pdf; *Achievable Renewable Energy Targets ("ARET") ch. 4 Solar Resource*, https://www.uprm.edu/aret/docs/Ch_4_Solar_resource_and_solar_thermal.pdf), Agustín A. Irizarry-Rivera et al., *Achievable Renewable Energy Targets ("ARET")* (2008), https://bibliotecalegalambiental.files.wordpress.com/2013/12/achievable-renewable-energy-targets-fo-p-r.pdf.

[2] Interstate Renewable Energy Council (IREC), Solar Workforce Development (2021), https://irecusa.org/programs/puerto-rican-solar-business-accelerator/solar-workforce-development/

[3] Updated 10-Year Plan, submitted July 6th in PREB docket NEPR-MI-2021-0002, p. 15. https://energia.pr.gov/wp-content/uploads/sites/7/2021/07/20210706-Joint-Motion-Submitting-Updated-10-Year-Infrastructure-Work-Plan.pdf

ManagementCo, and Luma Energy Servco, LLC as ServCo (the LUMA contract) is a long, expensive and exclusive scheme that creates a private monopoly over energy transmission, distribution, generation dispatch, customer service, planning and all other electric system functions with the exception of operation of the generation plants. Under the contract, PREPA must use ratepayer funds to pay LUMA a service fee that ranges from $83 million to $125 million per year, in addition to LUMA's costs, so-called Operator T&D Pass-Through Expenditures, some capital expenses and expenses during outage events. LUMA has no obligation to invest its own funds. LUMA has already exceeded its budget and is recently requested a rate hike notwithstanding its deficient service. Puerto Rico ratepayers have already shouldered four rate increases this year alone.[4]

Since LUMA Energy took over the operation of the electric system, Puerto Rico has suffered constant power outages, destructive voltage fluctuations, fires caused by electric malfunctions where hundreds of thousands of Puerto Rico electric consumers have been deprived of electric service for extended periods of time.[5] People have taken to calling the frequent and

[4] *Últimos ajustes por compra de combustible y energía: un ABC*, Microjuris, Oct. 1, 2021, https://aldia.microjuris.com/2021/10/01/que-significa-el-ajuste-por-compra-de-combustible/.

[5] Partial list of articles published in Puerto Rico media on LUMA:

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José Rafael Hernández, *Reclaman a LUMA Energy atienda los problemas de electricidad en Caguas*, June 17, 2021, http://www.presenciapr.com/reclaman-a-luma-energy-atienda-los-problemas-de-electricidad-en-caguas/.

Luis Penchi, *Municipio de San Juan activa brigadas ante problemas con LUMA*, July 12, 2021, https://www.elforodepuertorico.com/municipio-de-san-juan-activa-brigadas-ante-problemas-con-luma/.

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PIP pide investigar deficiencias operativas de LUMA, Noticel, June 11, 2021, https://www.noticel.com/legislatura/ahora/pip/politica/20210611/pip-pide-investigar-deficiencias-operativas-de-luma/.

Istra Pacheco, *LUMA confronta problemas con la facturación a clientes*, Sept. 29, 2021, https://www.elvocero.com/gobierno/agencias/luma-confronta-problemas-con-la-facturaci-n-a-clientes/article_adee728a-1c11-11ec-a567-470d7815aba2.html

Cathy Kunkel, *Retrasos, daños y mal servicio: los dos primeros meses de LUMA Energy ponen de relieve los defectos de la privatización*, Aug. 16, 2021, https://ieefa.org/retrasos-danos-y-mal-servicio-los-dos-primeros-meses-de-luma-energy-ponen-de-relieve-los-defectos-de-la-privatizacion/

Eliván, Martínez, *Apagones empeoraron desde la entrada de LUMA, reconoce un documento de la empresa*, Sept. 30, 2021, https://periodismoinvestigativo.com/2021/09/apagones-empeoraron-desde-la-entrada-de-luma-reconoce-un-documento-de-la-empresa/.

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Yaritza Rivera, *Reconocen problemas de LUMA Energy*, El Vocero, Aug. 3, 2021, https://www.elvocero.com/gobierno/reconocen-problemas-de-luma-energy/article_307e48bc-f48d-11eb-b865-ef16ecc194b3.html.

