



STATE OF WASHINGTON  
**STATE BUILDING CODE COUNCIL**

Log # 14-E07  
(office use only)

**1. State Building Code to be Amended:**

- |   |   |
|---|---|
| <input type="checkbox"/> International Building Code          | <input checked="" type="checkbox"/> State Energy Code         |
| <input type="checkbox"/> ICC ANSI A117.1 Accessibility Code   | <input type="checkbox"/> International Mechanical Code        |
| <input type="checkbox"/> International Existing Building Code | <input type="checkbox"/> International Fuel Gas Code          |
| <input type="checkbox"/> International Residential Code       | <input type="checkbox"/> NFPA 54 National Fuel Gas Code       |
| <input type="checkbox"/> International Fire Code              | <input type="checkbox"/> NFPA 58 Liquefied Petroleum Gas Code |
| <input type="checkbox"/> Uniform Plumbing Code                | <input type="checkbox"/> Wildland Urban Interface Code        |

**Section(s):**

Add new section to WSEC (404.2)

**Title:**

Solar Readiness

**2. Proponent Name (Specific local government, organization or individual):**

**Proponent:** Gary Nordeen, WSU Energy Program

**Title:** Senior Building Science Specialist

**Date:** 2/26/14

**3. Designated Contact Person:**

**Name:** Gary Nordeen

**Title:** Senior Building Science Specialist

**Address:** 905 Plum St. SE Olympia, WA 98504-3166

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**Cell:**

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**4. Proposed Code Amendment.** Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached. (Examples on the SBCC [website](#))

Code(s) WSEC Section(s) R404

Enforceable code language must be used; see an example [by clicking here](#).  
Amend section to read as follows:

#### **R404.2 Solar Readiness.**

**R404.2.1 General.** *A solar zone shall be provided for R-3 occupancies as defined by the International Residential Code on the roof of the building, in accordance with this section and the International Fire Code.*

**EXCEPTION.** *A solar zone is not required where shadow studies indicate that the roof area will be more than 25 percent in shadow on September 21 at 10am, 11am, 12pm, 1pm, and 2pm solar time.*

**R404.2.2 Minimum Area.** *The minimum area of the solar zone shall be 30 percent of the roof area. The roof area shall be calculated as the gross roof area less the area covered by skylights, occupied roof decks and planted areas. The solar zone is permitted to be comprised of smaller separated sub-zones, each at least 5 feet wide in the narrowest dimension.*

**R404.2.3 Obstructions.** *The solar zone shall be free of pipes, vents, ducts, equipment, skylights and other obstructions, except solar photovoltaic or solar hot water system components within the solar zone.*

**R404.2.4 Shading.** *The solar zone shall be set back from any existing or new object on the building or site that is located south, east, or west of the solar zone a distance at least two times the object's height above the nearest point on the roof surface. Such objects include but are not limited to taller portions of the building itself, parapets, chimneys, antennas, rooftop equipment, and trees. No portion of the solar zone shall be located on a roof slope greater than 2:12 that faces within 45° of true north.*

**R404.2.5 Access.** *Areas contiguous to the solar zone shall provide access pathways and provisions for emergency smoke ventilation as required by the International Fire Code.*

**R404.2.6 Structural integrity.** *The solar zone shall accommodate future solar photovoltaic or solar hot water at an assumed dead load of 5 pounds per square foot in addition to other required live and dead loads, and the as-designed dead load and live load for the solar zone shall be clearly marked on the record drawings. Where solar photovoltaic or solar hot water systems are installed in the solar zone, structural analysis shall be based upon calculated loads, not upon these assumed loads.*

**R404.2.7 PV interconnection.** *A capped roof penetration sleeve shall be provided adjacent to the solar zone to accommodate future solar photovoltaic system conduit. Dedicated wall space for a future inverter shall be located within 3 feet of the electrical service panel. Dedicated wall space for a future net meter shall be located within 3 feet of the utility meter.*

**R404.2.8 Electrical service reserved space.** *The main electrical service panel shall have a reserved space to allow installation of circuit breakers for future solar electric installation and shall be labeled "For Future Solar Electric". The reserved space shall be positioned at the opposite (load) end from the input feeder location or main circuit location, and shall include one 20-ampere circuit for each 200 square feet of required solar zone area.*

**R404.2.9 PV Construction documents and posted certificate.** The construction documents, and a permanent certificate posted within 3 feet of the electrical distribution panel or water heater, shall indicate the following:

- a. Solar zone boundaries and total area;
- b. Location for future inverters and metering equipment; and
- c. Route for future wiring between the solar zone and the inverter, and between the inverter and the main service panel.

**Definition: Solar zone.** A clear area or areas reserved solely for current and future installation of photovoltaic or solar hot water systems.

**5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

This amendment will reserve an area on roofs of housing units for future installation of solar PV systems without the need for engineering, rerouting plumbing vents or other roof penetrations, reserving a space near the electrical panel for an inverter and dedicating a space by the electrical meter for installation of a net meter.

Benefit for solar installers is that permits could be easily obtained as the house is ready for module installation. Benefits to homeowners include no costs for engineering and rerouting roof penetration in a solar zone. Enforcement personnel would have to verify on the building plans that a solar zone is specified and inspect that the house has the specified solar zone in place.

Washington State law mandates that the Washington State Energy Code be 70% more efficient than the 2006 version by 2031. In order to achieve this goal, solar PV and possibly solar hot water will eventually have to be incorporated into new houses.

**6. Specify what criteria this proposal meets.** You may select more than one.

- The amendment is needed to address a critical life/safety need.
- The amendment is needed to address a specific state policy or statute.
- The amendment is needed for consistency with state or federal regulations.
- The amendment is needed to address a unique character of the state.
- The amendment corrects errors and omissions.

**7. Is there an economic impact:**  Yes  No

Explain:

If there is an economic impact, use the Table below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

	Construction <sup>1</sup>	Enforcement <sup>2</sup>	Operations & Maintenance <sup>3</sup>
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<sup>1</sup> \$ / square foot of floor area or other cost. Attach data. **Construction** costs are costs prior to occupancy, and include both design and direct construction costs that impact the total cost of the construction to the owner/consumer.

<sup>2</sup> Cost per project plan. Attach data. **Enforcement** costs include governmental review of plans, field inspection, and other action required for enforcement.

<sup>3</sup> Cost to building owner/tenants over the life of the project.

Building Type	Costs	Benefits <sup>4</sup>	Costs	Benefits <sup>4</sup>	Costs	Benefits <sup>4</sup>
Residential						
Single family	+*		+*		0	
Multi-family						
Commercial/Retail						
Industrial						
Institutional						

Please send your completed proposal to: [sbcc@ga.wa.gov](mailto:sbcc@ga.wa.gov)

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.

\*Increased truss costs to add an additional dead load of 5 pounds range from no additional cost to an increase of 5% for large span trusses. The truss companies surveyed were: Tru-truss, Louws Truss, Truss Company, and Probuild. All of these are Washington State Companies.

Cost of a short piece of capped conduit is negligible.

Increased enforcement time will be to verify on the building plans that the solar zone is shown and verification in the field that the solar zone is in place.

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<sup>4</sup> Measurable benefit.