



November 9th, 2022

VIA EMAIL comentarios@jrsp.pr.gov

Mr. Edison Avilés-Deliz
Chairman
Puerto Rico Energy Bureau
World Plaza Building
268 Ave. Muñoz Rivera
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Hato Rey, PR 00918

RE: Answers to Questions by PREB to Stakeholders, including SESA on proposed EE and DR Transition Period Plan, Docket No. NEPR-MI-2022-0001

Comes now, the Puerto Rico Solar Energy Industries Association Corp., d/b/a/ Solar and Energy Storage Association of Puerto Rico (hereinafter, “SESA”) the non-for-profit association that represents Puerto Rico’s solar and energy storage industries. SESA advocates for solar and storage technologies at all scales as a central solution to the energy needs of Puerto Rico, promotes public policy that benefits the growth of these industries, brings awareness and understanding of these technologies to both government policymakers and the public, and facilitates collectively beneficial collaboration and good business practices within the industry.

SESA reiterates its appreciation to the Honorable Energy Bureau (hereinafter “PREB” or “the Bureau”) for the opportunity granted to stakeholders to provide comments to the above-captioned proceeding, which represent aggregated comments by our member companies. Also, please take note of the attached reference documents regarding programs/examples from across the Nation, relevant to the instant docket.

I. Background

SESA's focus is accelerating the deployment of battery storage and solar energy at all scales in Puerto Rico. While all forms of energy efficiency and demand response are of interest to us at SESA, given that these technologies all comprise a concept of "smart buildings" which are powered by solar, have battery backup, and also operate efficiently. However, our main focus in this proceeding, and the focus of these comments, is on the battery storage component of Demand Response. SESA filed specific comments in this docket on July 13th, 2022.

LUMA's proposed Transition Period Plan is designed to include a small set of initial programs that can generate positive customer and market experience; deliver energy, peak demand, and cost savings; and inform the development of future EE and DR programs. SESA supports this approach.

Before turning to the specific questions at hand, SESA would like to applaud the very constructive conversation between the Bureau and all present stakeholders in the Implementation Workshop held on November 4th, 2022. Although SESA was not able to attend, it was heartening to follow the trajectory and progress of this conversation via recording, and how concepts like "active" versus "scheduled dispatch" are being collaboratively landed; how no real technological barriers exist to today discharge thousands of batteries in coordinated ways to provide timely demand response, in order to benefit all grid users and help avoid blackouts.

SESA hereby reaffirms our expressions and statements in our prior comments of July 13th, 2022 and is generally supportive of past and current comments filed by VEIC, except as specifically specified and provided below.

II. General comments

1. What aspects of the Proposed TPP do you have concerns about? What are your concerns?

Our main concern is that the proposed Transition Plan Period (TPP) does not have already-deployed and currently being deployed customer-sited storage (both residential and commercial) as front-and-center. All potential programs have many steps from program inception to actual existence, and in our view, the most quickly deployable

solutions are those that already exist today: namely, the tens of thousands of batteries already installed in homes & businesses all across Puerto Rico today which could, within a matter of weeks, be activated with a passive pre-programmed dispatchable schedule to prevent brownouts and blackouts. All other programs being proposed or considered would involve deployment of new technology which doesn't exist on the island today, whereas utilizing the already-deployed solar & storage would be relatively simple and straightforward.

Our second concern is that the proposed TPP is essentially unfunded. LUMA states that they have secured only \$5M of the approximately \$10M bare-minimum needed to fully fund Year 1 operations. We agree with other stakeholders that a reliable and immediate short and medium-term source of funding will be crucial to the development of full-scale EE and DR programs in Puerto Rico.

SESA encourages the Bureau to explore federal funding streams, such as available CDBG-DR and / or CDBG-MIT funds. We urge the Bureau to host and convene the local Department of Housing ("Vivienda"), the federal Department of Energy (DOE), the PR Energy Policy Program, the PR Green Energy Trust, FEMA, and energy stakeholders including SESA to identify pertinent funding buckets.

Although successful EE programs normally collect funds from ratepayers, most commonly via a system benefits charge or through the utility rate base, Puerto Rico political idiosyncrasy and experience dictates this method should not be favored, at least not initially. Also, any future use of rate-based charges must be thoroughly socialized and well understood by all stakeholders, including political actors. The Energy Bureau should lead on this and be reasonably certain of stakeholder buy-in before moving to rate base any EE/DR initiatives, and should first seek to secure significant quantities (perhaps \$500 million or more) in federal funding to initially fund these important programs.

