TOWN OF PALMER
OFFICE OF THE BUILDING INSPECTOR
4417 Main Street
Palmer, Massachusetts 01069

Solar Permit Requirements 1 & 2 family homes and their accessory structures

Per Section R107.1.1 of the Commonwealth of Massachusetts 1 & 2 Family Building Code (780 CMR 9th Ed.) which states in part:

> …Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of 780 CMR and relevant laws, ordinances, rules and regulations, as determined by the building official.

Effective July 1, 2023, the following information is required for all building permit applications for roof mounted solar projects. Check all information that has been provided and submit with application. FAILURE TO PROVIDE REQUESTED INFORMATION WILL RESULT IN DENIAL OF PERMIT.

1. **Stamped plans** showing:
   - [ ] Plan view of structure including porches, decks or any attached or detached structures (per ASCE 7-10 sec. 7.7.2) that could be affected by new solar panel installation. All roofs must be labeled on plan.
   - [ ] Location of all equipment to be installed. Including distance of the panels from roof edges – (Please be aware that we are now in the 2021 fire code, firefighter access may be required, check with the AHJ)
   - [ ] If there are span breaks that support the roof and PV system - a plan view of the breaks, including distances and details of supporting construction (to foundation)
   - [ ] Copy of onsite survey report being sent to the engineer.
   - [ ] Report on condition, age, type (material) and number of layers of roof covering for each roof section that will have P.V. panels installed – report for each roof section must match roof labels on plan.
   - [ ] Plan view and elevations for any ESS system installed including: height from floor/grade, distances from combustibles, distances between battery packs and Manufacturers specifications and installation requirements.
   - [ ] ESS Plan view/floor plan must include: location of smoke detectors/alarms, floor layout with spaces labeled for use, ventilation to meet manufacturer's specifications, fire separation per code and/or manufacturer requirements, protection from impact.

2. [ ] Copies of **Installation Specifications** for all equipment, including mounting hardware, panels & **ESS**.

3. [ ] **Photos** required: all 4 full sides of the house, edge of roof showing number of layers of shingles, attic access, attic framing, measurements of rafter depth, span, spacing and any span breaks. If there are cathedral ceilings knee walls or raised ceiling joists, pictures of the room will also be required.

4. [ ] **method used to determine the size and spacing of rafters** ,with supporting documentation, must be provided if the rafters are not visible. The terms "estimated" or "assumed" will not be accepted.

5. [ ] **Engineer's letter** wet stamped and signed, including within the cover letter the following:
   a. [ ] Design criteria used for the calculations.
   b. [ ] Codes or Standards used (including the edition)

Engineer's letter (cont.)

   c. For each part of the roof supporting photo voltaic (PV) panels and associated equipment a section within the letter including:
      [ ] The array or roof number for that section of roof, that matches the array or roof number(s) used on the plan.
      [ ] The size, span (horizontal) and spacing, of the roof framing members for that roof section. If roof is a trussed roof, raised ceiling or cathedral, that information needs to be stated.
      [ ] The species and grade of the roof framing members that were used for the calculations for that roof section.
      [ ] Information on any intermediate support (span breaks) of the roof framing member(s) i.e. knee walls or purlins and
         - how the load is carried from the roof framing to the basement and
         - if the intermediate supports can carry the additional load.
      [ ] If there are beams, hip rafters or valleys supporting the section of roof with PV panels added, these rafters or framing methods (i.e. over framing) also have to be evaluated for the additional loads. -calculations must be provided showing
         - The beams, valley and hip rafters can support all the additional load that has been added to all the jack rafters they support, in addition:
         - Valleys could impact when and if the slippery roof factor can be used and
         - If the "slippery roof factor" is used, then impact and drift have to be taken into consideration in the valleys- engineering must be provided
   d. For structures within 15' (per ASCE 7.9), i.e. porch roofs, decks, sunrooms, accessory structures, and roof systems below the roof(s), supporting the PV panels the same information required for roof systems supporting the pv panels must be provided with added review and calculations for:
      [ ] Impact from the snow sliding off the PV panels.
      [ ] and additional snow loads from snow sliding off the PV panels, this is especially critical of the "slippery roof" factor is used for the load calculations of the upper roof(s)
   e. The engineer's conclusions **- if upgrades are required the plans and descriptions and plans for the structural upgrades must be submitted with the application. If conclusions are based solely on "5% rule" that must be clearly stated.** Note: additional engineering may be required if condition, age, excessive spans for framing size and spacing or other mitigating factors are noted by the AHJ especially on structures that predate building codes.

6. [ ] **Calculations** supporting the engineer's determinations for each roof section, and any

beams, hip or valley rafters, and any structures below the PV system, need to be supplied with the cover letter, calculations need to correspond with roof/array numbers as shown on the plans.

a. Calculations need to include dead loads, how they were determined, and if they include 2 layers of roofing or only one.
b. If ceiling joists are raised above the top of the supporting wall, the adjustment factors need to be clearly marked, and the dead loads need to include ceiling finish and insulation.
c. If the ceiling is cathedral the dead loads need to include ceiling finish and insulation.
d. If the roof is composed of trusses – information that the program used for calculations can be used to evaluate a truss system must be supplied.

7. [ ] A **Completed Building Permit Application** with all sections filled out correctly including contactor and homeowner signatures.
8. [ ] **Fee Payment** – the contract page showing estimated cost, &/or work order agreement so that the fee can be computed.

No application will be considered complete without the above information. An incomplete application will be denied. The application can be reinstated within 180 days of submittal. If not complete within 180 days the application will be considered abandoned and will have to be re-submitted.

Per the Fire Districts within the Town of Palmer:

527 CMR Fire Code (2021) as amended/adopted in December 2022 requires all plans for roof mounted solar and ESS Systems be submitted to the Fire Department(s) for review. The Three Fire Chiefs in Palmer i.e. Bondsville Fire, Three Rivers Fire and Palmer Fire (which also includes Thorndike) have determined that the clear fire path regulations as outlined in NFPA 1, for roof systems with solar panels, will be enforced. In addition, there are new requirements for ESS systems (NFPA 855) that will fall under their jurisdiction, including but not limited to decommissioning plans. They have determined, based on the new regulations, that no ESS Systems will be allowed in basements, within the Town boundaries (Palmer, Thorndike, Bondsville and Three Rivers).

All plans need to reflect compliance with 527 CMR.