



October 17, 2022

U.S. Department of Energy  
Office of Manufacturing & Energy Supply Chains  
Office of Energy Efficiency and Renewable Energy  
[bil-batterymanufacturing@hq.doe.gov](mailto:bil-batterymanufacturing@hq.doe.gov)

**SUBJECT: Comments from the Connecticut Green Bank – BIL-Battery Recycling RFI – DE-FOA-0002833**

To Whom it May Concern:

The Connecticut Green Bank (“Green Bank”) appreciates the U.S. Department of Energy’s (“DOE”) efforts through the Office of Manufacturing and Energy Supply Chains (“MESC”) and the Office of Energy Efficiency and Renewable Energy (“EERE”) issuing this request for Information (“RFI”) – Collection, Transportation, Sorting, Processing, and Second Life Applications for End-of-Life Lithium-Ion Batteries. The RFI is intended to provide the DOE with public input to help inform its implementation of the Infrastructure Investments and Jobs Act (“IIJA”), also known as the Bipartisan Infrastructure Law (“BIL”), specifically Sections 40207(e), 40207(f)(2), (f)(3), (f)(4) and 40208. The Green Bank, seeks to provide public comment on Section 40207(f)(2) “Battery Recycling Research, Development, and Demonstration Grants” and Section 40207(f)(3) “State and Local Programs,” and in particular Category G “State and Local Collection Programs for Lithium-Ion Batteries” and Category J “Equity, Environmental, and Energy Justice (EEEJ) Priorities”.

### **Background**

There are numerous public policies in Connecticut that support the Biden Administration’s policies, including:

- **GHG Reduction Targets** – Public Act 08-98 “An Act Concerning Connecticut Global Warming Solutions,” established GHG emission reduction targets for 2010, 2020, [2030, 2040] and 2050.<sup>1</sup>
- **Renewable Portfolio Standards** – Connecticut has a Renewable Portfolio Standard (“RPS”) of 40% by 2030.
- **Resilience and Vulnerable Communities** – Public Act 20-05 “An Act Concerning Emergency Response by Electric Distribution Companies, the Regulation of Other Public Utilities and Nexus

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<sup>1</sup> It should be noted, that through Public Act 18-82, a 45% reduction of GHG emissions from 2001 levels by 2030 was established. This target is consistent with President Biden’s 50% reduction of GHG emissions from 2005 levels by 2030. And, through the passage of Public Act 22-5, that a 100% zero carbon electric sector by 2040 was established.

Provisions for Certain Disaster-Related or Emergency-Related Work Performed in the State,” established definitions for resilience<sup>2</sup> and vulnerable communities,<sup>3</sup> including incentive programs (i.e., Microgrid and Resilience Grant and Loan Pilot Program).

- **Just Transition Requirements** – Public Act 21-43 “An Act Concerning a Just-Transition to Climate-Protective Energy Production and Community Investment,” established requirements for community benefit agreements.

The Green Bank shares the DOE’s goals for the investment under Section 20207(f) of the BIL. And specifically, with respect to Section 20207(f), there are several public policies in Connecticut that will lead to the use, and potential recycling, of lithium-ion batteries, including:

- **Battery Storage Target** – Public Act 21-53 “An Act Concerning Energy Storage,” established a 1000 MW target for battery storage by 2030.
- **Electric Vehicle Deployment Goal** – The Connecticut Department of Energy and Environmental Protection (“CT DEEP”) released the EV Roadmap for Connecticut, which sets a state goal for 20% of the statewide light-duty fleet, or 500,000 vehicles, to be EV by 2030. Cars and light-duty trucks purchased by state agencies in Connecticut will also transition to EV – by 2030 100% of vehicle acquisitions must be EVs per Connecticut General Statutes 4a-67d.
- **Zero Emission Buses** – Public Act 22-25 “An Act Concerning the Connecticut Clean Air Act,” established a 100% zero-emission target for school buses in environmental justice communities by 2030, and all school districts by 2040. Per Senate Bill 4, at least 30% of transit buses purchased or leased by the state must be zero emission by 2030.
- **Waste and Recycling** – Public Act 21-115 “An Act Concerning Climate Adaptation,” expanded the scope of the Connecticut Green Bank beyond “clean energy” to include “environmental infrastructure”<sup>4</sup> allowing the green bank model to accelerate and grow Connecticut’s green economy, including climate adaptation and resilience and waste and recycling.

In October 2019, the Public Utilities Regulatory Authority (“PURA”) initiated an Equitable Modern Grid Framework that includes battery storage (i.e., Docket No. 17-12-03RE03) and zero emission vehicles (i.e., Docket No. 17-12-03RE04). The Green Bank, in collaboration with Eversource Energy and United Illuminating (i.e., the two investor-owned electric distribution utilities in Connecticut), are co-administering a 580 MW by 2030 behind the meter battery storage incentive program for residential (i.e., 290 MW) and non-residential (i.e., 290 MW) end-use customers called Energy Storage Solutions – see Attachments A and B. Per PURA directive, no less than 40 percent of residential projects will be

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<sup>2</sup> “Resilience” means the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from deliberate attacks, accidents or naturally occurring threats or incidents, including, but not limited to, threats or incidents associated with the impacts of climate change.

<sup>3</sup> “Vulnerable communities” means populations that may be disproportionately impacted by the effects of climate change, including, but not limited to, low and moderate income communities, environmental justice communities pursuant to section 22a-20a, communities eligible for community reinvestment pursuant to section 36a-30 and the Community Reinvestment Act of 1977, 12 USC 2901 et seq., as amended from time to time, populations with increased risk and limited means to adapt to the effects of climate change, or as further defined by the Department of Energy and Environmental Protection in consultation with community representatives.

<sup>4</sup> “Environmental infrastructure” means structures, facilities, systems, services and improvement projects related to (A) water, (B) waste and recycling, (C) climate adaptation and resiliency, (D) agriculture, (E) land conservation, (F) parks and recreation, and (G) environmental markets, including, but not limited to, carbon offsets and ecosystem services.

installed for low-income families, in homes located in distressed communities, or in multi-family affordable housing. In this bring-your-own device program, the majority of batteries that have been approved to date are lithium-ion – see Table 1 below.

