Welcome!

Let us know in the chat –

Your name/pronouns, organization, and what you are most excited for this spring or summer

May 14, 2024

DOER Leading by Example Council Meeting

Leading by Example Council Agenda

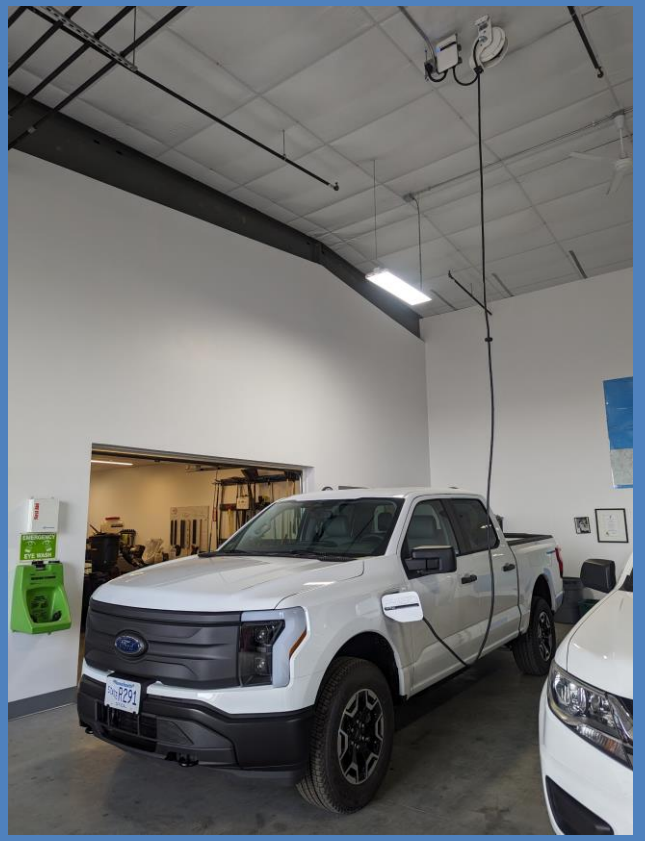
May 14, 2024

Welcome

Solar Spotlight: Policy Updates, Peer Experiences, & Third-Party Agreements

LBE Puts the "Fun" in Funding: Exciting Grant Updates

Climate News and Updates: Locally and Across the Globe



Plymouth County Mosquito Control received LBE Fleet EV Charging Grant funds and installed ceiling-mounted retractable charging for their vehicles!

Solar

- SMART Programmatic Review (Grace Fletcher, DOER)
- Innovative Rooftop Solar Solution (Sarah White, DCR)
- Solar Production Tracking and O&M (Pat Peterson, DCAMM)
- The Solar Canopy Experience (Ray Jackson, UMass Amherst)
- Navigating the Solar PPA Process (Walter Gray, PowerOptions; Matt Shortsleeve, Solect)
- Q&A

Poll

How would you define your experience with solar?
(Check all that apply)

Creating a Clean, Affordable and Resilient Energy Future for the Commonwealth

Massachusetts Department of Energy Resources

SMART Programmatic Review

May 14, 2024

Recent Developments

- Due to unexpected disruptions to the solar market and the Commonwealth's ambitious policy targets for solar deployment, DOER identified the need to conduct another review of the program to improve outcomes

- DOER engaged Sustainable Energy Advantage, LLC to perform an analysis of solar costs and needed incentive levels across sectors from 2025-2030

- Collected written stakeholder comments in January to a series of questions about program elements and potential improvements

- Hosted a series of stakeholder meetings in March to gather input on current challenges and barriers and desired changes to the program

- On April 22nd, DOER received an award notice of $156 million in federal funding under the Solar For All program
  - These projects are expected to participate in SMART and the additional funds will enable deeper benefits to low-income residents

DOER
Massachusetts Department of Energy Resources

Guiding Principles

Equity	Prioritizing historically underserved populations and those disproportionally affected by climate change.
Consumer Protection	Ensuring the value and benefits of the SMART program are being passed onto program participants.
Transparency	Creating accessibility to program data to ensure implementation is consistent and just.
Coordination	Ensuring the SMART program is in harmony with existing policy.
Simplicity	Reducing burdensome requirements to participate.

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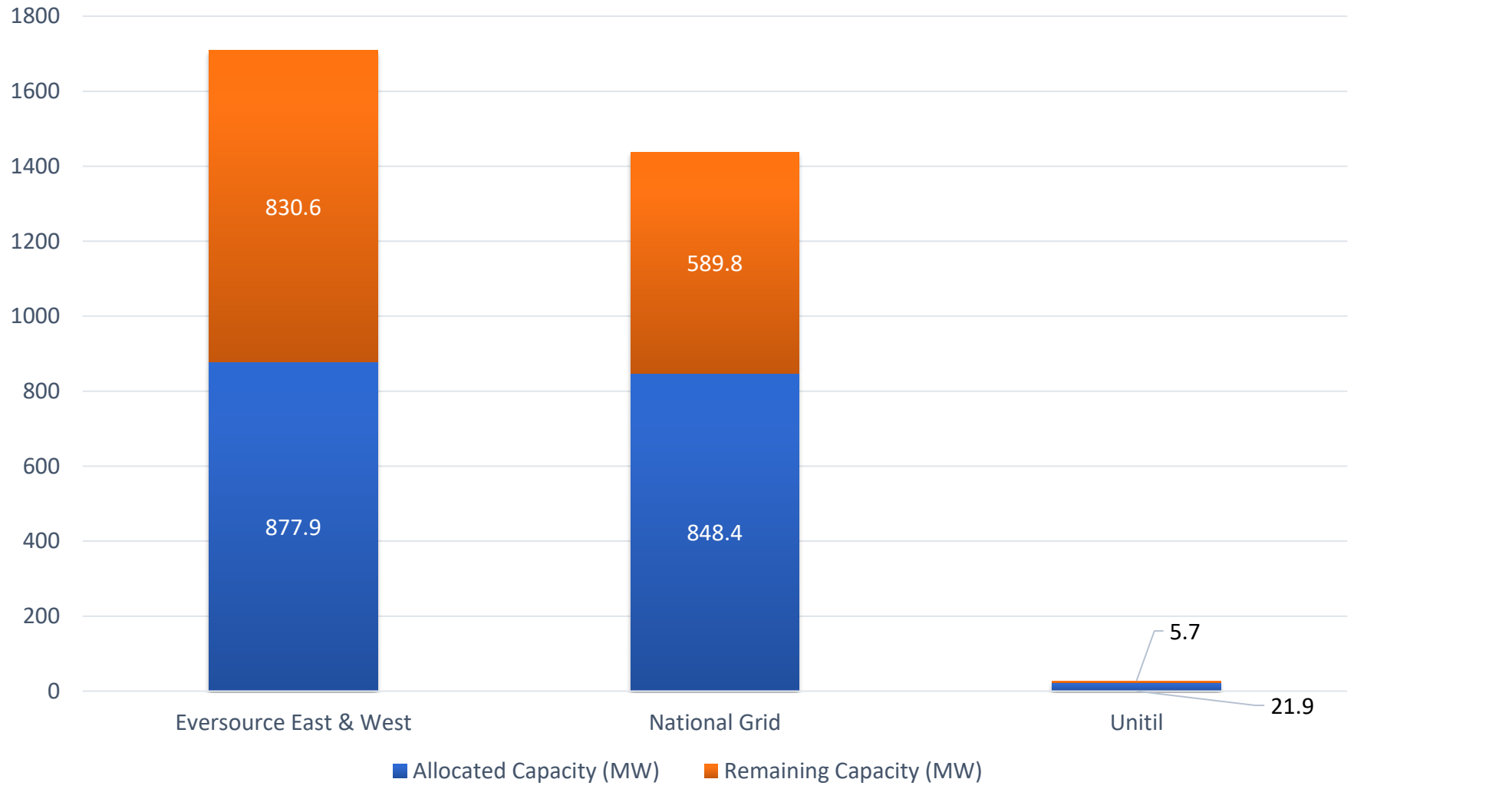
Massachusetts Department of Energy Resources

Capacity by Service Territory



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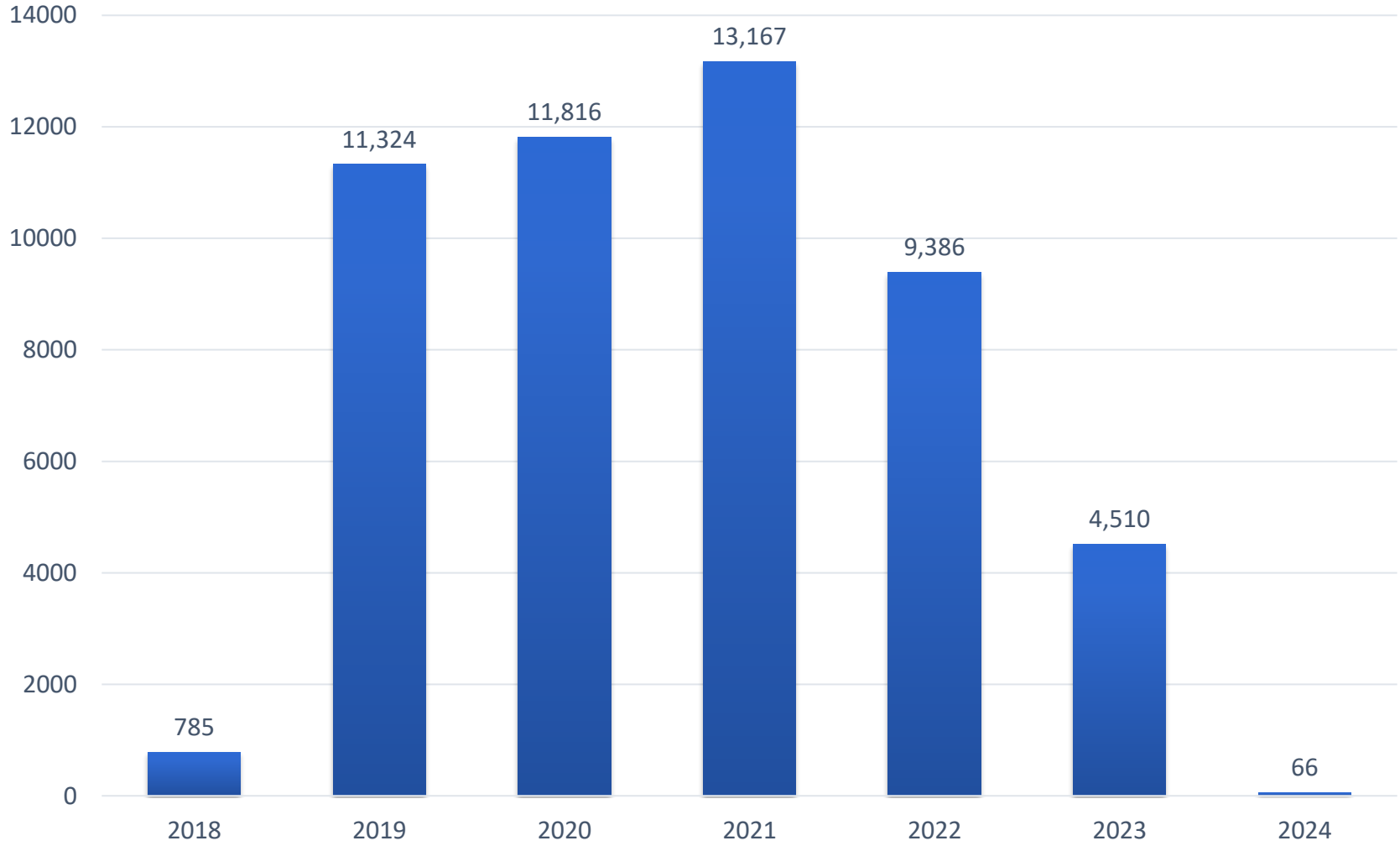
Massachusetts Department of Energy Resources

Number of Systems Operational Each Year



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Goals of Program Review

- Adjust incentive rates to be responsive to current market conditions to increase speed of deployment
- Align siting criteria with the Administration's other policies and goals on land protection and conservation
- Reduce barriers to entry for low-income and environmental justice populations and increase oversight on consumer protection

Stakeholder Input Received

- Incentivize projects on the built environment, limit greenfield development, and align program with other Administration policies and plans on land protection
- Build in more flexibility to the incentive structure so rates can be revised more frequently and stay aligned with market conditions
- Expand eligibility for projects serving low-income customers and increase consumer protection measures
- Provide more educational materials for residents and municipalities

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Massachusetts Department of Energy Resources

Major Themes for Review

- Program structure
  - Base compensation rates
  - Adder values
  - Block structure and capacity
- Community solar
  - Consumer protection and transparency
  - Customer savings
  - Low-income participation
- Land use and siting
  - Greenfield solar development
  - Solar on the built environment
  - Alignment with Administration policies on land protection
- Low-income participation and equity
  - Customer savings and benefits
  - Consumer education and transparency
  - Reducing barriers to entry

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Upcoming Engagement Opportunities

- **Summer 2024**: Feedback on Straw Proposal
- **Fall 2024**: Feedback on revised regulations