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Gerardo Alvarado, *Fallas en el sistema de facturación de LUMA Energy frenaron un aumento mayor para los consumidores*, Sept. 22, 2021, https://www.elnuevodia.com/noticias/locales/notas/fallas-en-el-sistema-de-facturacion-de-luma-energy-frenaron-un-aumento-mayor-para-los-consumidores/.

Vuelven los cacerolazos: protestan contra LUMA y constantes apagones, Telemundo, Sept. 28, 2021, https://www.telemundopr.com/noticias/puerto-rico/vuelven-los-cacerolazos-protestan-contra-luma-y-constantes-apagones/2263504/.

extended outages, "Hurricane LUMA". Lately, LUMA has alleged that the outages are attributable to lack of generation from the PREPA power plants. The documented evidence disproves LUMA's excuses about its deficient service. On January 29, 2021, the Puerto Rico Electric Power Authority ("PREPA") filed a report with the Puerto Rico Energy Bureau that provides a breakdown of electricity generation resources and energy demand. The report, titled Emergency Management KPI Dashboard, reflects that electricity demand was at 1960 MW, compared to the maximum capacity of the generating units in service of 3,361 MW with installed capacity of the units at 4596 MW. Moreover, according to the report, PREPA has additional units that could be placed into service with an extra maximum capacity of 935 MW and with an installed capacity of 1,722 MW.[6] We are aware that many of the plants no longer function at the original-installed capacity. Considering only functional capacity of the plants, a simple mathematical exercise shows that PREPA's excess generating capacity of at least 1401 MW, plus 935 MW from the units that were not in service but are functional. Although demand is higher in the summer months, PREPA still has excess generation capacity and sufficient reserves. Puerto Rico has about twice the available electricity capacity compared to peak (maximum) energy demand.

In a motion dated September 8, 2021, LUMA Energy submitted a report to the Energy Bureau that indicates that available capacity was 3245 MW.[7] While the figure is less than PREPA's earlier filing this year it is still more than enough generation to cover peak demand which LUMA estimates is 2750 MW.

Under the contract between the PREPA and LUMA Energy, LUMA is charged[8] with determining which plants inject or dispatch energy into the transmission and distribution (T&D) system to provide electricity to customers and not leave any residence, business, industry, government agency or public lighting without electric service. The malfunction of part of the Palo Seco plant and Unit 1 of the Aguirre Power Complex, which has a maximum capacity of 400 MW (installed capacity of 450 MW), allegedly affected by sargassum, making them inoperative still leaves enough generation available to supply energy demand if the remaining PREPA units are placed in service. Another alternative that LUMA has at its disposal to avoid outages is to lower peak demand by working with large customers to use their own self-generation units, totaling about 234 MW, at peak times.[9] Why has LUMA Energy failed to dispatch the available PREPA units as required by the contract or use demand response alternatives? Does the fact that dispatching peaker units increases costs have something to do

[6] See, Motion to Present Status and Final Progress Report and Request for Release of Order at 23; Mocion-para-Presentar-Reporte-de-Estatus-y-Progreso-Final-y-Solicitud-de-Relevo-de-Orden-NEPR-AP-2020-0001-1.pdf
[7] See, Motion Submitting Slides Projected by LUMA During Technical Conference of September 3, 2021, Motion-Submitting-Slides-Projected-by-LUMA-During-Technical-Conference-of-September-3-2021-NEPR-MI-2021-0014.pdf
[8] The Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement, June 22, 2020 at 35, 42, 73, https://www.p3.pr.gov/wp-content/uploads/2020/06/executed-consolidated-om-agreement-td.pdf.
[9] PREPA estimated that large customers had 234 MW of self-generation in Slide 15 of PREPA's presentation during Panel A of the Integrated Resource Plan evidentiary hearing. See, Autoridad de Energía Eléctrica, January 2020 Earthquakes: Effect on Existing Resources, https://app.box.com/s/fuvsx24ceblv64drlskvohiru8thsywt.

with LUMA's decision? Does the fact that the Government of Puerto Rico has asked FEMA to fund new "natural" methane gas plants in Palo Seco and throughout Puerto Rico or the government's intention to sell the plants to private investors or both have anything to do with not dispatching the existing units?

