

Solar Provisions in 2012 IFC IFC Chapter 605.11 &

2013 Solar Technical Advisory Group Recommendation to Washington State Building Code Council

By Jeff Randall

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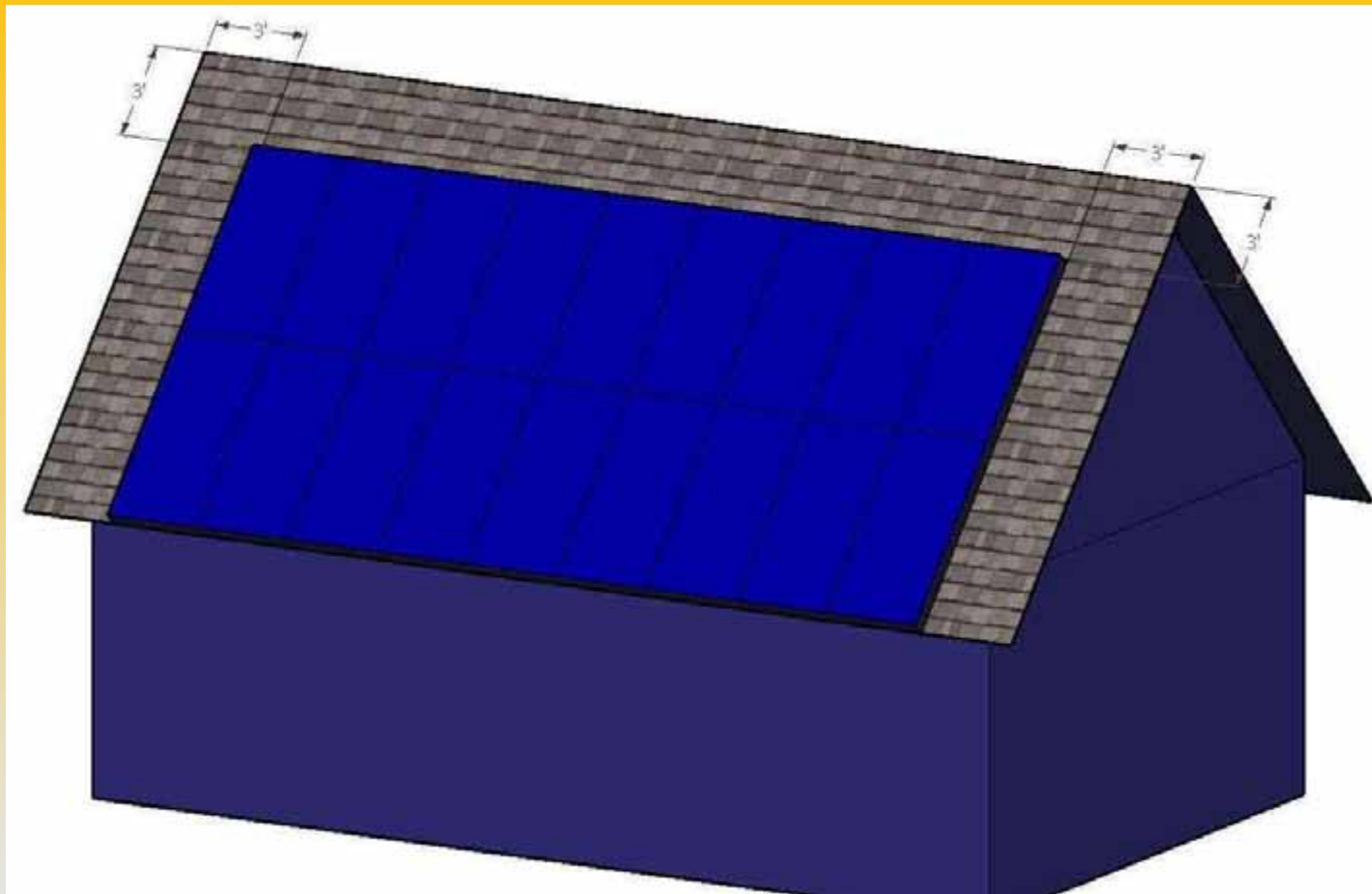
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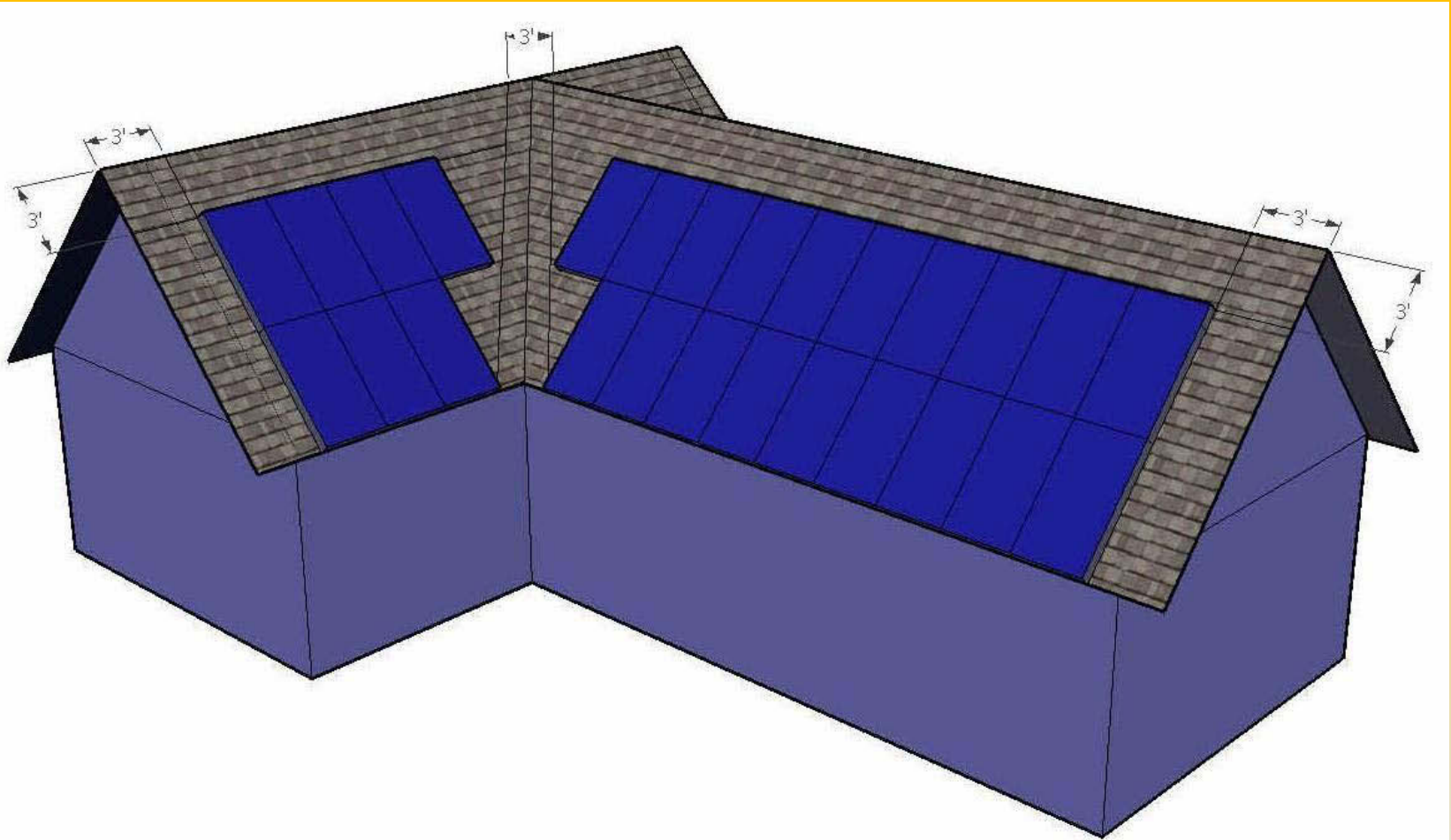
2012 Fire Code

- Published by ICC (International Code Council) in 2011. Set to go into effect in WA July 1, 2013
 - Section 605.11 based on 2008 California Solar PV Guidelines
- 2012 IFC adopted in WA State without section 605.11 (solar PV provisions)
 - Power Trip Energy submitted public comments and an amendment exempting single family residences from solar PV provisions of IFC.

