City of Mountlake Terrace
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SOLAR PERMIT CHECKLIST

Solar Application Submittal Requirements:

1. PV System will require a separate Electrical Permit.
2. One set of plans and specifications for review must be submitted.

Photovoltaic (PV) System Data Checklist

	Yes	No
PV system is designed and proposed for a detached one- or two-family dwelling or townhouse not more than three stories above grade or detached accessory structure that is code compliant to setbacks and height, or code allows expansion of nonconformity for solar modules. [IRC 101.2]		
Modules on pitched roofs do not exceed the highest point of the roof unless approved by the local jurisdiction.		
Rooftop is made from lightweight material such as a single layer of composition shingles, metal roofing, lightweight masonry, or cedar shingles.		
The installation shall comply with the manufacturer's instructions. [IRC M2302.2]		
The installation shall meet the requirements of NFPA 70 National Electric Code, and all required electrical permit(s) must be obtained from the Authority Having Jurisdiction to administer the electrical code. [IRC M2302.2]		
The installation shall meet the requirements of the International Fire Code as amended by WA State. [IRC M2302.2]		
The PV system is designed for the wind speed of the local area, and will be installed per the manufacturer's specifications. [IRC M2302.2.1(1)]		
The ground snow load does not exceed 70 pounds per square foot. [IRC M2302.2.1(2)]		
Attachment to the roof is specified by the mounting system manufacturer.		
Total dead loads of modules, supports, mountings, raceways and all other appurtenances weigh no more than four pounds per square foot. [IRC M2302.2.1(3)] Enter the dead load of system (lbs/ft²):_____		
To address uplift, modules are mounted no higher than 18" above the surface of the roofing to which they are affixed. [IRC M2302.2.1(4)]		
Supports for solar modules are installed to spread the dead load across as many roof-framing members as needed to ensure that no point load exceeds fifty (50) pounds. [IRC M2302.2.1(5)]		
The photovoltaic modules and supporting structure shall be constructed of noncombustible materials or fire-retardant treated wood equivalent to that required for the roof construction. [IRC M2302.2.1]		
Roof and wall penetrations shall be flashed and sealed to prevent entry of water, rodents, and insects. [IRD M2302.2.2]		
PV modules are listed and labeled with a fire classification in accordance with UL 1703. [IRC M2302.2.3]		

Residential Solar Building Permit Submittal Requirements

Requirements for a Solar / Photovoltaic System:

1. A **building permit** is required for the installation or replacement of solar/photovoltaic (PV) systems, including rooftop arrays, ground-mounted arrays and PV water heaters. Please submit the following materials:
    a. Permit Application
    b. Site Plan - show location of house and array/equipment on lot, with setback dimensions to property lines.
    c. Roof Plan - show the array and setbacks from edges of roof.
    d. Manufacturer specifications for the PV panels and mounting hardware. Include the weight of the equipment.
    e. For rooftop systems not conforming to all of the criteria in the attached checklist, provide a roof framing plan and either:
        i. Structural calculations by a WA state licensed engineer or other competent person showing the adequacy of the existing roof structure to support the additional load, or
        ii. Documentation showing that the roof structure was substantially overbuilt compared to prescriptive code requirements.
    f. For ground mounted systems - provide structural calculations by a WA state licensed engineer or other competent person showing how the structure meets wind design requirements for the structure and footings. Note that ground mounted equipment greater than 36" in height must adhere to minimum required property line setbacks of the applicable zoning district.
2. An **electrical permit** is required.

Electrical Permits and Inspections

1. Electrical permits and inspection approvals are required for all PV installations that connect to the building's electrical system.
2. A plan review may be necessary. If a plan review is not required, the following information must be provided to the electrical inspector at the time of the electrical inspection:
    a. A wiring diagram showing all photovoltaic equipment, devices, wire type and size, over-current protection and grounding.
    b. Electrical calculations used to determine voltage and current within the photovoltaic system.
    c. Information/specifications for all equipment (array, inverter, modules including operating and maximum voltages/currents/power, etc.).