This is analogous to the situation in 2020, when the earthquakes damaged the two large units at the Costa Sur (810 MW) and part of the EcoElectrica plant. The PREPA Executive Director at the time, Jose Ortiz claimed there was insufficient generation capacity in the system. The Energy Board approved the issuance of a request for proposals for temporary generation to be financed by FEMA. Civil society groups opposed the RFP as a waste of funds because PREPA had peaking units available to cover the demand. In the end, the case was withdrawn and no new temporary generation was required.[10]

We are aware that PREPA's maintenance budget has been decreasing in the past few years and that this may have led to lack of funds to maintain cooling water intake structures to prevent sargassum from clogging the filters at the Aguirre Power Complex.[11] We ask the Commission to investigate the role of the Federal Oversight Management Board (FOMB) which controls and must authorize changes in PREPA's budget.

Another way that LUMA could limit outages would be to expedite resolution of the pending interconnection requests for rooftop solar and storage made by the relatively few residents of Puerto Rico that can afford to finance the cost of these systems.[12] However, LUMA is delaying even those ready-to-go requests. These rooftop solar and storage installations, although only available to the privileged few could also contribute to alleviating energy demand from the centralized grid and thus reduce the incidence of outages. LUMA has exacerbated the crisis by failing to allow timely interconnections of rooftop solar systems; LUMA has a backlog of more than five thousand systems still to be interconnected, and the Puerto Rico Energy Bureau is considering issuing daily fines of $1,000 until LUMA clears the backlog.[13]

The electricity crisis manufactured by LUMA Energy and the government of Puerto Rico not only inflicts economic costs, it can also cost lives.

II. Disaster Recovery Funding

FEMA disaster recovery funds allocated to PREPA present a unique opportunity to provide a lifeline to Puerto Rico residents and businesses with rooftop solar and battery energy storage. The investment by PREPA of federal funds allocated to it for rooftop solar and storage systems through a transparent process for large-scale deployment of renewable energy

[10] Expedientes – NEPR, NEPR-AP-2020-0001.
[11] Laura M. Quinter,
[12] See, Máximo Solar Industries, Inc. Vs. Autoridad de Energía Eléctrica de Puerto Rico, Docket No. NEPR-QR-2020-0029, https://energia.pr.gov/expedientes/?docket=nepr-qr-2020-0029.
[13] Puerto Rico Energy Bureau Resolution & Order, August 6, 2021, Docket NEPR-MI-2019-0016, https://energia.pr.gov/wp-content/uploads/sites/7/2021/08/20210806-MI20190016-Resolucion-y-Orden.pdf.

technology achieves three primary goals: 1) provide access to energy resilience, equity and justice, especially for lower-income sectors of the population; otherwise, most people in Puerto Rico would not be able to obtain loans or leases for solar systems and batteries; 2) establish a uniform procedure through the public corporation, together with local talent and organized communities to accelerate the installation of solar and storage systems at or near the place of consumption/use; and 3) break the cycle of repeated destruction and reconstruction of the vulnerable long-distance transmission system that often disrupts power service in Puerto Rico and avoid the waste of federal taxpayer funds on a transmission system that will be devastated by future hurricanes.

Puerto Rico is at a crossroads with respect to its electric system. One of the main issues confronting the territory is whether to use FEMA funds to double down on rebuilding antiquated 20th century infrastructure or to embark on the creation and construction of a 21st century electric system, based on laws that require the Puerto Rican government to shift to renewable energy and enable Puerto Rico residents to participate in this essential public service. Over 97% of Puerto Rico's electric energy comes from burning fossil fuels.[14] The Queremos Sol civil society proposal ("We Want Sun," queremossolpr.com), endorsed by the groups joining in this testimony vigorously calls for the transformation of the Puerto Rico electric system as a public service including PREPA governance and the technology that empowers citizen participation as "prosumers" — producers and consumers of energy to achieve resiliency to the more frequent and intense hurricanes brought on by the climate crisis. Civil society in Puerto Rico favors rooftop solar as opposed to land-based utility scale projects that impact scarce agricultural land, ecological sensitive areas and open spaces.