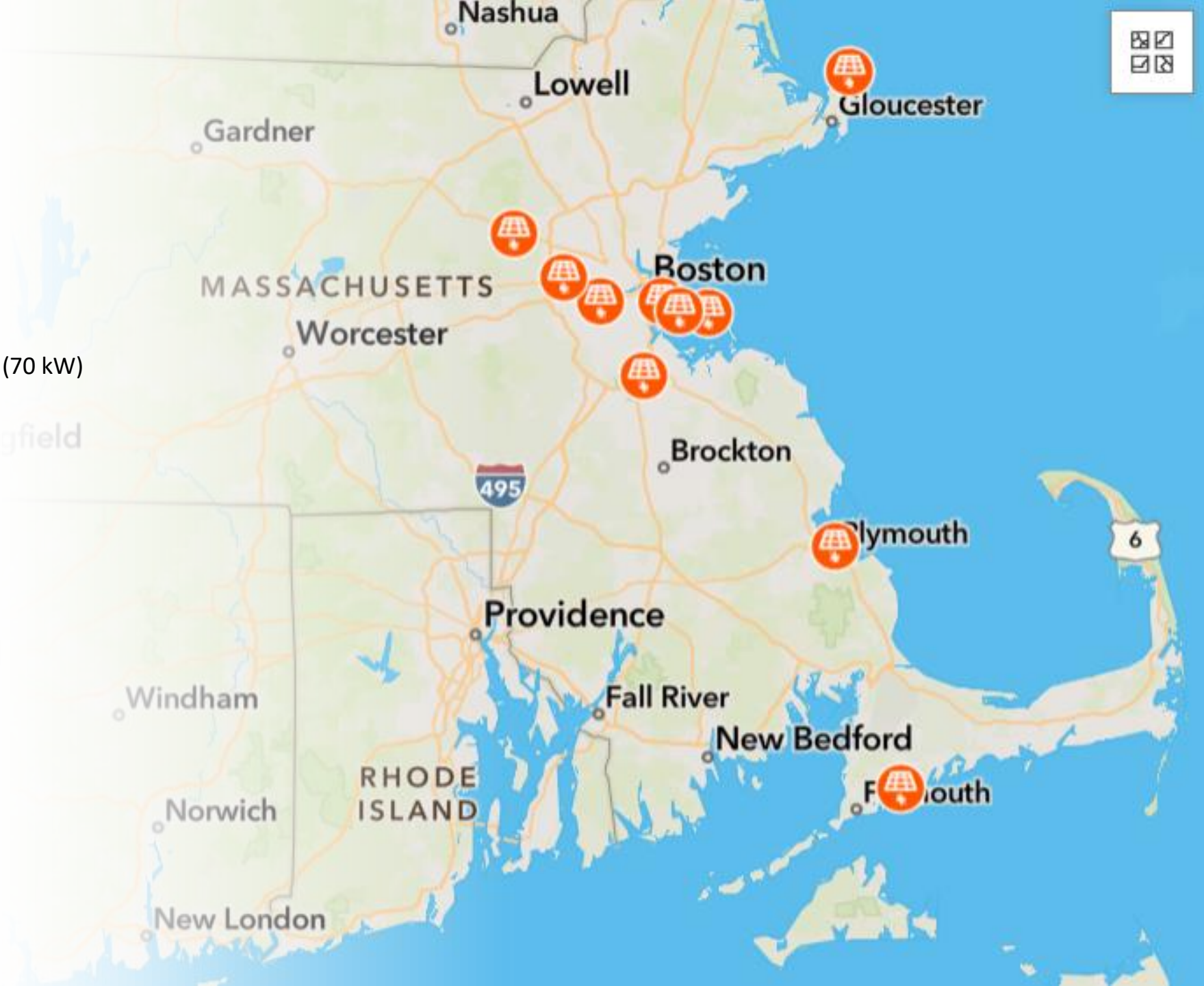
Click here to sign up for SMART email updates!!

DCR Treads on Thin ~~Ice~~ Solar

DCR's Solar Portfolio

- Solar at eight locations (313 kW total)
  - Blackstone Heritage Visitor Center (70 kW)
  - Blue Hills (48 kW)
  - Connors Pool (30 kW)
  - George's Island (29 kW)
  - Halibut Point (3 kW)
  - Shannon Beach (14 kW)
  - Walden Pond (100 kW)
  - Waquoit Bay (19 kW)

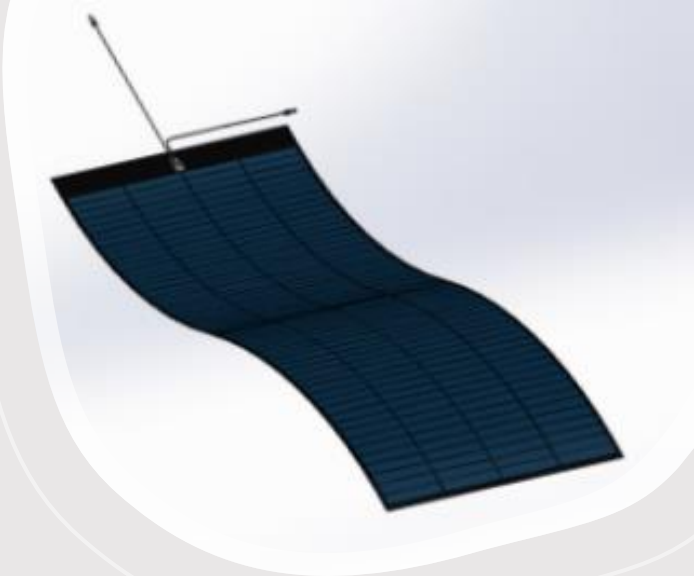
- Plus solar film on two rinks (so far)
  - Murphy Rink (116 kW)
  - Reilly Rink (92 kW)



DCR's Solar Challenge

- Article 97 prevents third-party PPAs on DCR lands
- High cost of installation and maintenance
- Ice rinks and recreation centers consume a lot of electricity, but barreled rooftops not suitable for traditional solar

The Solution: Thin Solar Film



- Flexible, lightweight, thin-film technology
- No infrastructure needed – just peel and stick
- Easy to install
- Solar material costs: ~$2.30 per kW
  - Murphy $263,800 (116 kW)
  - Reilly $221,600(92 kW)

Deployment Process

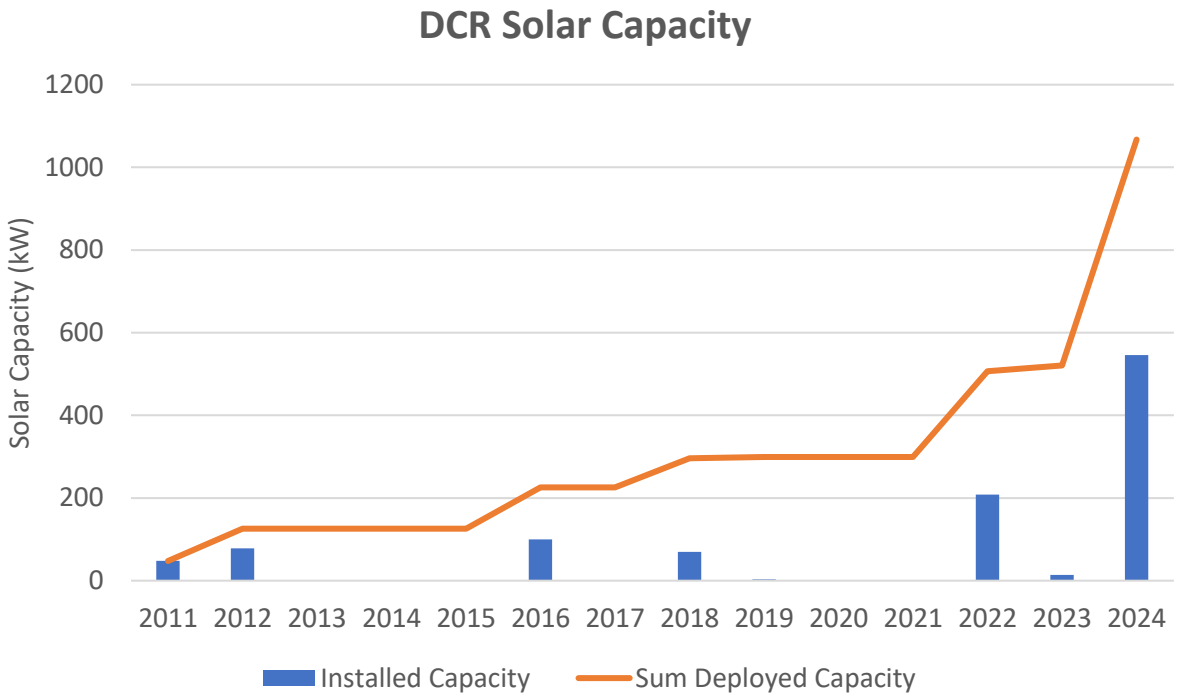
- Awarded design to DCR House Doctor
- Installed through Ch. 149 construction contract – added to roof replacement project
- Interconnection agreement initiated (took several months due to manual edits needed)
- DCR needed to be classified as “Other Governmental Entity” for net metering by DPU

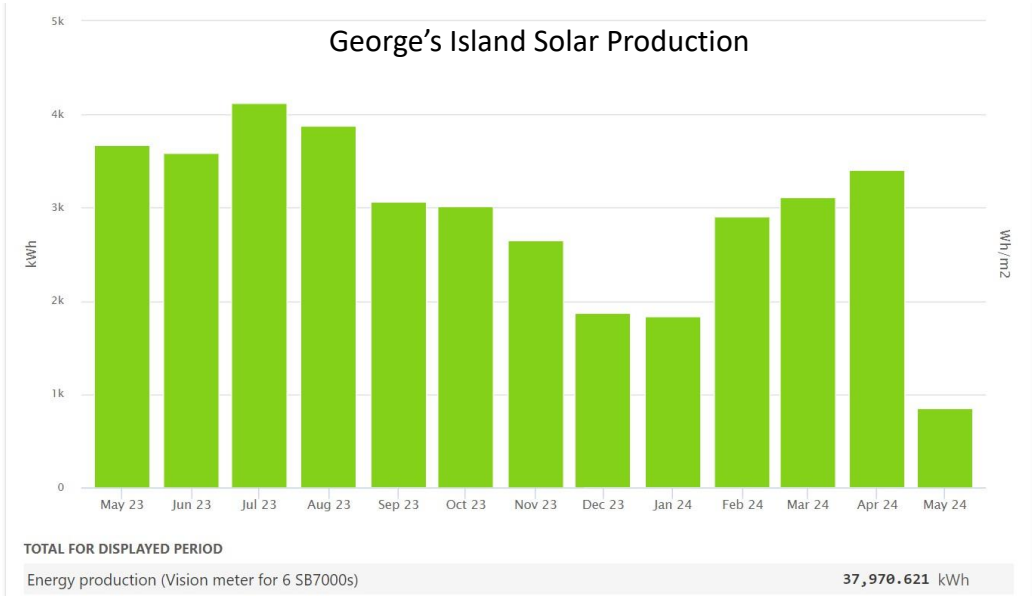
Costs and savings example: Murphy Rink

- Costs: Murphy $496,100
  - Panels + electrical
- Solar capacity: 116kw
- Est. annual generation: 132,000 kWh *(based on LBE calculator)*
  - Covers electricity use of highest month
  - ~10% of electricity use over entire year
- Total savings + SMART incentive = ~$29,700 per year
  - SMART compensation: $0.0964/kWh = ~$12,700 per year
  - Current electricity cost: ~$0.13/kwh = ~$17,000 per year

Next Steps

- After one year performance was impressive (wind, weather, etc.)
- Many options for future installs
- Solar designed and new construction contract signed for three additional rinks which will double DCR's solar capacity
  - Cass (156 kW)
  - Bajko (206 kW)
  - Devine (184 kW)
- Real-time solar production tracking





Lessons Learned from State Owned Solar

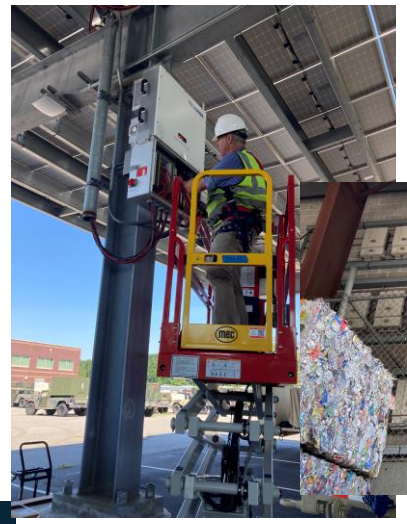
5/14/2024

Lessons Learned based on:

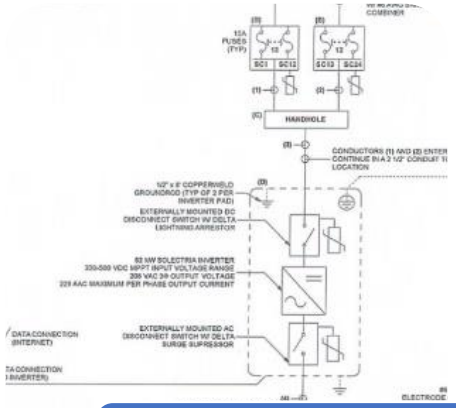
- Cumulative Experience: Over 700 years
  - 81 solar arrays
  - Average age: 9+ years

Image 9: Improperly seated connectors burned up, connectors replaced in field by SDA.