2. Regarding the education and outreach program:

a. How should programs be branded? (e.g., LUMA, Energy Bureau, or new EE specific brand?)

SESA agrees with VEIC that "a common brand would support collaboration across multiple agencies and partners on EE and DR efforts and could prevent customer confusion." However, it is most important that branding decisions be informed by

customer market research and consumer insights to ensure that the brand and marketing strategy are effective with customers. It may take time to get this right, and LUMA should be able to move forward with Transition Period implementation in the meantime. We also caution against instituting cumbersome approval processes for marketing materials. It is important that the program be able to act nimbly and flexibly to respond to market changes and customer interests. Market research should land in a common brand that works for Puerto Rico and its people, taking into account local culture, language, etc.

b. What community organizations could be good partners to help maximize customer participation and buy-in?

SESA agrees with VEIC that LUMA and its partners should collaborate with community-based organizations working on resilience projects, including solar, storage, and microgrids, to highlight the value of EE and DR to customers and in improving project economics.

Some of the nonprofits with successful track records have included Solar United Neighbors, Environmental Defense Fund, Resilient Power Puerto Rico, *Para La Naturaleza*, the Puerto Rico Science Trust, Foundation for Puerto Rico, Rocky Mountain Institute and *Fundación Comunitaria* de Puerto Rico and Hispanic Federation. A list of nonprofits involved in deployment of solar & storage since Hurricane Maria is included on the website <https://www.puertoricosolarmap.org>.

III. Specific question posted by PREB to SESA

In its Resolution and Order of October 12th, 2022 in this docket, specifically Appendix A: Requests for Information for all Stakeholders, the Honorable Energy Bureau posted the following question to SESA, in connection to our filed comments:

Regarding residential demand response, Solar and Energy Storage Association of Puerto Rico (SESA-PR) indicates in its comments that there is a substantial untapped residential battery energy storage resource, and that the lack of a DR program is resulting in underutilization of this resource. Based on this finding, the Energy Bureau is considering requiring the replacement of the proposed residential battery demand response program with a scheduled dispatch program for both residential and commercial

customers. For example, the batteries could charge during the solar peak between 10am and 2pm daily and discharge between 6pm and 10pm. No dispatch would be required or expected when a storm warning is issued. The Energy Bureau would particularly value answers to these questions from potential battery aggregators, such as the firms that have leased many of the distributed batteries deployed in Puerto Rico.

a. Should the program be open to both residential and commercial customers?

Yes. Although the two programs may have different nuances (i.e., if commercial customers have demand charges that should be considered), it should be open to both classes of customers.

b. Should the program be open to individual battery owners, or only through aggregators?

Participation through aggregators will likely be the main pathway through which individual batteries could most practicably participate, at least in the early phase of this program. In part, this is because most of the batteries deployed in Puerto Rico are owned by third party companies who would act as the aggregator for their fleet, but also because if individual batteries are enrolled, the utility may need a DERMS platform, would be responsible to roll a truck to a customer residence when a battery disconnects from the internet or otherwise does not perform and triggers customer complaints. Moreover, the aggregator model has a number of practical advantages over enrolling individual customers.

By working with aggregators, the utility will have a relatively few number counterparties as compared to the possibility of tens of thousands. As noted, this is also compelling because the vast majority of the ~75,000 residential batteries in Puerto Rico are owned by third party companies (who would act as aggregators). Therefore, enrolling individual battery customers at the beginning of the program would result in very little benefit in relation to the very heavy and expensive administrative burden. For

example, the *ConnectedSolutions*¹ program run by Massachusetts utilities and the dynamic load management program run by Public Service Electric & Gas on Long Island, New York utilize an aggregator-based enrollment model. While the aggregator model is likely the most efficient and practical pathway, the program could be designed to allow for certain individual batteries to participate, such as large commercial customers that own their own battery.

c. Should the program provide a monthly payment (proportional to daily energy charge/discharge in kWh) instead of an upfront payment to better align payments with savings?