Because PREPA and the Commonwealth of Puerto Rico are in bankruptcy, FEMA funds are the only viable way in which Puerto Rico can achieve its Renewable Portfolio Standard, renewable energy goals, and attain accessible electric rates. Financing of new power purchase agreements with PREPA as a credit counterparty would entail prohibitively high interest rates and financing costs that would lead to skyrocketing of the already astronomical electric rates that are currently about double the average U.S. rate.

Section 404 ("Hazard Mitigation") of the Stafford Act, as amended by the Disaster Recovery Reform Act of 2018 (Public Law 115-254, Oct. 5, 2018), provides that "The President may contribute up to 75 percent of the cost of hazard mitigation measures which the President has determined are **cost effective and which substantially reduce the risk of, or increase resilience to, future damage, hardship, loss, or suffering in any area affected by a major disaster** or any area affected by a fire for which assistance was provided under section 420. Such measures shall be identified following the evaluation of natural hazards under section 5165 of this title…and shall be subject to approval by the President." Stafford Act Sect. 404(a); 42 USC 5170c(a). Some of the projects to rebuild Puerto Rico's electric grid are proposed as hazard mitigation measures that must be guided by the goal of minimizing future damage to that grid and the suffering that results from such damage. Accordingly, FEMA is required to perform a cost-effectiveness analysis prior

[14] U.S. Energy Information Administration (EIA), *Puerto Rico – Territory Profile and Energy Estimates Overview*, https://www.eia.gov/state/?sid=RQ.

to funding projects such as those proposed by the Government of Puerto Rico. The Cambio-IEEFA study cited above shows that rooftop solar and storage is more cost effective than the projects proposed by the Government of Puerto Rico.

The current plan for FEMA funds would not only perpetuate dependence on the existing fossil fuel plants, but actually fund construction of new fossil fuel plants in Puerto Rico: the very first three very first three "Notable Projects" in PREPA's Updated 10-Year Plan are new gas-fired plants.[15] PREPA senior executives have indicated that the funds for methane gas infrastructure and the reconstruction of the current T&D system will come from federal sources. Implicit in this approach is the presumption that the people of Puerto Rico will be getting a "free lunch" and that they can request large sums for infrastructure of doubtful utility and security because it is paid by the federal government and ultimately, taxpayers. This reflects a mentality of dependence driven by the methane gas/LNG industry and corporations that sell fossil generation units. The "free" methane gas infrastructure would tie Puerto Rico to methane gas-burning plants for decades and endanger public health and safety, almost certainly requiring repeated injections of federal funds to restore transmission lines downed, time and again, by storms and earthquakes.

A true understanding of three points: price, reliability, and resiliency leads to the conclusion that FEMA funds should be invested in rooftop solar and storage to provide ratepayers accessible, reliable, and resilient energy.

> Price: Multiple studies, cited in this testimony have shown the economic viability and benefits of rooftop solar and storage in Puerto Rico. The avoidance of transmission system costs makes rooftop/on-site solar more viable than centralized generation. Transmission costs represent a huge opportunity cost that displaces investments in renewables. Furthermore, fossil-fired plant externalities are imposing costs on environmental justice communities and increasing the social cost of carbon in Puerto Rico.
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> Reliability: The studies cited in this testimony demonstrate that a grid powered by rooftop solar and storage is more resilient, reliable and affordable than one powered by large, centralized plants. In the meantime, PREPA's dashboard of its system showed generation capacity, enough to meet peak load with the necessary reserve margin– when dispatched properly. Puerto Rico does not need new gas-fired plants.
>
> Resiliency: The Puerto Rico grid depends on vulnerable long-distance transmission to provide power to northern Puerto Rico, especially the San Juan metropolitan area. Electrons from the plants in the south did not reach San Juan for months after Hurricane Maria: this demonstrates the vulnerability of the T&D system vertical poles, lines, towers

[15] New Black Start at Costa Sur, Emergency Generation at Yabucoa, Thermal Generation Feasibility Study at Palo Seco. Updated 10-Year Plan, submitted July 6th in PREB docket NEPR-MI-2021-0002, p. 15. See, https://energia.pr.gov/wp-content/uploads/sites/7/2021/07/20210706-Joint-Motion-Submitting-Updated-10-Year-Infrastructure-Work-Plan.pdf.

and substations to hurricanes and multiple other natural events.[16] Rebuilding and hardening the T&D system will not provide the resilience of rooftop solar and storage. These alternatives also have the advantage of avoiding impacts to scarce agricultural land, ecological sensitive areas, and open spaces. These alternatives also have the advantage of avoiding impacts to scarce agricultural land, ecological sensitive areas and open spaces.