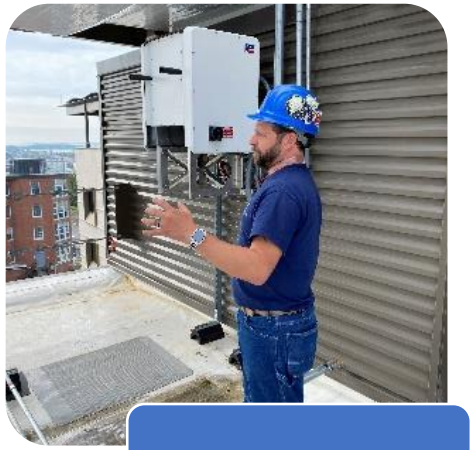
- Types: ground mount, roof mount, pole mount, canopy, roof mounted canopy, central inverter, string inverter, trackers, 28 kW to 938 kW, successes, failures
- Cumulative Electricity Produced (at FY23 year-end): 78,274,414 kWh
- Incentives Earned: $36,621,636



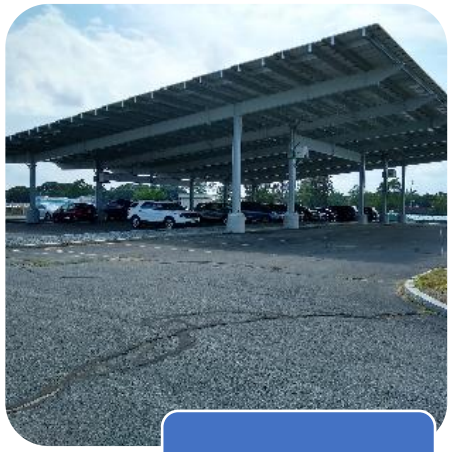
Life Cycle Stages: Highlights Learned in Each



Design



Construction

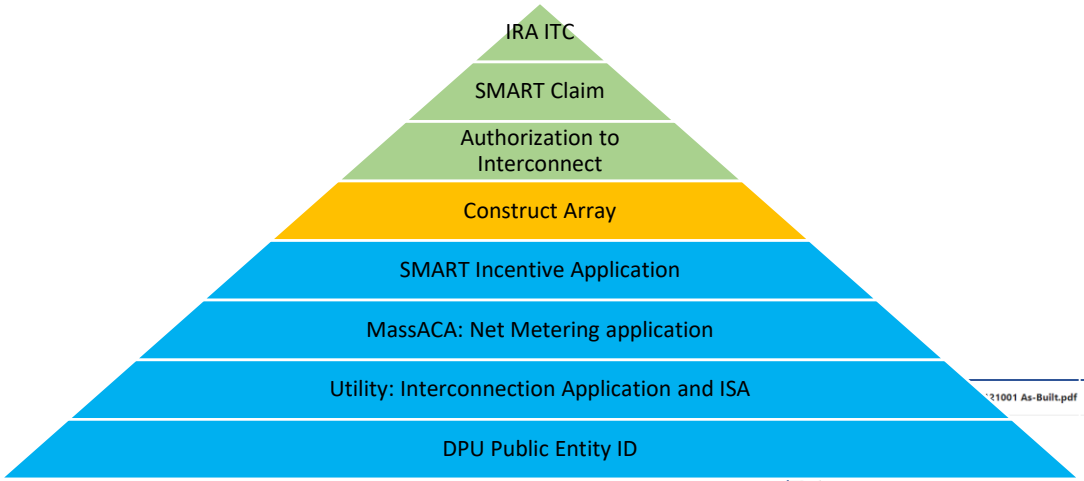


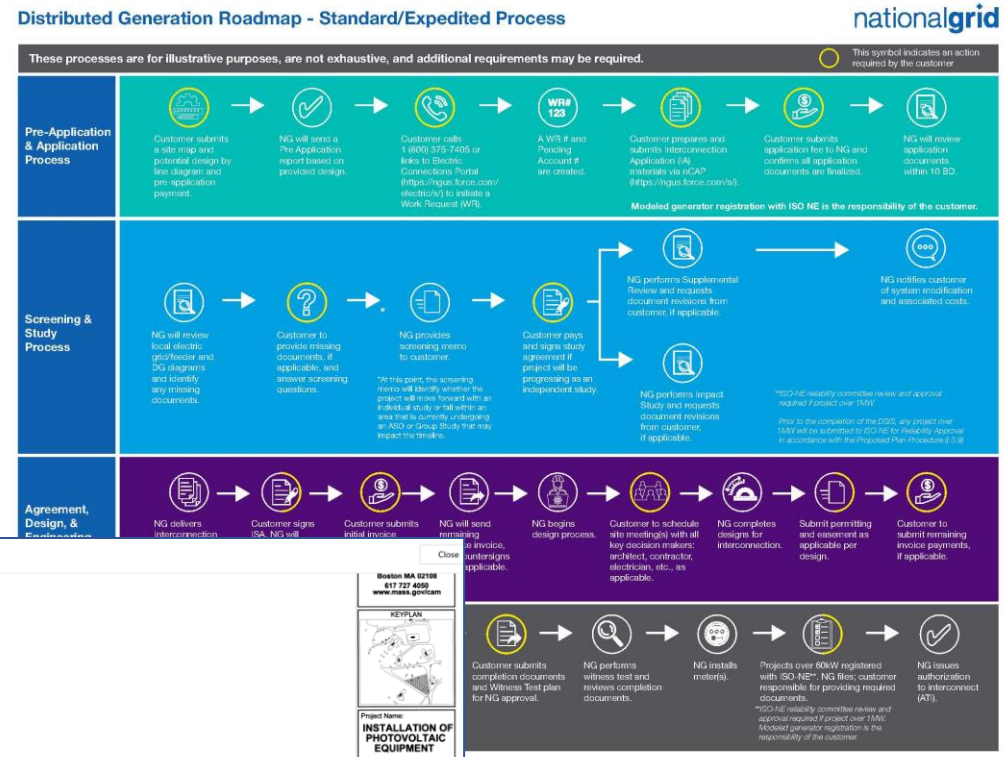
Production

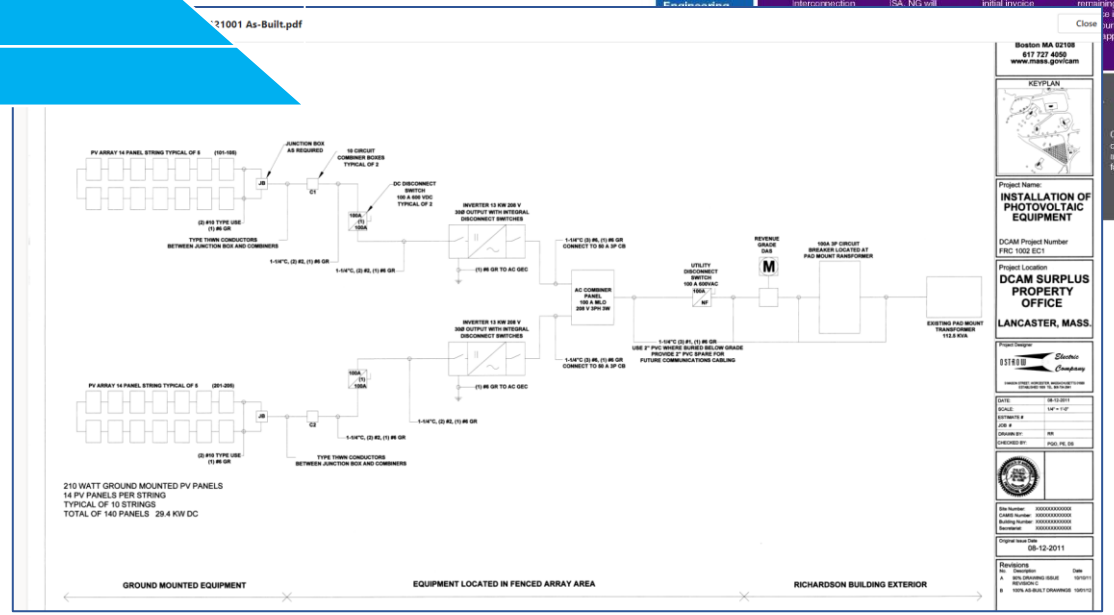
Decommissioning

Design

Own vs. PPA (Power Purchase Agreement)



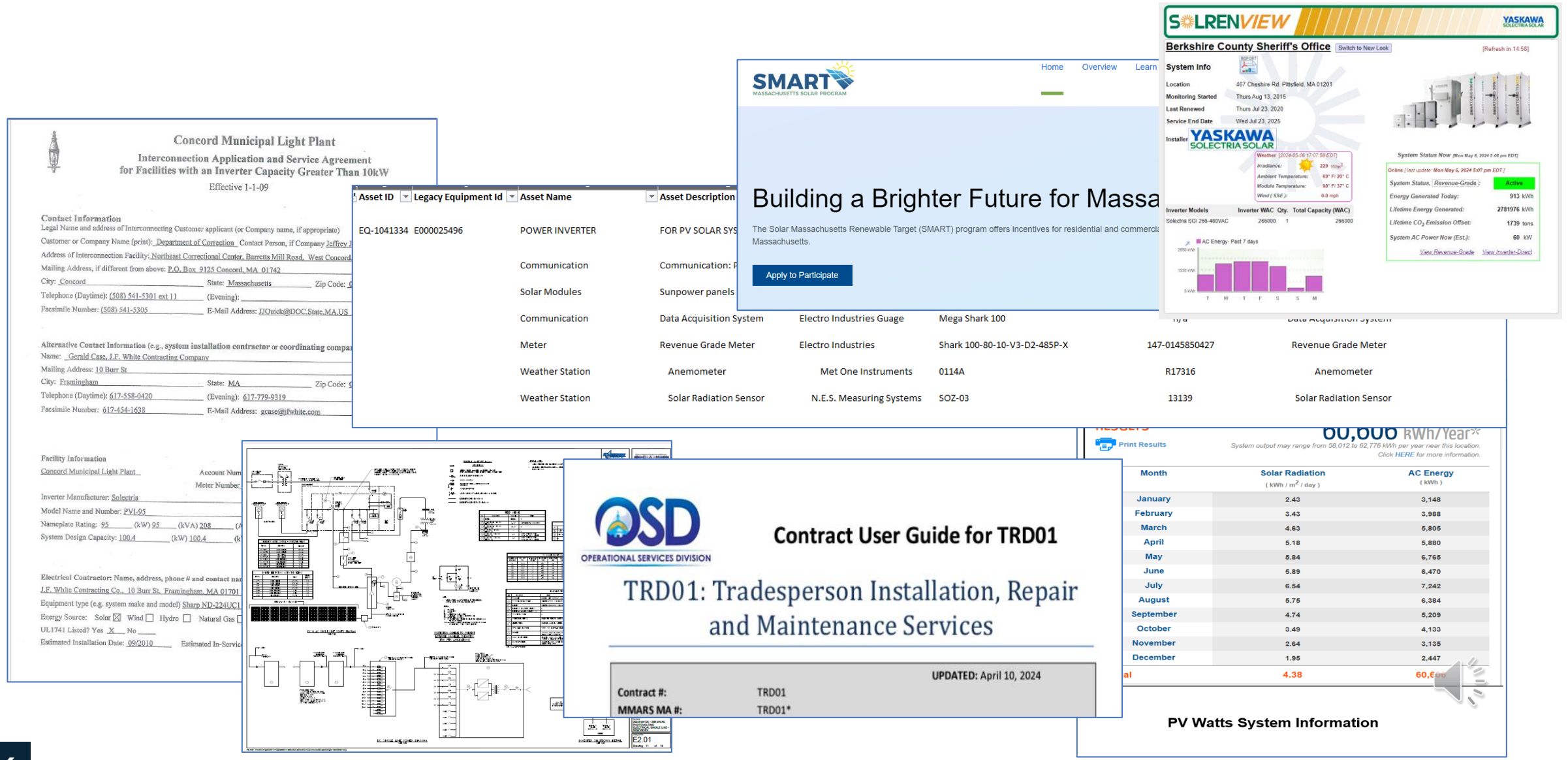




Design

i. Own or Power Purchase Agreement (PPA)?
ii. More than what's on the one-line diagram
    1. One line diagram - but let's talk about it anyway
        a. Warranties - modules 25 years, inverters 10-12 years
        b. Providers - will they be here in 10, 20 years?
        c. Product availability in later years
    2. Utility Interconnection
        a. Utilities have a big say, take their time saying it, and talk isn't always cheap
        b. Who's responsible and what they know - I like it to be the contractor's job but I can help and watch progress
    3. Incentives -
        a. Who's responsible and what they know - I like it to be the contractor's job but I can help
        b. SMART -
            i. may or may not have value, do the provided spreadsheet
            ii. Check the application for errors, if completed by the contractor
        c. IRA ITC (Inflation Reduction Act Investment Tax Credit) - may reimburse for 30%+ of cost
iii. O&M plan and provider -
    1. Solar arrays require some upkeep
        a. Requires some DC skills
    2. set expectations and budget upfront
    3. Builder isn't necessarily skilled at maintaining
    4. Procuring a vendor can be a challenge
        a. TRD01 Tradesperson contract

Construction

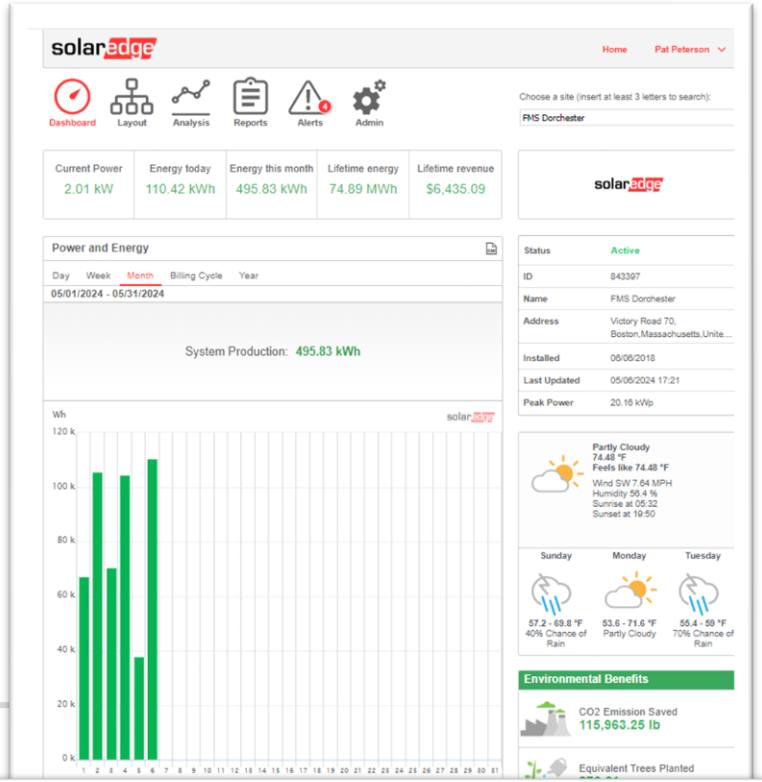


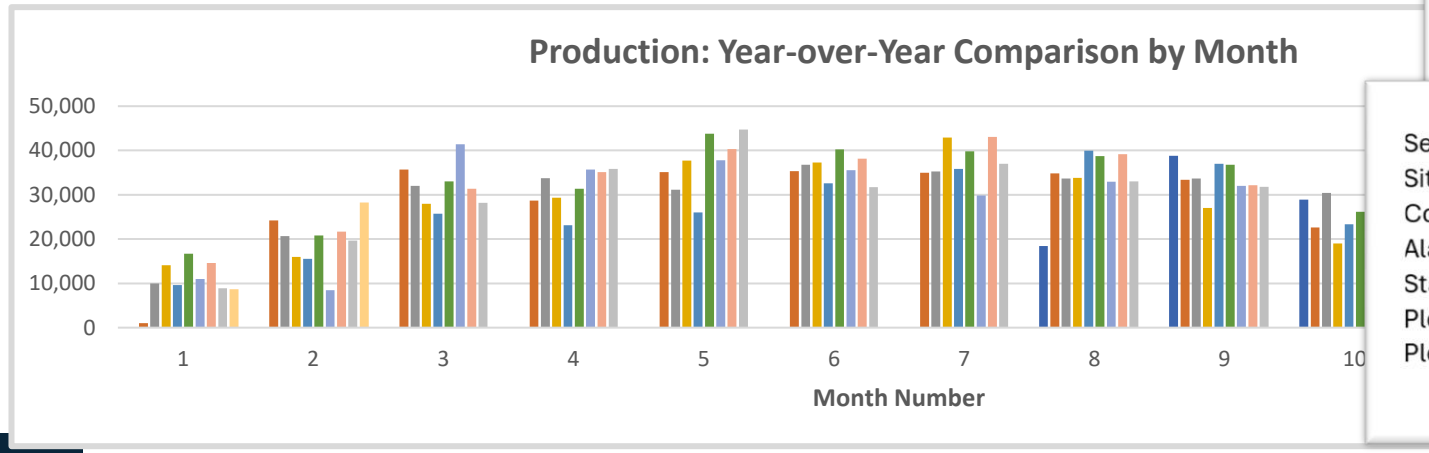
Construction

i. Construction goes fairly smoothly
    1. Supply chain - transformer, special recloser wire
    2. Surprises if you haven't kept with the applications
ii. Get documentation
    1. Production Expected (monthly) - PV Watts, Helios
    2. As-built diagrams
    3. Warranties and invoice date for major pieces of equipment
    4. Lots of pictures
iii. Monitoring - logins, administrative privileges
iv. Interconnection and incentives
    1. Approvals can be slow
    2. Don't build anticipating utility approval
    3. Get access to the application process and keep an eye on it

