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

IN RE: OPTIMIZATION PROCEEDING OF MINIGRID TRANSMISSION AND DISTRIBUTION INVESTMENTS	CASE NO.: NEPR-MI-2020-0016 SUBEJCT: Compliance with March 24, 2021 Resolution

INSTITUTO DE COMPETITIVIDAD Y SOSTENIBILIDAD ECONOMICA (ICSE)/ENERGY JUSTICE (EJ) ANSWERS TO PREB'S QUESTIONS

To The Puerto Rico Energy Bureau:

Now Comes, the Instituto de Competitividad y Sostenibilidad Económica (ICSE)/Energy Justice (EJ) represented by appearing attorney and respectfully alleges and prays:

1. ICSE/EJ submit the responses to questions 1 to 11 presented by PREB. ICSE/EJ Apologizes for filing a few days late, but respectfully understands that it bring and provide valuable perspective, information and answers, and the brief delay does no harm to any party, nor to the PREB.

2. ICSE/EJ are committed to help obtain for Puerto Rico electricity consumers the lowest possible price, the highest feasible level of sustainability and reliability of the energy system, under the control and supervision of an independent, professional non political entity, which is the PREB.

3. ICSE/EJ start from the premise that Puerto Rico already has a world class statutory and legal framework anchored by Laws 57 of 2014, 17 of 2019 and the modified IRP of August 2020.

This framework must be the basis for analyzing and answering each and every question raised by PREB.

4. It is of the utmost importance, that PREB and the stakeholders, beginning with PREPA/LUMA, abandon the old framework and the old models of operation, which were rejected and substituted by Law 57 and 17.

The current framework is consumer centered, and the grid optimization, the sustainability and the reliability must be defined in terms of the Act 17 consumer, the prosumer, not in terms of PREPA/LUMA and the old grid even when it worked with other technologies, economic dynamics, and risk scenarios. Of course, the grid must be protected and optimized, but it has to be done including the perspectives and the realities of the consumer, not the limited perspectives of a PREPA/LUMA and the old grid itself, presently incapable of property serving costumers with economic sustainability.

5. Same as load has been reducing for the last several years, (more than a decade), the grid, as we know it, will necessarily shrink as more consumer centered DER are deployed and sustainability is defined at the end user customer perspective as supported by energy efficiency, load management programs, DER, batteries, etc.

6. New markets, as ordered by Law 17, and new technologies, will be the foremost promoters of change of new DER-consumer centered solutions. PREPA/LUMA continue to look backward, fighting the old wars not looking forward and planning for the future, nor furthering competitive alternatives with other energy generation sources, and in support of the PREB as ordered by PROMESA Law and the Fiscal Oversight Management Board.

Introduction to the Integrated Response of ICSE-EJ to Questions one through four.

Herein please find the integrated response to questions 1 through 4 of the Energy Bureau of the Puerto Rico Public Service Regulatory Board (Energy Bureau) pursuant to the Energy Bureau's Resolution on this matter directed to PREPA and stakeholders. Respondent, ICSE includes Energy Justice for Puerto Rico (ICSE-EJ).

ICSE-EJ asks the Bureau to consider the close connections between the first four questions (1-4) in this inquiry to the questions five through eleven (5-11). The motivations and drivers that suggest the proposed projects described in the first four questions are directly related to the more policy-oriented questions five through eleven. Furthermore, ICSE-EJ suggest the first four questions provide concrete examples that can illustrate "best practices" responses to questions five through eleven. In this light, ICSE-EJ appreciates the opportunity to respond to the Energy Bureau's questions in the most direct and illustrative ways possible with this integrated response. With this backdrop, ICSE-EJ further explains that it was unable in the short time allowed to respond to the Energy Bureau's deadline for comments on questions 5 through 11, and thus responds here to those questions as well, requesting the PREB to receive and consider our input.

ISCE-EJ Proposed Direction for Distributed Energy Resource (DER) Integration

A set of premises should be made explicit that bear directly on the Energy Bureau's questions 1-4, specifically the following:

- Initial Restoration -- The focus of the Luma contract, to provide services in lieu of PREPA, is largely to upgrade the high voltage and distribution grids so that a workable level of electricity service is made available.
- Luma and PREPA have been and continue to be grid focused not customer focused and have not had, nor seem to entertain, significant responsibilities to

provide DERs to customers. Luma and PREPA understand and address DERs as part of their objective to reinforce the centrality of existing Grid as the main strategy for Puerto Rico needs. We think this approach, which is not a Law 17 approach must be subject to scrutiny and validation.