Law No. 550, the Land Use Plan Act, as amended by Law No. 6 of January 3, 2014, requires guaranteeing that a minimum of 600,000 acres of agricultural land are reserved. The Land Use Plan and all planning instruments must establish a process to ensure that land suitable for agricultural production and animal husbandry is preserved. Puerto Rico has lost about 133,000 acres of agricultural land every five years, according to census data between 2002 and 2007. Agricultural land in Puerto Rico was reduced from 584,987 cuerdas/acres in 2012 to 487,774 acres in 2018, equivalent to a loss of 17% , or an annual loss of 16,202 acres. According to Dr. David Sotomayor Ramírez, Professor of Soils at the College of Agricultural Sciences of the University of Puerto Rico, Mayagüez Campus, most countries dedicate at least 41% of the area to agriculture, compared to 22% of Puerto Rico.

III. LUMA Energy Control Over Federal Funds, Conflicts of Interests and Potential Self-Dealing

The LUMA contract grants LUMA Energy control over federal funds assigned for the Puerto Rico electric system as detailed below.

1. LUMA participates and has veto power in the selection of the federal funds grant manager. Contract Section 1.1, page 17.
2. LUMA can request changes or modifications to the federal funding, including modifications to, or reallocations between, the project worksheets related to the T&D System prepared by FEMA pursuant to Section 428 of the Stafford Act or the Integrated Resource Plan. Contract Section 4.3 (j) Pages 50-1.
3. LUMA, in conjunction with the Administrator determines that capital improvements are done to maximize the potential realization of the federal funding anticipated or received. Contract Section 5.9, Page 70.
4. LUMA has "complete flexibility, subject to compliance with the Contract Standards and prior consultation with, but not subject to approval by, Administrator or PREB, to (i) reallocate, accelerate or postpone expenditures within the approved Operating Budget, (ii) reallocate, accelerate or postpone expenditures within the approved Capital Budget – Federally Funded, subject to the Federal Funding Requirements,"…Section 7.3, Page 89.

[16] In 2005, Congress determined that rebuilding these lines over and over was not a cost-effective strategy: "…electric power transmission and distribution lines in insular areas [including Puerto Rico] are inadequate to withstand damage caused by the hurricanes and typhoons which frequently occur in insular areas and such damage often costs millions of dollars to repair;" 48 U.S.C.A. § 1492(5).

5. LUMA and its subcontractor will "deal with federal funds management" to manage "longterm recovery using federal funding on behalf of the Owner". Page Annex II-39, Page (pdf) 207.
6. LUMA Energy, LLC, was created by Quanta Services and ATCO, an affiliate of Canadian Utilities these companies are expected to benefit from the billions of dollars in federal funds. LUMA's parent company, Quanta Services plans to "compete for work associated with Puerto Rico's electric T&D system modernization efforts that are separate from its ownership interest in LUMA", "expected to be funded by U.S. federal disaster relief agencies and managed by LUMA."[17]
7. The contract states that the Operator (LUMA) will work with IEM (as its subcontractor) to manage federal funds.
8. LUMA establishes a governance framework to manage longterm recovery using federal funds on behalf of PREPA. (VII. Federal Funds Procurement Manual).
9. LUMA may request changes or modifications to federal funding (including modifications or reassignments between project worksheets related to the T&D system prepared by FEMA pursuant to Section 428 of Stafford Act) or the Integrated Resource Plan. (LUMA contract page II-39, pdf 207).
10. **Luma Energy objects to PREPA using funds allocated for the electric system by FEMA and other federal agencies to install rooftop solar systems and batteries**. LUMA and its affiliated companies Quanta and ATCO plan to use the funds for transmission projects. In a proceeding before the Energy Bureau, one of the LUMA Energy representatives, Lee Wood, falsely alleged that FEMA would not allow the use of funds for behind the meter generation, that is, located in the residence or business of the consumer, mainly rooftop solar.[18] Several recent communications from members of Congress belie LUMA's allegations.[19]

