



**CITIZENS
ENERGY
CORPORATION**
a non-profit energy company



<https://www.citizensenergy.com/>

February 2023

**Warren Farms Solar LLC
Dalton, MA**

CITIZENS ENERGY CORPORATION

40+ YEAR HISTORY OF INNOVATION



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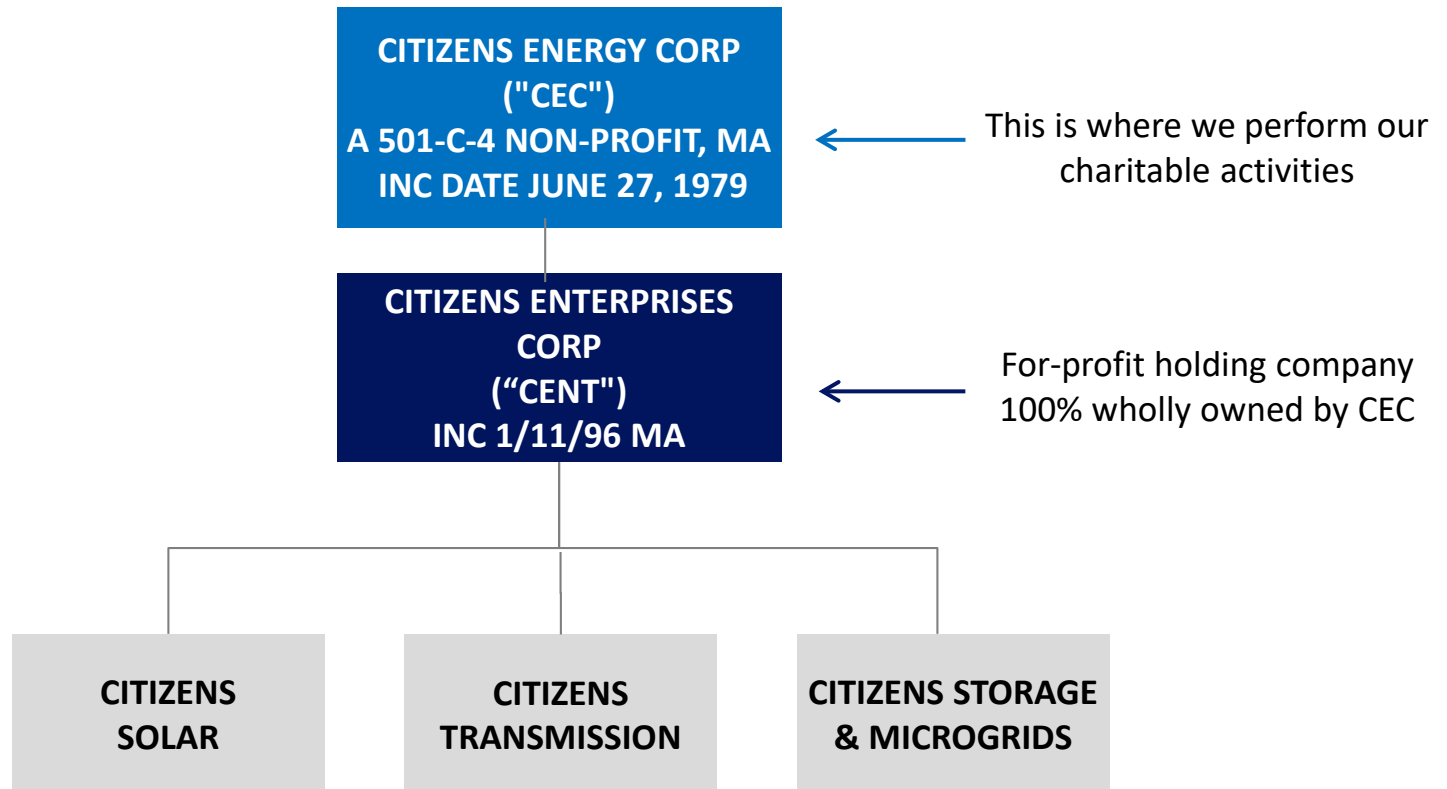
- **Mission:** To make life's basic necessities more affordable for those in need.
- **Charitable Programs:** Charitable energy assistance programs funded with profits from various business ventures:
 - Joe-4-Sun Low Income Community Solar: Launched in 2019, provides deeply discounted energy bill credits to ~2,000 low-income households in MA, NY and CA
 - Shelter Winter Assistance: Provides financial assistance for unpaid bills to low-income shelters in MA & RI
 - Solar Homes Program: No-cost residential rooftop solar systems installed on homes of low-income families in Imperial Valley, California
 - Heating Oil Assistance: Delivered 100 gallons of free heating oil to low-income households and 65 tribes in 23 states (\$500M over past 10 years), in partnership with CITGO Petroleum.