Production

5.30	UMass Dartmouth - Evergreen Dormitory	UMass Dartmouth - Hickory Dormitory	UMass Dartmouth - Ivy Dormitory	UMass Dartmouth - Tripp Athletic Center	UMass Dartmouth - Willow Dormitory	UMass Lowell Bourgeois Hall	UMass Lowell - Costello Gymnasium	UMass Lowell - Dugan Hall	UMass Lowell - Leitch Hall	UMass Lowell - South Parking Garage
sunny, upper 50s				2/19: low production					7/3: mid day production, probably derate	
Size (kW DC)	44.1	44.1	44.1	92.4	44.1	46.2	70.56	83.16	46.2	200.52
Date/time										
kWh/kW DC	6.16	5.82	6.12	5.24	5.96	5.57	5.83	5.42	5.64	6.33



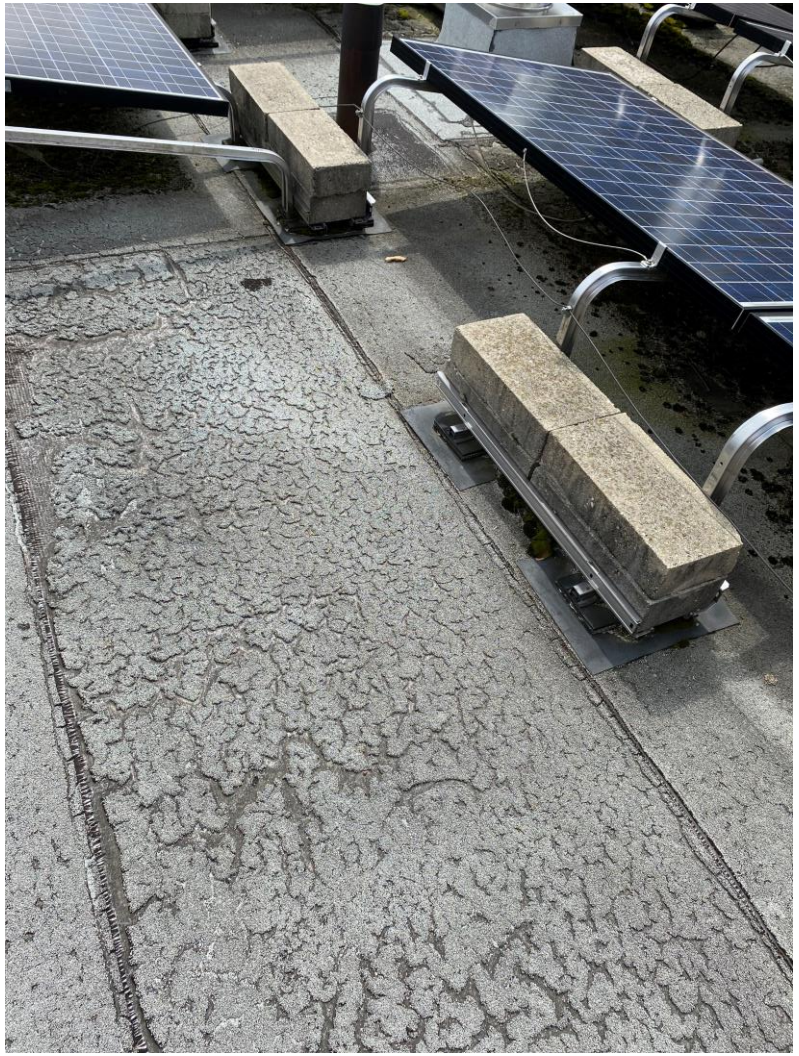


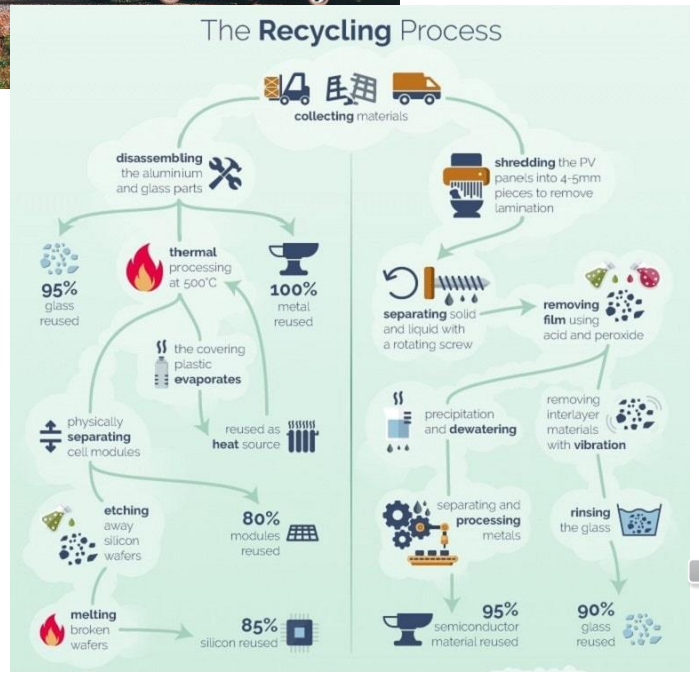
Severity: **0**
Site: **Roxbury Community College**
Component Affected: **Inverter 21**
Alarm: **Performance ratio status value is Normal**
Start date: **2024-05-06 10:15:00 -0400**
Please follow link to view all the active alerts of the site: Site active alerts
Please follow link to view the latest state of the event: Event latest state

Production

i. Arrays work well and need little, generally
ii. Metrics to know how well it's going
    1. Daily or sort of frequently - kWh/kW
    2. Monthly (year over year comparison)
        a. Compare Actual to Expected Value: Should be available from the design stage (PV Watts, Helios)
        b. Most recent years are oftentimes producing as well as the early years
iii. Monitoring
    1. Communications - About 50% of issues
    2. Not communicating doesn't always mean not producing - try a reboot
    3. Set up alerts
iv. Operations and Maintenance
    1. DC electricity is different than AC - be safe
    2. Preventive Maintenance Plans
        a. Automate task delivery
        b. Site dependent frequency of tasks
        c. Every 5 years a full inspection
        d. 10-12 years - a mid-life facelift
    3. Mother Nature
        a. Sunshine - UV destruction (e.g., wire management zip ties, inverter screens)
        b. Mice and warm, dry places
        c. Vegetation
        d. Wind - hasn't been a problem
        e. Lightning - arrestors
    4. Equipment repairs
        a. Communications resets
        b. Inverter fans
        c. Electrical: wiring and fuses
        d. Modules
        e. Inverters
v. Incentives
    1. Don't assume that the utility payment is correct
vi. Issues - very early and end of life

Decommissioning: Retire, Reroof, Resale and Recycle





Decommissioning

i. Roof replacement is our biggest cause
    1. Probably not worth reinstalling an old array
ii. Module Resale
iii. Module Recycle

If you only remember three lessons learned, remember these:

1. Design: Getting the applications done correctly is critical
2. Production: Have a preventive maintenance plan and execute it
3. Production: Monitor. Monitor. Monitor.

Solar Parking Canopies at UMass Amherst

Leading by Example Meeting – May 14

Ray Jackson, Executive Director of Facilities Management

Planning, Peer Learning, Implementation

2013	•	Solar Energy Plan - canopy opportunity
2013	•	UMA team visits Rutgers canopies
2014	•	External Review – “RE operations gap”
2016	•	First canopy system installed (direct ownership, LBE grant and AEC funds)
2017	•	First Campus wide PPA completed (5 rooftops, 2 parking lots)
2023	•	Second PPA completed (2 parking lots, 1 battery)

Ray looking at Rutgers canopies

Lot 43 (Visitor Center) Pilot Project

ROBSHAM VISITOR CENTER

COMPLETED: February 19, 2016

DESIGNER: Fuss & O'Neil, W. Springfield, MA

CONTRACTOR: RAC Builders, Agawam, MA

ELECTRICAL: M.L. Schmidt, Springfield, MA

CANOPY: Solaire/SunPower, Boston, MA

SIZE: 336kW DC, 192 kW AC

EST ANNUAL PRODUCTION: 330,639 kWh

YEAR 1 ACTUAL: 295,302 kWh

PV MODULES: 1,008 UpSolar UP-M300P (300W)

INVERTERS: 12 Advanced Energy (AE) 3TL 600 Series String Inverters (out of production)

EV CHARGING: Fast Charger and 2 Duel Level II Chargers (CT4000 Level 2 Commercial Charging Stations)

DESIGN & INSTALL COST: $2,000,000

DOER CLEAN ENERGY GRANT: $146,000

20 YEAR EXPECTED EMISSIONS AVOIDED: 2,000 MT (TO THE REGIONAL GRID, NOT UMA)

15 YR SREC II POTENTIAL REVENUE: $500,000-$800,000 estimated

20-YR AVOIDED ELECTRICITY COSTS: $898,000

SIMPLE PAYBACK: 14 Years

2017 Campus-wide PPA

System Statistics

- **PPA SIZE:** 5,335.94 (5.3 MW DC)
- **PARKING LOTS:** 4.4MW
- **EST ANNUAL PRODUCTION:** 5,900,000 kWh
- **PARKING LOTS:** 4.9M kWh
- **PV MODULES:** 15,000 LG NeON (300-365W)
- **INVERTERS:** Yaskawa-Solectria 36kW, 1000VDC Transformerless String
- **CANOPIES:** Solaire by Sun Power 360 D
- **EV CHARGING:** ChargePoint CT4000 Level 2 EV chargers

- **DOER CLEAN ENERGY GRANT:** $500,000
- **20 YEAR EXPECTED EMISSIONS AVOIDED:** 31,456 MT (to the regional grid)
- **FORECASTED COST SAVINGS:** $3.6M NPV over 20 yrs
- **PPA RATES:** very low locked in 20 year rate with 2% escalator
- UMA can purchase system anytime after year 7
- UMA owns REC's after year 10

2023 Solar PPA + Battery

- 2 parking canopies and one Tesla Battery
- DOER Clean Energy Grant: $1,100,000
- 20 yr PPA with ConEdison Clean Energy
- RBI Solar's dual-tilt longspan canopy, model CP-LS (longer than Lot 25/44)
- Lot 21/22: 2.9MW DC/2MW AC generates over 3 million kWh/year
- Lot 49: 1.2MW DC/850kW AC generates over 1.2 million kWh/year
- Water mgmt: downspouts connected to sub-grade collection plumbed into Purchaser's existing drainage system.


Lot 21/22 Canopies


The 1MW/4MWh Tesla Battery

University of Massachusetts Amherst

Solar PPAs for State Agencies

May 14th, 2023

PowerOptions

solectenergy™

Power Your Tomorrow

Speakers

- Involved in PowerOptions Solar programming for 9+ years 120+ projects, 90+ MW, $170mil+ in savings
- Responsible for managing procurements, financial modelling design, template contracts, program administration, project support
- PowerOptions “member manager” for ~10 members, responsible for “whole health” energy support

Walter Gray
Solar Program Manager
PowerOptions
wgray@poweroptions.org
857-410-1658

Speakers

Matt Shortsleeve
Senior Vice President
Solect Energy
mshortsleeve@solect.com
508-598-3511

- Manages the PowerOptions Solar and Storage Program
- Solect team of BDMs, developers, engineers, construction PMs, service technicians support the project development, installation, and management of solar and storage projects.
- Experience with the DOER LBE program, DCAMM and past and current projects.

PowerOptions

We give our members "peace of mind"

A Trusted Advisor Since 1998

Originally created by the Commonwealth of Massachusetts to serve state agencies, PowerOptions has been serving nonprofits and public entities for 25 years.

A Mission-Driven Nonprofit

PowerOptions' mission is to empower nonprofits and public entities with solutions to reduce the cost, carbon, and complexity of energy.

Consortium Leverage

PowerOptions members benefit from the collective buying strength of over 490 members including some of the largest nonprofits in Massachusetts, Connecticut, and Rhode Island.

Flexible Programs

PowerOptions' programs are intentionally and thoughtfully designed to serve members of any size and circumstance

Your Energy Team

PowerOptions' on-call energy team provides guidance throughout the contracting process, so you feel supported and resourced to make smart and proactive energy decisions.

