



161-2018  
Proponent Revision  
08/09/18

STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

### Washington State Energy Code Development Standard Energy Code Proposal Form

Code being amended:  Commercial Provisions  Residential Provisions

#### Code Section # New C501.4.1, C502.2.1, C502.2.2, C503.2, C503.3.2, C503.3.3, C505.1

**Brief Description:** Existing buildings are a large percentage of the building stock and thus represent a significant opportunity for energy savings. However, it can be difficult to bring an existing building up to the current Code due to inherent limitations.

The purpose of this proposal is to identify more clearly the compliance options currently available in the Code for existing building retrofits, and expand these compliance options so they are available for most retrofit project types.

This proposal also addresses the common challenge of locating accurate existing building information for Code compliance documentation.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

**RETROFIT, BUILDING ENVELOPE.** Includes building envelope alterations and building envelope upgrades required for an area undergoing a change in space conditioning or change in occupancy.

**C501.4 Compliance.** Alterations, repairs, additions and changes of occupancy to, or relocation of, existing buildings and structures shall comply with the provisions for *alterations, repairs, additions* and changes of occupancy or relocation, respectively, in this code and in the *International Building Code, International Existing Building Code, International Fire Code, International Fuel Gas Code, International Mechanical Code, Uniform Plumbing Code, and NFPA 70.*

**C501.4.1 U-factor requirements for retrofits.** For existing building projects where an *addition or building envelope retrofit* area is combined with existing-to-remain building areas to demonstrate compliance with this Code as a whole building, the U-factors applied to existing-to-remain envelope assemblies shall be per as-built record documents.

**Exceptions:**

1. If accurate as-built record documents are not available, U-factors for the existing envelope assemblies may be per the edition of the Washington State Energy Code that was in effect at the time the building was permitted.
2. U-factors for the existing envelope assemblies as approved by the code official.

**C502.2.1 Vertical fenestration.** Additions with *vertical fenestration* that results in a total building vertical fenestration area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4. Additions with vertical fenestration that results in a total building vertical fenestration area greater than that specified in Section C402.4.1 shall comply with one of the following:

1. Vertical fenestration alternate per Section C402.4.1.1 or C402.4.1.3 for the addition area of the building only.
2. Component performance ~~option~~ alternative with target area adjustment per Section C402.1.5 for the addition area of the building only.
3. Existing building and addition area are combined to demonstrate compliance with the component performance alternative for the whole building.
4. ~~or the Total building performance option in~~ per Section C407 for the addition area of the building only.
5. Total building performance for the whole building.

**C502.2.2 Skylight area.** Additions with *skylights* that result in a total building skylight area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4. Additions with skylights that result in a total building skylight area greater than that specified in Section C402.4.1 shall comply with one of the following:

1. Component performance ~~option~~ alternative with target area adjustment per Section C402.1.5 for the addition area of the building only.
2. Existing building and addition area are combined to demonstrate compliance with the component performance alternative for the whole building.
3. ~~or the~~ Total building performance option in per Section C407 for the addition area of the building only.
4. Total building performance for the whole building.

**C503.2 Change in space conditioning.** Any ~~nonconditioned space~~ low energy space per Section C402.1.1.1 that is altered to become *conditioned space* or *semi-heated space* shall ~~be required to~~ be brought into full compliance with this code. Any *semi-heated space* per Section C402.1.1.2 that is altered to become *conditioned space* shall ~~be required to~~ be brought into full compliance with this code.

*Commentary – This paragraph is TAG approved language per ENV-037.* For buildings with more than one space conditioning category, the interior partition walls, ceilings, floors and fenestration that separate space conditioning areas shall comply with the thermal envelope requirements per the area with the highest level of space conditioning.

A change in space conditioning project shall be deemed to comply with this code if the project area alone complies or if the existing building and the project area combined comply with this code as a whole building.

**Exceptions:**

1. Where the component performance ~~building envelope option in~~ alternative per Section C402.1.5 is used to ~~comply~~ demonstrate compliance with this Section, the Proposed Total Envelope UA is allowed to be up to 110 percent of the Target Allowed Total Envelope UA. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building.
2. Where ~~the~~ total building performance ~~option in~~ per Section C407 is used to comply with this section, the annual energy consumption of the proposed design is allowed to be 110 percent of the annual energy consumption otherwise allowed by per Section C407.3. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building.

**C503.3.2 Vertical fenestration.** The addition of *vertical fenestration* that results in a total building vertical fenestration area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4.3 ~~or C407.~~

The addition of *vertical fenestration Alterations* that results in a total building vertical fenestration area greater than specified in Section C402.4.1 shall comply with one of the following:

1. Vertical fenestration alternate per Section C402.4.1.3 for the new vertical fenestration added.
2. Vertical fenestration alternate per Section C402.4.1.1 for the area adjacent to the new vertical fenestration added.
3. Existing building and alteration area are combined to demonstrate compliance with the component performance ~~option~~ alternative per Section C402.1.5 for the whole building.
4. ~~or the~~ Total building performance option in per Section C407 for the whole building.

