

# Pikes Peak REGIONAL Building Department

## ALTERNATIVE ENERGY PLAN REQUIREMENTS

### PHOTO VOLTAIC (PV) SYSTEMS

#### ELECTRICAL REQUIREMENTS

##### UTILITY APPROVAL

- Written approval from the utility company for the system. This should include the location of any mandated disconnects, if required.

##### SITE PLAN

- North arrow.
- Location of all existing/new service gear and electrical equipment relative to structures involved in this scope of work.
- Location of all equipment.
- Routing of all raceways clearly showing interior and exterior.
- Module layout.

##### MANUFACTURER'S SPECIFICATIONS

- Module spec sheet.
- Inverter spec sheet.
- Optimizer spec sheet.
- Method of module grounding (methods of grounding used to fasten modules must be listed by an NRTL)
- Show specification sheet for GFDI complying with 690.41(B) NEC

##### ONE-LINE

- Conductor/Conduit size, type, and quantity.
- Bus and over current device size for all panels.
- Line-side taps must be a minimum of 6 AWG CU or 4 AWG AL. Only three conductors for single phase. (L1, L2, N (grounded conductor)).
- Effective January 1, 2023 pressure connectors and devices for splices and taps installed on service conductors shall be marked "suitable for use on the line side of the service equipment" or equivalent.
- Energy Storage Systems (ESS) must comply with 706.15 NEC.
- DC disconnect between ESS output and inverter

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## **-PHOTO VOLTAIC (PV) SYSTEMS-**

### **CONSTRUCTION REQUIREMENTS**

#### **ROOF MOUNT**

- Site plan
  - \* Roof access and pathways around panels
- Configurator printout/charts from racking manufacturer OR letter from Colorado licensed design professional stating the following:
  - \* Design criteria
    - ◇ Snow load of 30 PSF if property is below 7000' in elevation
    - ◇ Snow load of 40 PSF if property is above 7000' in elevation
    - ◇ Wind load (Vult) of 130 MPH, Exposure C
  - \* Roof connection spacing requirements. May be different for portrait and landscape orientations.
  - \* Fasteners to be used to connect racking system to roof structure
  - \* **IF ELEVATED ROOF MOUNT** - A letter from a Colorado licensed design professional is required regarding the structural ability of the roof framing to accept the point loads from the system.

*Many manufacturers have a design tool, or configurator, which will produce a report for connection spacing and uplift requirements. The correct design criteria must be input for the report to be correct and accepted. If a configurator is not available from the manufacturer, there are usually published charts used for design. The applicable charts must be provided with the applicable design criteria indicated (clouded, highlighted, circled, etc.). Uplift limitations for the attaching hardware, for example lag bolts, must be provided showing the physical connection can withstand the uplift forces. An engineer stamped letter or plan that shows the design criteria and the attachment requirements is also acceptable.*

#### **GROUND MOUNT**

- Site plan, must indicate the tallest point of the array. Only arrays exceeding 7' require a building permit (electrical permit still applicable).
- Configurator printout/charts OR letter from Colorado licensed design professional stating the following:
  - \* Design criteria
    - ◇ Snow load of 30 PSF if property is below 7000' in elevation, Snow load of 40 PSF if property is above 7000' in elevation
    - ◇ Wind load (Vult) of 130 MPH, Exposure C
  - \* Foundation requirements to include depth, diameter, and spacing

*All site fabricated elements require a design that is stamped by a Colorado licensed design professional.*

#### **ESS SYSTEMS**

- Provide a floor plan showing location of ESS systems.

### **MECHANICAL/PLUMBING REQUIREMENTS**

- Show the floor layout to include new and existing equipment, floor drains, and doors.
- Show isometric of solar system - one line drawings allowed.
- Provide manufacturer's specifications
- Specify type of system: drain back or glycol
- Show required backflow devices and connections to the domestic water lines
- Include general notes on all fixtures, materials used shall be listed and accessible
- IPC 504.5 Relief valve approval
- IRC combination pressure and temperature relief valves required to be shown on water heaters and storage tanks.

### **CONSTRUCTION REQUIREMENTS**

#### **ROOF MOUNT**

- Site plan
- Letter from Colorado licensed design professional stating the following:
  - \* Design criteria
    - ◇ Snow load of 30 PSF if property is below 7000' in elevation
    - ◇ Snow load of 40 PSF if property is above 7000' in elevation
    - ◇ Wind load (Vult) of 130 MPH, Exposure C
  - \* Roof connection spacing requirements. May be different for portrait and landscape orientations.
  - \* Fasteners to be used to connect racking system to roof structure
  - \* A statement regarding the structural ability of the roof framing to accept the additional weight from the system.

#### **GROUND MOUNT**

- Site plan, must indicate the tallest point of the array. Only arrays exceeding 7' require a building permit (mechanical/plumbing permit still applicable).
- Configurator printout/charts OR letter from Colorado licensed design professional stating the following:
  - \* Design criteria
    - ◇ Snow load of 30 PSF if property is below 7000' in elevation
    - ◇ Snow load of 40 PSF if property is above 7000' in elevation
    - ◇ Wind load (Vult) of 130 MPH, Exposure C
  - \* Foundation requirements to include depth, diameter, and spacing

*All site fabricated elements require a design that is stamped by a Colorado licensed design professional.*