Firefighter Access

1. PV systems are a serious concern for the fire service in that they limit access for roof operations and, even when disconnected from the building electrical system, remain energized during daylight hours.
2. The following recommendations are made to help mitigate these concerns:
    a. Access
        i. A pathway should be constructed along all roof edges, peaks, and valleys for firefighter access.
        ii. The pathway should be not less than 36" wide measured from the edge of the solar array. (See attached figures 1-4 for examples of firefighter pathways).
        iii. When solar arrays are installed on roofs, there should be a minimum of 36" of clearance at the ridgeline to allow for smoke ventilation.
        iv. This guideline does not apply to non-habitable structures without concealed attic/roof spaced. Examples of non-habitable structures include, but are not limited to, parking shade structures, carports, solar trellises, etc.

Roof Mounted Photo-Voltaic Solar Panels
One-and-Two Family Dwellings
2012 IRC

1. Purpose: To assist and encourage private generation of electricity through usage of solar power, while assuring that such generation does not create electrical, structural, fire or life safety hazards.
2. Definitions
    a. PV means Photo-Voltaic
    b. NEC means National Electrical Code

Permit and Installation Requirements
PV panel installations that require a building permit and an electrical permit.

- Total dead load of panels, supports, mountings, raceways and all other appurtenances weigh no more than four pounds per square foot.
- Panels are to be mounted no higher than 18" above the surface of the roofing to which they are affixed. Except for flat roofs, no portion of the system may exceed the highest point of the roof. Panels on flat roofs cannot exceed the maximum height allowed for the building unless approved by the local jurisdiction.
- Supports for solar panels are to be installed to spread the dead load across as many roof-framing members as needed to ensure that no point loads in excess of fifty pounds are created.
- Attachment to the roof will be as specified by the mounting system manufacturer.
- All signage and markings required by NEC 690 shall be a phenolic or metallic plate or other similar material engraved in block letters at least ¼" high and suitable for the environments and application. The letters and the background shall be in contrasting colors. Screws or rivets shall be used to affix an identification plate to the equipments or enclosure.
- The installation must still comply with all land use and other applicable codes.

Additional Signage and Marking Requirements

In addition to the signage and markings required in NEC 690 an Identification Plate is needed to provide emergency responders with appropriate warning regarding the solar electric system and must comply with the following:

- Identification Plate text: "WARNING: PHOTOVOLTAIC POWER SOURCE"
- Red background, white lettering
- Minimum 3/8" letter height, all capital letters
- Arial or similar font, non-bold
- Reflective, weather resistant material
- The marking should be placed on the exterior of structure adjacent to the meter and within the main service disconnect. If the main service disconnect is operable with the service panel closed, then the marking should be placed on the outside cover.