*Table 1. Example of batteries that could potentially be used in Energy Storage Solutions and need end-of-life services.*

<b>Manufacturer</b>	<b>Model/Model #</b>	<b>Composition</b>	<b>kWh</b>	<b>Weight (lbs.)</b>	<b>Dimensions</b>
Sun Power	SV-BASE13-12-B	Li-ion (LiFePO4)	13	528	26 x 63 x 15
Electriq Power	350-10LC	Li-ion (LiFePO4)	15	725	60 x 50 x 9
EndurEnergy Systems	ESP-5100	Li-ion (LiFePO4)	5.12	92.6	17.4 x 19.7 x 5.2
Enphase	Encharge 3	Li-ion (LiFePO4)	3.5	114	14.5 x 26.1 x 12.6
Enphase	Encharge 10	Li-ion (LiFePO4)	10.08	341	42.1 x 26.1 x 12.6
Equana	Evolve LFP	Li-ion (LiFePO4)	14	23	15.3 x 17.3 x 6.7
Urban Electric Power	Ohm-20	ZnMNO2	8.8	395	25 x 9.6 x 62
Tesla	Megapack 2	Li-ion (LMC)	3000		
Generac	M3	Li-ion (NMC)	9	175.8	3*(17.3 x 17.7 x 3.5)
Generac	M4	Li-ion (NMC)	12	234.4	4*(17.3 x 17.7 x 3.5)
Generac	M5	Li-ion (NMC)	15	293	5*(17.3 x 17.7 x 3.5)
Generac	M6	Li-ion (NMC)	18	351.6	6*(17.3 x 17.7 x 3.5)
SolarEdge Technologies	BAT 10K 1P	Li-ion (LMC)	361		48 x 40 x 20
Cadenza	CI-P-1-371	Li-ion			
Northern Reliability, Inc	NRI-E1000-K24	Li-ion			

As we transition both our heavy- and light-duty vehicles to zero-emissions alternatives, EVs will be an essential tool to decarbonize. For instance, there are approximately 8,600 school buses in Connecticut that are entirely powered by fossil fuels. To achieve the transformative investment to deploy zero emission school buses (e.g., electric school buses), and associate charging infrastructure, requires successful public-private partnerships. This will result not only in a reduction of GHG emissions and local criteria pollutants, but also other opportunities (e.g., vehicle-to-grid) to improve the resilience of the grid during power outages or periods of peak electric demand.

In Connecticut, we have the public policy infrastructure to reduce the burden of energy costs through the deployment of renewable energy and increase energy security through the deployment of battery storage, with a priority towards vulnerable communities. As our state ramps up deployment of battery technology, both stationary and in transit, we are looking ahead to a future in which the batteries deployed today are retired from use. To build the sustainable future our state envisions, we need both technical and financial assistance from the DOE to support the end-of-life of lithium-ion batteries.

## **Category G – State and Local Collection Programs**

- 1. What are used batteries classified as when they are collected and stored (waste, used material, universal waste, hazardous waste)? How is the location and time impacted by this classification?**

The Green Bank is unaware of how used batteries are classified when they are collected and stored. In consulting with the Connecticut Department of Energy and Environmental Protection (“CT DEEP”), the Green Bank has learned that batteries are regulated differently depending on whether or not they are generated in a household. Batteries that are not generated in a household are regulated as: (1) universal waste, if they are characteristically hazardous; or (2) so-called “Connecticut Regulated Waste<sup>5</sup>” if they are not characteristically hazardous. Batteries generated in a household are exempt from federal and state hazardous waste regulations, and can be legally disposed of with the homeowner’s municipal solid waste in Connecticut, although the State strongly promotes and encourages the recycling of household batteries, especially larger types that constitute a significant fire or safety hazard if disposed of in the municipal solid waste stream. Persons that aggregate household batteries (e.g., for recycling purposes) would either have to manage them as universal waste or under Connecticut’s solid waste permitting requirements.

As the Green Bank implements Energy Storage Solutions, we anticipate a useful life of participating lithium-ion batteries of ten years.<sup>6</sup>

- 2. What regulatory agencies have jurisdiction over used battery management at specific points in the EOL lifecycle?**

In Connecticut the following state entities have jurisdiction over the identified areas:

- a. Environmental** – Overseen by CT DEEP
- b. Fire** – Overseen by the State Fire Marshall
- c. Transportation** – Overseen by US Department of Transportation (“US DOT”), specifically the US DOT’s hazardous materials regulations. CT DEEP has oversight with respect to the transportation of batteries that are regulated as universal waste.
- d. Other** – unknown

Connecticut could use technical and financial assistance from the DOE to determine what federal or international regulations and standards our state could adopt to support the management of batteries at specific points in the end-of-life lifecycle, especially whether there should be distinct regulation for depleted batteries versus systems with remaining charge.

As far as the Green Bank is aware, the current guidance from the Environmental Protection Agency for consumers of mid-range to large lithium-ion batteries is:

*“Contact the manufacturer, automobile dealer, or company that installed the Li-ion battery for management options; do not put it in the trash or municipal recycling bins.*

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<sup>5</sup> [Connecticut-Regulated Waste](#)

<sup>6</sup> For a list of participating batteries – [https://energystoragect.com/submitted\\_ess\\_system\\_status\\_list/](https://energystoragect.com/submitted_ess_system_status_list/)

*Because of the size and complexity of these battery systems, medium and large-scale Li-ion batteries may not be able to be removed by the consumer. Refer to the manufacturer's instructions and heed warnings and safety instructions.”<sup>7</sup>*

The EPA's guidance for disposal of energy storage systems of the size and kW being installed under the Energy Storage Program, is to contact the manufacturer. However, the Green Bank is aware that there are potential environmental and fire risks which would make it hazardous for the consumer to attempt disposal of the energy storage systems without appropriate training. While the EPA's guidance puts responsibility on manufacturers to perform decommissioning, the responsibility of the battery at end-of-life has not been codified in Extended Producer Responsibility regulation, warranty information, or consumer contracts.