- Build-out of the grid, to restore and enhance grid services, presents the likelihood of stranded costs for high-voltage features and utility-scale generation.
- The economics of the grid are changing rapidly, with major continued DER cost declines, particularly for solar PVs, battery storage, and the internet of things (Iot).
- Energy efficiency (EE) is a least-cost resource with low capital cost that can reduce grid requirements by reducing customer load levels – a "first-best" option.
- Combined use of EE, PVs/storage, and the Iot reduce the need and costs for grid restoration, upgrades, and accordingly produces lower grid needs and costs.
- Answers to Energy Bureau questions 5-11 are directly relevant to answers to questions 1-4.

ICSE-EJ were directly involved in the Energy Bureau's IRP process and are supportive of the Energy Bureau's August 2020 modified IRP determination. Based on this decision and related stakeholder engagement, as further context for comments below ICSE-EJ offers these recommendations to the Energy Bureau, which the following admonition: it's now time to focus on investing in customers (first) to integrate and optimize these combined resources:

1. Customer Choice Tariffs to allow customers to select the KiloWatt (kW) level of service they will pay for over a 3 to 5 year window, which will require that we a) educate

customers on size of kW load they want and need, and 2) explain choices that correspond to energy efficiency-first decisions for customers

2. Analytics to lower grid needs and costs, reduce capital upgrades, and eliminate additional stranded costs, which suggests Puerto Rico limit use of utility-scale resources.

3. Customer-specific "best DER packages," i.e., locational, right-sized energy efficiency, load management, distributed generation, storage batteries, and electric vehicles (charging).

4. Resulting lower green-house gas emissions and fossil pollution with integrated and optimized DERs.

5. Network customers with microgrids through the lot for least-cost resiliency and lower total costs.

With these recommendations in mind ICSE-EJ offers these specific comments.

Comments on the Specific Questions 1 through 4

Question 1, regarding the thirteen PREPA proposed 115 kV underground projects, in general which of these projects is most needed and how should they be prioritized?

ICSE-EJ, working with Willdan Group Inc. (Willdan), suggest that more detailed comparative analysis is needed before decisions are made on these long-term capital-intensive projects. Willdan and its company Integral Analytics have extensive experience with modeling of grid systems, including with best known load-flow models CYME/SYNERGI, and LoadSEER which provides detailed recommendations on customer-specific resource selection to compare the economics of DER packages and grid upgrades. Locational geospatial analysis usually shows that overall cost can be

reduced, based on a combination of DERs and grid upgrades, to net far lower capital cost and total dollar (fixed and variable) costs. This approach is viewed as a premier analytic approach in California, such as for Pacific Gas & Electric.[1]

While it appears that Luma/PREPA seek to define specific "remediation repair" of the grid, targeted at "foundational T&D," including repair of "highest risk damaged system assets…" the process to do this should enable DERs to be directly examined in order to lower the overall costs of these initially proposed grid upgrades. ICSE-EJ is especially concerned that the LUMA/PREPA process to identify and size proposed 115 kV underground projects will fail to provide the essential analytics that whow how DERs can reduce or eliminate these costly underground projects. ICSE-EJ is also concerned that the LUMA/PREPA process to define grid upgrade projects will not be transparent, will be internally held, and circumvent stakeholder input. LUMA/PREPA processes to define these decisions seem likely to push out all stakeholders but those that can obtain and use detailed data and PREPA asset/use information, as this information will be considered "confidential." In short, this means there is unlikely to be any transparency, leaving LUMA/PREPA to control the critical inputs, outputs, and thus results of the analysis, at the same time giving short-shrift to DERs.

While Luma/PREPA claim to want an "apples-to-apples" comparison process to compare grid upgrades (options) and DERs, ICSE-EJ is concerned that the perceived role for LUMA/PREPA is to primarily maintain the high voltage and distribution grids, leaving DERs and customers to take subservient roles opposite of Law 17 and IRP mandates. ICSE-EJ is concerned that the LUMA/PREPA proposed "power system data

[1] See, https://www.businesswire.com/news/home/20210415005971/en/LoadSEER-and-Integral-Analytics-Continue-as-Integrated-Grid-Planning-Software-Solution-in-California.

repository" will undoubtedly be confidential, limit transparency, and limit proper consideration of DERs. ICSE-EJ firmly states that open access and transparency of all transactions must be central drivers of the Energy Transformation process and that efforts or intents to limit these drivers must be specifically addressed and reviewed in an adjudicatory process by PREB reflecting Law 17 mandates.