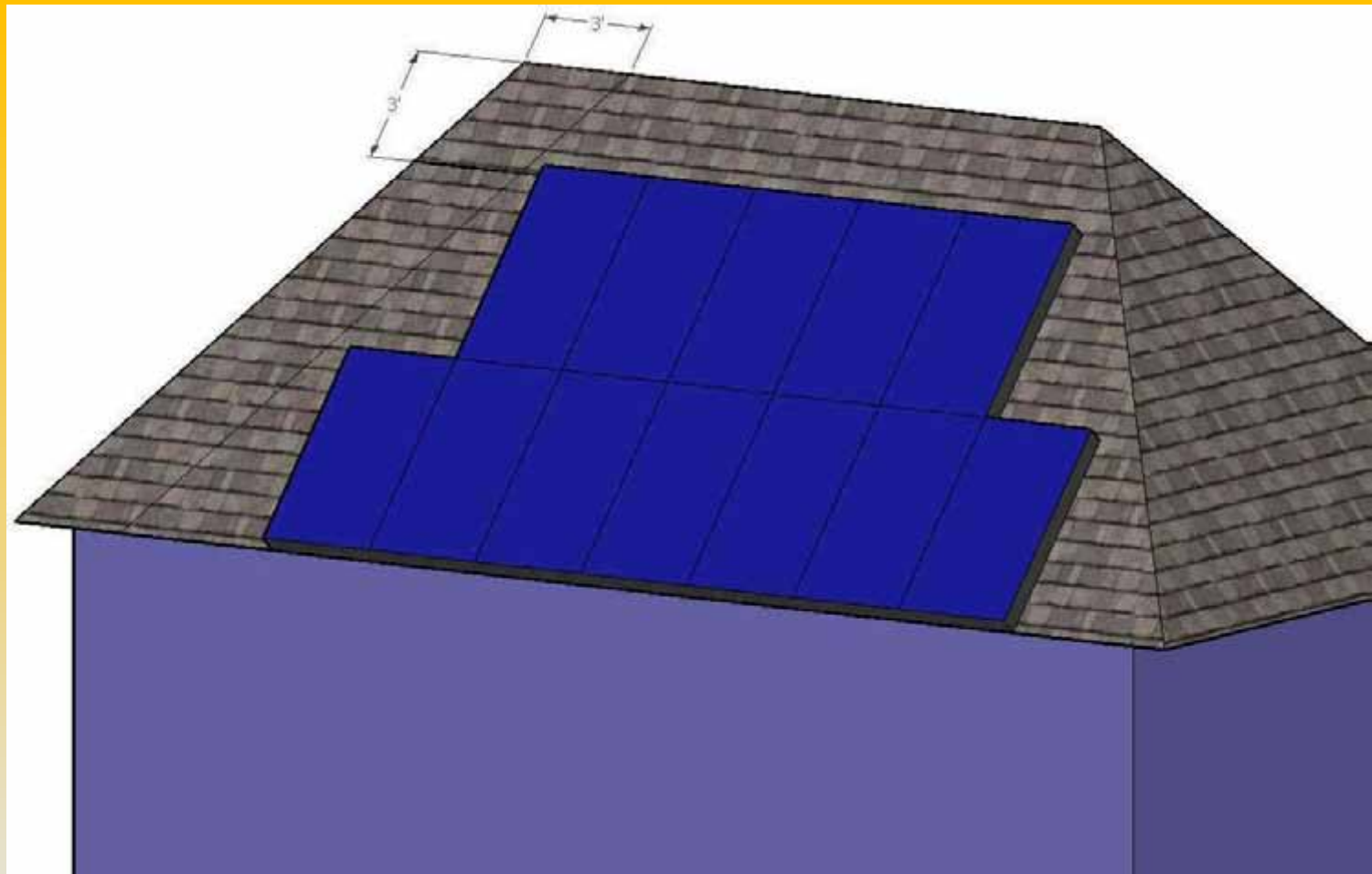
Gable roof with single ridge – 3 ft. setback along peak and two 3 ft. wide access paths from peak to gutter on solar roof with clear area (no windows or doors) below access points.