EXAMPLES OF SOLAR ARRAY FIREFIGHTER PATHWAYS

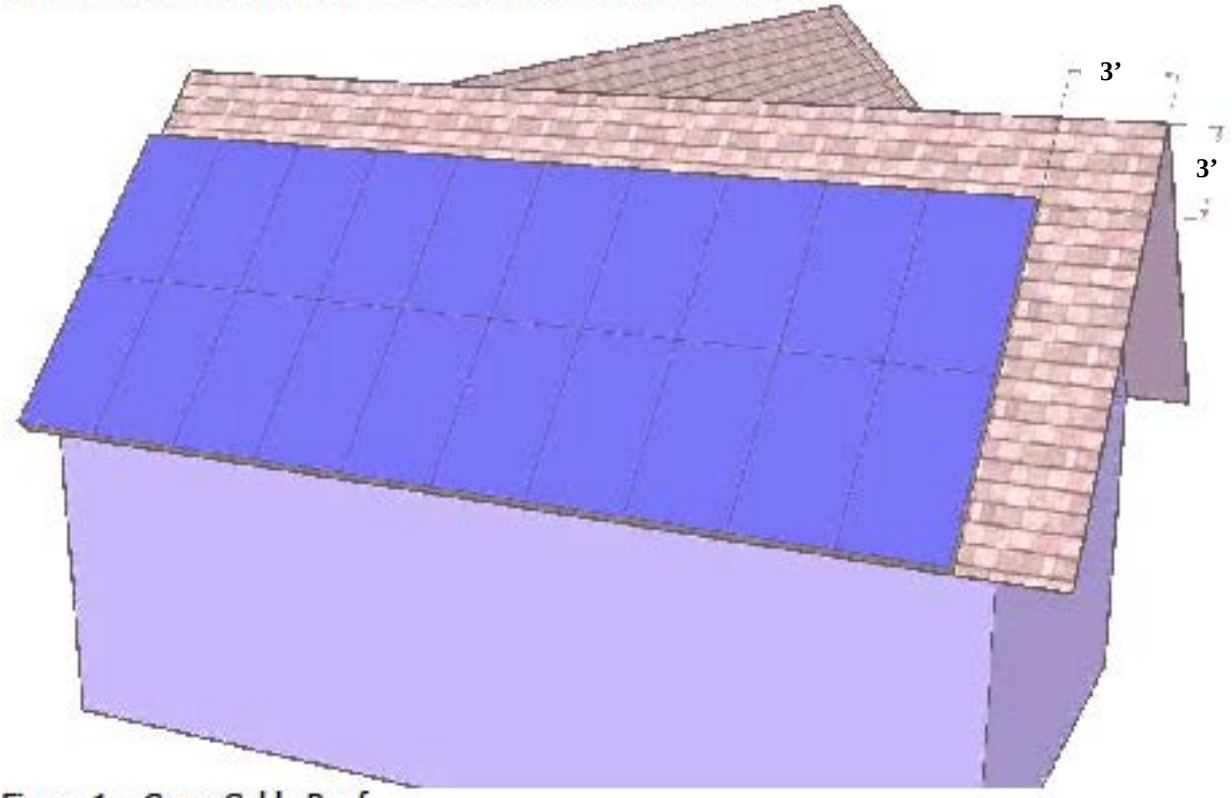

Figure 1 – Cross Gable Roof