ICSE-EJ have two additional concerns about how LUMA/PREPA will define grid undergrounding solutions. While LUMA/PREPA say they want "best no regrets distribution energy solutions," they fail to explain how grid upgrades may become stranded assets and how customer DER solutions can lower or eliminate the need for capital-intensive, long-term grid solutions, as well as stranded costs. Finally, LUMA/PREPA seem committed to be the sole provider and arbiter of DER solutions; that their role is to facilitate DERs, do the analysis, and provide the priorities for DERs. At the same time they seem far more interested in investing in the grid based on traditional "iron-in-the-ground" methods, i.e., grid hardware solutions.

Question 2, regarding the 100 or more PREPA proposed 38 kW undergrounding projects, how should these projects be ranked and prioritized, and what are the added costs for distribution grid hardening?

The answers and suggestions of ICSE-EJ offered regarding question 1 above apply without further qualification to question 2, so will not be repeated. ICSE-EJ wants to emphasize that added costs for grid hardening should be compared to the level of grid service that the customers, in aggregate on a circuit, seeks to pay for. This is a critical question that has not been asked by the monopoly utility, now to be managed by Luma. ICSE-EJ hope to have the opportunity to more fully explain an approach that let's

customers "buy what they need" in terms of kW, over a 5 year timeframe, the equivalent of a "demand subscription service."

Customers can then with energy efficiency first, and with other DERs initially or later, bring down their demand levels, which provides a most direct way to lower utility grid costs and the potential for stranded grid and generation costs. Tradeoffs between the customers demand-level or "fuse-level" and DERs can then be used to provide greater transparency. Then sizing of DERs will be more accurately defined for customers. And grid planners, as well as other stakeholders, will have more information about the potential and the benefits of DERs.

In major part this is important as the variable costs of electric power, with solar, wind and other renewables, is declining. At the same time the fixed costs to provide customer resiliency and reliability – to ensure power is delivered – seems more likely to trend upward absent DERs. Accordingly, control of fixed costs is where customers should have options, specifically with use of DERs. Utility costs have not been controllable by customers to date in Puerto Rico, but should be in the future as more customers rely on DERs.

Question 3, what are clearly identifiable clusters of critical load that can benefit from increased reliability, how can these critical loads be identified and prioritized, and thus what projects are needed?

The ICSE-EJ logic and arguments presented regarding questions 1 and 2 above similarly apply here. ICSE-EJ believe that the additional costs for the 100 or more PREPA proposed 38 kW undergrounding projects should be ranked and prioritized, as well as the added costs for distribution grid hardening. That said, needed are full integration and

optimization of DERs with the grid is the way to ensure lower overall costs to customers. After all it is consumer based resiliency and reliability what is at stake.

Arguments are raised about solar photo-voltaic (PV) issues where PVs are abundant, like California (CA), but critical positive arguments have been ignored. In the Western U.S., the prior grid generation peak has been shifted to later hours, reflecting air-conditioning load, and the variable price of electricity has been dramatically reduced, benefiting many customers. While some like Luma/PREPA claim that California experiences grid frequency issues, this is entirely wrong, inaccurate at best. With almost zero variable costs, PV is a critical low cost resource, and is especially valuable to customers to lower their electricity bills. PV is also valuable to charge battery storage, as the variable costs to do so is again zero.

What is not discussed by LUMA/PREPA are the benefits of "smart-inverters" used for PV and battery charging. California and Hawaii (CA/HI)have adopted smart-inverter standards so that scale economies lower inverter costs, and scope economies to integrate smart inverters also lower installed costs. With CA/HI smart inverters, when the grid power goes off customers with these systems still have power and can continue to charge their batteries with PV, as long as daily sunlight persists. This customer resiliency means a customer may not buy-in to have a higher kW demand (fuse-level), as it has independent resiliency. At present, and more in the near future, the set of resilient smart-inverter customers can be monitored and controlled with the Iot. It appears that Luma/PREPA have ignored the benefits of inverter standards, rather saying that different levels of grid resiliency for reliability are costly. ICSE-EJ contend that customer resiliency is the primary level of resiliency to be examined and is the lowest cost to provide.