The State of Connecticut is currently considering whether to develop Extended Producer Responsibility laws, either independently or in conjunction with other states that have similar home and business battery storage programs. Please see Attachment C for a list of state-run storage programs that Connecticut would consider partnering with on this initiative.

### **3. What are the laws for compliance at the state and local level on end-of-life battery disposition?**

Batteries that are classified as universal waste as described above would be subject to Section 22a-449(c)-113 of the Regulations of Connecticut State Agencies (“RCSA”), which incorporates the federal universal waste regulations at 40 CFR 273 with specified changes. Batteries that are classified as “Connecticut Regulated Waste” would be subject to Connecticut General Statutes Section 22a-454. Batteries that are generated in a household would be subject to regulation under Connecticut's solid waste regulations, i.e., RCSA Section 22a-209-1 through -17, inclusive. The US DOT's hazardous materials regulations (i.e., 49 CFR parts 100 through 180) apply to the transportation of batteries at the end of life. The Green Bank is unaware of existing transportation, storage, or disposal laws at the state and local level specific to energy storage or EV battery systems beyond the battery rules described above.

Specific to the behind-the-meter storage program co-administered by the Green Bank, within the program manual of Energy Storage Solutions,<sup>8</sup> it is noted:

*“The decommissioning of any BESS participating in Energy Storage Solutions shall be completed by the Contractor, TPO, or another party as designed by the Contractor or TPO. The Contractor or TPO shall be held responsible by the Program Administrators for ensuring that all appropriate steps have been taken to dispose of and recycle all BESS components in such a manner that minimizes waste and environmental harm in compliance with all local, state, and federal regulations”*

Connecticut could use technical and financial assistance from the DOE and the EPA to support the development of laws for compliance at the state and local level on end-of-life energy storage and EV battery processing.

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<sup>7</sup> EPA, “Used Lithium-ion Batteries”, <https://www.epa.gov/recycle/used-lithium-ion-batteries>.

<sup>8</sup> [https://energystoragect.com/wp-content/uploads/2022/01/ESS-Program-Manual\\_Final-1-14-2022.pdf](https://energystoragect.com/wp-content/uploads/2022/01/ESS-Program-Manual_Final-1-14-2022.pdf)

It should be noted that the DOE SunShot Initiative was an excellent tool that helped Connecticut, and its 169 municipalities, work towards standardized permitting for residential solar PV. Perhaps there is a SunShot Initiative (or EarthShot Initiative) best practice there for the DOE to consider with respect to battery storage recycling.

**4. How do you keep track of regulations at the state and local level and how do you determine your compliance? Are there multi-state agreements with the handling and storage of materials (as materials travel between states)?**

The Green Bank is not currently keeping track of regulations at the state and local level in order to determine compliance, as this is largely the responsibility of CT DEEP. The Green Bank will work with CT DEEP to determine how to keep track of regulations at the state and local level and how to determine compliance.

While not specific to battery waste, regionally, CT DEEP works with Northeast Waste Management Officials (NEWMOA) to communicate with other northeast states on interstate regulatory issues and promote consistency. The Green Bank is unaware of other multi-state agreements with regards to the handling and storage of materials.

NEWMOA is a multi-state funded initiative and could use technical and financial assistance from the DOE to better keep track of regulations at the state and regional level. NEWMOA has not yet looked specifically at storage or EV battery waste but would benefit from support to coordinate end-of-life management best practices for handling, storing, and processing these resources. Connecticut intends to continue to work through NEWMOA with the EPA Region 1 and Region 2 as well as other neighboring states on multi-state agreements.

**5. What liabilities are these programs responsible for? And how are these programs insured?**

Hazardous waste contractors and transporters are permitted by the state and as a condition of obtaining a permit must carry certain levels of insurance and surety. At the state level, there are no battery/storage-specific permits.

For contractors to participate in Energy Storage Solutions, they must provide both Workmanship Warranty and General Liability Insurance:<sup>9</sup>

- **Workmanship Warranty** – Provide a copy of Eligible Contractor’s workmanship warranty. Contractors participating in Energy Storage Solutions must provide a ten (10) year or longer workmanship warranty. The warranty must cover full costs of labor for repair or replacement of any defective system components or components that failed due to improper or insufficient design or installation.
- **General Liability Insurance** – All Eligible Contractors and subcontractors must carry at least one million dollars in general liability insurance to participate in Energy Storage Solutions. Additionally, all Eligible Contractors and subcontracts must carry worker’s compensation, and auto insurance.

It should also be noted that in Energy Storage Solutions:

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<sup>9</sup> Ibid (pp. 24)

*“Neither the Connecticut Green Bank, Eversource Energy, United Illuminating (Program Administrators) nor the State of Connecticut: (1) endorses the workmanship of any Contractor; nor (2) guarantees, warranties, or in any way represents or assumes liability for any work proposed or carried out by a Contractor. Additionally, the Program Administrators are not responsible for assuring the design, engineering, and construction of any BESS is proper or complies with any particular laws, regulations, codes, licensing, certification and permit requirements, or industry standards. The Program Administrators do not make any representations of any kind regarding the results to be achieved by the system or the adequacy or safety of such measures.”<sup>10</sup>*

**6. Is there an estimate of building requirements based on quantity of batteries stored? Is this variable depending on where the batteries are stored?**

The Green Bank is unaware of an estimate of building requirements based on the quantity of batteries stored. In Connecticut, CT DEEP would individually evaluate and permit battery storage facilities, including reviewing plans for the location for storing batteries at each facility.

Connecticut could use technical and financial assistance from the DOE to determine these building requirements for batteries stored.

**7. Do you have examples of education and outreach programs, materials, or approaches to improve recycling, source reduction, recycling, recovering, reusing, repairing, or refurbishing that are associated with demonstrated results?**

While Connecticut has numerous education campaigns in the waste sector, the Green Bank does not have examples of education and outreach programs, materials, or approaches to improve recycling, source reduction, recycling, recovering, reusing, repairing, or refurbishing that are associated with demonstrated results that are specific to EV battery or energy storage disposal.

Connecticut could use technical and financial assistance from the DOE on consumer education and outreach programs on battery recycling. As stated above, perhaps there are lessons to be learned from the SunShot Initiative and soft-cost reduction strategies that can inform a DOE approach to battery storage recycling (i.e., EarthShot Initiative).