For a capacity program such as the contemplated scheduled dispatch program, when the customer discharges energy during the event window, the customer reduces their consumption of grid supplied energy and provides energy to the grid. Customers layer capacity program participation on top of their underlying retail program (e.g. net metering). For the capacity program, the upfront capacity payment, monthly or seasonal capacity payment, or a combination of the upfront + periodic capacity payment model have proven successful around the country. A key to the success of these customer-battery programs is the “pay for performance” feature.

In a purely upfront payment model, if an aggregator does not dispatch the committed enrolled capacity, programs provide for the return of the appropriate portion of the upfront payment. Similarly, under the periodic payment structure, the aggregator is only paid for the service delivered (i.e. the performance). The scheduled dispatch program currently operating in Hawai'i uses a combination of upfront payment + monthly payment model. This could be a helpful template for designing the Puerto Rico program.

A capacity reservation payment plus a fixed monthly payment per kW committed, with submitted performance data, is a good framework for this program.

¹ <https://www.nationalgridus.com/MA-Home/Energy-Saving-Programs/ConnectedSolutions>

d. Should the payment amount be based on estimated system-level fuel cost savings from daily arbitrage?

No. Savings to all customers through these types of programs include fuel cost savings, but also include a vast array of other financial benefits, as well as preventing the damage caused by out of control voltage fluctuations, brownouts and blackouts.

Payments should be based on the average marginal cost of electricity delivered into the grid during the performance window that reflects the generation, transmission, and distribution cost during the scheduled dispatch period, minus a reasonable discount to ensure the program provides ratepayer savings. Additional information, including how the dispatch of generators, and generator payments, work in Puerto Rico, will be helpful in developing the compensation methodology. Also, the value provided by aggregated batteries far exceeds the offset of fuel costs.

e. Should the program provide a larger payment for batteries in critical facilities, or which serve more vulnerable customers?

Possibly. Currently, there are no battery programs in Puerto Rico and no financial incentive to site resilient batteries in critical facilities, or anywhere else for that matter. A program so tailored could meaningfully impact deployment at these sites. There's however an inherent value to having batteries at these critical facilities, but that inherent value is often provided by the backup power that those batteries provide. Especially considering the constant and unpredictable widespread blackouts on the island, critical facilities should normally have their batteries maintained at 100% state of charge. But specific programs with measurable goals of increasing battery deployment for critical facilities and vulnerable customers could also help deploy the batteries at those locations in the first place.

f. How many years' commitment should be required to participate in the program?

This is a calculation that utilities and regulators should do to understand their investment levels. The most important factor is to create a program that people want to stay in after the commitment period ends.

SESA reaffirms its gratitude to the Bureau for the opportunity to comment in this docket and looks forward to continued engagement in the same. SESA again applauds the very constructive conversation taking place in this docket between the Honorable Bureau and all expert stakeholders.

Cordially,



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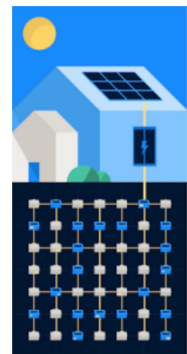
Meeting Utility Needs with Customer-Sited Solar+Storage

Summary

Utilities around the country are instituting programs that leverage customer-sited, non-utility owned battery storage to reduce costs for all ratepayers. These “Bring-Your-Own-Device” (BYOD) programs unlock the ability of residential and commercial batteries to meet grid needs without putting ratepayer dollars at risk. This reduces costs for all ratepayers, improves resiliency, contributes to grid reliability and helps utilities meet other grid needs, reduces harmful emissions from fossil fuel power plants, and advances other public policy goals.

During California’s September 2022 heat wave, residential solar and batteries helped to keep the lights on for all California residents. **Over 18,000 Sunrun batteries representing over 17,000 customers were dispatched statewide (an equivalent of over 90MW of nameplate capacity), with over 1 GWh of energy dispatched between 4 and 9pm from our solar-paired battery systems.** During the critical period of 6-9pm, our inverters recorded 651 MWh delivered from our batteries - a capacity nearly equivalent to expensive, gas-fired peaker plants that were used [during the "flex emergency"](#). Residential solar and batteries can truly help avoid blackouts during a grid emergency and, during normal operations, can cycle daily or be dispatched at key periods to meet other grid needs and reduce grid costs for all.