Certainly, resiliency is about customer options to maintain reliability, even in the presence of hurricanes. This appears to contrast with the LUMA/PREPA view that resiliency be based on utility revenue and traditional grid reliability, both of which seem "wrong-headed" and ignore customers. With greater customer resiliency, to provide enhanced reliability, to repeat customers may choose to subscribe to lower load levels, which will reduce stress on the grid and enable it to be more reliable with minimal investment. Accordingly, as explained above, ICSE-EJ strongly recommend integrated, locational DER and grid analysis (optimization), to properly specify EE and other DERs going forward, to alter the need for grid upgrades and substantially reduce overall costs. This approach is needed to evaluate these 100 plus 38 kV underground projects and all other projects where DERs can make a difference.

A direct consequence of LUMA/PREPA's strategic approach towards resiliency as gatekeeper of utility revenue and grid reliability is to reinforce the Wall Street based financial model centrally used by PREPA and Puerto Rico to fund traditional fossil fuel based generation and distribution activities. This financial approach has rendered PREPA and Puerto Rico bankrupt in the end and constitutes the prime cause of the present inability to restart the economy. Restoring the Grid towards recreating a Wall Street oriented financial structure goes contrary to global initiatives that shift the Grid towards the consumer as key driver of Grid sizing and deployment.

Question 4. Of the 43 substation hardening projects, what is the rationale for grid hardening, and why should these projects be separately defined from minigrid consideration?

This question seems very important to further illustrate customer-DER-grid tradeoffs. ICSE-EJ have explained how this should be considered, using best-practices that are used in places such as California. Transparency is needed to show the inputs, outputs, and general algorithms to fully integrate grid analytics and DER analytics. Integration and optimization can then be used to define best sizes for the grid and customers that use DERs. Grid hardening should be defined with specific criteria in mind, including grid resiliency (for reliability).

The consideration of Minigrids should be a natural result of best-practice integration and optimization of DERs and the grid. There may be natural lines where reliability-related grid economics and customer DER economics suggest regional clustering. If minigrid customers want different levels of reliability in a region, this is another way to separate a part of the larger grid, such as to apply switching to achieve "islanding." Minigrids can also be defined further with understanding of customer outage costs, as suggested by Luma/PREPA in their recent comments on questions 5 to 11. ICSE-EJ suggest that grid hardening projects should be considered not separately but in a priority "economic-stack" that can differentiate when and where such projects compete with other grid and customer DER investments.

The apparent focus of Luma/PREPA on the use of "lost-revenue" and to maintain the existing grid as it was historically, however, seems to make little sense. Grid hardening, with lower grid loads and less need to provide higher reliability to customers who are truly resilient, means that the previous revenue-retention criteria should no longer apply. Luma/PREPA appear to resist use of integrated grid and DSM planning methods, though they have aspirations it seems to use advanced grid analytic methods in the future.

And let's remind PREB that "Revenue Certainty" is precisely not a characteristic nor a result of the old system whose higher 4 times household costs in Puerto Rico and over twice the business costs when compared to US mainland systems had already occasioned General Economy shrinkage and Revenue losses PREPA to begin with ...

General aspirations must not be proposed as factual responses to address the Energy Transformation of Puerto Rico.

Luma/PREPA want to use techniques to determine "hosting capacity" and then dictate how PVs and batteries should be grid-connected. This has been a typical constraint used by other utilities that seek to control, in fact limit, solar PV and battery integration. Also of concern are utility approaches that ignore EE and load management, insisting on analysis solely of PVs and battery storage. As ICSE-EJ explains above, it is essential that integration and optimization of the grid and DERs be performed, specifically to define right locations and customer DER packages.

Question 5: What are the "best" distributed energy resource solutions for Puerto Rico? Why? How should they be deployed, implemented, or procured? Define the scale of DER solutions, types, likely physical locations, and any other attributes or considerations.

The best DER solutions for Puerto Rico should involve the advising and investing in the best customer-specific DER packages with use of these five steps:

- Advise customers on right tariff service (fuse) level, customer selection of the kW level customers seek to pay with energy efficiency first (to lower fuse levels and thus costs);

- Directed packages of DERs for each customer composed of energy efficiency, demand-management, distributed generation (likely solar photo-voltaic), battery storage, smart-inverter, and electric vehicle connection and charging;
- Customer-specific DER packages should be properly sized, use incentives where needed, financed, and installed according to the customer's choice and timing over a 5 year period of consumer engagement.[2]
- Granular customer data should be used with grid-specific (distribution and transmission) data to integrate and optimize use of DER packages for all customers.
- As soon as possible, customer tariffs need to be normalized at regional grid-specific levels to provide time-of use differentiation, recognizing DER grid integration impacts.[3]