**8. Can you direct us to any specific examples of useful consumer educational materials or other content that states, Tribes, and units of government can adapt and use in recycling programs? What were the associated impacts and costs (financial, staff, an/or other resources) of the effective programs?**

The Green Bank cannot direct the DOE to any specific examples of useful consumer educational materials on EV battery or energy storage recycling programs. However,

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<sup>10</sup> Ibid (pp. 4)

Connecticut has run numerous consumer educational programs on waste such as *What Do I Do With...*<sup>11</sup>

**9. Can you direct us to any specific good examples of local and state coordination and/or collaboration on laws, permitting, zoning, etc. on recycling programs?**

The Connecticut Coalition for Sustainable Materials Management (“CCSMM”) has convened 100 municipalities from across the state to explore ways to reduce the amount of waste that is generated in our state, improve reuse, recycling, organics collection, support extended producer responsibility (“EPR”) legislation, and consider other innovative solutions.

The Green Bank cannot direct the DOE to any examples of local and state coordination and/or collaboration on laws, permitting, zoning, etc. specific to storage recycling programs. To our knowledge, there are no such initiatives in the state. However, as noted above, the DOE should consider a SunShot Initiative best practice approach to battery storage recycling.

**Category J: Equity, Environmental, and Energy Justice (EEEJ) Priorities**

**1. Please give input on how the Battery Recycling Provisions help achieve the Justice40 policy priorities that could benefit disadvantaged communities and to maximize implementation co-benefits.**

On October 12, 2021, the Green Bank, along with the Greater Bridgeport Community Enterprises and Operation Fuel, submitted public comments into the DOE’s Communities Local Energy Action Plan (“LEAP”) pilot program process – see Attachment D. Within those comments, we suggested that the DOE include a “Recycling Planning and Investment Pathway” alongside all of the other pathways. Such a pathway would have sought to support the development of facilities for recycled materials (e.g., solar PV panels, battery storage, Energy Star appliances) and support workforce training.

Since this pathway was not included within the pilot Communities LEAP program, the Green Bank would suggest that consideration be given to expanding Communities LEAP and including recycling within the eligible pathways of the program through the program(s) envisioned by DE-FOA-0002833. Expanding Communities LEAP, through its inclusion of recycling pathways, would serve to benefit the Justice40 policy priorities. Also, as noted within the comments, the DOE should consider providing additional support from potential applicants under the envisioned programs through this RFI.

**2. What program requirements or review criteria should DOE consider ensuring that regional economic growth flowing from funded projects will be shared with disadvantaged communities?**

As battery storage recycling [and all clean energy recycling (e.g., solar PV, appliances)], is likely to be a regional opportunity, the Green Bank would suggest that the DOE work across government with the EPA to encourage regional applications and/or planning. For example,

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<sup>11</sup> <https://portal.ct.gov/DEEP/Waste-Management-and-Disposal/What-Do-I-Do-With>



given the ambitious public policies and incentives for battery storage and electric vehicles in New England that are leading to significant technology adoption, EPA Region 1 and the DOE could be unifying voices to bring our states together. With the Green Bank's new scope expansion inclusion of "waste and recycling" within "environmental infrastructure," we stand ready to coordinate with the DOE, EPA, CT DEEP, and New England states to support the investment in and operation of battery storage recycling facilities.

It should be noted, per CGS 22a-20a(2)(D),<sup>12</sup> that "environmental justice communities"<sup>13</sup> in Connecticut would likely treat battery storage recycling facilities as "affecting facilities"<sup>14</sup> and therefore require the planning and development of such facilities to enable meaningful public participation, including a community environmental benefit agreement.

**3. How are adverse impacts of manufacturing and recycling facilities currently measured or monitored? Which materials, processes, and/or components result in the largest environmental impacts? What opportunities exist to minimize such impacts?**

The Green Bank is not aware of how adverse impacts of manufacturing and recycling facilities are currently measured or monitored.

Connecticut could use technical and financial assistance from the DOE to help us determine how adverse impacts of manufacturing and recycling facilities are measured and monitored, including materials, processes and/or components, in order to identify opportunities to minimize such impacts.

**4. Describe possible human health, environmental, or ecological considerations, both positive and negative (e.g., are there any air quality impacts, sensitive ecosystems, National Environmental Policy Act (NEPA) issues, environmental justice communities, other considerations) that the DOE should consider in conjunction with design and implementation of the Battery Recycling Provisions?**

Li-ion batteries are prone to thermal runaway, fires, and explosions. Thermal runaway is an uncontrollable self-heating reaction that can lead to fires or explosions. Several things can cause the battery to overheat, including mechanical failures, overcharging the battery, a short circuit, and internal chemical reactions. The likelihood of thermal runaway increases as cells

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<sup>12</sup> CGS 22a-20a – <https://portal.ct.gov/-/media/DOT/CGSSec22a20aEnvironmentalJusticeCommunitypdf.pdf>

<sup>13</sup> "Environmental justice community" means (A) a United States census block group, as determined in accordance with the most recent United States census, for which thirty per cent or more of the population consists of low income persons who are not institutionalized and have an income below two hundred per cent of the federal poverty level, or (B) a distressed municipality, as defined in subsection (b) of section 32-9p;

<sup>14</sup> (2) "Affecting facility" means any (A) electric generating facility with a capacity of more than ten megawatts; (B) sludge or solid waste incinerator or combustor; (C) sewage treatment plant with a capacity of more than fifty million gallons per day; (D) **intermediate processing center, volume reduction facility or multitown recycling facility with a combined monthly volume in excess of twenty-five tons**; (E) new or expanded landfill, including, but not limited to, a landfill that contains ash, construction and demolition debris or solid waste; (F) medical waste incinerator; or (G) major source of air pollution, as defined by the federal Clean Air Act. "Affecting facility" shall not include (i) the portion of an electric generating facility that uses nonemitting and nonpolluting renewable resources such as wind, solar and hydro power or that uses fuel cells, (ii) any facility for which a certificate of environmental compatibility and public need was obtained from the Connecticut Siting Council on or before January 1, 2000, or (iii) a facility of a constituent unit of the state system of higher education that has been the subject of an environmental impact evaluation in accordance with the provisions of sections 22a-1b to 22a-1h, inclusive, and such evaluation has been determined to be satisfactory in accordance with section 22a-1e.

age. When burned, Li-ion batteries produce toxic sulfur dioxide fumes and may produce toxic HF.