BYOD programs enable utilities to reduce costs for *all ratepayers* – not just participating customers – by providing a market participation pathway for customer-sited, non-utility owned batteries to provide the same grid service that the utility would otherwise provide or procure from other market participants, but for less cost. For example, in many organized markets, transmission charges, capacity, or other wholesale market costs are attributed to each utility according to the percentage of the utility’s regional load during a peak hour. Those costs are passed on to customers through rates. A BYOD program can reduce these costs. A BYOD program designed to target peak demand reduction provides the utility a load management resource to help reduce its peak load and thereby lower costs for its customers. Because customer-sited batteries are typically paired with solar, BYOD programs targeting peak load reduction also contribute to a “cleaner peak” by reducing reliance on high emission rate “peaker” fossil fuel generating plants, thus providing cost savings and environmental and public health benefits.



BYOD programs exist in many states, including AZ, CA, CT, HI, MA, NH, NY, and RI. While many programs target system wide peak reduction, the BYOD model can be tailored to meet locational needs and provide other capacity, energy and ancillary grid services. As BYOD programs have expanded across states and utility territories, the use cases have also expanded. Moreover, as the transition to whole home and other beneficial electrification continues, BYOD programs offer a customer-based solution to cost-effectively meet increased demand. And has been demonstrated in other states, incorporating BYOD battery storage programs as part of a utilities energy efficiency portfolio further expands the opportunity to unlock additional customer savings and expand access to low-income and other customers.

Benefits of BYOD

1. **Low Risk:** Because customers and their storage providers/aggregators finance and own the systems, ratepayer capital is not put at risk. Moreover, “pay-for-performance” BYOD programs

ensure that participating devices are paid only for verified performance, further reducing ratepayer risk.

2. **Simple:** Starting a BYOD program is simple. Batteries can participate based on a pre-set schedule for discharge to deliver a specified service (e.g. peak reduction), with no utility software upgrades needed to dispatch the battery. When ready, the utility can incorporate additional capabilities, such as remote dispatch and include additional capacity, energy or ancillary grid services, including locational services into the program offerings.
3. **No Rate Design:** Customers participate in BYOD programs through their underlying tariff (e.g. residential net metering tariff) without the need for rate design changes or enrolling in a separate rate class. This reduces regulatory complexity and increases customer participation.
4. **Partnerships:** The BYOD program structure combines the core competencies of electric utilities with those of the competitive battery storage industry to deliver ratepayer benefits. Moreover, by unlocking the grid value of storage, BYOD programs improve the financability of battery storage devices, which helps grow the market and increase opportunities for customer adoption across the income spectrum; which in turn increases the amount of storage deployed and available to participate in grid service programs.
5. **Resiliency:** When the grid goes down, BYOD batteries provide critical backup power to customers.
6. **Lowers costs and reduces emissions:** BYOD programs can deliver cost savings to customers by lowering utility costs and providing environmental and public health benefits by reducing emissions of GHGs and other pollutants.

How to Create a BYOD Program

Creating a BYOD program can be simple. Most utilities have energy efficiency and/or other demand management programs. These programs often include measures to target load reduction through the installation of more efficient appliances, fixtures and other technologies, such as smart thermostats. A BYOD program is a simple pathway for the utility to incorporate battery storage technology into their energy efficiency or demand management strategies. Because batteries are controllable (i.e. programmed to dispatch on a set schedule or remotely dispatched at varying times of need), they are more flexible and reliable than traditional energy efficiency measures and thereby can significantly enhance the utility's load management capabilities as a demand and/or supply side resource.

BYOD compensation can be structured as an upfront payment, as periodic (e.g. monthly) payments, or a combination of both. Payment is typically based on the customer's enrolled capacity commitment (i.e. \$ per kW). Under an upfront payment structure, compensation is tied to the anticipated performance over the program term. Under a periodic payment structure, compensation is tied to verified performance over the payment period throughout the program term. Both structures are designed to pay for performance of service delivered (e.g. peak load reduction, frequency response, etc.). See examples below for how different payment structures have been applied in different states and utility service territories.

Key Elements of a BYOD Program

Customers participating in the BYOD program install an eligible battery storage system and enroll with the utility either individually or through an aggregator. The aggregator role is critical in delivering the communication signal from the utility to all of the customer devices in its portfolio to respond to the utility called event (i.e. peak demand event) and otherwise providing the interface for program administration between the utility and the customers enrolled through the aggregator. The enrollment typically includes a verification process that confirms the participating device and aggregator meet program participation

requirements. This can be as simple as confirming the device is discharging at prescribed time periods for pre-set or “schedules dispatch” configurations or that the device and/or aggregator are properly integrated into the program communication platform for more sophisticated remote dispatch configurations. Once the enrollment and integration processes are complete, the device can begin to provide the target service and receive participation payments. For customers who enroll with an aggregator, the participation payment remits directly to the aggregator, which manages the customers’ batteries and value proposition.