[17] "Quanta believes there is opportunity for it to compete for work associated with Puerto Rico's electric T&D system modernization efforts that are separate from its ownership interest in LUMA. Puerto Rico's electric T&D system is at a critical juncture after the destruction caused by Hurricanes Maria and Irma. As a result, the government of Puerto Rico, through the P3 and in collaboration with PREPA, have embarked on a plan to rebuild, modernize, harden and "green" its power grid, a majority of which is expected to be funded by U.S. federal disaster relief agencies and managed by LUMA. The P3 estimates that more than $18 billion of electric T&D capital investment could be required through 2028 for this initiative." Quanta Services and ATCO-Led Consortium Selected by the Puerto Rico Public-Private Partnership Authority for the Operation and Maintenance of Puerto Rico's Electric Power Transmission and Distribution System, https://investors.quantaservices.com/news-events/press-releases/detail/277/quanta-services-and-atco-led-consortium-selected-by-the.

[18] In the recording of the proceedings before the Energy Bureau, Luma's representative tries to argue that PREPA cannot use the FEMA funds assigned to it to install solar systems with batteries for its subscribers. See, https://www.youtube.com/watch?v=oGYujWJ8S7s (minute 1:49).

[19] José Delgado, Alexandria Ocasio Cortez, Nydia Velázquez y Charles Schumer reclaman priorizar la energía renovable en Puerto Rico, Feb. 25, 2021, https://www.elnuevodia.com/corresponsalias/washington-dc/notas/alexandria-ocasio-cortez-nydia-velazquez-y-charles-schumer-reclaman-priorizar-la-energia-renovable-en-puerto-rico/.

IV. Environmental and Climate Justice

The LUMA contract establishes that the grid work must "align" with the Grid Modernization Plan, which is the Puerto Rico government's proposal to rebuild the existing grid rather than transform the electric system to provide the resilience that would make the difference between life and death in the face of disaster and shock events. PREPA's Transmission and Distribution System Operation and Maintenance Agreement with LUMA Energy promotes the operation of centralized generation that lacks the life-saving resiliency of distributed renewable energy and storage and perpetuates environmental injustice. Rebuilding the T&D system to connect to these plants perpetuates their operation.

In addition to Executive Order 12,898 on Environmental Justice, the Biden Administration's Executive Order, "Tackling the Climate Crisis at Home and Abroad" provides a further foundation for environmental justice claims and states in part as follows:

> To secure an equitable economic future, the United States must ensure that environmental and economic justice are key considerations in how we govern. That means investing and building a clean energy economy that creates well- paying union jobs, turning disadvantaged communities — historically marginalized and overburdened — into healthy, thriving communities, and undertaking robust actions to mitigate climate change while preparing for the impacts of climate change across rural, urban, and Tribal areas.[20]

The communities near the existing fossil-fired power plants, most of which are located in southern Puerto Rico, are overburdened by the operation of the plants. The Guayama region is an environmental justice community with high poverty rates and where the majority of residents are Afro-Puerto Ricans.[21] According to the Toxic Release Inventory this region suffers the greatest contamination of any region in Puerto Rico. The Guayama region also has among the highest poverty, unemployment, and school dropout rates in Puerto Rico. Simultaneously, the region has experienced a sharp decrease in medical services available to this environmental justice community with the closure of two hospitals and only one hospital currently in operation.

The LUMA contract will exacerbate PREPA's current system vulnerabilities and harm public health and safety. Hurricanes Irma and Maria demonstrated that the 230kV and 115 kV lines that carry power from the large, centralized power plants in the south to the north were a key vulnerability of the system. The LUMA contract entails continued reliance on centralized fossil fuel combustion plants and these transmission lines, and even contemplates more large, centralized plants, also connected to the grid through the same vulnerable transmission lines. The south-to-

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[20] See, Exec. Order No. 14008, 86 C.F.R. 7619, Executive Order on Tackling the Climate Crisis at Home and Abroad, Jan. 27, 2021, Section 219, https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/.