Connecticut could use technical and financial assistance from the DOE to help us understand the possible human health, environmental, or ecological considerations from battery storage recycling facilities.

**5. How will Tribal communities or lands potentially be impacted by design and implementation of the Battery Recycling Provisions?**

The Green Bank is unaware of how Tribal communities or lands could potentially be impacted by the design and implementation of the Battery Recycling Provisions. As the DOE's Justice40 Initiative has identified Disadvantaged Communities ("DACs") within each state, including Tribal areas, if there were technical and financial resources for states, Tribal communities could be included within community engagement efforts to assess the costs and benefits of such facility deployment.

**6. What are key equity-aligned criteria that DOE should use to evaluate and select projects in the Battery Recycling Provisions?**

The Green Bank would prioritize the eight (8) policy priorities of the DOE's Justice40 Initiative, and therefore align them to the key-equity criteria, in the following manner when it comes to Battery Recycling Provisions:

- 1) Increase energy democracy in DACs
- 2) Decrease environmental exposure and burdens for DACs
- 3) Increase energy resilience in DACs
- 4) Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs
- 5) Increase clean energy jobs, jobs pipeline, and job training for individuals from DACs
- 6) Increase access to low-cost capital in DACs
- 7) Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs
- 8) Decrease energy burden in DACs

**7. In what ways, if any, do you anticipate battery manufacturing, recycling, and associated activities could impact the workforce? For example:**

**a. To what extent do you anticipate job creation, loss, or changes in job quality?**

The Green Bank anticipates job creation and high quality jobs when it comes to battery storage recycling.

**b. To what extent do you anticipate the creation of jobs? Ongoing operations and maintenance jobs? Other jobs across the supply chain?**

The Green Bank anticipates sustained job creation in battery storage recycling beginning in the 3 to 5 years. The Green Bank would suggest that future United States Energy and Employment Report ("USEER") take-up the opportunity for

assessing job creation when it comes to not only battery storage recycling, but also clean energy recycling in general.

**c. What is needed to train, secure, and maintain a qualified workforce for these activities?**

The Green Bank is unsure about what is needed to train, secure, and maintain a qualified workforce for these activities.

The Green Bank, working with its regulatory (e.g., CT DEEP, PURA), and implementation (i.e., Eversource Energy, United Illuminating) partners, have the ability to create an extended consumer [or producer] responsibility program as aspects of our initiatives. However, we are not experts and need technical and financial assistance from the DOE, including from its national labs (e.g., ReCell Center at Argonne National Laboratory), to assist us in ensuring that the clean energy economy we are building stands-up to the green economy that we want to create.

The Green Bank appreciates the DOE's efforts to solicit public comment on the pending RLF request for proposals. We look forward to working with our private capital partners to submit an application for consideration into the Revolving Loan Fund Program solicitation.

Sincerely,

*Bryan Garcia*

Bryan Garcia  
President and CEO

*Sara Harari*

Sara Harari  
Associate Director of Innovation and  
Senior Advisor to the President and CEO

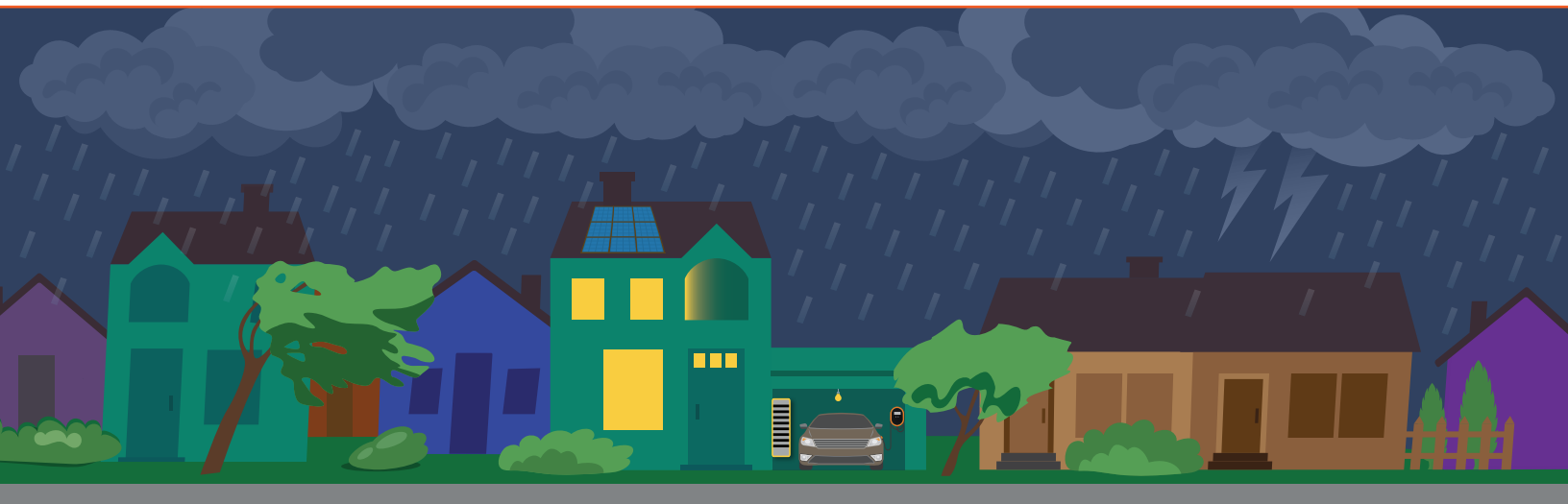
**About the Connecticut Green Bank**

As the nation's first state-level green bank, the Connecticut Green Bank leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized \$2.26 billion of investment into Connecticut's clean energy economy at a 7 to 1 leverage ratio of private to public funds, supported the creation of 27,720 direct, indirect and induced jobs, reduced the energy burden on over 66,500 families and businesses, deployed nearly 510 MW of clean renewable energy, helped avoid 10.4 million tons of CO<sub>2</sub> emissions over the life of the projects, and generated \$113.6 million in individual income, corporate, and sales tax revenues to the State of Connecticut.