Key program terms are defined in the standard offer BYOD tariff and supporting program materials. Typical program terms include:

- Target use case(s) (e.g., peak demand reduction, frequency response, etc.) along with anticipated number of discharge events, duration of each event and minimum notice to be provided prior to each event.
- Device eligibility rules for customer and third-party owned battery storage and approved inverter technologies.
- Customer eligibility rules enabling customers to enroll and participate without departing from their existing rate schedule or net metering agreement, and enabling participation through the customer designated aggregator.
- Performance rules consistent with the use case.
- Payment terms for either upfront or periodic payment (or a combination of the two) based on a \$ per kW of enrolled capacity. including direct payment to the customer or system owner, or to the customer designated aggregator and repayment terms under upfront payment regimes for non-performance or early withdrawal from the program.
- Customer enrollment and opt-out terms enabling customers to opt-out of the program at any time (subject to certain conditions, including repayment terms).

Examples of Residential BYOD Programs

1. Green Mountain Power’s Residential Storage Program

The Green Mountain Power (GMP) BYOD program provides the utility a peak demand reduction resource from the coordinated discharge of residential customer energy storage devices during forecasted peak demand events. Participating storage devices are discharged on average 5 to 8 times per month for an average of 3 to 6 hours per event. Customers receive notification from the utility of a forecasted peak event at least 4 hours in advance of the event. Customers enroll for a 10-year term and receive an upfront payment of \$850 per kW of enrolled capacity for participation over the program term. Additional compensation of \$100 per kW is available for customers located in grid constrained areas (i.e. an “adder” for locational services). Customers may unenroll from the program with 30-days notice, subject to repayment of a pro-rated portion of the upfront payment.¹

The program is open to customers across the GMP service territory. This enables GMP to access battery capacity and bring a battery offering to its customers in partnership with solar/storage providers, without taking on the responsibility to manage deployment of the resources. Solar/storage providers are able to customize offers to suit customer preferences and can enroll customers as part of an aggregation.

¹ Green Mountain Power Corp., Bring Your Own Device (“BYOD”) Terms and Conditions *available at* <https://greenmountainpower.com/wp-content/uploads/2020/11/BYOD-Customer-Agreement-11-2-20.pdf>.

2. Massachusetts’s Statewide “ConnectedSolutions” Program²

The ConnectedSolutions program – a statewide BYOD program offered by each of the electric distribution companies (EDCs) in Massachusetts – provides utilities a summer peak demand reduction resource from coordinated discharge of customer-sited battery storage during forecasted summer peak events. Residential customers enroll eligible behind-the-meter storage devices through an approved aggregator (or “integrator”). Participating devices are discharged between June and September between 30 – 60 times over the course of the summer event season. Discharge events last for 2-3 hours between the hours of 2–7pm. Customers enroll for a 5-year term for payment of between \$225 and \$275 per kW (depending on the service territory) based on their average performance over the event season.³ The performance payment amount is fixed at the time of enrollment for the 5-year term. Customers may unenroll at any time, but must participate through an entire event season to be eligible for payment for that season.⁴

The ConnectedSolutions program is open to customers across each EDC’s service territory and incorporates battery storage as an active demand reduction measure in the EDCs’ energy efficiency program and budgets. Massachusetts’ integration of energy storage technologies into the EDC’s energy efficiency plans is innovative in its expansion of the goals and definition of energy efficiency to include peak demand reduction as a strategy to improve overall system efficiencies, and provides further evidence that customer-sited battery storage are a cost-effective demand reduction measure.

3. Hawaiian Electric’s Battery Bonus Program

The Battery Bonus program provides the Hawaiian Electric Companies a year round peak load reduction and energy supply resource on the islands of Oahu and Maui. Residential (and commercial) customers who add an energy storage device to a new or existing solar installation can enroll in the program. Participating devices are discharged daily based on a preset schedule for two hours between the hours of 6–8:30p.m (the evening peak period). Customers enroll for a 10-year term and receive an upfront payment of \$850 per kW of enrolled capacity.⁵ Customers receive an additional \$5 per kW peak reduction payment as a monthly bill credit. Customers not enrolled in the utility’s net energy metering program receive an additional fixed monthly bill credit equivalent to the respective retail rate for electricity exported during the two-hour period. Customers may unenroll from the program with 60 days written notice, subject to repayment of a prorated portion of the upfront payment.⁶

² The ConnectedSolutions program is also offered by utilities in Connecticut, New Hampshire and Rhode Island.

