



Town of Groton Solar and Battery Storage Request for Proposals

Through funding from the VT Municipal Energy Resilience Program (MERP) the Town of Groton is requesting proposals to install solar panels and battery storage at the following locations:

- Groton Community Building located at 1476 Scott Highway, Groton, VT 05046
- Groton Fire Station located at 1476 Scott Highway, Groton, VT 05046
- Groton Town Highway Garage located at 2681 Scott Highway, Groton, VT 05046

Scope of work: Groton Community Building and Groton Fire Station

I. Solar Photovoltaic (PV) System

A 20-kW (or other owner-approved size) roof-mounted PV array shall be designed and installed on the roof at the Groton Community Building. The intent is to provide significant electrical off-set of the electricity usage at the Community Building and the Groton Fire Station. The array(s) shall be capable of providing power to the BESS when disconnected from the grid and power the loads at the Community Building and the Fire Station during power outages. It is expected that this system will be mounted on the eastern part of the Community Building roof.

1. Design

- a. Perform engineering analysis and system design in accordance with town preferences and applicable codes and local utility requirements. Final design to be approved by the owner.
- b. Submit application to the PUC to obtain approval for installation and interconnection of the designed system capable of net-metering.
- c. Determine appropriate racking and mounting system and building structural analysis in accordance with applicable standards.
- d. Obtain all necessary permits and interconnection agreements with applicable authorities.
- e. Coordinate with Green Mountain Power to confirm that transformer can handle this change to the local grid. Transformer shall be upgraded if required.

- f. Additionally, site electric service to be upgraded as necessary to accommodate the addition of this PV array.
- g. It may be possible and is acceptable to place the solar panels only on the Community Building roof if the array provides adequate power to offset demands of the Community Building and the Fire Station.

2. Materials

a. Photovoltaic Panels:

- i. Shall meet Vermont and federal safety, performance, and labeling standards (including UL 1703, NEC 2023, and IEC 61215).
- ii. Shall have a minimum efficiency of 20.0%, when tested under STC.
- iii. Shall have a minimum warranty of 25 years with efficiency $\geq 80\%$ at that time. Warranty shall be provided by the manufacturer.
- iv. The nominal power of each individual panel shall not be less than 250 Wp
- v. Basis of design is crystalline silicone panels

b. Inverters

- i. Shall match PV array size and operating characteristics for Voltage, Current, and rated power.
- ii. Shall comply with all Vermont and federal safety, performance, and labeling standards (including VDE 0126-1-1, IEC 60255.27, IEC 62116, IEC 62109-1, and IEC 62109-2)
- iii. Shall have an efficiency of $>95.5\%$
- iv. Shall be rated mounting conditions (indoor or outdoor).
- v. All inverters shall be maximum power point tracking.

c. Racking System

- i. Shall be designed in accordance with local wind, snow, and building structural calculations.
- ii. Shall be designed in accordance with all local, state, and federal building codes.

d. Additional components

- i. Provide all necessary cabling, conduit, combiner/distribution/junction boxes, disconnects and other balance of system components rated for outdoor use and sized for the voltages, currents and powers of the system as appropriate.
- ii. Ensure all components comply with local, state, and federal codes and standards and allow for interconnection of the system with the local grid and BESS.

3. Installation:

- a. Prepare the site, including necessary building structural reinforcement.
- b. Install the racking system per manufacturer instructions and appropriate codes and standard practice.
- c. Mount photovoltaic panels as instructed by the manufacturer
- d. Install inverters, combiner/distribution/junction boxes, conduit, and wiring.
- e. Complete tie-in with existing electrical system per interconnection agreement and applicable codes
- f. Ensure appropriate grounding of the system
- g. Complete system commissioning per interconnection and net-metering agreement
- h. Provide system documentation, manuals, permits, warranty information, and train town personnel on system maintenance.

II. **Battery Energy Storage System (BESS)**

A 13.5 kWh or larger lithium battery to be installed to meet the battery storage needs of both the Community Building and the Fire Station to increase building resilience and allow full functionality of electrical capacity during grid outages (EV charging, as described below, may be shed during a grid outage). The system should be capable of being charged by the PV array described above during normal operations and during grid outages. The BESS should be capable of offsetting load to reduce costs associated with both TOU and peak demand for future electric rate structures.