Why this set of steps? The least-cost, "no regrets" solution to serve customers in this age is to provide customer-specific, properly sized and configured DER packages, that lower overall grid costs. The need is to integrate and optimize DERs to give customers choice of service level and DER packages that enable best practice integration and optimization. Participant cost-effectiveness and grid cost-effectiveness are critical here to best advice customers and lower total costs. Best practice DER integration enables lower costs for transmission, distribution, and utility-scale generation, portions of which seem likely to be stranded costs otherwise. This approach integrates and makes more accurate i) planned-for customer load levels, ii) transmission and distribution

[2] Some customers may take a longer period for DER adoption, depending on preferences and economic conditions.
[3] This may be a first step in the above sequence of steps to enhance DER sizing and best practice configuration.

deferral costs opportunities, iii) customer choices to lower bills and invest, iv) best practice knowledge, computation, data management, software design, and environmental mitigation, i.e., best financial investment for customers and Puerto Rico's economy.

How should DERs be deployed, implemented, or procured? Best practice options to deploy and implement DERs for Puerto Rico customers strongly suggest use of competitive procurement to select the best providers of DERs. Often used are targeted DER procurements that typically involve segmentation into customer classes, residential (low-income and others), small commercial, and large commercial and industrial.

Requests for Offers (RFOs) may follow Requests for Information (RFIs) to first enable selection of a set of qualified bidders. An independent DER procurement expert may also be used to oversee and make more transparent the process. Advice may also be sought to design the RFO to maximize the success of the procurement, especially to obtain best practice capabilities to integrate and optimize DERs for specific customers. Teaming arrangements are also important, especially to ensure customers obtain financing as much as possible where feasible.

With regard to the scale of DER solutions, types, likely physical locations, and any other attributes or considerations, ICSE-EJ offers these comments:

- The scale of DERs implementation should increase to reduce loads (stress) on the existing transmission grid and distribution grid, which is a direct result of integration and optimization of DERs to minimize overall costs and maximize customer value.
- The recommended strategy is to use DERs in regional microgrids and minigrids, which can be networked over time with Distribution System Operators (DSOs).

- Full scale for DER implementation should aim to provide DERs to all who seek to use these resources in Puerto Rico, so should be expected to be full-scale;
- DER implementation can be designed to fulfill microgrid/minigrid configurations, it is a natural and expected outcome of the integration and optimization process.

Question 6: How should the resiliency value of specific energy resources be gauged?

ICSE-EJ feels strongly that resiliency should be defined as customer reliability, including the ability to sustain individual customer reliability during extreme weather and earthquakes. The use of DERs with CA/HI level smart inverters enables resiliency for those that have PVS and storage batteries, which ICSE-EJ recommends to be standard practice in Puerto Rico as soon as possible. With grid outages, CA/HI smart inverters enable customers to maintain reliable power reliability as long as batteries can be charged, which in Puerto Rico suggests for long durations. This customer resiliency can be extended of course with common-sense customer behavior to use critical loads and curtail non-critical loads, which can be identified before possible crises conditions manifest.

Question 7: How can the Energy Bureau support the most rapid deployment of distributed energy solutions for increased resiliency?

Specific goals for rapid procurement of DERs for the Energy Bureau are suggested as follows:

- Invest in customers first – enable finance options to install initial increments of energy efficiency and the other DER options to be installed and operated in network configurations with Iot.

- Enable 3rd parties to provide specific short-term customer engagement strategies that start with energy efficiency, let customers choose their service level, enlist early DER adopters, and create pathways to enlist low-income electricity customers.
- Enable 3rd parties to provide longer-term consumer engagement plans (e.g., 5 year) to enable customers to rapidly go from no-DERs to energy efficiency (at a selected fuse-level), load-management, PVs, batteries, and ideally electric vehicles (charging).

ICSE-EJ recommends that the Energy Bureau ask for support on best practice competitive procurement of DERs from other regions where expertise is available, such as California, Hawaii, Germany, and other entities like the Electric Power Research Institute, RAP, and Rocky Mountain Research Institute. ICSE-EJ further recommends that the Energy Bureau specifically request responses from 3rd party providers about their expertise in modeling and developing customer-specific, integrated, optimized DER portfolios that specifically provide minimum total costs.[4]

This suggests that the Energy Bureau put out a RFO solicitation with specific requirements to engage those that have deep experience to provide integrated and optimized DER portfolios on a large scale basis for electric utilities and governments. The RFO should ask for experience in development of effective and comprehensive plans for consumer engagement. RFPs that are customer segment specific should follow, of course with selection of best 3rd party providers based on specific criteria.