[21] Hilda Lloréns, *In Puerto Rico, Environmental Injustice and Racism Inflame Protests over Coal Ash*, December 8, 2016. http://theconversation.com/in-puerto-rico-environmental-injustice-and-racism-inflame-protests-over-coal-ash-69763; Hilda Lloréns, *Puerto Rico's Coal-Ash Material Publics and the Summer 2019 Boricua Uprising*, February 25, 2020. https://www.societyandspace.org/articles/puerto-ricos-coal-ash-material-publics-and-the-summer-2019-boricua-uprising; Catalina De Onis, *Energy Islands, Metaphors of Power, Extractivism, and Justice in Puerto Rico*, June 2021, https://www.ucpress.edu/book/9780520380622/energy-islands.

north transmission lines are vulnerable to extreme weather events, vegetation growth, wildlife impacts, lack of investment in maintenance, and difficult access to servitudes and easements, among others. The seismic events of 2020 further demonstrated the vulnerability of large, centralized plants and the affiliated transmission system: Costa Sur and EcoElectrica were both damaged.

The U.S. Geological Survey has determined that the areas where the San Juan and Palo Seco plants are located present high risk of liquefaction in the event of earthquakes. The Great Southern Puerto Rico Fault Zone runs through the Jobos Bay area where the Aguirre Power Complex and the AES coal burning power plants are located.[22] The Palo Seco plant, depot and accompanying infrastructure are in a tsunami flood area. The Federal Energy Regulatory Commission earlier this year issued an Order acknowledging that regulators have not sufficiently analyzed the risk impacts to powerplants from more frequent and intense earthquakes in Puerto Rico.[23]

The operation of all fossil fuel plants in Puerto Rico emit multiple contaminants that adversely impact public health and the environment. The Applied Energy System (AES) Corporation coal-fired power plant and the Aguirre Power Complex, located in southeastern Puerto Rico are the two primary sources of toxic emissions in Puerto Rico and disproportionately impact some of the poorest communities. These two plants also extract large amounts of freshwater from the South Coast Aquifer and have contributed to the water scarcity that led to water rationing in summer 2019 and in previous years. The AES coal burning power plant in Guayama transmits electricity to northern Puerto Rico, including the San Juan metro area and accumulates hundreds of thousands of tons of coal ash waste at its plant site. The facility and its polluting practices already contaminated part of the South Coast Aquifer, the sole source of potable water for tens of thousands of people in Puerto Rico. [24]

The Costa Sur and EcoElectrica plants in southwestern Puerto Rico both burn imported methane gas and also transmit energy long distance. Gas combustion is the substitution of one group of contaminants for others. The myth that methane gas is a cleaner energy source is a fallacy.

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[22] Bachhuber, Hengesh, & Sunderman, *Liquefaction Susceptibility of the Bayamon and San Juan Quadrangles, Puerto Rico*, at Figure 6, PDF p. 30 (2008), https://earthquake.usgs.gov/cfusion/external_grants/reports/03HQGR0107.pdf (noting very high susceptibility zones in areas along the Bayamon coastal plain, Bahia de San Juan, and Laguna San Jose); Hengesh, & Bachhuber, *Liquefaction susceptibility zonation map of San Juan, Puerto Rico*, in Mann, P. (ed.), Active tectonics and seismic hazards of Puerto Rico, the Virgin Islands, and offshore areas: Geological Society of America Special Paper 385, at 249–262 (2005).

[23] Federal Energy Regulatory Commission Order Establishing Briefing, Docket CP95-35-000. "There has been an increase in frequency and intensity of earthquakes on Puerto Rico since 2003."

[24] EPA, 2019 TRI Factsheet – Guayama, PR (Oct. 2020), https://enviro.epa.gov/triexplorer/tri_factsheet.factsheet?pzip=&pstate=PR&pcity=GUAYAMA&pcounty=&pyear=2019&pParent=TRI&pDataSet=TRIQ1; U.S. Dept. of Interior, USGS Water Use Data for Puerto Rico (2021), https://waterdata.usgs.gov/pr/nwis/wu; Jason Rodríguez, Acuífero del Sur: Retrocede la única Fuente de agua potable de 30 mil sureños, May 29, 2021, https://www.periodicolaperla.com/acuifero-del-sur-retrocede-la-unica-fuente-de-agua-potable-de-30-mil-surenos1/; Report On Corrective Measures Assessment Aes Puerto Rico – Agremax™ Staging Area Guayama, Puerto Rico Haley & Aldrich, Inc. (2019), https://www.aespuertorico.com/sites/default/files/2021-02/Corrective-Measures-Assessment-English.pdf; AES Puerto Rico Coal Combustion Residuals Rule Compliance Data and Information, https://aespuertorico.com/ccr/.