Multiple ridges – 3 ft. access path on each solar roof and 3 ft. path in valleys between solar arrays & 3 ft. setback from ridge for ventilation.



Full Hip Roof – 3 ft. setback from peak and one
3 ft. access path from peak to gutter.



Impacts to solar of setbacks – 100% reduction of this solar array.



Typical Hip Roof Installation with microinverters – 56% reduction of array size



Fire Code provisions would reduce this array by 50%.



Solar PV Technical Advisory Group (TAG)

- In late 2012 the WA State Building Code Council (SBCC) deferred adoption of the solar PV sections of the 2012 IFC and assigned a committee to review and make recommendations in 2013 – Solar PV TAG (technical advisory group).
- The TAG consists of fire professionals, building officials, a solar homeowner, and solar PV professionals

2013 Solar PV TAG – Active Members - Fire

- Dave Kokot – Chair – Fire Protection Engineer – City of Spokane
- Grace Allen Steuart – Fire Marshal city of Kirkland
- Hank Teran – Fire Chief – City of Bainbridge Island
- John Westfall – Fire Marshall – Snohomish County & city of Edmonds
- Tom Maloney – Fire Marshall – Marysville
- Shawn Sheppard (non-voting) – South Kitsap Fire District

Solar PV Tag – Solar Reps

- Dana Brandt – Ecotech Energy Systems
- Chris Herman - SunErgy
- Dave Kozin – Solar WA
- Mike Nelson
- Jeff Randall – Power Trip Energy
- Perry Spring – Net Zero Energy
- Kirk Haffner – South Sound Solar
- Joerg Zender – Solar Homeowner

Goals of the Solar PV Team

- Reduce impacts to residential installations of IFC provisions
- Recognize that many fire departments don't use roof fire fighting tactics (vertical ventilation)
- Create an over-the-counter simple permit process that exempts most single family PV systems from roof setback standards

Issues before Solar PV TAG

- Fire professionals very reluctant to depart from International Fire Code provisions (life safety)
 - No recognized standards for when to use vertical ventilation – up to each department
 - Want to keep all options on the table for fighting fires
 - Fire marshalls feel they are reasonable and will not unreasonably deny solar projects
 - Need for over the counter permitting not recognized (“that time is over” in the words of one fire chief)

Criteria for an Amendment (WAC 51-04-020)

- Statewide to the state building code shall be based on one of the following criteria:
 - (1) The amendment is needed to address a critical life/safety need.
 - (2) The amendment is needed to address a specific state policy or statute.**
 - (3) The amendment is needed for consistency with state or federal regulations.
 - (4) The amendment is needed to address a unique character of the state.**
 - (5) The amendment corrects errors and omissions.

Results of Solar PV TAG – Next Steps

#1 Consensus was reached (with one exception).

* Exception: exemption from roof setbacks for residences under 10,000 s.f. where solar covers less than 40% of roof area. Adopted by majority vote (4 – 1).

#2 The recommendation of the Solar PV TAG will be forwarded to the SBCC.

- Sept. 19 SBCC Committee Meeting (Fire/Plumbing/Building) (Spokane)
- Sept. 20 SBCC Public Hearing (Spokane)
- Oct. 18 SBCC Public Hearing (Olympia)

Next Steps

#3 The changes to the state Fire Code would go into effect July 1, 2014 if adopted by the SBCC and State Legislature.

#4 Local adoption by cities and counties.

Note: The solar PV TAG “consensus” document was a recommendation. Further coordinated participation by the solar industry needed to see this (or better) language adopted.