[4] This can be specifically requested with use of a total-cost perspective in terms of net-present value, which in some jurisdictions in the U.S. is called the "Program Administrator Cost" (PAC) Test perspective.

Question 8: What is PREPA's role or Luma's role in supporting DERs for resiliency? a)

Should Luma or PREPA be responsible for analysis of microgrid options? Why or why not?

b) PREPA currently facilitates development of distributed generation through procurement of VPPs and demand response programs. Should PREPA or LUMA support direct installation of DERs through specific program tariffs? C) Should PREPA/Luma directly participate in installation, maintenance of distributed photo-voltaics systems with storage? Would this be alignment with Act 17-2019 and other Puerto Rico public policy that supports procurement?

ICSE-EJ recommends that Luma/PREPA focus on tariffs that allow customers to choose their kW service or fuse level and enable (not restrict) customers to select energy efficiency and other components of "best-fit" DER packages. Customer resiliency can be most cost-effective with adoption of a standard in Puerto Rico that all solar inverters, and solar-battery inverters, be smart inverters comparable to now adopted CA/HI standards. Inverters installed in Puerto Rico can then be used when batteries are applied to create customer resiliency. With customer choice of service (fuse) level, energy efficiency, and solar-battery, the amount (hours) of resiliency can then be correlated to the amount of critical load and the level of investment in DERs. In these ways the amount of resiliency can be a customer choice. The load levels and levels of resiliency that customers choose then can be directly used, and forecasted to back-out T&D needs, reduce T&D investment, and lower overall grid costs. Luma/PREPA roles to support these efforts

should be to monitor increased customer resiliency and subscribed load levels, and in these ways define the reduced levels of grid investment that are required over time.

On the question of whether Luma/PREPA should be responsible for analysis of microgrid options, ICSE-EJ suggests not. Rather, the Energy Bureau should initiate large scale DER procurement and implementation as a first in priority, as these procurements should drive microgrid options.

Detailed customer-specific DER plans – informed by integration and optimization (which includes the grid) -- provide the "native lines" for differentiation of microgrid boundaries.

This suggests that first planned levels of grid subscription (customer loads) and expected DER investments should be determined consistent with competitive procurement and implementation of DERs. Beyond "planning review" by Luma/PREPA, the Energy Bureau should administer competitive procurement of DERs by third parties, including the specific large-scale plans to offer customer-specific DERs. The Luma/PREPA roles as a matter of course would thus be largely monitoring and review functions to inform grid investment decisions. In this way the Energy Bureau can gain insight about and advice from Luma/PREPA and other stakeholders about the level of grid needs, for refurbishment and upgrades, that best correspond to large scale DER implementation.

On the question of whether Luma/PREPA should support direct installation of distributed generation, ICSE-EJ suggests not. The large-scale implementation of all DERs should be managed by 3rd parties, which will provide the equivalent of virtual power plants. PREPA or LUMA should not take on these roles, in major part as they seem so

committed to the "old fashion" grid and disinterested in full-scale implementation of DERs. ICSE-EJ suggests that large-scale implementation of DERs, including modeling to recommend DER sizing and configurations by 3rd parties, is in alignment with Act 17-2019 and other Puerto Rico public policy that supports procurement. Luma/PREPA on the other hand, as they seem to clearly favor old fashion grid and utility-scale development to the exclusion of wide scale DERs, seem entirely out of touch with Act 17-2019 and related Puerto Rico public policy.

Question 9: In general, concerning the best microgrid sites across Puerto Rico, comment…

As previously explained above, ICSE-EJ strongly suggest that the best microgrid sites are a result of detailed integration and optimization of the grid and DERs, which is a process that should be done in conjunction with competitive DER procurement. To enable this process to be effective, data from Luma/PREPA will need to be made available under confidentiality, non-disclosure requirements. ICSE-EJ suggests this would be in the RFP response stage, after potential bidders have been selected in response to the RFO stage.

The SANDIA report, cited by the Energy Bureau, includes very limiting considerations in its analysis to determine microgrid locations for Puerto Rico as follows:

- Points of common coupling,
- Hardened distribution lines,
- Fuel infrastructure and supply,
- Controls (for the grid),
- Grid system protection, and

- Cyber security.[5]

By current standards, this is an outdated and inappropriate set of considerations, again because full-scale DER integration and optimization, in the context of granular distribution modeling, are almost completely ignored.