The LNG imported to Puerto Rico must be stored under cryogenic conditions and revaporized/regasified before it can used at the plants. These additional processes add to the total emissions of LNG use in a way that exceeds the CO2 emissions of other fossil fuels. Methane gas combustion also emits increased Volatile Organic Compounds (VOCs) such as formaldehyde, benzene, toluene, hexane, and styrene.[25]

Multiple scientific studies, including a Harvard University report found that, "A small increase in long-term exposure to PM2.5 leads to a large increase in COVID-19 death rate, with the magnitude of increase 20 times that observed for PM2.5 and all-cause mortality. to air pollution and COVID-19 mortality in the United States. The study results underscore the importance of continuing to enforce existing air pollution regulations to protect human health both during and after the COVID-19 crisis." The specific findings demonstrate that, an increase of only 1 ug/m3 in PM2.5 is associated with a 15% increase in the COVID-19 death rate, at a 95% confidence interval.[26] Particulate matter is emitted by electric power plants, motor vehicles and other sources of air contamination. Continued reliance on these plants for energy transmission to San Juan and northern Puerto Rico is another climate disaster in the making.

Although the LUMA contract has especially ominous implications for environmental justice communities, the LUMA scheme does not bode well for the health and safety of the general population in Puerto Rico. LUMA can abandon the tasks required under the contract after PREPA has been dismantled and when reinforcements for the electric system are most needed and almost at any time. In an extended force majeure event, LUMA, as Operator has the right to terminate the contract, in the event that the force majeure event continues for a period longer than eighteen (18) consecutive months and materially interferes, delays or increases the cost of initial transition services (front-end) or operation and maintenance services (O&M). (LUMA contract page 125, pdf 132). In addition, according to the contract, "force majeure event" is defined so broadly that it excuses LUMA from performing the services required for almost any reason, including an interruption or blackout event (page 22, 29), computer sabotage or virus, quarantine, epidemic, or civil disobedience; any event that causes any Puerto Rico or federal government agency to declare any part of the geographical area of the T&D system as part of a "disaster zone", "state of emergency" or any other similar declaration; and a change in the law. (LUMA contract pages 14-5, pdf 22. In sum, the definition of force majeure in the contract is very broad and allows LUMA to evade responsibility after receiving the benefits of the contract.

V. Conclusion

For the reasons summarized in this written testimony, we urge the House Committee on Natural Resources to investigate PREPA's Transmission and Distribution System Operation and

[25] Public Comments by Pediatric Environmental Health Specialty Unit (PEHSU), Mount Sinai Medical School, FERC Docket CP13-193-000 at 1-2. https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01c6d80b-66e2-5005-8110-c31fafc91712.

[26] Wu, X., Nethery, R. C., Sabath, M. B., Braun, D. and Dominici, F., Air pollution and COVID-19 mortality in the United States: Strengths and limitations of an ecological regression analysis *Science advances*, 6(45), p.eabd4049, (2020), https://projects.iq.harvard.edu/covid-pm.

Maintenance Agreement with LUMA Energy, LLC and the role of the Federal Oversight and Management Board in the imposition of the LUMA contract and the Puerto Rico electric crisis. We ask this Committee to urge the Federal Government to earmark the historic amount of FEMA funds allocated for the electric system for on-site and rooftop solar and battery systems and similar alternatives that will provide life-saving electric service to the residents of Puerto Rico and include an inquiry on the proposed use of FEMA funds for electric system work to ensure that they are invested in a cost-effective manner to provide accessible, affordable, renewable, reliable and resilient electric energy. The use of the historic amount of FEMA funds allocated for the electric system will determine the viability of Puerto Rico for generations to come.

In Salinas, Puerto Rico

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Attachment:
List of Puerto Rico and Stateside organizations that joined in the previous testimony presented by Ruth Santiago, Esq.