



# DEPARTMENT OF PUBLIC WORKS • BUILDING DIVISION

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## RESIDENTIAL ROOFTOP PV STRUCTURAL WORKSHEET & DECLARATION OF COMPLIANCE

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This worksheet, to be completed by the applicant or PV installation contractor and is required for residential PV system applications. If the drawings are prepared and stamped by a Hawai'i registered professional architect or structural engineer, then this worksheet is not required. The installation of a roof mounted PV system can be complex and additional information may be required to determine structural integrity of existing roof structure and/or solar array system. It is recommended (but not required) that the structure be reviewed by a registered professional architect or structural engineer.

When a licensed architect or structural engineer is involved and if this form is to be utilized to qualify existing structural conditions, this form must then be stamped and included as part of the construction plan set.

### STEP 1: Existing Structure – Permitting Verification

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A. Is the array to be installed on a permitted Structure?

Yes

- a. Permit: \_\_\_\_\_  
b. Year Built: \_\_\_\_\_

No  – Do not proceed, PV systems must be mounted on permitted structure(s) only

### STEP 2: Existing/Proposed Structure – Design Criteria

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A. Roof Construction (Select Applicable)

- 1) Rafters  (2x members with 24" on center maximum spacing)  
2) Pre-Engineered Trusses   
3) Open Beam   
4) Site-Built Trusses   
5) Other  \_\_\_\_\_

B. Slope: \_\_\_\_\_ (Degrees) If Multiple: \_\_\_\_\_

C. Describe rafter, truss system or open beam roof framing

- 1) Size \_\_\_\_\_ x \_\_\_\_\_ inches  
2) Spacing \_\_\_\_\_ inches.  
3) Maximum unsupported span: \_\_\_\_\_ feet, \_\_\_\_\_ inches.

### STEP 3: Site Design Criteria

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**A. Basic Wind Speed ( $V_{ult}$ ): \_\_\_\_\_ mph (100 to 200)**

- 1) 2018 IBC/IRC – ASCE 7-16: <https://ags.hawaii.gov/bcc/building-code-rules/wind-maps/> (PDF's linked below)
  - a. IBC - Figure 1609.3(5) & 1609.3(8)
    1. [Category I](#) – Accessory Structures
    2. [Category II](#) – Dwellings
    3. Alternative Resources: [ASCE 7 Hazard Tool](#)

**B. Wind Exposure Category (Ref. 2018 IRC – Figure R301.2.1.4): \_\_\_\_\_ (A, B, C or D)**

- 1) 2018 IBC/IRC – ASCE 7-16:
  - a. Wind Exposure Category Map: [https://ags.hawaii.gov/wp-content/uploads/2021/11/ExposureMap\\_Hawaii.pdf](https://ags.hawaii.gov/wp-content/uploads/2021/11/ExposureMap_Hawaii.pdf)

**C. Seismic Design Category (Ref. 2018 IRC – Fig. R301.2(3) ): \_\_\_\_\_ (D2 or E)**

- 1) 2018 IBC/IRC – Figure R301.2(3):
  - a. Seismic Design Category Map: <https://codes.iccsafe.org/content/IRC2018/chapter-3-building-planning>

### STEP 4: Solar Array Components

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**A. Photovoltaic Module(s)**

- 1) Manufacturer: \_\_\_\_\_
- 2) Model: \_\_\_\_\_
- 3) Dimensions: \_\_\_\_\_ x \_\_\_\_\_ inches
- 4) Weight (per module): \_\_\_\_\_ lbs

**B. Rail Product:**

- 1) Manufacturer: \_\_\_\_\_
- 2) Model: \_\_\_\_\_

**C. Rail to Roof Fastening:**

- 1)  Rail mounting anchorage method consistent with rail manufacturers specifications/documentation, ensure plan details indicate minimum fastener size and embedment

### STEP 5: Solar Array Structural Evaluation

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Please define the following structural criteria and verify compliance with requirements indicated.

**A.** Distance between rails \_\_\_\_\_

**B.** Maximum panel overhang: \_\_\_\_\_ inches

**C.** Total weight of PV modules, and rails: \_\_\_\_\_ lbs.

**D.** Total number of attachment points: \_\_\_\_\_

**E.** Weight per attachment point (C÷D): \_\_\_\_\_ lbs.

**F.** Maximum spacing between attachment points on rail: \_\_\_\_\_ inches

Provide the product manual and identify the maximum spacing allowed based on design wind speed and other required criteria per manufacturer's installation guidelines as reviewed and approved by a Hawai'i licensed engineer.

**G.** Total surface area of PV modules: \_\_\_\_\_ ft<sup>2</sup>

**H.** Distributed weight of PV module on roof (C÷G): \_\_\_\_\_ lbs/ft<sup>2</sup>

- 1) Does the distributed weight of the solar array weigh no more that 4psf for photovoltaic arrays  
Yes   
N/A

## STEP 6: Battery Systems

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Please indicate only and all those applicable for the proposed scope of work

- A.  Wall Mounted Battery Products
  - a. Install per manufacturers requirements
  - b. Plans to Indicate any measures/materials to be installed to ensure compliance with the manufacturer's installation requirements
- B.  Ground-mounted Battery System
  - a.  Barriers in place to prevent vehicle impact if located in the garage or carport (IRC R327.6)
  - b. Does the battery system require ventilation? (IRC R327.5)
    - 2) Yes  Ventilation to be provided
    - 3) N/A

## STEP 7: Construction Plan Standards – Identifying Minimum Code Standards

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Please ensure that construction plan sets identify the following additional minimum code information:

- A.  Pathways (IRC R324.6.1) – No fewer than (2) pathways on separate roof planes 36” wide are provided from roof edge to ridge.
- B.  Minimum (1) of the (2) required pathways to be on the street or driveway side of dwelling.
- C. Ridge Setback (IRC R324.6.2) – Provide required setback based on percentage of roof covered by PV array – Select applicable and ensure plan documents reflect the necessary setback
  - 1)  ≤ 33% of roof covered – Provide 18” clear setback on both sides of horizontal ridge(s)
  - 2)  > 33% of roof covered – Provide 36” clear setback on both sides of horizontal ridge(s)

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**I HEREBY ACKNOWLEDGE THAT THE INFORMATION GIVEN ON THIS FORM IS CORRECT AND AGREE WITH ALL COUNTY AND STATE LAWS, AND AM RESPONSIBLE FOR THE BUILDING'S STRUCTURAL INTEGRITY AND INSTALLATION.**

<hr/> <p>PERMITTEE OR PV CONTRACTOR SIGNATURE</p>  <p>TMK (3) _____</p>	(Leave Blank - For County of Hawaii Use)