³ For ease of example, assume a customer enrolls 5kW of capacity at \$275/kW. The utility calls 4 events over the course of the summer season and the customer provides 1kW, 4kW, 3kW, and 4kW of curtailment for each event respectively, for an average of 3kW per event over the season. The customer payment would be calculated as $\$275 * 3\text{kW} = \825 .

⁴ MassSave, Program Materials for ConnectedSolutions for Small Scale Batteries, *available at* <https://www.masssave.com/-/media/Files/PDFs/Save/Residential/connectedsolution-batteries/MA-Resi-Battery-Program-Materials-August-2021.pdf>.

⁵ The program is capped at 50MW of enrollment on Oahu and 15 MW on Maui. Customers on Oahu and Maui that sign up for the first 15MW on each island receive \$850/kW. Customers on Oahu enrolling in the next 15MW receive \$750/kW, and those enrolling in the final 20MW receive \$500/kW.

⁶ Hawaiian Electric, Customer Energy Solutions, Battery Bonus, <https://www.hawaiianelectric.com/products-and-services/customer-renewable-programs/rooftop-solar/battery-bonus>.

The Battery Bonus program was adopted by the Hawaii Public Utilities Commission to enable customer-sited battery storage to meet impending emergency capacity shortfalls on the islands. The Commission subsequently adopted a successor BYOD program scheduled to launch in July 2023. The successor BYOD program is anticipated to offer scheduled as well as remote dispatch capabilities to provide energy, capacity and ancillary grid services.⁷

Where Can I Learn More About Home Battery Programs?

- [How States Can Use Efficiency Funds to Support Battery Storage and Flatten Demand Peaks](#)
- [Bring-Your-Own-Batteries and EV Chargers: The Future of Distributed Energy Integration?](#)
- [Batteries Vs. Blackouts: 1,100 Homes Powered Through VT Outage with Storage](#)
- [Welcoming the Next Generation: Residential Demand Response 3.0](#)

⁷ Hawaii Public Utilities Commission, Docket No. 2019-0323, Instituting a Proceeding to Investigate Distributed Energy Resource Policies, Decision and Order No. 38196 (Jan. 25, 2022).

Example BYOD Programs

State	Utility	Program	Compensation	Call Window
Arizona ¹	Arizona Public Service	Residential Energy Storage Pilot	\$500/kW upfront incentive with total available incentive between \$2,500 – \$3,750 (lower incentive for providing data only, higher incentive for providing data + allowing APS to manage battery).	1-4 hours, 6-9 PM (non-holiday weekdays) or 9AM – 9PM (weekends and holidays)
California ²	Pacific Gas & Electric, Southern California Edison, San Diego Gas & Electric	Distribution Investment and Deferral Framework Partnership Pilot	Tiered payment structure based on value of distribution infrastructure avoided or deferred by use of DERs.	TBD
Colorado ³	Xcel	Battery Connect	\$1,250 upfront incentive in exchange for discharge of up to 80% of battery energy up to 100 times per year.	Year-round, 1-4 hours; no specific window but generally afternoon and early evening.
Connecticut ⁴	Eversource	Connected Solutions – Targeted Seasonal	\$225/kW-summer (avg. per peak event), locked in for five years.	3 hours, between 2-7 PM, June 1 – Sept. 30,

¹ Arizona Public Service Commission, Docket No. E-01345A-19-0148, Decision No. 77762, p. 7 (October 2, 2020). *See also* <https://www.solaredge.com/us/aps-residential-program>.

² Pacific Gas & Electric, Distribution Investment and Deferral Framework Partnership Pilot, *available at* https://www.pge.com/en_US/for-our-business-partners/energy-supply/electric-rfo/wholesale-electric-power-procurement/didf-partnership-pilot.page; *see also* California Public Utilities Commission, Decision 21-02-006 (Feb. 11, 2021) *available at* https://www.pge.com/pge_global/common/pdfs/for-our-business-partners/energy-supply/electric-rfo/wholesale-electric-power-procurement/DIDF%20Partnership%20Pilot/365628213.PDF.