What will be new on July 1, 2014:

Fire Code Construction Permit

- A fire code “construction permit” is required for “installation, modification, or alteration of solar PV systems.”
- Maintenance of such systems does not require a fire code permit.
- Fire Code construction permit is separate from a building permit (building permit may also be required, or may not depending upon jurisdiction)

Marking – IFC 605.11.1 - .4

- Marking required on interior and exterior DC conduit, enclosures, raceways, cable assemblies, junction boxes, and disconnects.
- Marking content: “~~Warning~~ Photovoltaic Power Source.”
- Marking materials: reflective and weather resistant
- Every 10 feet on conduit

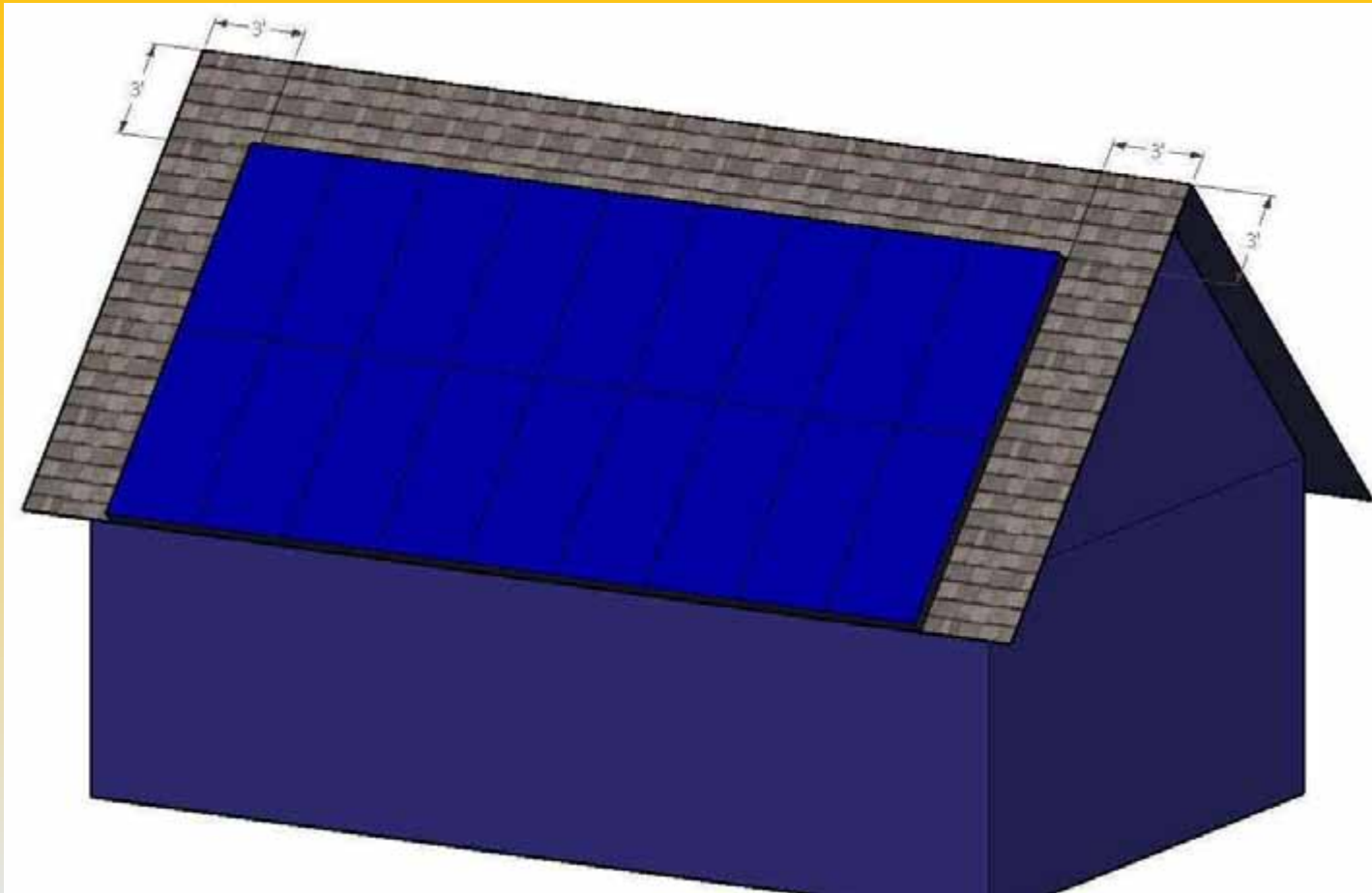
Location of DC Conductors – 605.11.2

- Located as close as possible to ridge, hip, or valley and as directly as possible to an outside wall.
- Take shortest paths possible off roof
- ~~“Conduit shall run along the bottom of load bearing members.”~~ (deleted as impractical – how to run conduit on the bottom of a truss)