Electricity & Gas Supply | Solar & Renewables | Vehicle Electrification| Energy Efficiency | Analytics & Sustainability Planning

Certified WBE Women's Business Enterprise

490+ members

85+ MWs SOLAR

25 years serving nonprofits

1B kWh ELECTRICITY

$120m ANNUAL ENERGY SUPPLY SALES

7M Dth NATURAL GAS

PowerOptions Solar

- ✓ 11 years, 90 MW, 120 projects, $170mil savings
- ✓ A robust competitive procurement
- ✓ Negotiating strength of over 490 PowerOptions members
- ✓ Project pricing model with a capped developer margin and full transparency for PowerOptions price audits at the project level.
- ✓ Pre-negotiated contract template with consumer-friendly terms and conditions saves you money on legal fees.
- ✓ MGL Chapter 164, Section 137 allows public entities to participate in the PowerOptions program without conducting own RFP.
- ✓ Ability to move now – SMART incentives decline over time. The faster you can lock in, the better your savings for 20+ years.
- ✓ PowerOptions as your advisor and advocate from proposal through operation.

About Solect Energy

- Leader in Commercial & industrial solar in the Northeast
- Founded in 2009; headquartered in Hopkinton, MA
- Full service solar and energy storage
  - Design, Finance, Install, Monitor, Maintain
- 700+ installations | 130+ MW | 110 employees
- Services team monitors and manages 700+ installations
- DCAMM Certified
- Solect.com

- Serving State, Municipal and Non-Profit members since 2015 – 33 MW, 153 projects
- Solect won 2022 RFP on price and non-price factors to continue serving PowerOptions program
- The LBE grant lowers project capital costs, yielding lower PPA rates for the campus/agency.
- Optional inclusion of battery storage
- Template participant agreements for state agencies reviewed and negotiated by DCAMM
- Solect performs the solar work; PowerOptions assures compliance to pricing, contracting, service levels for Members participating in the Solar program.




Power Purchase Agreement (PPA) Basics

- Very low risk
- No O&M responsibilities
- Solar kWh offset grid kWh at lower cost

No upfront cost

Fixed per-kWh price for 20 to 25 years

20 to 25 Year Power Purchase Agreement (PPA)

PowerOptions as an advisor, advocate, and facilitator

Solect to install, finance, operate and maintain system

Pre-negotiated favorable contract terms and conditions

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Power Your Tomorrow

MA State Solar Project Experience

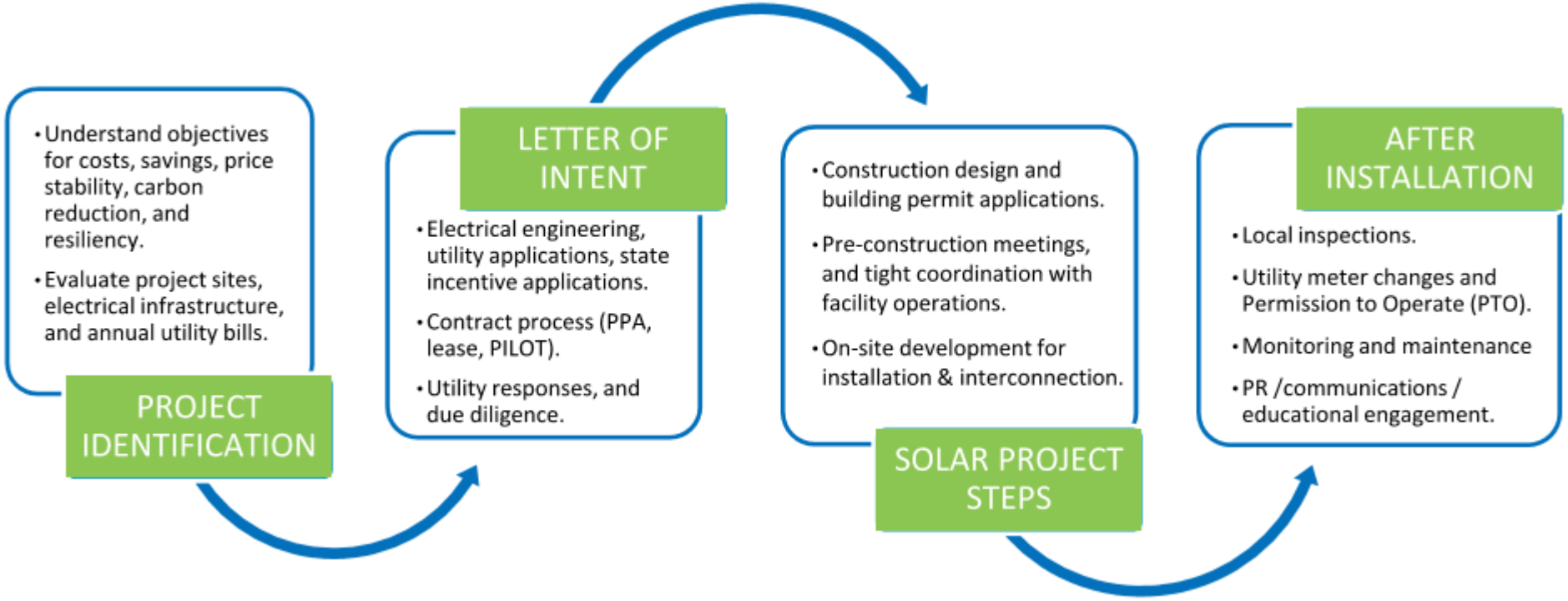
Stage	Projects	kW
Evaluation	5	2,860
LOI	9	6,986
Operating/Construction	16	4,752
Totals	30	14,598

Community College Canopy + Rooftop

Transit Authority Canopy

Solar Project - Process

- PowerOptions and Solect are here to help!
- No cost or commitment until you sign contract
- You don't need a fully-baked plan. Let us help



A simple, streamlined process offered to PowerOptions members at a competitive rate.

Solect minimizes disruption to operations during construction and installation.

We handle the logistics, so you benefit from long-term access to affordable and reliable solar energy for years to come.

solectenergy
Power Your Tomorrow

- Project diligence includes incentive research and incorporation
- PowerOptions program ensures incentives are baked into PPA rate

Incentives

- **Federal** – 30% Investment Tax Credit ("ITC")
  - Rebate on project cost
  - 10% adder for "Energy Communities" – specific locations to be announced in May
- **State** – SMART program
  - ¢/kWh payment to system owner
  - Declines over time
- **LBE** – previous and potential future grants specifically for State entities

solectenergy
Power Your Tomorrow

Solar Info
Q&A

LBE Grant Opportunities

Fleet EV Charging

Feasibility Studies

Decarbonization

Integrated Solar

Statewide and State Government Clean Energy Objectives

The 2050 Clean Energy and Climate Plan lays out significant changes needed in the building and transportation sectors among others for the Commonwealth to meet its net zero 2050 mandate

In addition, Leading by Example Executive Order 594 sets targets in 2025, 2030, and beyond for the **state portfolio** including

- ✓ Electrification of the overall state fleet
- ✓ EV charging station deployment at state facilities
- ✓ Significant reductions in onsite fossil fuel emissions from government operations
- ✓ Increased renewable energy generation whenever possible
- ✓ Accelerated adoption of innovative clean energy technologies

LBE grants are intended to provide financial support in instances where funding is either not available or insufficient to enable state projects to achieve these targets

Fleet EV Charging Deployment

DON’T WAIT!

Rolling Application Deadline: September 15, 2024
Fund Encumbrance Deadline: December 31, 2024

DOER
Massachusetts Department of Energy Resources

Role of LBE Fleet Charging Grant

- Transportation is the largest emitter in MA at **37% of GHG emissions**
- **CECP goal:** 900,000 EVs on the road in MA by 2030
- **EO594 goals:** 5% electrified state fleet by 2025 and 20% by 2030
  - Requires EV charging infrastructure to enable this fleet transition
- LBE Fleet EV Charging Grant streamlines the process of installing EV charging for your fleet's use to support fleet electrification in line with EO594 goals
- Complement DCAMM funding that is targeting larger-scale installations at high-priority sites identified by OVM

LBE Fleet EV Charging Grant

LBE FLEET EV CHARGING GRANT DETAILS	
Eligible entities	State entities **not** receiving funding through DCAMM's EV charging station programs
Total available funding	$1,800,000
Per entity funding cap	$300,000*
Eligible property types	Owned & leased** sites
Rolling application deadline	**September 15, 2024**
ARPA Fund Encumbrance Deadline	**December 31, 2024**
Grant webpage	LBE Fleet EV Charging Grant
Have questions?	Contact Sophia (sophia.vitello@mass.gov)

Funding available to support:

- Leased facilities
- Non-executive branch agencies
- Agencies with fewer than 10 light-duty vehicles
- Mobile EV charging
- Domicile vehicles

As of beginning of May, three applications have been awarded (4 sites, 10 ports)

$1.6 million remaining in funding

**EJ adder for EVSE deployment in EJ communities*

***Lease must have at least 1 year remaining; mobile charging as a service also eligible for funding under this grant*

What does the grant cover?

LBE Fleet EV Charging Grant will cover 100% of the cost of installing fleet EV charging

- The grant will cover **100% of the cost** of installing EV charging for fleet use, including costs for:
  - Equipment
  - Installation
  - Electrical upgrades
  - Networking packages* (if networked stations)
  - Warranty packages*
  - Maintenance packages*

*Grant covers the cost of up to 3 years of prepaid networking, extended warranty, and/or maintenance packages

How to Apply

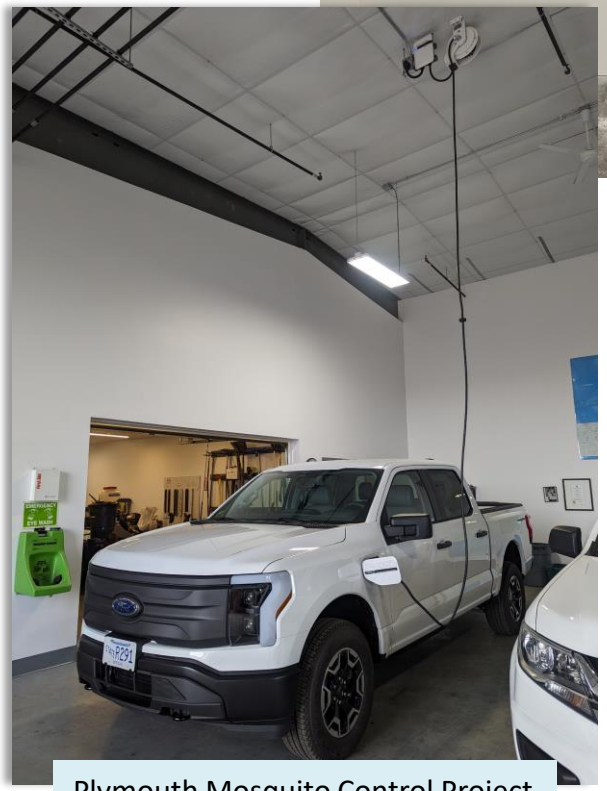
For more details on the application process, visit the LBE Fleet EV Charging Grant webpage

DOER
Massachusetts Department of Energy Resources

State Entity Examples

Entities Awarded 2023 LBE Fleet Charging Grant Funding			
State Entity	# of Fleet Charging Ports	# of Sites	Grant Amount
UMass Amherst	30	1	$175,000
Dept. of Conservation & Recreation	23	7	$173,878
UMass Chan Medical School	16	1	$125,000
Plymouth County Mosquito Control Project	8	1	$29,424
Dept. of Fire Services	6	2	$96,875
Military Division	4	1	$115,971
Division of Marine Fisheries	4	1	$46,277
Division of Fisheries and Wildlife	4	1	$28,520
Bridgewater State University	4	1	$100,000
Cape Cod Mosquito Control Project	4	1	$71,301
Dept. of Public Health	4	2	$68,516
Division of Standards	2	1	$26,140
Total	109	20	$1,056,902

Division of Standards



Plymouth Mosquito Control Project

Fleet Electrification Planning Resources

The resources below are available to help plan for the transition of your fleet to EVs to meet EO594 targets

For OVM-managed, Executive Branch fleets, reach out to karen.rasnick@mass.gov at OVM first

Fleet planning resource	Eligibility	How to get started/access
National Grid fleet advisory services	State & municipal fleets in National Grid electric service territory	Contact hugh.reece@nationalgrid.com (National Grid)
Eversource fleet advisory services	State & municipal fleets in Eversource electric service territory	Contact sean.tully@eversource.com (Eversource)
Mass Clean Energy Center Fleet Advisor *(managed by CALSTART)*	State & municipal fleets in Municipal Light Plant (MLP) service territories Fleet must have at least 3 vehicles with at least 1 MD or HD vehicle	Sign up to participate at massfleetadvisor.org For questions, contact Sydney Hayes (shayes@calstart.org) or Nahlia Yefet (nyefet@masscec.com)
Dashboard for Rapid Vehicle Electrification (DRVE) Tool *(provides analysis on total cost of ownership and likelihood of savings from vehicle electrification)*	All fleets *(LBE is available to support state fleet analyses)*	Tool available to download free from Electrification Coalition here State fleets interested in working with LBE on a DRVE fleet analysis, contact sophia.vitello@mass.gov

If you have any questions or if you would like to work directly with LBE on fleet planning efforts, please reach out to sophia.vitello@mass.gov!