**Attachments**

Attachment A – Energy Storage Solutions Fact Sheet (Homes)  
Attachment B – Energy Storage Solutions Fact Sheet (Buildings)  
Attachment C – Behind-the-Meter Storage Programs  
Attachment D – Comments to DOE on Recycling Pathway under Communities LEAP

## **Attachment A – Energy Storage Solutions Fact Sheet (Homes)**

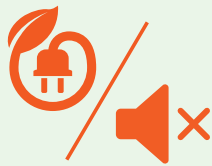


## Introducing Energy Storage Solutions

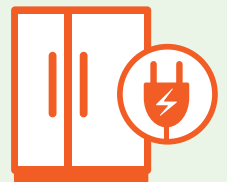
Energy Storage Solutions is a new incentive program designed to help Eversource and United Illuminating customers install energy storage for their home. Installing a battery in your home can help you be prepared when extreme weather events are on the horizon. Batteries can provide backup power when the electricity goes out to keep your lights, small appliances, and medical equipment running without the need to run an onsite generator. Plus, batteries work even better when you add them to an existing solar PV system or pair them with a new one, allowing batteries to recharge with the sun's energy.

## Battery Benefits

**Cleaner / Quieter:** Unlike generators that run on fossil fuels, batteries are a cleaner, quieter option for powering your home during an outage.



**Resilient:** With battery storage, you're always ready for a storm without needing to buy or store fossil fuels. Keep your lights on and your refrigerator running without the stress and hassle.



**Affordable:** With Energy Storage Solutions, it's more affordable than ever to purchase a battery system. Upfront and performance-based incentives allow you to save money at the time of purchase and over the life of your system. Residential customers could receive up to \$7,500 upfront per installation with additional incentives as your system contributes to the utility grid. Visit <https://energystoragect.com/>.

# How Do I Get Started?

Talk to an eligible contractor who will help you size a battery system based on what you want to power, how long you want to power it, and where you have suitable space to install a battery system.

## 1 What do you want to power in an outage?

Your contractor will look at the appliances, lighting, or priority equipment you want to power in an outage to determine how much power you'll need during a power outage.

## 2 Where is there suitable space to install batteries?

Depending on the type, batteries may need to be located inside or outside. Your contractor may need to adjust the size of your battery system to accommodate your available space.

## 3 How long can the battery run without being re-charged?

The larger the battery, the longer it will be able to power your appliances and lights without being re-charged by solar PV or your homes power supply. Your contractor will help you decide on a battery size that works for the goals of your household.



**To learn more about Energy Storage Solutions or get started with an eligible contractor, visit <https://energystoragect.com/>**

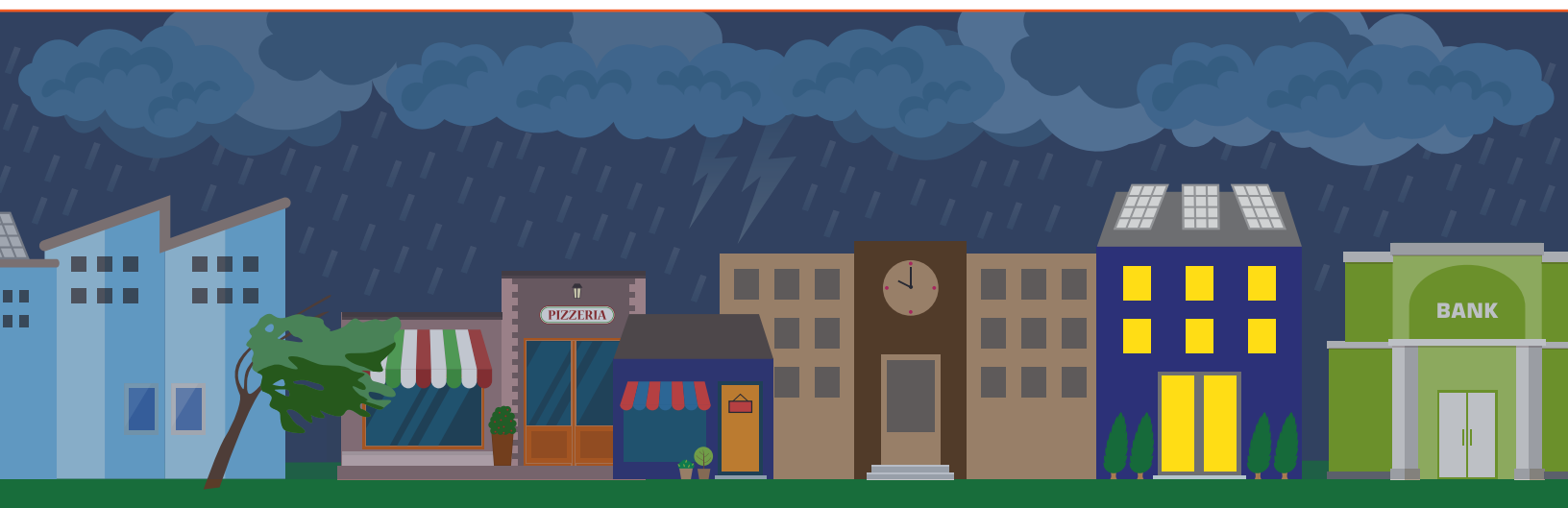


EVERSOURCE



This program is overseen by the Public Utilities Regulatory Authority (PURA), is paid for by ratepayers, and is administered by the Green Bank, Eversource, and UI.