**Exceptions:**

1. Additional envelope upgrades are included in the project so the addition of vertical fenestration does not cause a reduction in overall building energy efficiency, as approved by the code official.
2. Where the component performance alternative for the whole building is used to comply with this Section, the Proposed Total Envelope UA is allowed to be up to 110 percent of the Allowed Total Envelope UA.
3. Where total building performance for the whole building is used to comply with this Section, the annual energy consumption of the proposed design is allowed to be 110 percent of the annual energy consumption allowed per Section C407.3.

**C503.3.3 Skylight area.** The addition of *skylights* that results in a total building skylight area less than or equal to that specified in Section C402.4.1 shall comply with Section C402.4.

The addition of *skylights Alterations* that results in a total building skylight area greater than that specified in Section C402.4.1 shall comply with one of the following:

1. Existing building and alteration area are combined to demonstrate compliance with the component performance ~~option~~ alternative per Section C402.1.5 for the whole building.
2. ~~or the~~ Total building performance option in per Section C407 for the whole building.

**Exceptions:**

1. Additional envelope upgrades are included in the project so the addition of skylights does not cause a reduction in overall building energy efficiency, as approved by the code official.
2. Where the component performance alternative for the whole building is used to comply with this Section, the Proposed Total Envelope UA is allowed to be up to 110 percent of the Allowed Total Envelope UA.
3. Where total building performance for the whole building is used to comply with this Section, the annual energy consumption of the proposed design is allowed to be 110 percent of the annual energy consumption allowed per Section C407.3.

**C505.1 General.** Spaces undergoing a change in occupancy shall be brought up to full compliance with this code in the following cases:

1. Any space that is converted from an F, S or U occupancy to an occupancy other than F, S or U.
2. Any space that is converted to a Group R dwelling unit or portion thereof, from another use or occupancy.
3. Any Group R dwelling unit or portion thereof permitted prior to July 1, 2002, that is converted to a commercial use or occupancy.

~~Where the use in a space changes from one use in Table C405.4.2 (1) or (2) to another use in Table C405.4.2 (1) or (2), the installed lighting wattage shall comply with Section C405.4.~~

A change in occupancy project shall be deemed to comply with this code if the project area alone complies or if the existing building and the project area combined comply with this code as a whole building.

**Exceptions:**

1. Where the component performance ~~building envelope option in alternative per~~ Section C402.1.5 is used to ~~comply demonstrate compliance~~ with this Section, the Proposed Total Envelope UA is allowed to be up to 110 percent of the ~~Target~~ Allowed Total Envelope UA. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building.
2. Where ~~the total building performance option in Section C407 for the whole building~~ is used to comply with this section, the annual energy consumption of the proposed design is allowed to be 110 percent of the annual energy consumption ~~otherwise allowed by per~~ Section C407.3. This exception may be applied to the project area alone, or to the existing building and project area combined as a whole building.

~~Where the use in a space changes from one use in Table C405.4.2 (1) or (2) to another use in Table C405.4.2 (1) or (2), the installed lighting wattage shall comply with Section C405.4.~~

**Purpose of code change:**

*Existing buildings are a significant portion of the building stock. It is already recognized in the Code that there are many variables within an existing building that can make it difficult to bring the building up to the current code.*

*This proposal presents more clearly the current compliance allowances available in the Code for existing buildings and applies these allowances to more retrofit project types as follows:*

1. **Additions** - Per Section C502.1, "An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building." For additions that include vertical fenestration or skylights that cause the total building window-to-wall ratio (WWR) or skylight-to-roof ratio (SRR) to exceed the prescriptive allowances, this proposal clarifies that the component performance alternative or total building performance option may be applied to either the addition area only or the existing building and addition combined as a whole building.
2. **Envelope Alterations** - For an envelope alteration that adds new vertical fenestration or skylights that causes the total building WWR or SRR to exceed the prescriptive allowances, Code language has been interpreted to state that "Component performance option with target area adjustment per Section C402.1.5 or the total building performance option in Section C407 for the whole building." This makes sense because it would be difficult to enforce this approach at the retrofit level. However, this limits the options for demonstrating compliance in this case. This proposal recommends allowing an "additional efficiency measure" approach to offset the excess fenestration, as well as allowing this type of project to utilize the 110% above Code allowance currently available for change in occupancy and change in space conditioning projects.
3. **Change is space conditioning (CSC) or occupancy (CO)** – Often a CSC or CO project only includes a portion of a building, similar to an addition project. This proposal clarifies that the component performance alternative or total



## **Economic Impact Data Sheet**

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

*For building owners who wish to upgrade their existing buildings, it can be difficult and cost prohibitive to meet the current code prescriptively. This proposal provides flexibility to building owners to demonstrate compliance with the current Code for their retrofit projects, so that it is more cost effective to improve the energy performance of their existing buildings.*

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#) and [Here](#)**)

**Indeterminate** (For residential projects, also provide [Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

**WSEC Envelope U-Factor History table, attached.**

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal? **NA**

[Click here to enter text.](#)KWH/ square foot (or) KBTU/ square foot

(For residential projects, also provide [Click here to enter text.](#)KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

**NA**

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

*This proposal potentially reduces the amount of time required by jurisdictions to determine whether a retrofit project meets the intent of the Code by providing them with better project information with which to base their permitting decisions for retrofits.*

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