LBE Feasibility Studies Grant

Feasibility Study Grant Overview

Goal is to support feasibility studies for technologies and strategies that will result in project recommendations and/or analysis that can lead to a reduction or elimination of emissions

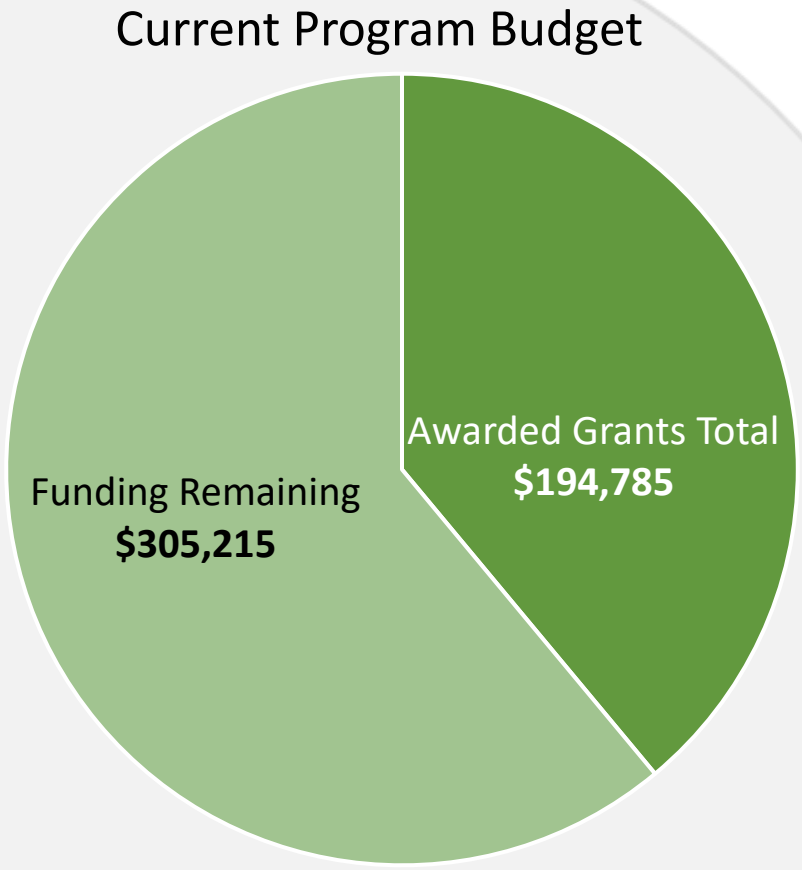
Grant Structure	
Eligible Applicants	Executive branch agencies, state institutions of higher education, and quasi-public authorities
Total Budget	$500,000
Award Maximum	$150,000 per study
Applications accepted on a rolling basis through **June 30, 2025**, or until funds run out	
LBE Feasibility Study Grant Webpage	
Have questions? Email morgan.bowler@mass.gov and LBE-grants@mass.gov	

Eligible Projects
Renewable thermal applications
Innovative solar applications
Combined heat and power systems utilizing renewable fuels
Energy resilience utilizing clean energy resources
Energy storage
Long-range building, campus- or facility-wide decarbonization studies
Others

Why feasibility studies?

- Feasibility studies can prove critical by demonstrating technical and/or financial viability of projects meant to reduce GHG emissions
- This grant is should be used for:
  - projects that you know you want to move forward with or want to be ready to move forward with if you get funding
  - ***Preparing for*** the project, ***not doing*** the project
  - ***ONLY*** studies related to projects not included in other studies (e.g. DCAMM decarbonization roadmaps)
  - Projects that do not conflict with other decarbonization projects (e.g. solar canopies on parking lots designated for ground source wells)

Current Projects



Agency/Campus	Status	Project Type
Montachusett Regional Transit Authority (MART)	Complete	Study of electrification at HQ (EVSE, solar, etc.)
UMass Chan Medical School	Complete	Decarbonization Roadmap
UMass Lowell	Awarded	Analysis of fleet EVSE needs and EVSE implementation plan

LBE Public Entity Decarbonization Grant

LBE Decarbonization Grant Program Overview

Focused on bridging the funding gap impeding the *replacement* of existing fossil fuel-based equipment with electrified solutions for small- to medium-sized projects (not optimal for large campus-wide projects)

DECARBONIZATION GRANT DETAILS	
Eligible entities	Executive branch agencies, public institutions of higher education, and quasi-public authorities
Total available funding	$2,450,000
Applications accepted on a rolling basis through **June 30, 2027**, or until funds run out	
LBE Decarbonization Grant Webpage	
Have questions? Email morgan.bowler@mass.gov and LBE-grants@mass.gov	

Categories of Funding
Space Conditioning System
Service Water Heating
Battery Powered Landscaping Equipment
Commercial Kitchen Equipment

Eligible Replacements

Public Entity Decarbonization Grant Project Categories

Space Heating:

- Replace space heating systems fueled by oil, natural gas, propane, or electric resistance with air-source heat pumps (ASHPs)

Service Water Heating:

- Replace water heating systems fueled by oil, natural gas, propane, or electric resistance with heat pump technology or the most efficient electric alternative

Battery-Powered Landscaping Equipment:

- Replace fossil fuel equipment with electrified solutions

Commercial Kitchen Equipment:

- Replace fossil fuel equipment with electrified solutions

Space Heating

Photo Credit

Funding:

40% of the project cost after accounting for other available incentives

Maximum base grant:

$350,000 per site address

Requirements:

- Meet APS standards
- Be ENERGY STAR certified
- Be on the NEEP product list whenever possible
- Apply for Mass Save incentives if eligible and meet those specifications

Note:

- Will need to meet Build America, Buy America Act (BABAA) provisions
- Sites participating in (or slated to in next 5 years) DCAMM sponsored decarbonization projects or roadmaps are not eligible. DOER and DCAMM can confirm your eligibility if you are unsure.

Service Water Heating

Funding:

40% of the project cost after accounting for other available incentives

Maximum base grant:

$150,000 per site address

Photo Credit

Requirements:

- Be ENERGY STAR certified (residential- or commercial-scale)
- Apply for Mass Save incentives if eligible and meet those specifications

Note:

Will need to meet BABAA provisions

Battery Powered Landscaping Equipment (BPLE)

Photo Credit

Funding:

- Handhelds: 40% of the project cost after accounting for other available incentives
- Ride-on Mowers and Utility Vehicles: 55% of the project cost after accounting for other available incentives

Maximum base grant:

$150,000 per site address

Requirements:

- Meet specs created by OSD for FAC116
- Recommended AFTC Field Tested Certified
- Apply for Mass Save incentives if eligible and meet those specifications

Notes:

- Does not need to meet BABAA provisions but should still ask vendors about availability of BABAA certified products when soliciting quotes
- Check out the **LBE Commercial Battery-Powered Electric Lawn and Garden Equipment Calculator** to look at cost and emissions savings from switching from fossil fuel to electric

Photo Credit

Examples of BPLE

Commercial Kitchen Equipment

Funding:

40% of the project cost after accounting for other available incentives

Maximum base grant:

$150,000 per site address

Requirements:

- Be ENERGY STAR certified
- Apply for Mass Save incentives if eligible and meet those specifications

Notes:

Does not need to meet BABAA provisions but should still ask vendors about availability of BABAA certified products when soliciting quotes.

Photo Credit

Eligible Costs Under Grant Program

Including but not limited to:

Equipment procurement

Infrastructure upgrades

Screening

Oil tank removal

Installation costs and services

Optional Grant Funding Adders

Climate and Economic Justice Adder

- Adds an additional 10% of the base grant amount if located in a disadvantaged census block according to federal definition
- Climate and Economic Justice Screening Tool
- Applicable to **any project categories**

Pollinator Habitat Adder

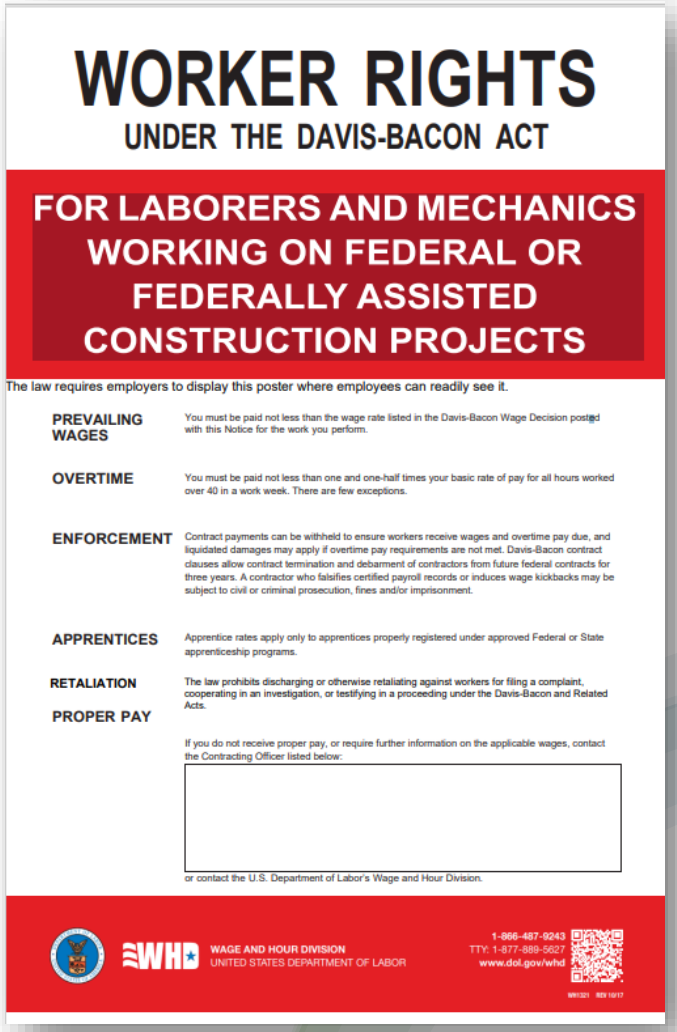
- Additional:
  - 0.5-1.5 acres: $5,000 maximum
  - >1.5 acres: $10,000 maximum
- Applicable **only** in tandem with **BPLE project category**

Examples of Pollinator Habitat

Federal Requirement: Davis-Bacon & Reporting

Since the LBE grant is federally funded, Davis-Bacon and Related Acts (DBRA) apply to space conditioning, service water heating, and commercial kitchen equipment projects

When soliciting bids and executing contracts for these project types, ensure vendors know they are responsible for DBRA reporting and that they must meet prevailing wage requirements



WORKER RIGHTS

UNDER THE DAVIS-BACON ACT

FOR LABORERS AND MECHANICS WORKING ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

The law requires employers to display this poster where employees can readily see it.

PREVAILING WAGES — You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

OVERTIME — You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

ENFORCEMENT — Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

APPRENTICES — Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

RETALIATION — The law prohibits discharging or otherwise retaliating against workers for filing a complaint, cooperating in an investigation, or testifying in a proceeding under the Davis-Bacon and Related Acts.

PROPER PAY

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.

WHD WAGE AND HOUR DIVISION
UNITED STATES DEPARTMENT OF LABOR

1-866-487-9243
TTY: 1-877-889-5627
www.dol.gov/whd

Federal Requirement: Build America, Buy America Act (BABAA)

This LBE grant is supported by U.S. DOE funding and is subject to provisions of BABAA

BABAA provisions apply to **space conditioning projects and service water heating** projects

Waivers for BABAA requirements may be provided in certain cases

Non-availability (i.e., BABAA-certified systems are not available through vendors on statewide contract)

Unreasonable cost (i.e., BABAA-certified systems that raise the total project cost at least 25% higher than otherwise)

DOER will provide a waiver template, assist applicants with waiver development, and subsequently submit the applicant's waiver to U.S. DOE for processing

For BPLE and kitchen project categories, DOER is collecting information from applicants on the *availability* of BABAA-certified options

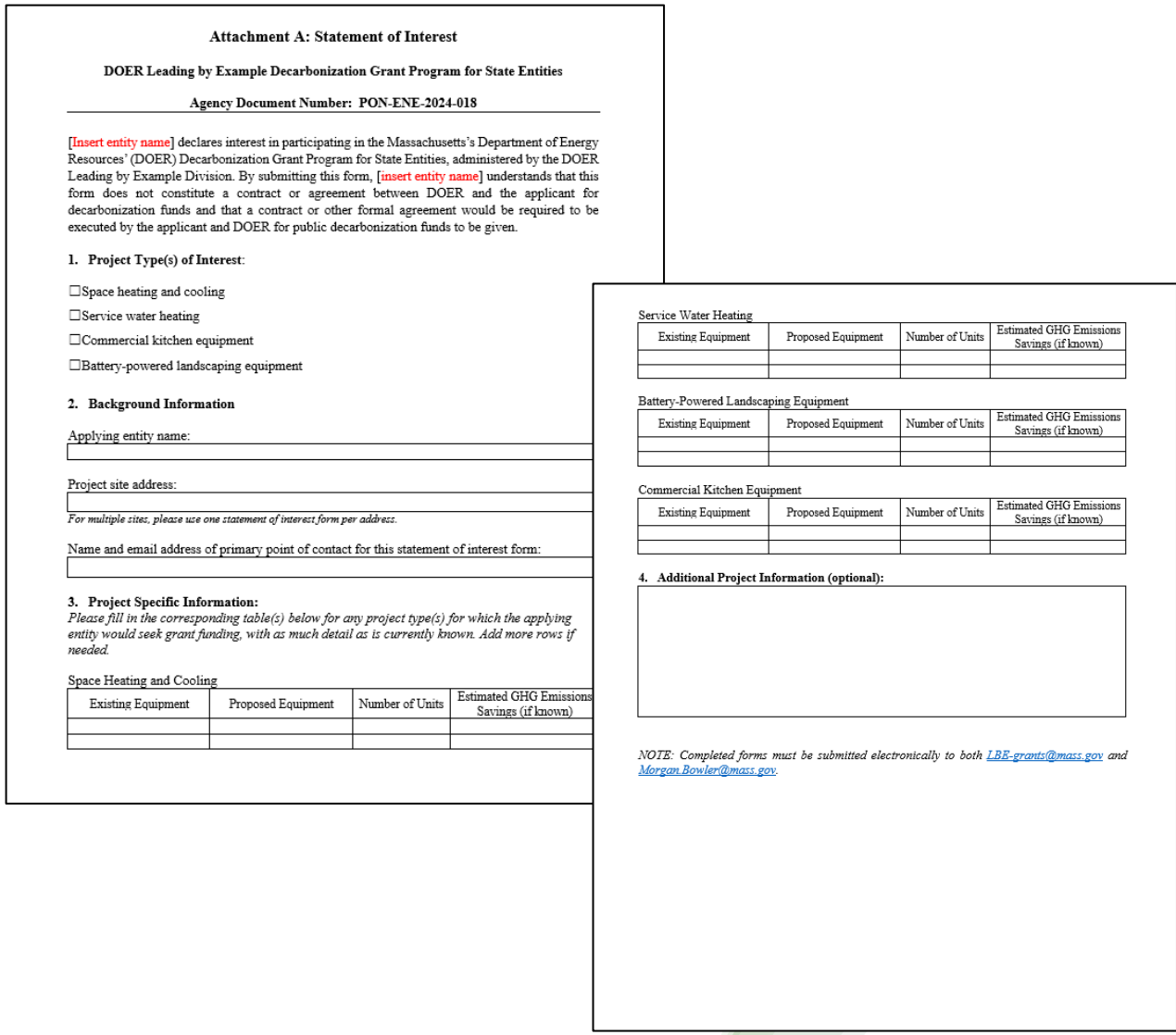
Learn more about BABAA and its requirements here!