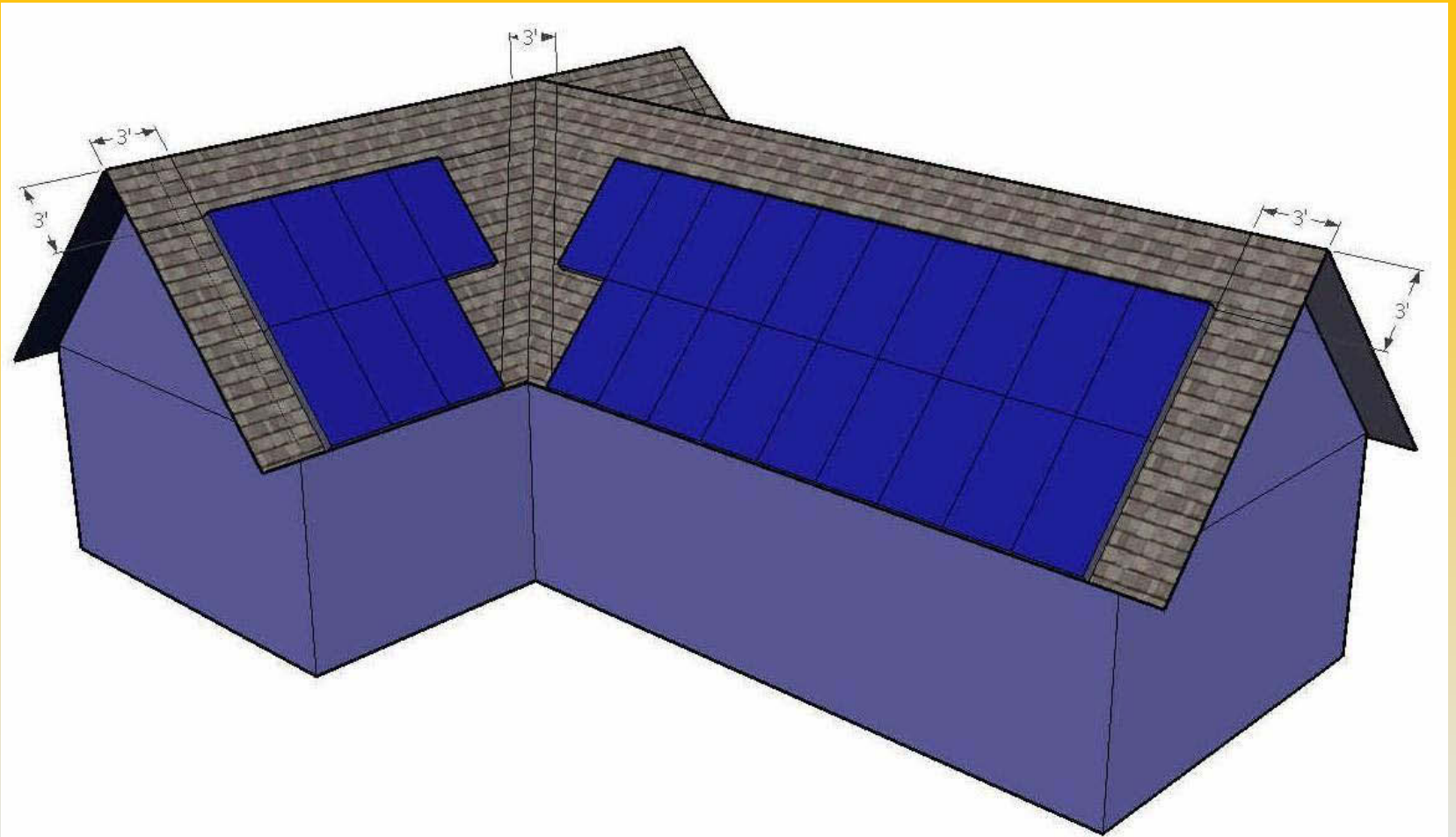
Access and Pathways – 605.11.3

- **Issues of most contention**
- 3 acceptable ways to comply with Fire Code
 - 1. Prescriptive provisions of 2012 IFC (3 ft. ventilation area from peak reduced to 18 inches).
 - 2. Alternative Materials and Methods – Fire Code Official can approve alternative method for ventilation.
