



STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

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# MECHANICAL, VENTILATION and ENERGY CODES COMMITTEE SUMMARY MEETING MINUTES

**LOCATION:** In response to the Governor's Emergency Proclamation, there was no physical location.

**MEETING DATE:** June 5, 2020

Agenda Items	Committee Actions/Discussion
1. Welcome and Introductions	<p>Meeting called to order at 10:04 a.m. by Kjell Anderson, Committee Chair.</p> <p><b>Members in Attendance:</b> Kjell Anderson, Chair; Eric Vander Mey, Vice Chair; Andrew Klein; Diane Glenn</p> <p><b>Members Absent:</b> Doug Orth</p> <p><b>Staff In Attendance:</b> Richard Brown, Krista Braaksma, Ray Shipman, Shannon Pitts</p> <p><b>Visitors Present:</b> Caia Caldwell, David Nehren, Ashlee Delaney, Al Audette, Michael Baranick, David Reddy, Mark Frankel, Henry Odem, Mike Lubiner</p>
2. Review and Approve Agenda	<p>The <a href="#">agenda</a> was approved as modified. The order of business was changed to move Item 6 up before Item 4.</p>
3. Review and Approve Minutes	<p>The minutes of the <a href="#">April 17, 2020</a>, meeting were approved as written.</p>
6. Request for Opinions (See attached)	<p>The Committee reviewed four requests for opinion.</p> <p>20-June01 from Bellevue regarding emergency lighting and the 2015 Washington State Energy Code, Commercial, was approved as written.</p> <p>20-June02 from Seattle regarding the requirements for Total System Performance Ratio (TSPR) in the 2018 Washington State Energy Code, Commercial, was approved with a minor modification, noting that Group A accessory occupancies should be categorized as the main occupancy.</p> <p>20-June03 from Bellevue regarding the additional credits requirement in the 2018 Washington State Energy Code, Commercial, was approved with modifications.</p> <p>20-June04 from Bellevue regarding the residential ventilation requirements in the 2018 International Mechanical Code, was approved as written, with a minor editorial correction.</p>

<p>4. Review Descriptions of Research Findings and Analysis for Energy Code <a href="#">Baseline Economic Analysis</a></p>	<p>Mark Frankel with Ecotope took the Committee through the follow-up to the original baseline report, with a more in depth look at those energy conservation factors that lie outside of the building code and how those variables can be captured through prototype modeling and more accurately capture performance of the building stock.</p> <p>Eric Vander Mey requested that the setpoint for makeup air in commercial kitchens be changed from 55 degrees to 58 degrees, to better conform to code requirements.</p> <p>Richard Brown asked that any other comments be sent to him by June 12, and he will then forward them to Ecotope.</p> <p>There will be two further drafts provided to the Committee before the final deliverable on September 18.</p>
<p>5. Review <a href="#">Draft 2018 Energy Code Legislative Report</a></p>	<p>Richard Brown presented a draft outline for the report to the legislature on the 2018 energy code. Kjell Anderson asked that a statement regarding the need for funding for training be included. Richard noted there was a section for outlining the significant measures in the code. It was suggested that be broken down into two lists—residential and commercial. Eric Vander Mey agreed to draft the commercial portion. Richard and staff will draft the residential.</p> <p>Eric also noted the federal determination letters are not up to date and should be followed up. Also, the “Goals for Energy Code Development” has not been updated with the most recent iteration. Kjell Anderson volunteered to work on the “Moving Toward 2021 Targets and Beyond” section.</p>
<p>6. Staff Report</p>	<p>Richard reported that Steve Simpson’s position has been filled, and Traci Harvey has officially resigned from the Council. Traci’s term expired January 2019 and her current duties will no longer allow her to continue to serve until the position is filled.</p>
<p>7. Other Business</p>	<p>Mike Lubliner noted he was working to find sponsors for some requests for opinion.</p>
<p>8. Adjourn</p>	<p>Meeting was adjourned at 1:28 p.m.</p>

- Attachments: Opinion 20-June01  
Opinion 20-June02 with Committee modifications  
Opinion 20-June03 with Committee modifications  
Opinion 20-June04 with Committee modifications

**STATE BUILDING CODE OPINION 20-June01**

**CODE:** 2015 Washington State Energy Code, Commercial  
2015 International Building Code  
**SECTION:** WSEC Section C405.2.5  
IBC Section 1008.3

**QUESTION:** For the conditions specified in Sections 1008.3.1, 1008.3.2 and 1008.3.3 of the 2015 IBC, an emergency electrical system is required to 'automatically illuminate' specific areas of a building. However, Section C405.2.5 of the 2015 WSEC require occupancy motion sensors that would prevent the emergency lights from illuminating unless there is motion by an occupant in the area where the light is located.

Because the IBC says the electrical system shall "automatically illuminate" the specified area but the WSEC requires the emergency lighting to "automatically shut off" when the areas served by the emergency lights are unoccupied, does this constitute a conflict between the IBC and the WSEC?