## **Attachment B – Energy Storage Solutions Fact Sheet (Buildings)**



## Introducing Energy Storage Solutions

Energy Storage Solutions is a new incentive program designed to help Eversource and United Illuminating customers install energy storage for their commercial, industrial and institutional properties. Installing a battery for your business, nonprofit or government facility can help you lower your building's peak demand to reduce energy costs. Batteries can also provide backup power when the electricity goes out to keep your lights on and your facility running without interruption. Upfront and performance-based incentives are available to reduce the cost of an energy storage system. **Additional value may be available for customers on the grid edge, critical facilities, facilities replacing fossil fuel generators, and small businesses.**

## Energy Storage Solutions Benefits

**Affordable:** With Energy Storage Solutions, there has never been a better business case for purchasing a battery system. Upfront and performance-based incentives allow you to save money at the time of purchase and earn over the life of your system. You could receive up to 50% off the installation price with additional performance incentive payments based on the average power your battery system contributes during critical periods. Visit <https://energystoragect.com/> for details.



**Resilient:** With battery storage, you're always ready for a storm. Keep your business or facility running so that you can continue to serve the needs of your customers or members.



**Cleaner & Quieter:** Unlike generators that run on fossil fuels, batteries are a cleaner, quieter option for powering your business during an outage. They're better for the environment and friendlier for your customers, members or constituents. Battery systems tied to new or existing solar PV systems can charge during an outage.





## How Do I Get Started?

Talk to an Eligible Contractor who will help you size and identify the best location for your battery system based on your facility's needs or the core function of your business. Your contractor will help you decide on a battery size that works for the goals of your facility.

### Commercial and Industrial End-Use Customer Upfront Declining Incentive Block Structure (2022-2024)



	Effective Upfront Incentive (\$/kWh)		
	Small Commercial	Medium Commercial	Large Commercial
Peak Demand	<200 kW	200 kW – 500 kW	>500 kW
Incentive for first 50 MW of Commercial Storage Projects	\$200	\$175	\$100

### Commercial and Industrial End-Use Customer Annual Performance-Based Incentive (2022-2024)



	Years 1-5		Years 6-10	
	Summer	Winter	Summer	Winter
Season Incentive (\$/kW)	\$200	\$25	\$115	\$15

To learn more about Energy Storage Solutions or get started with an eligible contractor, visit <https://energystoraget.com/>



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## **Attachment C – Behind-the-Meter Storage Programs**

Program Name	State	Program	Eligible Sectors	Description
Self-Generation Incentive Program	California	Public Utilities Commission PG&E, SCE, SoCalGas, and SDG&E	Electric and/or gas customers of PG&E, SCE, and SDG&E both residential and non- residential facilities	Offers rebates for installing energy storage technology at both residential and non-residential facilities. System must be sized according to the customer's electricity usage. Incentives for storage vary by system size, sector, and whether or not the system is claiming the ITC or not.
Battery Storage for Homeowners	California	Sacramento Municipal Utility District	Residential	Incentive level varies by engagement level. The highest incentive level (\$250/kWh up to \$2,500 for enrollment and additional performance payments) requires that the customer allow their Tesla Powerwall to be participate in peak events year-round. The second tier is to allow SMUD to optimize the battery during peak periods during the summer, and the lowest is to optimize the battery using a time of day rate.
Holy Cross Energy – Renewable Energy Rebate Program	Colorado	Holy Cross Energy	Available for commercial, local government, nonprofit, residential, schools, federal government, agricultural, and	\$250 per kW incentive for energy storage systems up to 25 kW; if systems are enrolled in the Distribution Flexibility Program, they are eligible for an incentive of \$500 per kW
Residential Battery Storage Program	Colorado	Fort Collins Utilities	Residential systems (standalone or PV paired)	Upfront incentive of \$100 per kWh up to \$1,500 for new installation
Energy Storage Solutions	Connecticut	Connecticut Green Bank, United Illuminating & Eversource	Available for commercial and residential sectors	Offers both an upfront and performance incentive to commercial and residential customers installing storage.
JEA Battery Incentive Program	Florida	Jacksonville Electric Authority (JEA)	Available for commercial and residential sectors	Rebate of \$4,000 for residential and commercial storage systems that have a minimum capacity rating of 6 kWh. System must be paired with a renewable generation system that charges the battery.

Program Name	State	Program	Eligible Sectors	Description
Battery Bonus	Hawaii	Hawaiian Electric	Residential or commercial customers with PV-paired energy storage systems	Incentive for customers to add energy storage to PV systems. Participants must commit to a firm two-hour schedule for battery dispatch.
Wattsmart Battery Program	Idaho, Wyoming, and Utah	Rocky Mountain Power	Residential and commercial customers with storage systems paired with solar PV	Upfront incentive of \$400 per kW and participation incentive of \$15 per kW for residential customers. Participation requires batteries to be called upon during events.
Solar Massachusetts Renewable Target (SMART) Program	Massachusetts	Department of Energy Resources	Commercial, industrial, govnrment, nonprofit, residential	Solar projects co-located with storage will receive a compensation rate adder as part of their per kWh incentive through the program
ConnectedSolutions	Massachusetts	MassSave - National Grid, Eversource, Cape Light Compact	Residential and small business	Performance-based incentive of \$275 per kW (National Grid), \$225 per kW (Eversource), for participating in summer events. Standalone batteries are eligible.
NV Energy – Energy Storage Incentive Program	Nevada	Nevada Power Co, Sierra Pacific Power Co	Available for commercial, local government, nonprofit, residential, schools, federal government, agricultural, and institutional for energy storage sited with a previously installed renewable energy system or	Incentives available for residential systems between 4 and 100 kW and commercial systems between 4 and 1,000 kW. Incentives are and dependent on system size and system type (commercial or residential). The max residential system incentive is the lessor of 50% of the system cost of \$3,000.
Liberty Battery Storage Program	New Hampshire	Liberty	Residential	Monthly cost to participants for the battery. Liberty Utilities programs the battery to charge at certain times. Customers are eligible for net metering.
NYSERDA Retail Energy Storage Incentive Program	New York	NYSERDA	Available for commercial, industrial, residential, government, nonprofit, agricultural	Incentives for behind-the-meter energy storage projects that are less than 5 MW (AC) that are connected to the customer’s meter or directly to the distribution system. Incentives are based on system capacity up to a system size of 15 MWh per system. Uses a block system with declining incentive levels.

