



## KITITITAS COUNTY COMMUNITY DEVELOPMENT SERVICES

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# 26

ITEM

## RESIDENTIAL PHOTOVOLTAIC SOLAR PANEL POLICY

FOR MORE INFORMATION VISIT THE CDS WEBSITE AT: [WWW.CO.KITITITAS.WA.US/CDS](http://WWW.CO.KITITITAS.WA.US/CDS)

**Kittitas County requires a building permit to install Photovoltaic (PV) Solar Panel(s) for residential and commercial uses. This policy governs Residential uses only.**

Other permits may be required per Washington State Labor and Industries or Utility Providers. A Flood Development Permit is required prior to any permit for placement in a flood hazard area. Please contact Kittitas County Public Works if your project is in a flood hazard area.

An Administrative Permit is required and may be obtained Over the Counter for a Roof Mounted PV Solar System with the following minimum requirements:

1. Complete site plan.
2. Roof plan. Please show panel layout with spaces as required.
4. Manufacturer's specifications.
5. Engineering (if required, see below).

**R324.3 Photovoltaic systems.** Installation, modification, or alteration of solar photovoltaic power systems shall comply with this section and the International Fire Code. Section R104.11, Alternate materials design and methods of construction and equipment, shall be considered when approving the installation of solar photovoltaic power systems. Photovoltaic systems shall be designed and installed in accordance with Sections R324.3.1 through R324.6 and chapter 19.28 RCW. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.

**EXCEPTION:** Detached, non-habitable Group U structures shall not be subject to the requirements of this section for structural and fire safety. A residential ground mounted system shall be deemed a Group U structure per IBC 312.

**R324.3.1 Equipment listing.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.

**R324.4 WSA Rooftop-mounted photovoltaic systems.** Rooftop-mounted photovoltaic panel systems installed on or above the roof covering shall be designed and installed in accordance with Section 907.

**EXCEPTION:** The roof structure shall be deemed adequate to support the load of the rooftop solar photovoltaic system if all of the following requirements are met:

1. The solar photovoltaic panel system shall be designed for the wind speed of the local area and shall be installed per the manufacturer's specifications.
2. The ground snow load does not exceed 70 pounds per square foot. (See exceptions to engineering)
3. The total dead load of modules, supports, mountings, raceways, and all other appurtenances weigh no more than 4 pounds per square foot.
4. Photovoltaic modules are not mounted higher than 18 inches above the surface of the roofing to which they are affixed.
5. Supports for solar modules are to be installed to spread the dead load across as many roof-framing

members as needed, so that no point load exceeds 50 pounds.

**R324.4.1 Structural requirements.** Rooftop-mounted photovoltaic panel systems shall be designed to structurally support the system and withstand applicable gravity loads in accordance with Chapter 3. The roof on which these systems are installed shall be designed and constructed to support the loads imposed by such systems in accordance with Chapter 8.

**R324.4.1.1 Roof load.** Portions of roof structures not covered with photovoltaic panel systems shall be designed for dead loads and roof loads in accordance with Sections R301.4 and R301.6. Portions of roof structures covered with photovoltaic panel systems shall be designed for the following load cases:

1. Dead load (including photovoltaic panel weight) plus snow load in accordance with Table R301.2(1).
2. Dead load (excluding photovoltaic panel weight) plus roof live load or snow load, whichever is greater, in accordance with Section R301.6.

**R324.4.1.2 Wind load.** Rooftop-mounted photovoltaic panel or module systems and their supports shall be designed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

**R324.4.2 Fire classification.** Rooftop-mounted photovoltaic panel systems shall have the same fire classification as the roof assembly required in Section R902.

**324.4.3 Roof penetrations.** Roof penetrations shall be flashed and sealed in accordance with Chapter 9.

**R324.5 Building-integrated photovoltaic systems.** Building-integrated photovoltaic systems that serve as roof coverings shall be designed and installed in accordance with Section R905.

**R324.5.1 Photovoltaic shingles.** Photovoltaic shingles shall comply with Section R905.16.

**R324.6 Roof access and pathways.** Roof access, pathways and setback requirements shall be provided in accordance with Sections R324.6.1 through R324.6.2.1. Access and minimum spacing shall be required to provide emergency access to the roof, to provide pathways to specific areas of the roof, provide for smoke ventilation opportunity areas, and to provide emergency egress from the roof.