Application Process: Statement of Interest (all projects)

Interested applicants must submit a statement of interest to DOER prior to completing application

Submitting a statement of interest allows us to know what process flow the applicant will be expected to follow based on project category

Each statement of interest should cover a discrete project category



Attachment A: Statement of Interest

DOER Leading by Example Decarbonization Grant Program for State Entities

Agency Document Number: PON-ENE-2024-018

[Insert entity name] declares interest in participating in the Massachusetts's Department of Energy Resources' (DOER) Decarbonization Grant Program for State Entities, administered by the DOER Leading by Example Division. By submitting this form, [insert entity name] understands that this form does not constitute a contract or agreement between DOER and the applicant for decarbonization funds and that a contract or other formal agreement would be required to be executed by the applicant and DOER for public decarbonization funds to be given.

1. Project Type(s) of Interest:

☐Space heating and cooling

☐Service water heating

☐Commercial kitchen equipment

☐Battery-powered landscaping equipment

2. Background Information

Applying entity name:

Project site address:

For multiple sites, please use one statement of interest form per address.

Name and email address of primary point of contact for this statement of interest form:

3. Project Specific Information:
Please fill in the corresponding table(s) below for any project type(s) for which the applying entity would seek grant funding, with as much detail as is currently known. Add more rows if needed.

Space Heating and Cooling

Existing Equipment	Proposed Equipment	Number of Units	Estimated GHG Emissions Savings (if known)

Service Water Heating

Existing Equipment	Proposed Equipment	Number of Units	Estimated GHG Emissions Savings (if known)

Battery-Powered Landscaping Equipment

Existing Equipment	Proposed Equipment	Number of Units	Estimated GHG Emissions Savings (if known)

Commercial Kitchen Equipment

Existing Equipment	Proposed Equipment	Number of Units	Estimated GHG Emissions Savings (if known)

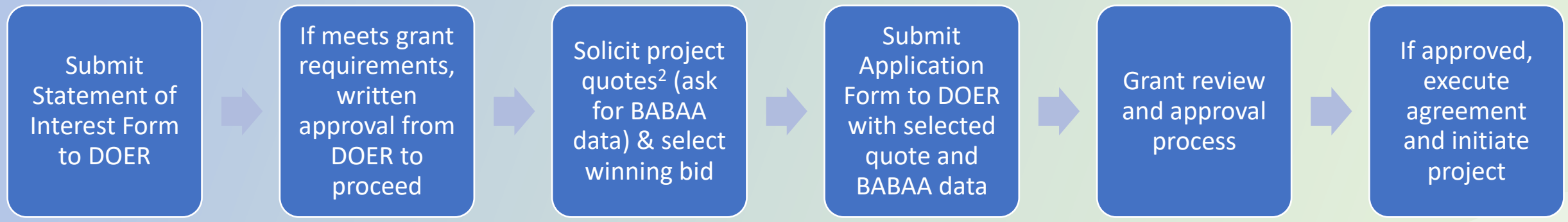
4. Additional Project Information (optional):

NOTE: Completed forms must be submitted electronically to both LBE-grants@mass.gov and Morgan.Bowler@mass.gov.

Application Process: Without BABAA Waiver

Commercial kitchen or landscaping equipment, or BABAA-certified[1] heat pumps or water heating

Up to 30 days; DOER may request clarifications



[1]If BABAA-certified heat pumps or water heating solutions are both available and cost-effective, projects may not require a waiver and could pursue this application process.

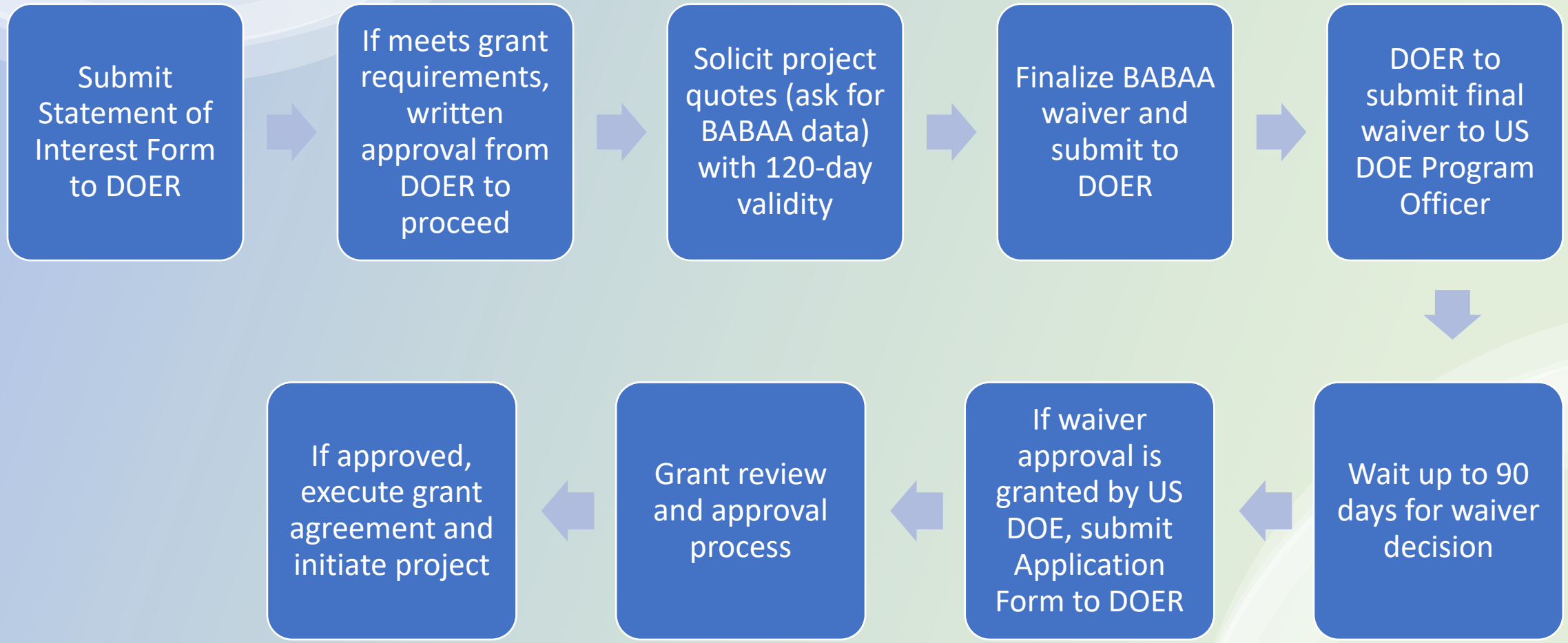
[2]Where applicable, executive branch agencies are required and non-executive branch agencies are encouraged to use statewide contracts:

- BPLE: FAC116
- Heating/cooling and water heating equipment: FAC124
- Commercial kitchen equipment: GRO40

Application Process: With BABAA Waiver

For heat pumps or water heating that are not BABAA certified

Up to 30 days; DOER may request clarifications



COMING SOON!

LBE Integrated Solar Grant

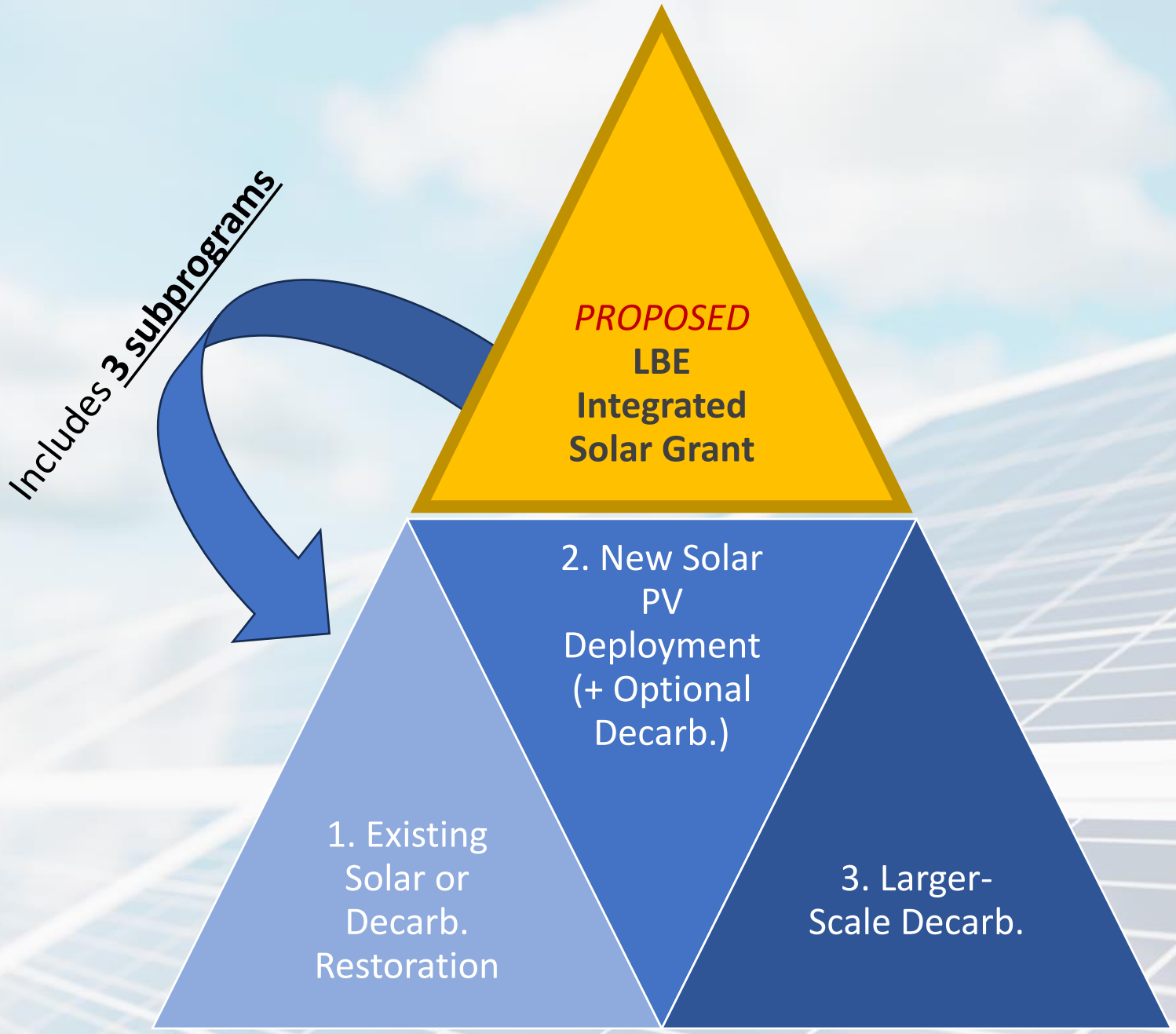
Integrated solar = solar PV with battery energy storage, EV charging, and/or decarbonization

- Eligibility: executive branch agencies, public higher education campuses, and quasi-public authorities
- Project proponents are expected to pursue applicable utility funding and/or federal elective pay tax credits where available
- First subprogram anticipated to launch in June or July

Program Objectives

The new LBE Integrated Solar Grant aims to:

- Support a **holistic approach** to electrification
- Increase **deployment of solar PV** at state facilities over the next five years
- Decrease **onsite fossil fuel emissions** in alignment with Executive Order 594
- Bolster the **grid and resilience benefits** from energy storage
- Reduce state **electricity and/or operational costs**



Proposal subject to change and approval

1. Existing Solar or Decarb Restoration

1. Existing Solar or Decarb. Restoration

(Equipment and/or labor costs)

Existing Solar

- Goal to increase the amount of active solar PV capacity at state facilities
- Funding could be used to repair or replace components of existing state-owned solar PV installations such as panels, production tracking systems, inverters, etc.