1. Design

- a. Evaluate site conditions and coordinate with the owner on system placement and interconnection strategy.
- b. Perform electrical load analysis and ensure power requirements are capable of meeting owner requirements.
- c. Design BESS system including appropriate integration with the on-site PV system and grid.
- d. Obtain all necessary permits and interconnection agreements with applicable authorities, including coordination with the local fire authority for BESS compliance.
- e. Design (and as required materials provided) to comply with:
 - i. NFPA 855
 - ii. NEC 2023 (Articles 706 & 480)

- iii. IBC, IFC 2018+
- iv. Local building and fire codes
- v. Utility interconnection standards (IEEE 1547, UL 1741)

2. Materials

a. Batteries, inverter, and BMS

- i. Shall have a minimum energy capacity of 13.5 kWh, power shall be sufficient to serve all electrical loads at the Community Center.
- ii. BESS shall have a minimum round trip efficiency of 87%, and manufacturer provided warranty of at least 10 years.
- iii. Basis of design is Tesla PowerWall 2, equal or better substitutions are acceptable with owner approval.

b. Safety system

- i. As required by the local fire authority, provide fire detection, suppression, disconnects, fire rated cabinet, etc.
- ii. All systems shall be rated for use in the conditions in which they are installed.

3. Installation

- a. Structural loading and mounting of the system at the site to be confirmed and any necessary site work is to be performed
- b. Coordinate any ventilation, heating, or cooling requirements at the site to maintain environmental conditions for the battery.
- c. Install all system components in accordance with the design, manufacture recommendations, and local, state, and federal regulations.
- d. Complete tie-in with existing electrical system per interconnection agreement and applicable codes, and to meet objectives of the project
- e. Ensure appropriate grounding of the system
- f. Complete system commissioning per interconnection and net-metering agreement
- g. Provide system documentation, manuals, permits, warranty information, and train town personnel on system maintenance.

III. Electric Vehicle Charging

If MERP funding permits, the Town would like to install EV charging at the Community Building to support future expansion of electric vehicle usage.

1. Materials

a. Level 2 EV Chargers

- i. Charger shall provide at least (2) 40A output units, and shall include a J1772 connector. Owner to approve model and connections before installation.
- ii. Charger shall be capable of accepting payment for usage from users. Final arrangements for payment and/or electrical connection to be approved by the owner.
- iii. Contractor shall coordinate with Green Mountain Power to confirm transformer capacity (or upgrade if required) to support the addition of the EV charger.

b. Charge Mounting System

- i. Mounting shall be coordinated with the owner, and mounting equipment supplied as approved.

c. Electrical conduit, wiring, and fittings

- i. Provide a dedicated circuit for the EV charger
- ii. Provide additional components per NEC

2. Installation

- a. De-energize panel and install new breaker and circuit (240V, as sized per EVSE requirements).
- b. Run conduit (surface-mounted or trenched, if applicable) to charger location.
- c. Pull and terminate conductors at panel and charger.
- d. Bond and ground per NEC 2023 (Articles 625 & 250).
- e. Install wall-mounted or pedestal charger per manufacturer specs.
- f. Level, anchor, and weatherproof all mounts.
- g. Install required protective bollards (if charger is in a parking lot).
- h. Ensure compliance with GMP's electrical service requirements and grounding standards.
- i. Energize system and perform operational test using EV or test load.
- j. Verify communications (if smart charger), power delivery, and breaker function.
- k. Label disconnects, EV charger, and panel per code.
- l. Provide brief training for the owner on charger use, reset procedures, and network features (if applicable).

IV. Groton Town Highway Garage

Solar Photovoltaic (PV) System

A 4.8-kW (or other owner-approved size) roof-mounted PV array shall be designed and installed on the roof at the Groton Town Garage. The intent is to provide full electrical off-set of the electricity usage at the Groton Town Garage. The array shall be capable of providing power to the BESS when disconnected from the grid and power the loads at the Town Garage during power outages. It is expected that this system will be mounted on the Southern part of the Town Garage roof.

4. Design

- a. Perform engineering analysis and system design in accordance with town preferences and applicable codes and local utility requirements. Final design to be approved by the owner.
- b. Submit application to the PUC to obtain approval for installation and interconnection of the designed system capable of net-metering.
- c. Determine appropriate racking and mounting system and building structural analysis in accordance with applicable standards.
- d. Obtain all necessary permits and interconnection agreements with applicable authorities.
- e. Coordinate with Washington Electric Coop. to confirm that transformer can handle this change to the local grid. Transformer shall be upgraded if required.
- f. Additionally, site electric service to be upgraded as necessary to accommodate the addition of this PV array.

5. Materials

a. Photovoltaic Panels

- i. Shall meet Vermont and federal safety, performance, and labeling standards (including UL 1703, NEC 2023, and IEC 61215).
- ii. Shall have a minimum efficiency of 20.0%, when tested under STC.
- iii. Shall have a minimum warranty of 25 years with efficiency $\geq 80\%$ at that time. Warranty shall be provided by the manufacturer.
- iv. The nominal power of each individual panel shall not be less than 250 Wp
- v. Basis of design is crystalline silicone panels

b. Inverters

- i. Shall match PV array size and operating characteristics for Voltage, Current, and rated power.