 - 3. Project exempt – list of exemptions

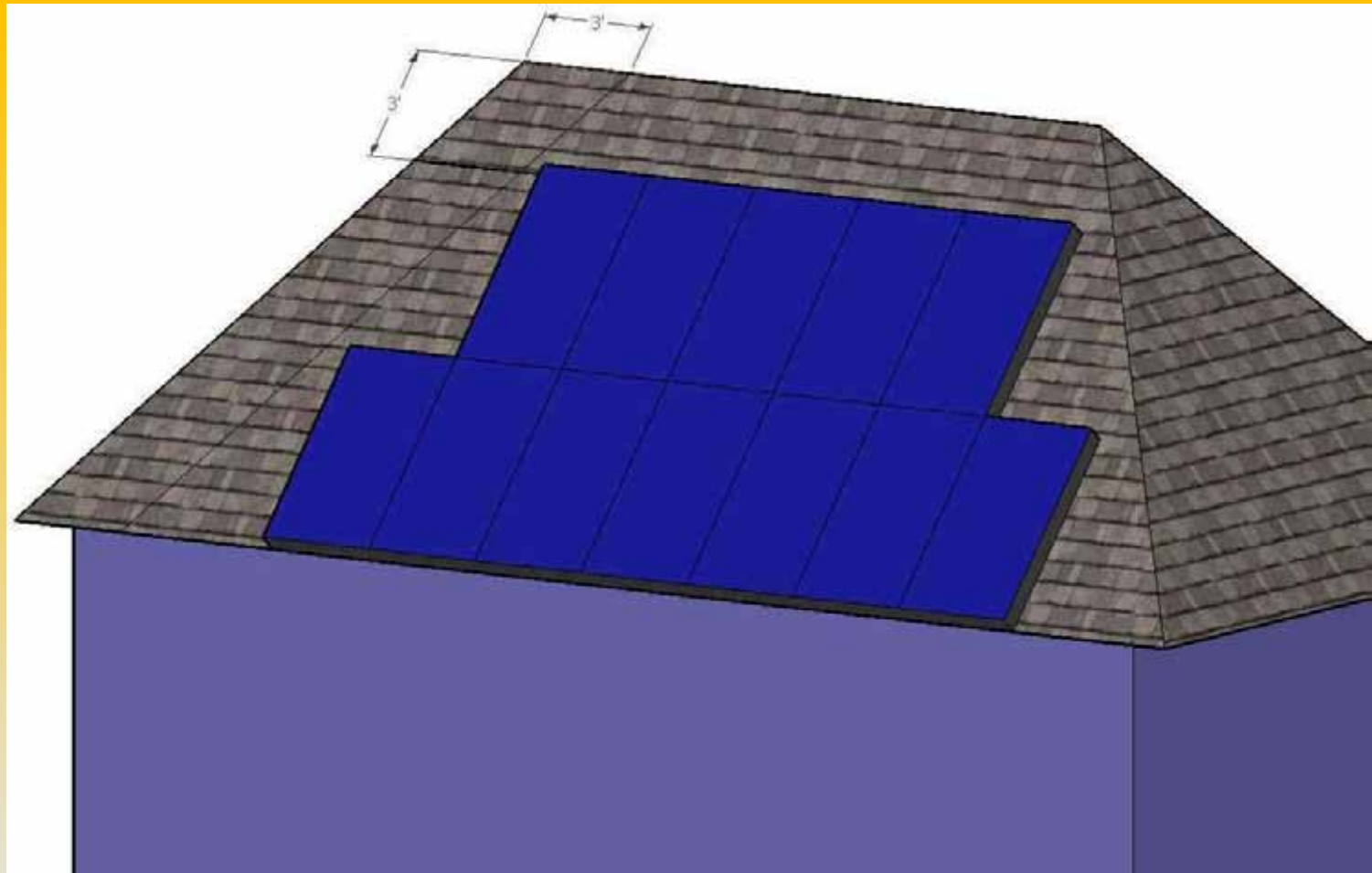
Gable roof with single ridge – 18 inch setback along peak and two 3 ft. wide access paths from peak to gutter on solar roof with clear area (no windows or doors) below access points.