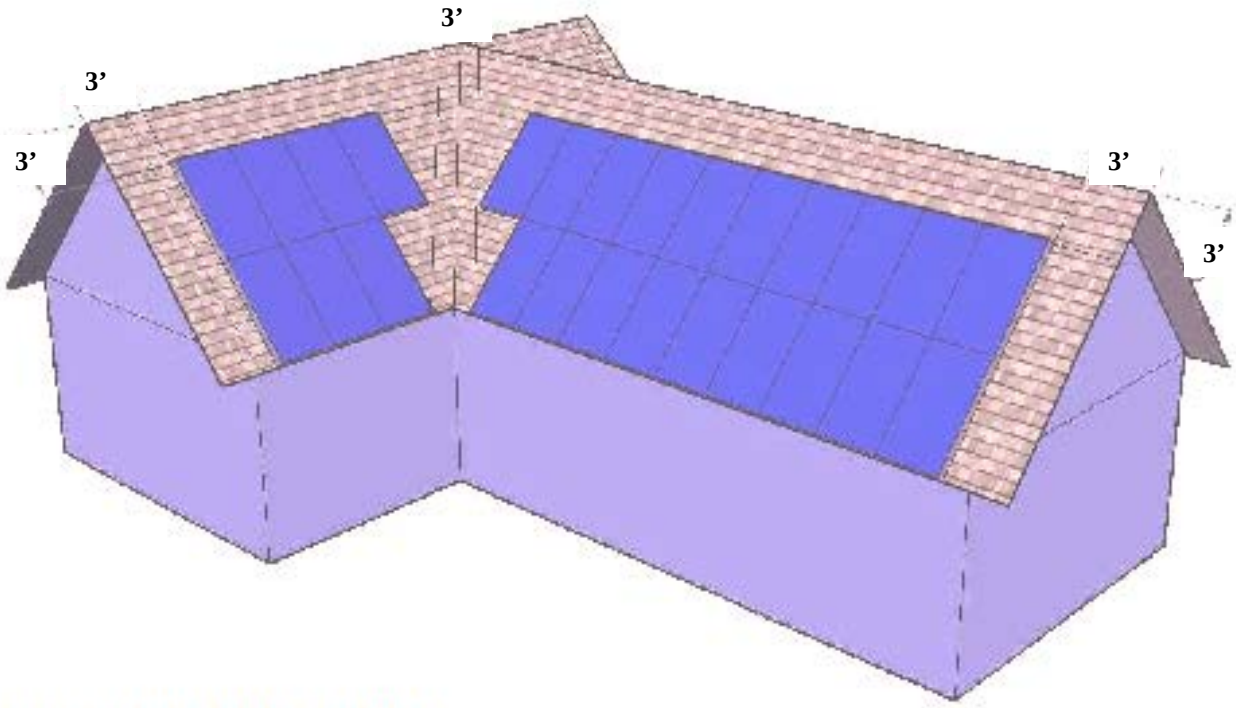

Figure 2 – Cross Gable with Valley

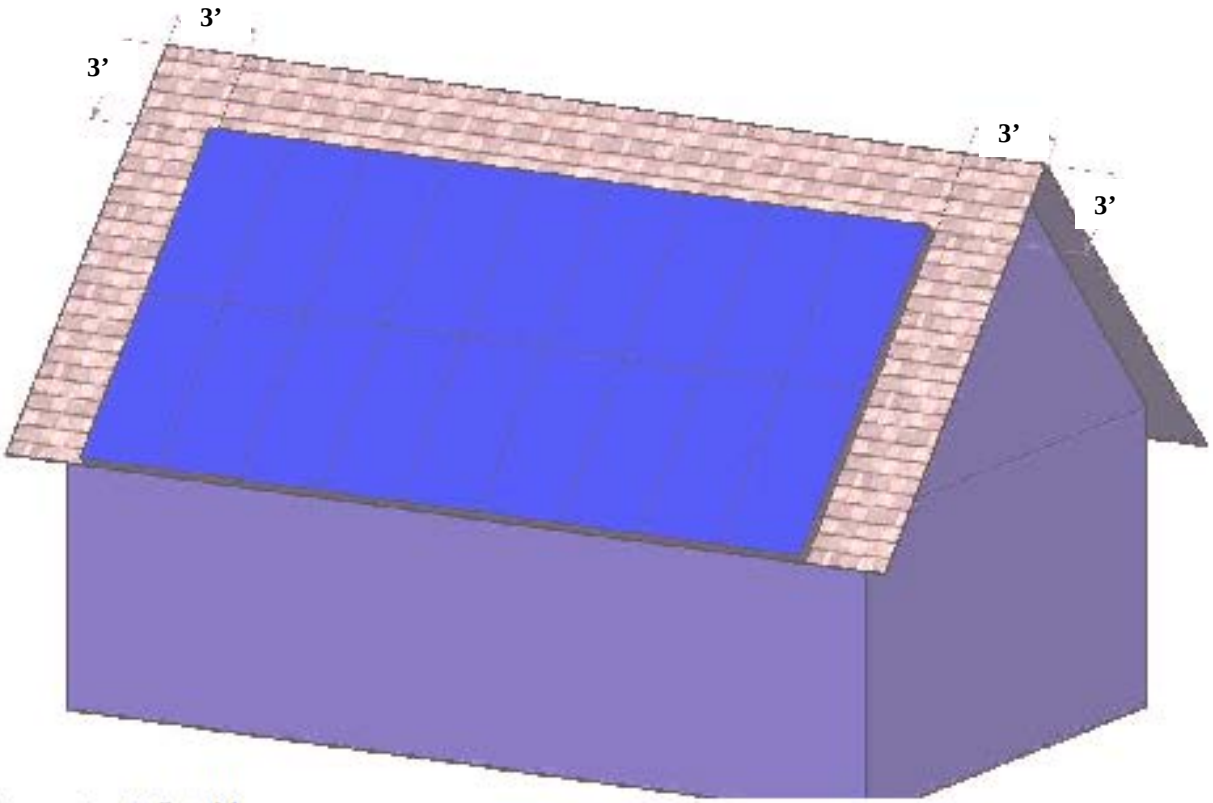