- ii. Shall comply with all Vermont and federal safety, performance, and labeling standards (including VDE 0126-1-1, IEC 60255.27, IEC 62116, IEC 62109-1, and IEC 62109-2)
 - iii. Shall have an efficiency of >95.5%
 - iv. Shall be rated mounting conditions (indoor or outdoor).
 - v. All inverters shall be maximum power point tracking.
- c. Racking System
 - i. Shall be designed in accordance with local wind, snow, and building structural calculations.
 - ii. Shall be designed in accordance with all local, state, and federal building codes.
- d. Additional components
 - i. Provide all necessary cabling, conduit, combiner/distribution/junction boxes, disconnects and other balance of system components rated for outdoor use and sized for the voltages, currents and powers of the system as appropriate.
 - ii. Ensure all components comply with local, state, and federal codes and standards and allow for interconnection of the system with the local grid and BESS.

6. Installation:

- a. Prepare the site, including necessary building structural reinforcement.
- b. Install the racking system per manufacturer instructions and appropriate codes and standard practice.
- c. Mount photovoltaic panels as instructed by the manufacturer
- d. Install inverters, combiner/distribution/junction boxes, conduit, and wiring.
- e. Complete tie-in with existing electrical system per interconnection agreement and applicable codes
- f. Ensure appropriate grounding of the system
- g. Complete system commissioning per interconnection and net-metering agreement
- h. Provide system documentation, manuals, permits, warranty information, and train town personnel on system maintenance.

V. Battery Energy Storage System (BESS) – Groton Town Highway Garage

A 13.5 kWh (or other owner-approved size) lithium battery should be installed at the facility to increase building resilience and allow full functionality of electrical capacity during grid outages. The system should be capable of being charged by the PV array described above

during normal operations and during grid outages. The BESS should be capable of offsetting load to reduce costs associated with both TOU and peak demand for future electric rate structures.

4. Design

- a. Evaluate site conditions and coordinate with the owner on system placement and interconnection strategy.
- b. Perform electrical load analysis and ensure power requirements are capable of meeting owner requirements.
- c. Design BESS system including appropriate integration with the on-site PV system and grid.
- d. Obtain all necessary permits and interconnection agreements with applicable authorities, including coordination with the local fire authority for BESS compliance.
- e. Design (and as required materials provided) to comply with:
 - i. NFPA 855
 - ii. NEC 2023 (Articles 706 & 480)
 - iii. IBC, IFC 2018+
 - iv. Local building and fire codes
 - v. Utility interconnection standards (IEEE 1547, UL 1741)

5. Materials

- a. Batteries, inverter, and BMS
 - i. Shall have an energy capacity of 13.5 kWh (or other capacity as agreed by the owner), power shall be sufficient to serve all electrical loads at the Town Garage.
 - ii. BESS shall have a minimum round trip efficiency of 87%, and manufacturer provided warranty of at least 10 years.
 - iii. Basis of design is Tesla PowerWall 2, equal or better substitutions are acceptable with owner approval.
- b. Safety system
 - i. As required by the local fire authority, provide fire detection, suppression, disconnects, fire rated cabinet, etc.
 - ii. All systems shall be rated for use in the conditions in which they are installed.

6. Installation

- a. Structural loading and mounting of the system at the site to be confirmed and any necessary site work is to be performed

- b. Coordinate any ventilation, heating, or cooling requirements at the site to maintain environmental conditions for the battery.
- c. Install all system components in accordance with the design, manufacture recommendations, and local, state, and federal regulations.
- d. Complete tie-in with existing electrical system per interconnection agreement and applicable codes, and to meet objectives of the project
- e. Ensure appropriate grounding of the system
- f. Complete system commissioning per interconnection and net-metering agreement
- g. Provide system documentation, manuals, permits, warranty information, and train town personnel on system maintenance.

VI. Qualifications and Process

The Town of Groton also requires the following as a part of the proposal process:

- 1. Provide at least two references for previously completed projects of a similar scope, including pictures of said work.
- 2. Agree to complete all contract documents, including verification of insurance(s) prior to the start of construction.
- 3. Contractor agrees to provide all documentation and assist in securing the 30% Federal Direct Pay funding available for this energy project.
- 4. Contractor agrees to perform a site visit prior to the submission of their proposal to confirm buildings meet structural and mechanical requirements for said installation.

VII. Schedule

RFP announced on August 28, 2025

Pre-bid site visits: To be arranged with the bidder

Deadline for proposals: September 29, 2025 (4pm EDT)

Expected Select Board meeting to review bids and select proposal: 10/01/2025 (5pm EDT)

Construction window: October, 2025 through May 31, 2026 (with all work completed by 5/31/26)

For **questions** contact Dennis Casey, MERP grant volunteer at 802-751-9016. Email: drcasey58@gmail.com

To submit a **quote**, please send it to:

Carrie Peters,
Groton Town Clerk
1476 Scott Highway
Groton, VT 05046
townclerk@grotonvt.com