Multiple ridges – 3 ft. access path on each solar roof and 3 ft. path in valleys between solar arrays & 18 inch setback from ridge (ladder access from back side)



Full Hip Roof – 18 inch setback from peak and one 3 ft. access path from peak to gutter.



Exemptions from Access and Pathways

- Detached, nonhabitable Group U occupancy



Exemptions from Access and Pathways

- Residential one or two family dwelling:
 - 1. With an approved automatic fire sprinkler system or approved mechanical or passive smoke ventilation system
 - 2. Where fire code official determines that slope of roof is too steep for emergency access
 - 3. Where fire code official determines that vertical ventilation tactics will not be utilized.
 - 4. Buildings under 10,000 s.f. in size and where solar array will cover 40% or less of roof over any floor (majority vote in favor, likely in jeopardy)

Exemption for less than 40% roof coverage over any floor



Where fire code official determines roof is too steep for emergency access

- Local discretion
- Some fire departments will use ladders to access steep roofs
- Others will only go on roofs of certain slopes



Where fire code official determines ventilation tactics will not be utilized

- Case by case determination, or
- Entire jurisdiction where fire district does not employ roof ventilation operations (Jefferson County, city of Seattle ??)

Commercial or Multi-family buildings like a one or two family dwelling

- Fire code official can determine that the roof configuration is similar to a single family dwelling, residential access and ventilation standards can apply (including exemptions) rather than commercial standards.



Other than one and two family dwellings – Access - 605.11.3.2

- Perimeter access – 6 ft. wide clear perimeter around edges of roof (4 ft. where building less than 250 ft. long in either direction)
- Centerline 4 ft. pathway along both axes of roof
- 4 ft. pathways to roof access hatches, roof stand pipes, skylights, or ventilation hatches.

Other than one and two family dwelling – ventilation – 605.11.3.3.3

- Arrays shall be no greater than 150 ft. x 150 ft.
- Smoke ventilation options:
 - A pathway 8 ft. or wider in width
 - A 4 ft. or wider pathway bordering roof skylights or smoke or heat vents
 - A 4 ft. or wider pathway bordering a 4 ft. x 8 ft. vent cutout every 20 ft. on alternating sides of the pathway

Ground Mounted Solar PV

- Shall comply with marking, and DC conductor requirements.
- Setback requirements do not apply to ground mounted solar PV systems
- ~~• A clear, brush free area of 10 feet shall be required for ground mounted photovoltaic arrays.~~



For More Information

- State Building Code Council Staff
 - Joanne McCaughan #[360-407-9279](tel:360-407-9279),
email: joanne.mccaughan@des.wa.gov
- Documents, Minutes, Meeting Schedule
 - State Building Code Council – Solar PV TAG
Website:
<https://fortress.wa.gov/ga/apps/sbcc/Page.aspx?nid=206>

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