³ Xcel Energy Colorado. Battery Connect, *available at* <https://co.my.xcelenergy.com/s/renewable/battery-connect>.

⁴ Eversource Connecticut. Application for Connected Solutions: Small Scale Batteries, *available at* <https://www.eversource.com/content/ct-c/residential/save-money-energy/manage-energy-costs-usage/demand-response/battery-storage-demand-response>.

				between 30-60 events per season
Hawaii ⁵	Hawaiian Electric Companies	Scheduled Dispatch Program	Program cap of 50 MW on Oahu. Upfront payment of \$850/kW for first 15 MW, \$750/kW committed for next 15 MW, and \$500/kW committed for last 20 MW. Program cap of 15 MW on Maui. Upfront payment \$850/kW for first 15 MW. Oahu and Maui customers each receive monthly bill credit of \$5/kW. Non-NEM customer receive a fixed bill credit equivalent to the respective retail rate for electricity exported during the two-hour dispatch period.	2 hours, 6:00 - 8:30 PM
Massachusetts ⁶	National Grid, Cape Light Compact	Connected Solutions – Residential	\$275/kW-summer, locked in for five years.	3 hours, between 2-7 PM, June 1 – Sept. 30, between 30-60 events per season
Massachusetts ⁷	Eversource	Connected Solutions – Residential	\$225/kW-summer, locked in for five years.	3 hours, between 2-7 PM, June 1 – Sept. 30, between 30-60 events per season

⁵ Hawaiian Electric Company, Customer Renewable Programs – Battery Bonus, *available at* <https://www.hawaiianelectric.com/products-and-services/customer-renewable-programs/rooftop-solar/battery-bonus>.

⁶ National Grid Massachusetts. Program Materials for Connected Solutions for Small Scale Batteries, *available at* https://www.nationalgridus.com/media/pdfs/resi-ways-to-save/ma_resi_battery_program_materials.pdf.

⁷ Eversource Massachusetts East. Application for ConnectedSolutions: Small Scale Batteries, *available at* <https://www.eversource.com/content/ema-c/residential/save-money-energy/energy-efficiency-programs/demand-response/battery-storage-demand-response>.

Massachusetts ⁸	Eversource, Cape Light Compact	Connected Solutions – Daily Dispatch	\$200/kW for dispatch on a daily basis (summer only), locked in for five years.	2-3 hours, between 2-7 PM, June 1 – Sept. 30
Massachusetts ⁹	Eversource, Cape Light Compact	Connected Solutions – Targeted Dispatch	\$100/kW-summer	3 hours, between 2-7 PM, June 1 – Sept. 30
Massachusetts ¹⁰	Unitil, National Grid	Connected Solutions – Daily Dispatch	\$200/kW for dispatch on a daily basis (summer only), locked in for five years.	2-3 hours, between 2-7 PM, June 1 – Sept. 30
Massachusetts ¹¹	Unitil, National Grid	Connected Solutions – Targeted Dispatch	\$35/kW-summer; \$10/kW weekend bonus.	3 hours, between 2-7 PM, June 1 – Sept. 30
New Hampshire ¹²	Unitil	Connected Solutions – Targeted Dispatch Pilot	\$35/kW-summer	3 hours, between 2-7 PM, June 1 – Sept. 30
New Hampshire ¹³	Eversource	Connected Solutions – Daily Dispatch	\$200/kW for dispatch on a daily basis (summer only), locked in for five years.	2-3 hours, between 2-7

⁸ Eversource Massachusetts East Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.eversource.com/content/ema-c/business/save-money-energy/manage-energy-costs-usage/demand-response>; Cape Light Compact, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.capelightcompact.org/business/commercial-connectedsolutions/>.

⁹ Eversource Massachusetts East Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.eversource.com/content/ema-c/business/save-money-energy/manage-energy-costs-usage/demand-response>; Cape Light Compact, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.capelightcompact.org/business/commercial-connectedsolutions/>.

¹⁰ Unitil, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at*: <https://unitil.com/sites/default/files/2022-05/CI-DemandResponse-ProgramMaterials-Unitil-FINAL-04-04-2022.pdf>; National Grid, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.nationalgridus.com/MA-Business/Energy-Saving-Programs/ConnectedSolutions>.