Luma/PREPA claims to seek the opportunity to evaluate DERs and even to define potential microgrid sites across Puerto Rico. But this has been done in an informed way. The detailed plans for customer-specific, integrated and optimized DER portfolios – which should be the bases for microgrids -- have not even been considered by Luma/PREPA or SANDIA, much less planned for and executed. Luma/PREPA have an old-fashion high-voltage grid-centric view of where microgrids should be sited, which reveals their distinct bias and lack of focus on DERs first.[6] Given this bias and the apparent resistance from Luma/PREPA to full-scale adoption of DERs across Puerto Rico it sems ill-advised to leave the roles of DER planning and actual microgrid site determination in the hands

---

[5] The entire SANDIA list of considerations to determine microgrids is as follows: *Points of Common Coupling — Switching devices that isolate and form the microgrid from the PREPA distribution system • Hardened Distribution Lines — Hardening overhead distribution lines to expected wind damage and falling trees, or converting overhead lines to underground • Reconfiguring Distribution Lines — In some cases to build a microgrid, the existing distribution may need to be reconfigured so that critical buildings are all on the same distribution feeder in order for the microgrid to be able to form a seamless transition during a major event • Fuel Infrastructure and Supply — Adequate diesel, natural gas, or other fuels, as well as storage and supply infrastructure to support the microgrid for the duration of the major event • Controls — Controls include the communications, infrastructure, and protocols for switching, generation, and operating load devices that detect system conditions, monitor, and operate the microgrid • System Protection — System protection includes modifications of the protection scheme when the loads connected to the distribution feeder are connected to the microgrid • Cyber Security — Cyber security includes both administrative and engineered cyber protections included in control and protection, as well as the hardening of any other hardware that may be possible to interface with to harden with which they interface.* Analysis of Microgrid Locations Benefitting Community Resilience for Puerto Rico, SANDIA, 30 September 2018, SAND2018-11145, PG 30.

[6] The DOE report "Energy Solutions for Puerto Rico," June 2018 report also reveal the bias of failing to perform detailed customer-specific integration and optimization of DERs. https://www.energy.gov/sites/prod/files/2018/06/f53/DOE%20Report_Energy%20Resilience%20Solutions%20for%20the%20PR%20Grid%20Final%20June%202018.pdf

of Luma/PREPA. LUMA/PREPA does not seem to recognize the new paradigm of energy in Puerto Rico.

Question 10: How should stand-alone DER solutions be procured and paid for?

Stand-alone-DERs, implemented by 3rd parties, should be paid for at least in major part by FEMA funds that are otherwise planned for use by Luma/PREPA to achieve traditional grid upgrades and repairs. The problem is that Luma/PREPA do not know what traditional grid upgrades are required as full-scale DER plans that integrate and optimize all resources have not been completed. This suggests the much quoted problem of the "ox before the cart." The FEMA hazard mitigation investment can be a much prompter reliability and resiliency solution at the customer level that is also more cost-effective, and avoid major stranded costs, if allocated primarily to integration and optimization of DERs in the Puerto Rico grid context. This ICSE-EJ proposal allows the Energy Bureau to invest in customers first, invest in energy efficiency (for customers) first, have customers learn and understand their service levels, and from there with further customer engagement integrate and optimize the additional DERs that Puerto Rican's can rely on to lower their bills, enable economic expansion, and fulfill environmental goals.

Beyond FEMA funds, customer ratepayer funds are likely needed to continue optimal DER investments, but may be best used in a revolving energy trust, which deserves further discussion.

Yet, jumpstarting prompt DER solutions in tandem with CDBG and other federal and state funding – with financial guarantee funding and similar model programs federal government agencies that lower initial capital and lending costs while growing the local

private sector Energy Efficiency, DER implementation capacity – will drive down costs as local industrial capacity is enhanced in line with disaster recovery funding objectives.

An aggressive energy efficiency model, as mandated by law, can generate shared benefits which will result in lower bills for customers and are an additional source of economic capacity for consumers to share DER costs.

We are surprised that FEMA and federal disaster recovery guidelines to enhance local capital businesses capacity and economic redevelopment along with reconstruction funding are not a key provision of LUMA/PREPA key performance metrics – a subject for further inquiry and action by the PREB and Puerto Rico government.