Program Name	State	Program	Eligible Sectors	Description
PSEG Long Island Battery Storage Rewards	New York	PSEG	Residential and commercial customers with either standalone battery or PV-	Performance-based incentive during summer month events (amount not specified). Participation is done through an aggregator.
Solar + Storage Rebate Program	Oregon	Oregon Department of Energy	Available for residential and low income residential	This program offers incentives for residential solar plus storage systems with higher rebates for low-income customers. The standard storage incentives are \$300 per kWh of installed capacity up to the lesser of \$2,500 or 60% of net costs. Low-income customers are eligible for up to \$15,000 or 60% of system costs, whichever is lower.
PGE Smart Battery Pilot	Oregon	PGE	Residential standalone or PV-paired systems	Rebate of \$1,000 to \$3,000 for installing a battery (only available in PGE Smart Grid Test Bed communities), and \$20 per month if the battery only charges from your solar system.
Battery Program	Rhode Island	Rhode Island Energy	Residential batteries paired with on-site renewable generation or standalone systems (limited incentives)	Performance-based incentive of \$400 per kW for summer events.
Bring Your Own Device Program	Vermont	Green Mountain Power	Residential and small business customers	Upfront incentive of \$850 per kW enrolled for three hour discharge, \$950 per kW enrolled for four hour discharge. Extra \$100 per kW in certain areas.
APS Storage Rewards	Arizona	APS	Residential customers in targeted areas	APS owns and operates the battery while customers receive a one-time enrollment bill credit of \$500.

**Attachment D – Comments to DOE on Recycling Pathway under Communities  
LEAP**



October 12, 2021

U.S. Department of Energy  
Offices of EERE, Electricity, Policy, Fossil Energy and Carbon  
Management, and Economic Impact and Diversity  
Communities LEAP Pilot  
[CommunitiesLEAPInfo@hq.doe.gov](mailto:CommunitiesLEAPInfo@hq.doe.gov)

SUBJECT: Comments from the Greater Bridgeport Community Enterprises, Operation Fuel, and  
Connecticut Green Bank – Communities LEAP Pilot

To Whom it May Concern:

The Greater Bridgeport Community Enterprises ("GBCE"), Operation Fuel, and the Connecticut Green Bank ("Green Bank") (i.e., together the "Respondents"), appreciate the U.S. Department of Energy's ("DOE") efforts through the Office of Energy Efficiency and Renewable Energy ("EERE"), Electricity, Policy, Fossil Energy and Carbon Management, and Economic Impact and Diversity for issuing this competitive opportunity – Communities Local Energy Action Plan ("LEAP") Pilot – which will support 24-36 communities with technical assistance services.

As diverse leaders of organizations serving underserved communities throughout Connecticut, the Respondents support the Justice 40 Initiative by the DOE to ensure that everyone is afforded an opportunity to participate fully in its programs, opportunities, and resources. The following are comments by the Respondents on the Communities LEAP Pilot:

- **Include "Recycling Planning and Investment" Pathway** – the Communities LEAP Pilot identifies seven (7) pathways to clean energy-related economic development with an emphasis on developing energy jobs and workforce skills, as well as promoting minority-owned businesses and small- to mid-size businesses. Consideration should be given to including an additional pathway called "Recycling Planning and Investment" that would seek to support the development of facilities for recycled materials (e.g., solar PV panels, battery storage, Energy Star appliances), support workforce training, and acquire the necessary machinery arising from the successful growth and development of a clean energy economy. The Respondents would be happy to work with the DOE staff to develop a "Recycling Planning and Investment" pathway to be included in Appendix A.
- **Race to All vs. Race to the Top** – the Respondents appreciate the efforts by the DOE to support competitive solicitations for technical assistance through programs such as the Communities LEAP Pilot – such competitive solicitations inspire collaboration and innovation. However, for those communities that are encouraged to register and apply, but are unsuccessful – this can be devastating to expectations and progress made within a community and result in less participation

(e.g., application) in future DOE solicitations. The Respondents would suggest that the DOE consider additional support like:

- **Applicant Technical Assistance** - provide potential applicants with preproposal stage technical assistance directed to preparing community actors for the application process. For example, the DOE could initiate a program that prepares communities and their environmental justice groups to respond to opportunities presented by the Administration.
- **Additional Program Resources** - increasing the budget for technical assistance to support local communities develop their Launch or Accelerate develop their project concepts (i.e. go beyond supporting up to 36 applicants and unlock it to thousands of environmental justice communities). Perhaps state and local governments, and/or philanthropic institutions (e.g., community-based foundations) would be interested in co-funding such an effort alongside the DOE to ensure that the race for environmental justice is for all and not the select few.
- **Participatory Democracy and Unheard Voices** – everyone within the environmental justice community recognizes the challenges of having consistent participation in regulatory, statutory, and other political processes (e.g., planning) in order to effectively advocate for vulnerable communities. The Respondents are unsure as to what the DOE can do to support the foundational needs of community engagement in local democracies, but offer-up the notion that there needs to be steady representation that can advocate on behalf of the community in order to develop and then implement actions to advance the local clean energy economy. Perhaps each state, or DOE-identified environmental justice communities within a state, could be provided access to an experienced consulting firm like 38 North Solutions, APPRISE, Institute for Sustainable Communities who can support the advocacy, facilitation, guidance, and other needs of the community.
- **Eligible Entities: Local, Tribal, or Territorial Government Entity** – making steady progress in environmental justice communities to advance the benefits of the clean energy economy can ebb-and-flow with local politics albeit new leadership, changing staff, or other dynamics. The Respondents would recommend that all levels of formal and informal government be allowed to be considered as part of multi-stakeholder teams, so as to navigate the ever-changing transitions of leadership in government – “Include at least one neighborhood revitalization zone, local, regional, state, tribal, or territorial government entity.”

We stand ready as minority-led organizations from Connecticut to work with the DOE to advance its Justice 40 Initiatives to enable our communities to access the economic and environmental benefits of clean energy.

Sincerely,

/Brenda Watson/  
Brenda Watson  
Executive Director  
Operation Fuel

/Adrienne Farrar Houël/  
Adrienne Farrar Houël  
President and CEO  
Greater Bridgeport Community Enterprises

/Bryan Garcia/  
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