Exceptions:

1. Detached, non-habitable structures, including but not limited to detached garages, parking shade structures, carports, solar trellises and similar structures, shall not be required to provide roof access.
2. Roof access, pathways and setbacks need not be provided where the code official has determined that rooftop operations will not be employed.
3. These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (17-percent slope) or less.

**324.6.1 Pathways.** Not fewer than two pathways, on separate roof planes from lowest roof edge to ridge and not less than 36 inches (914 mm) wide, shall be provided on all buildings. Not fewer than one pathway shall be provided on the street or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided from the lowest roof edge to ridge on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas capable of supporting fire fighters accessing the roof. Pathways shall be located in areas with minimal obstructions such as vent pipes, conduit, or mechanical equipment.

**324.6.2 Setback at ridge.** For photovoltaic arrays occupying not more than 33 percent of the plan view total roof area, not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, not less than a 36-inch (914 mm) clear setback is required on both sides of a horizontal ridge.

**R324.6.2.1 Alternative setback at ridge.** Where an automatic sprinkler system is installed within the dwelling in accordance with NFPA 13D or Section P2904, setbacks at ridges shall comply with one of the following:

1. For photovoltaic arrays occupying not more than 66 percent of the plan view total roof area, not less than an 18-inch (457 mm) clear setback is required on both sides of a horizontal ridge.
2. For photovoltaic arrays occupying more than 66 percent of the plan view total roof area, not less than a 36-

inch (914 mm) clear setback is required on both sides of a horizontal ridge.

**R324.6.2.2 Emergency escape and rescue opening.** Panels and modules installed on dwellings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway not less than 36 inches (914 mm) wide shall be provided to the emergency escape and rescue opening.

**R324.7 Ground-mounted photovoltaic systems.** Ground-mounted photovoltaic systems shall be designed and installed in accordance with Section R301.

### **Exception to Engineering above 70 psf ground snow for Roof Mounted systems:**

1. Trussed roof structures completely covered in metal roofing of any pitch and configuration.
2. Trussed roof structures with composition or other non-slippery roofing materials if panels are mounted from ridge to eave and there are no other roofs, obstructions or structures below. (Panels must maintain a minimum of 12" space below the ridge.)
3. Stick framed structures built after 1974 and also meeting the conditions of 1 or 2 above.

### **Limited Engineering above 70 psf ground snow for Roof Mounted systems:**

(Engineering need only address the ability of the roof framing to carry the additional weight of the panels.)

Stick framed roof structures built before 1974 completely covered in metal roofing of any pitch and configuration; or with composition or other non-slippery roofing materials if panels are mounted from ridge to eave and there are no other roofs, obstructions or other structures below. (Panels must maintain a minimum of 12" space below the ridge.)

### **Complete Engineering above 70 psf ground snow for Roof Mounted systems:**

(This will require a plan review and will be placed in line with other permits and reviewed in the order it was received.)

1. If unable to meet any of the exceptions listed above, complete engineering shall be required.
2. Engineering shall consist of the following:
  - a. The ability of the roof to support the additional weight of the panels combined with how it affects the roof live load and;
  - b. If panels do not extend to the ridge or the eave, engineering to address the probability of ice damming and specify methods of preventing or modifying roof to eliminate damage and;
  - c. If there are other roofs, obstructions or structures below, engineering to address impact loading, drifting snow and other snow load issues as deemed necessary by the engineer.

### **Required documentation for permitting:**

1. Building Permit application with parcel map number or tax parcel identification.
2. Site plan.
3. Roof plan. Include emergency disconnect location and identification.
4. Manufacturer's installation specifications and guidelines.
5. Engineering for roof mounted installations over 70 psf snow load according to the exceptions above.

All required electrical permit(s), review and inspection(s) must be obtained from Washington State Labor and Industries.

### **Inspection Requirements:**

Roof mount panels require two (2) inspections minimum. The first inspection is for the roof mount racking

hardware to verify compliance and attachment. (You may schedule this inspection for the day the panels are being installed. You may begin mounting panels over the racking prior to inspection but there must be enough racking exposed for the inspector to verify compliance.) The final inspection shall be scheduled when the project is complete and after Labor and Industries has approved the electrical.

DATE: 3/2/21\_\_\_\_\_

BUILDING OFFICIAL: MIKE FLOPY\_\_\_\_\_