Photo credit: Dept. of Correction

Proposal subject to change and approval

1. Existing Solar or Decarb Restoration

1. Existing Solar or Decarb. Restoration

(Equipment and/or labor costs)

Existing Decarbonization

- Funding would be available to help state facilities avoid the use of backup fossil fuel systems by getting efficient electric systems back online
- Grants must be used toward restoring existing
  - ✓ air-source heat pumps
  - ✓ solar thermal systems
  - ✓ geothermal systems

Photo credit: Angi.com

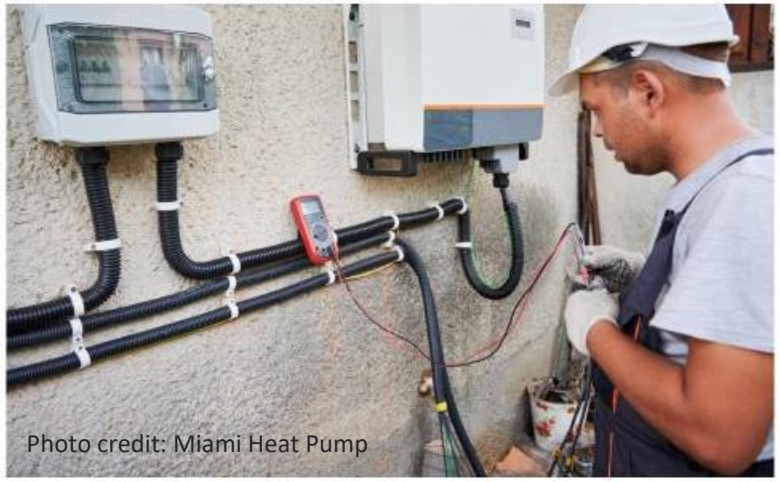
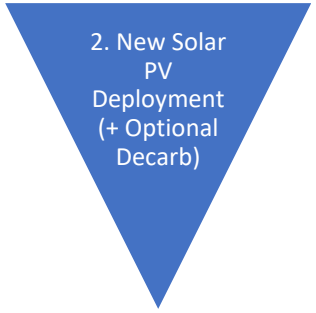


Photo credit: Miami Heat Pump

Proposal subject to change and approval



2. New Solar PV Deployment (+ Decarb.)

- Includes all types of PV and ownership models
- Funding formula based on system size and other factors
  - PV type, metering structure (behind or front of meter) and ownership (state owned or third-party)
- Will include embodied carbon offset requirements
- Provides funds for installed battery energy storage
  - Storage installation required for projects over a certain size
- EV charging required for parking lot canopies, with additional grant funds for sites that go beyond the minimum number of ports

Proposal subject to change and approval

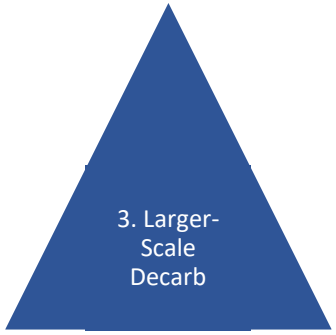
2. New Solar PV Deployment (+ Optional Decarb)

2. New Solar Deployment (+ Decarb.)

- New solar PV deployment projects can access additional grant funding (up to an amount equal to the associated solar PV grant) to support decarbonization activities
- Decarbonization funds can be used at the same or a separate site for:

Actual conversions including building retrofits and heat pump installations	**Site electrification preparation** such as electrical infrastructure upgrades or geo-exchange wells
Envelope improvements including air sealing and window replacements	**Other projects** that facilitate current or future facility decarbonization

Proposal subject to change and approval



3. Larger-Scale Decarbonization

A separate funding set-aside will be available for decarbonization efforts at sites with dedicated decarbonization plans in place, with a primary focus on sites that have existing solar arrays

- State entities are eligible to access decarbonization funding through the subprogram without adding new solar arrays
- The subprogram aims to support larger-scale efforts with a clear action plan for direct decarbonization
- Evaluation criteria is expected to favor projects at sites that have installed substantial solar and/or energy storage

LBE Grants
Q&A

Poll

Given available funding opportunities, are there specific electric/decarbonization technologies you're interested in deploying in FY25? (Check all that apply)

Poll

If you are interested in deploying any of these technologies in FY25, rank your level of readiness for deployment.

Climate News & Updates

Solar Eclipse and Energy Generation

- ISO-NE estimates roughly 4,000 MW of electricity (~1/3 of total electricity demand at the time) was being generated by solar just prior to the eclipse
- The ensuing gap in solar generation was filled by increasing natural gas power plant production and importing electricity from neighboring regions
- The eclipse's effect on solar generation illustrates how solar power is changing the way the power grid operates (and underscores the value of battery energy storage!)

Source: https://commonwealthbeacon.org/energy/magical-eclipse-created-temporary-solar-power-void/

Offshore Winds of Change

- In April, Massachusetts received new project bids from Avangrid Renewables, South Coast Wind Energy, and Vineyard Offshore
- This is the state's fourth offshore wind solicitation, for up to 3,600 MW
- Proposal evaluation will focus on cost, energy market impacts, economic development, environmental and fisheries impact, and support for low-income ratepayers
- The electric distribution companies would execute long term contracts with selected project(s) in Fall 2024

Source: https://www.publicpower.org/periodical/article/massachusetts-details-offshore-wind-bids-solicitation-3600-mw

The Clock is Ticking…

- Last year, the world's energy-related CO_2 emissions increased to a record high
- Current commitments to fight climate change would barely cut global emissions at all by 2030
- Scientists say **halving climate-damaging greenhouse gas emissions by 2030 is crucial** to stop a rise in temperatures of more than 1.5℃ that would unleash more extreme weather and heat

Source: https://www.reuters.com/world/un-climate-chief-says-two-years-save-planet-2024-04-10/

New EPA Funding Opportunity for Clean Heavy-Duty Vehicles Program

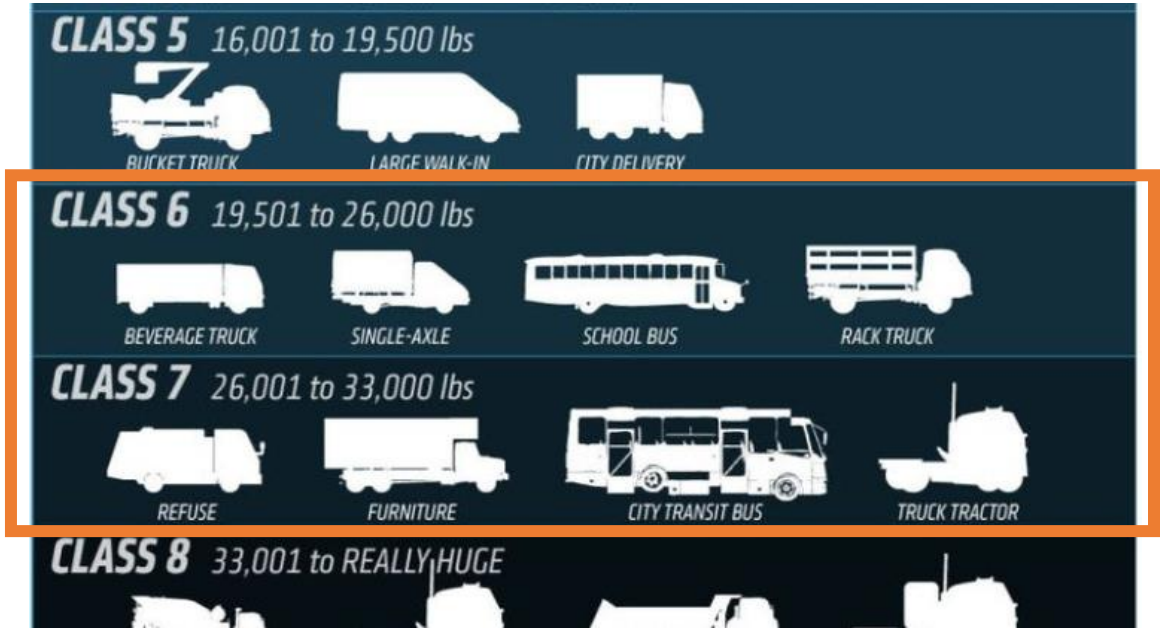
EPA will offer funding to eligible recipients to replace existing Class 6 and 7 heavy-duty vehicles with eligible zero-emission vehicles

Eligible entities:

- States, including U.S. territories
- Municipalities, including public school districts
- Tribal governments
- Nonprofit school transportation associations

Funding may also be used for:

- Zero-emission vehicle refueling infrastructure
- Workforce development and training
- Project implementation costs



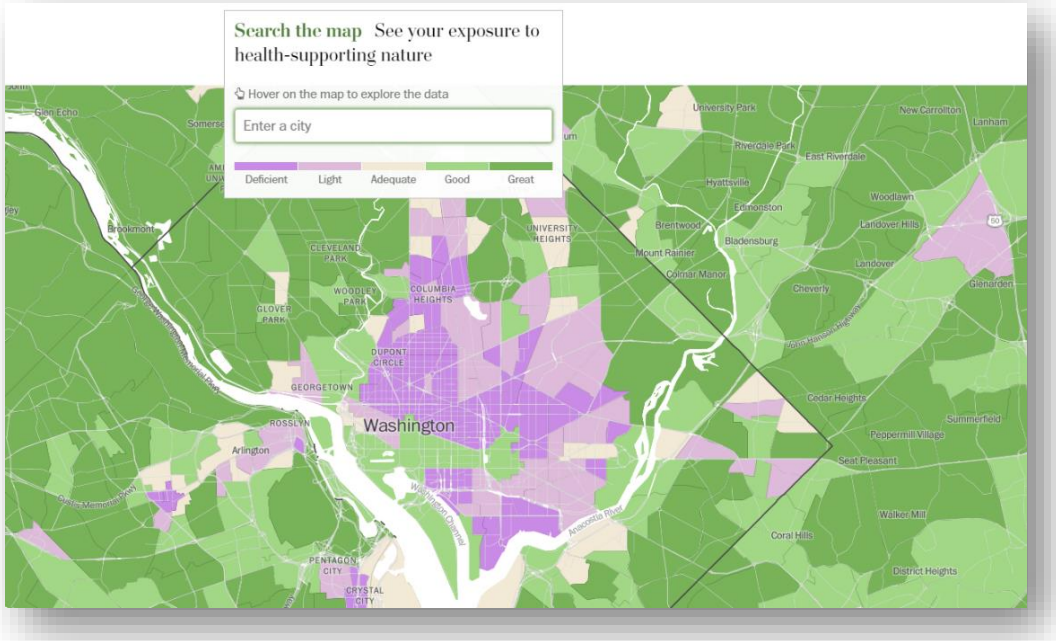
Key Dates: NOFO closes Thursday, July 25, 2024; Anticipated Notification of Selection: November 2024

Clean Heavy-Duty Vehicles Grant Program | US EPA

MassCEC Transportation Programming

Program	Funding Amount	Program Focus Areas
Act4All Round 1 (2021 – 2022) *Increase clean transportation access and decrease transportation burdens*	$5 million for 10 awards	Piloted equity-focused transportation programs that focused on: • E-bike incentives • EV consumer education • Ride-for-hire electrification & incentives • E-cargo bike delivery
Act4All Round 2 (closes May 2024) *Increase clean transportation access and decrease transportation burdens*	$500,000 - $1 million per project	Same main goal as Round 1 with new focus areas: • EV charging station access • Regional Transit Authority decarbonization • Expanding access to economic opportunities
EV Charging Infrastructure (series of NOIs, Spring 2024) *Advance electric vehicle charging infrastructure installation across the Commonwealth*	$38 million	• Ride-for-hire vehicle electrification charging • On-street charging solutions (e.g., pole-mounted) • Medium- & heavy-duty mobile charging • Vehicles-to-everything(V2X) demonstration projects

Take a Break Outside After This Meeting!



Check out the NatureScore of your home or work address here:
https://www.naturequant.com/naturescore/

- There are various theories about *why* exposure to nature is so closely linked to health, but countless studies have shown the correlation between time in nature and physical and mental wellbeing

- Using satellite imagery and factors such as **light, air and noise pollution, park space, open water, and tree canopies**, NatureQuant has created aggregated NatureScores at the census tract level to gauge the amount and quality of natural elements of any address

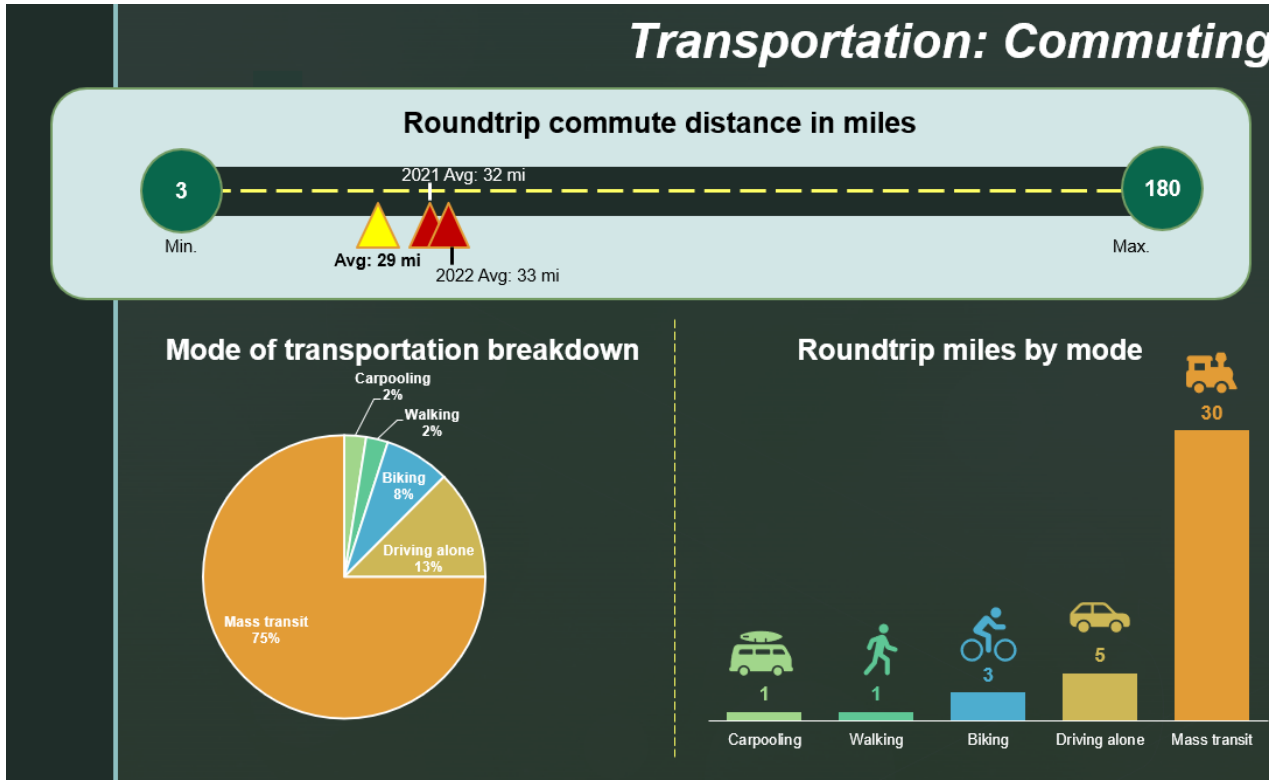
This data can be used as a starting point for future investments in natural infrastructure – e.g., planting trees where they're needed most

Source: Washington Post, https://tinyurl.com/272ooyb3

Poll

Where did your home address land on the NatureScore spectrum?

Sustainability at Home Survey



Thank you to those who have already completed the survey!

- Survey is completely voluntary and anonymous
- Takes 15 minutes to complete
- Share how you are practicing sustainability in your everyday life (clean energy & efficiency, transportation, recycling, composting, etc.)
- LBE will share results at July Council Meeting

CLICK HERE TO TAKE THE SURVEY BY MAY 31

Save the Date!

Next LBE Council Meeting: **July 9th**