¹¹ *Id.*

¹² Unitil, Program Materials for Connected Solutions for Commercial / Industrial Customers, Appendix A, *available at* <https://unitil.com/sites/default/files/2022-05/CI-DemandResponse-ProgramMaterials-Unitil-FINAL-04-04-2022.pdf>.

¹³ Eversource Massachusetts East Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.eversource.com/content/ema-c/business/save-money->

				PM, June 1 – Sept. 30
New Hampshire ¹⁴	Eversource,	Connected Solutions – Targeted Dispatch	\$100/kW-summer \$50/kW-winter	3 hours, between 2-7 PM, June 1 – Sept. 30
New York ¹⁵	Consolidated Edison NY	Commercial Demand Response Programs	\$/kW-month capacity reservation payment (May – September) differentiated by location & number of event calls per peak season. Rates may change annually. Minor \$/kWh payment during events.	4+ hours, May 1 – Sept. 30
Rhode Island ¹⁶	National Grid	Connected Solutions – Targeted Seasonal	\$400/kW-summer season (avg. per peak event), locked in for five years. Up to 60 events per year.	3 hours, between 2-7 PM, June 1 – Sept. 30
Rhode Island ¹⁷	National Grid	Connected Solutions – Summer Targeted Dispatch	\$35/kW-summer season (avg. per peak event), locked in for five years. Extra \$10/kW-summer for weekend events. Between 2-8 events per year.	3 hours, 2-7 PM, from June 1 – Sept. 30
Rhode Island ¹⁸	National Grid	Connected Solutions – Daily Dispatch	\$300/kW-summer season (avg. per peak event), locked in for five years. Between 30-60 events per year.	2-3 hours from June 1 – Sept. 30 (Primarily

energy/manage-energy-costs-usage/demand-response; Cape Light Compact, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.capelightcompact.org/business/commercial-connectedsolutions/>.

¹⁴ Eversource Massachusetts East Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.eversource.com/content/ema-c/business/save-money-energy/manage-energy-costs-usage/demand-response>; Cape Light Compact, Program Materials for Connected Solutions for Commercial / Industrial Customers, *available at* <https://www.capelightcompact.org/business/commercial-connectedsolutions/>.

¹⁵ Consolidated Edison New York. Schedule for Electric Delivery Service, Rider T, *available at* https://lite.coned.com/_external/cerates/documents/elecPSC10/electric-tariff.pdf.

¹⁶ National Grid, Program Materials for Connected Solutions for Small Scale Batteries, *available at* <https://www.rienergy.com/RI-Home/ConnectedSolutions/BatteryProgram>.

¹⁷ National Grid, Summer Targeted Dispatch, *available at* <https://www.rienergy.com/RI-Business/Energy-Saving-Programs/Summer-Targeted-Dispatch>.

¹⁸ National Grid, Daily Dispatch, *available at* <https://www.rienergy.com/RI-Business/Energy-Saving-Programs/Daily-Dispatch>.

				July and August)
Vermont ¹⁹	Green Mountain Power	Bring Your Own Device (Grid Charging)	Up-front payment of \$850/kW for 3-hour storage discharge capability or \$950/kW for 4-hour discharge capability (10% event performance tolerance subject to clawback). 10-year program commitment.	3-6 hours
Vermont ²⁰	Green Mountain Power	Bring Your Own Device (Solar Only Charging)	Up-front payment of \$650/kW for 3-hour storage discharge capability or \$750/kW for 4-hour discharge capability (10% event performance tolerance subject to clawback) for systems installed for backup power only option, additional \$100/kW for these systems when installed in grid constrained locations; \$650 (no kW multiplier) for systems installed under solar self-consumption option. Additional \$100 (no kW multiplier) for for systems installed in grid constrained areas. 10-year program commitment.	3-6 hours

¹⁹ Green Mountain Power. BYOD – Terms and Conditions, *available at* <https://greenmountainpower.com/rebates-programs/home-energy-storage/bring-your-own-device/battery-systems/>, *see also* <https://greenmountainpower.com/wp-content/uploads/2020/11/BYOD-Customer-Agreement-11-2-20.pdf>.

²⁰ Green Mountain Power, BYOD – Solar Charging Program Tariff, V.P.S.B. No. 9, *available at* <http://epuc.vermont.gov/?q=downloadfile/576554/167385>.