Question 11: Provide any additional comment of response…

In summary, ICSE-EJ suggest an approach to evaluate grid options and procure DERs. Further, ICSE-EJ asks the Energy Bureau to arm Puerto Rico customers' to be prosumers, to chart their future, with the following steps:

1. Count-up kilowatt (kW) loads – know what you need? This is the infrastructure level customers' should demand, not more, not less.
    a. A simple "work-book" page for customers to sum kW loads.
2. Know what customer's need to avoid large scale utility investments that can be stranded.
    a. What large scale projects are proposed and how to avoid them?
3. What package of customer resources is best for a customer, now and later?
    a. How to use new distributed resources over time?
4. Reduce customers' GHG, pollution, and health care costs.
    a. What are GHG and pollution impacts of your electricity use?

5. Tap personal and neighborhood needs to increase resiliency.

    a. Show how to use tariff/solar/batteries at personal and local levels, even link with neighbors to share costs?

WHEREFORE, it is respectfully requested for PREB to received ICSE/EJ answers.

CERTIFY: That on April 22, 2021, copy of this motion was notified by electronic mail to the following: astrid.rodriguez@prepa.com fabiola.rosa@prepa.com marisol.pomales@prepa.com vilmarie.fontanet@prepa.com jorge.ruiz@prepa.com kbolanos@diazvaz.law jmarrero@diazvaz.law mario.hurtado@lumamc.com wayne.stensby@lumamc.com ashley.engbloom@lumamc.com Legal@lumamc.com margarita.mercado@us.dlapiper.com elias.sostre@aes.com jesus.bolinaga@aescom cfl@mcvpr.com ivc@mcvpr.com notices@sonnedix.com leslie@sonnedix.com victorluisgonzalez@yahoo.com tax@sunnova.com jcmendez@reichardescalera.com r.martinez@fonroche.fr gonzalo.rodriguez@gestampren.com kevin.devlin@patternenergy.com fortiz@reichardescalera.com jeff.lewis@terraform.com mperez@prrenewables.com cotero@landfillpr.com geoff.biddick@radiangen.com hjcruz@urielrenewables.com carlos.reyes@ecoelectrica.com brent.miller@longroadenergy.com tracy.deguise@everstreamcapital.com h.bobea@fonrochepr.com ramonluisnieves@rlnlegal.com hrivera@oipc.pr.gov info@sesapr.org yan.oquendo@ddec.pr.gov acarbo@edf.org pjcleanenergy@gmail.com Jmadej@veic.org nicolas@dexgrid.io javrua@gmail.com JavRua@sesapr.org lmartinez@nrdc.org thomas.quasius@aptim.com tjtorres@amscm.com lionel.orama@upr.edu noloseus@gmail.com acorner.pr@gmail.com dortiz@elpuente.us wilma.lopez@ddec.pr.gov gary.holtzer@weil.com ingridmvila@gmail.com rstgo2@gmail.com agc@agcpr.com presidente@ciapr.org cpsmith@unidosporutuado.org jmenen6666@gmail.com cpares@maximosolar.com CESA@cleanegroup.org acasepr@gmail.com secretario@ddec.pr.gov julia.mignuccisanchez@gmail.com professoraviles@gmail.com gmch24@gmail.com ausubopr88@gmail.com

carlos.rodriguez@valairlines.com amaneser2020@gmail.com
acasellas@amgprlaw.com presidente@camarapr.net jmarvel@marvelarchitects.com
amassol@gmail.com jmartin@arcainc.com melitza.lopez@aep.pr.gov
eduardo.rivera@afi.pr.gov leonardo.torres@afi.pr.gov carsantini@gmail.com
directoralcaldes@gmail.co imolina@fedalcaldes.com LCSchwartz@lbl.gov
thomas@fundacionborincana.org cathykunkel@gmail.com
joseph.paladino@hq.doe.gov adam.hasz@ee.doe.gov
Sergio.Gonsales@patternenergy.com energiaverdepr@gmail.com
Arnaldo.serrano@aes.com gustavo.giraldo@aes.com
accountlng@everstreamcapital.com mgrpcorp@gmail.com jczayas@landfillpr.com
auriarte@newenergypr.com jeanna.steele@sunrun.com mildred@liga.coop
rodrigomasses@gmail.com presidencia-secretarias@segurosmultiples.com
rtobert@rmi.org.

In San Juan, Puerto Rico, at 22 days of April, 2021.

FERNANDO E. AGRAIT
TS NUM. 3772
EDIFICIO CENTRO DE SEGUROS
701 AVENIDA PONCE DE LEON
OFICINA 414
SAN JUAN, PR 00907
TELS. 787-725-3390/3391
EMAIL agraitfe@agraitlawpr.com