CORPORATE STRUCTURE



Citizens Energy Corporation (CEC) is a 501(c)4 non-profit based in Boston, MA



- **Operating Solar Portfolio**

With 176 MW of solar assets in operation across 41 projects - 64 MW/23 projects of which are in Massachusetts - Citizens has a proven track record developing, financing, constructing and operating large-scale ground mounted solar projects

- **Landfill/Superfund Experience**

Citizens is one of the top developers and owners of landfill solar in Massachusetts with 45 MW of landfill solar assets operating across 16 project sites; 6 of these projects are located on municipally owned landfills

- **Financial Capabilities**

40+ years of energy industry financing experience. All projects have been financed by Citizens as the sole project sponsor, in addition to a tax equity partner, and a debt partner.

- **MA Electric Utility Experience**

Citizens has successfully installed 9 projects in Eversource territory, totaling over 24 MW of operational projects.





23 operational solar projects in MA – of these, 16 are landfill solar projects

	Project	Location	Quarter Installed	Size (MW DC)	Type
1	JOE-4-SUN Falmouth Solar II	Falmouth, MA	2021 Q3	2.1	Municipal Landfill
2	JOE-4-SUN Ashland Solar	Ashland, MA	2019 Q2	5.7	Private EPA Superfund Site
3	JOE-4-SUN Ayer East	Ayer, MA	2019 Q2	1	Municipal Landfill
4	JOE-4-SUN Bridgewater Landfill Solar	Bridgewater, MA	2019 Q2	1.1	Private Landfill
5	JOE-4-SUN Oak Street Landfill	Springfield, MA	2019 Q2	4.5	Private Landfill
6	JOE-4-SUN Spencer Landfill Solar	Spencer, MA	2019 Q2	3.4	Municipal Landfill
7	Oxford Solar	Oxford, MA	2019 Q2	5.2	Public Land Lease
8	Falmouth Solar	Falmouth, MA	2017 Q1	4	Municipal Landfill
9	Agawam Avenue	Agawam, MA	2017 Q1	2.6	Private Landfill
10	Dunstable Solar	Dunstable, MA	2017 Q1	1.2	Private EPA Superfund Site
11	Tyngsborough Solar	Tyngsborough, MA	2017 Q1	2.3	Private EPA Superfund Site
12	Norton Landfill	Norton, MA	2016 Q4	2	Municipal Landfill
13	Hunt Road Solar	Amesbury, MA	2016 Q4	6	Private Landfill
14	Twiss Street Solar	Westfield, MA	2015 Q1	2	Municipal Landfill
15	Chicopee River Solar	Springfield, MA	2015 Q1	2.6	Non-Profit / Landfill
16	Granby Road	Chicopee, MA	2015 Q1	2.1	Non-Profit / Landfill
17	Whately Solar	Whately, MA	2013 Q1	1.8	Ground-Mount
18	Devens EBZ Solar	Devens, MA	2013 Q1	3	Ground-Mount
19	Chicopee Solar	Chicopee, MA	2013 Q4	3.9	Ground-Mount
20	Agawam Landfill (Mushy's)	Agawam, MA	2013 Q1	1.8	Private Landfill
21	Rehoboth Solar	Rehoboth, MA	2013 Q4	2.6	Ground-Mount
22	Holyoke Solar	Holyoke, MA	2013 Q1	0.8	Ground-Mount
23	Route 57	Agawam, MA	2013 Q1	1.8	Ground-Mount

EXAMPLE LANDFILL SOLAR PROJECTS



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*Location: Amesbury, MA
Size: 6.0 MW
Technology: Ballast on landfill*



*Location: Falmouth, MA
Size: 4.0 MW
Technology: Ballast on muni landfill*

WARREN FARMS LANDFILL SOLAR PROJECT



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Location

- Warren Farms Landfill
 - Bridle Road
 - Map 106 Lot 55
-
- Landfill Solar Array
 - Project previously obtained Town and State approvals in 2014; project cancelled due to utility upgrade costs
 - Warren Farms Solar to own, operate and maintain the solar project, will lease site from Owner
 - Project to participate in SMART Program – Solar Massachusetts Renewable Target Program – as a Low Income Community Shared Solar Project