Figure 3 – Full Gable

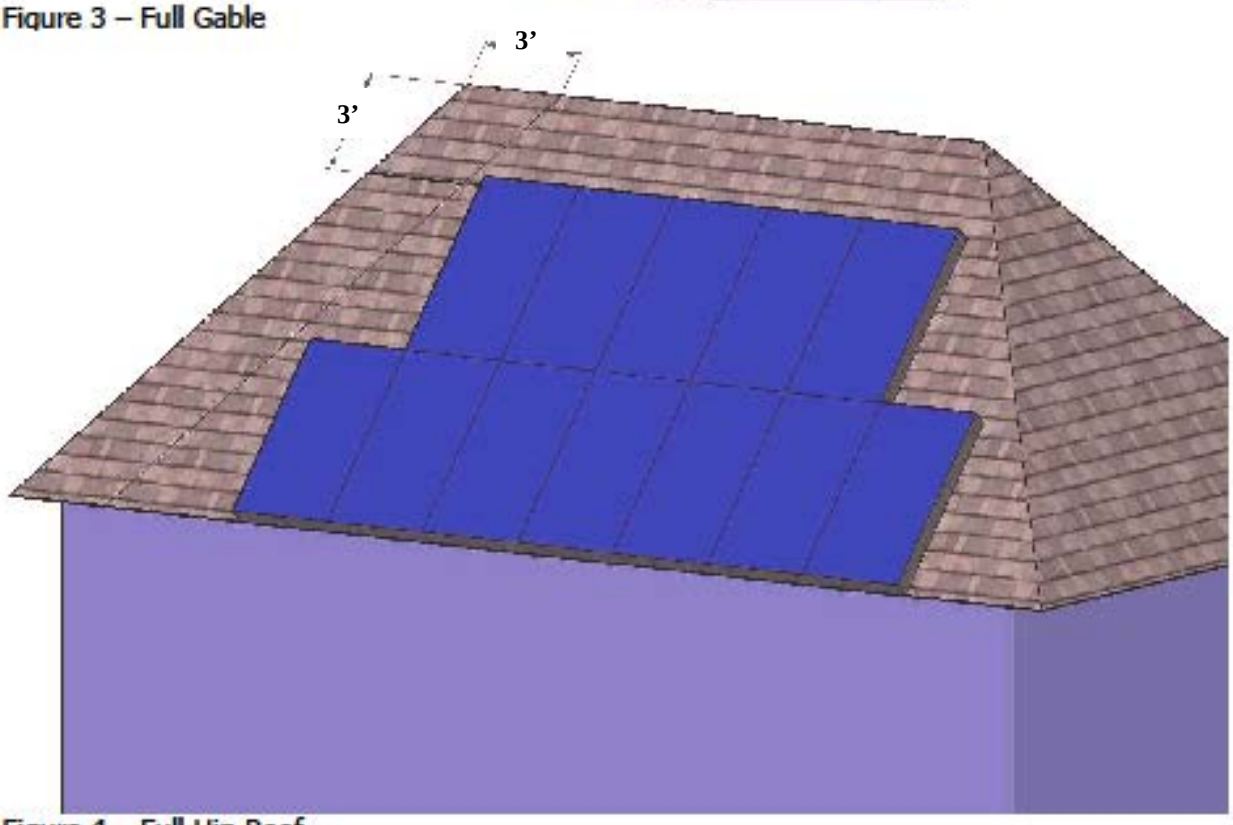

Figure 4 – Full Hip Roof