- Tax Benefits
 - Payment of outstanding back taxes
 - Annual tax benefits to Town over 20 year term (PILOT)
- Low Income Resident Benefit
 - Provide deeply discounted electricity to over 350 local low-income residents through Citizens Joe-4-Sun program
- Provide an opportunity for the Town to purchase discounted energy from the facility.
- A positive use of otherwise undevelopable property

- Dalton Planning Board – Special Permit
 - Previous approval in 2014 (prior to the Solar Bylaw)
- Dalton Stormwater Commission – Land Disturbance Request for Determination of Applicability
 - Negative Determination 2/9/23
- Department of Environmental Protection – Post Closure Use Permit
 - Previous approval in 2014; reapplied 2023

PROJECT DESIGN



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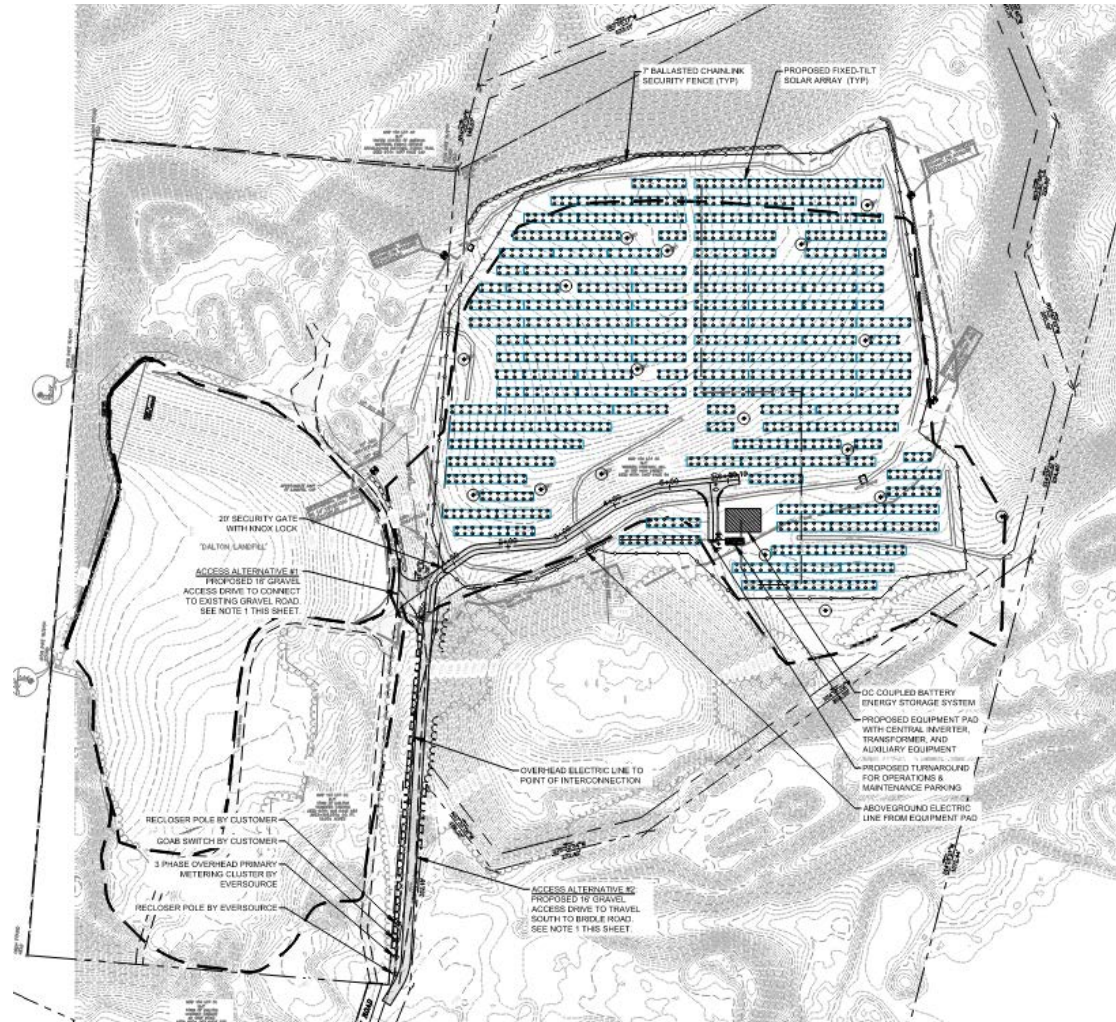
Solar Size:

- 3.1 MW DC
- 2.66 MW AC

Battery System:

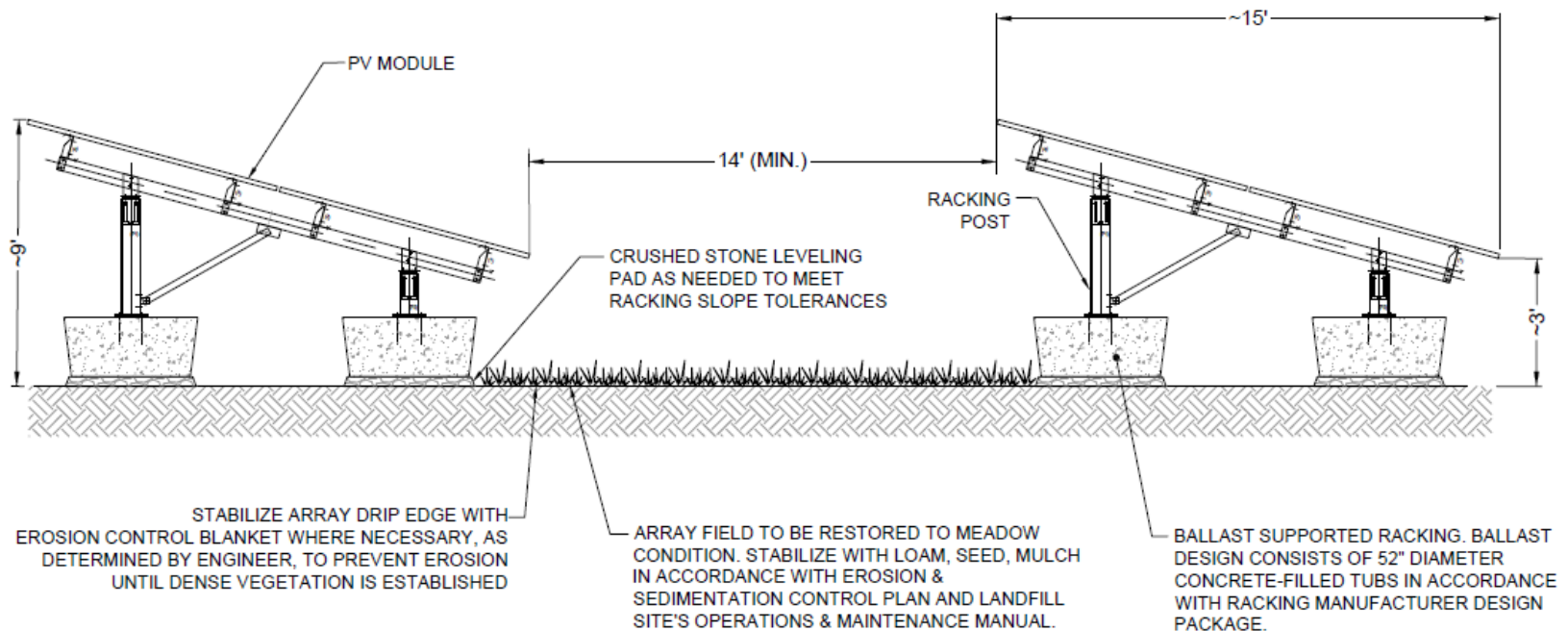
- 2.1 MW AC
- 6.5 MWh (capacity to discharge for 3 hrs)

- ~13.2 acre of 31 acre parcel
- 585w panels/ ~5,304 panels
- DC-Coupled Battery System
- SMA 2660kW central inverter



CONSTRUCTION DETAILS

- Minimize Earthwork
- No excavation is proposed
- Non-penetrating ballasted system with above-ground cable trays
- Project to use existing access roads and stormwater management features as-possible.





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APPENDIX

CONSTRUCTION ON LANDFILL CAPS



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Installation of non-penetrating ballast blocks with Low Ground Pressure Equipment (LGPE)



Improvement/creation of access roads to allow access to active gas collection systems



Use of Pad-mounted inverters



Use of above-grade cable tray collection system

LANDFILL SOLAR



Tyngsborough Solar



Norton Solar