If the answer to the above question is yes, then which code should apply?

If the answer is no, did the Council anticipate that the emergency lights may not function properly if the motion sensors are obscured by smoke?

**ANSWER:** **No. The intent was that the emergency lighting required by the IBC would govern. This requirement in the WSEC was based on the 2012 IBC language in Section 1006.1, which is comparable to the 2015 IBC Section 1008.2, and addresses means of egress illumination when the building is occupied. During an emergency, it was the intent that the 90 minutes of emergency lighting would still be provided per IBC Section 1008.3, and the level of emergency lighting required by the code at an average of 1 footcandle would be met by the 0.02 watts/sq. ft. exception.**

**SUPERSEDES:** None

**REQUESTED BY:** City of Bellevue

**STATE BUILDING CODE OPINION 20-June02**

**CODE:** 2018 Washington State Energy Code, Commercial  
**SECTION:** Section C403.1.1, Total System Performance Ratio

**QUESTION 1:** Do the Total System Performance Ratio (TSPR) requirements apply to assembly occupancies?

**ANSWER:** **No. The intent was that this would only apply to the occupancy types listed in this section—office, retail, library and education. The phrase “and buildings” should apply only to those four occupancy types. [HVAC systems serving Group A occupancies that are classified as accessory under the IBC shall be included in the category of the main occupancy.](#)**

**QUESTION 2:** Is the renewable energy separately accounted for in TSPR calculations?

**ANSWER:** **No. The intent of the TSPR approach is to not include renewable energy in the calculation as is stated in Section D601.10. For the purposes of TSPR calculations, electricity from renewable sources shall be calculated in the same manner as grid electricity.**

**SUPERSEDES:** None

**REQUESTED BY:** City of Seattle

## STATE BUILDING CODE OPINION 20-June03

**CODE:** 2018 Washington State Energy Code-Commercial

**SECTION:** C401.1 & 406 Efficiency Packages

**BACKGROUND:** *Per Section C401.1, the provisions of chapter 4 are “applicable to commercial buildings and their sites”.*

*Per Section C406.1, the provisions for additional efficiency package credits apply to “new buildings and changes in space conditioning, change of occupancy, and building additional” and apply to “each area... provided all areas in the building comply”. Additionally, “areas included in the same permit within mixed use buildings shall be permitted to demonstrate compliance by an area weighted average number of credits”.*

**QUESTION 1:** Do the Section C406 additional efficiency package credit requirements ~~only~~ apply to ~~the~~ any area on the site?

**ANSWER 1:** **No. Section C406 does not apply to site areas such as surface parking lots, landscape areas, outdoor plaza areas, transit bus or light rail station unenclosed covered platform areas or other similar outdoor spaces. It only applies to the enclosed areas of buildings.**

**QUESTION 2:** Do the Section C406 additional efficiency package credit requirements only apply to the conditioned space and low energy space areas of the building?

**ANSWER 2:** **No. Section C406 applies to all enclosed building areas such as enclosed unconditioned storage spaces, enclosed parking garages, enclosed loading docks and other similar spaces. Section C406 does not apply to areas such as exterior entries covered by canopies, exterior courtyards under building overhangs, exterior loading docks, exterior covered transit station platforms, exterior roof decks (open or enclosed), or other similar unenclosed exterior spaces outside the building.**

**QUESTION 3:** If unconditioned areas of the building are required to comply with Section C406 additional efficiency package credit requirements (See answer to Question 2 above) then how many credits need to be achieved for unconditioned spaces?

**ANSWER 3:** **Enclosed, unconditioned building areas may utilize Section C406.1 exception 1 for low energy spaces and therefore only require a minimum of three Section C406 credits.**

**QUESTION 4:** If unconditioned areas of the building are required to comply with Section C406 additional efficiency package credit requirements (See answer to Question 2 above) which occupancy category per Table C406.1 shall be used?

**ANSWER 4:** **Enclosed, unconditioned building areas shall utilize the “All Other” category of Table C406.1 regardless of occupancy.**

**QUESTION 5:** Do the Section C406 additional efficiency package credit requirements apply to an *open parking garage* building as defined by the IBC?

**ANSWER 5:** **Yes. Any conditioned or enclosed spaces for such as elevator machine rooms, electrical rooms, etc\_ would be subject to six credit requirements of Section C406.1, unless they meet the criteria for a low energy space, and would utilize the “All Other” category of Table C406.1. ~~Open, unconditioned parking garage~~ areas may utilize Section C406.1 exception 1 for low energy spaces and therefore only require a minimum of three Section C406 credits. The area of the upper deck**

of the parking structure if used for parking where it is not enclosed would be excluded from the area weighted average calculation and would not need to comply with Section C406.

**BACKGROUND:** *Per Section C406.1, “areas included in the same permit within mixed use buildings shall be permitted to demonstrate compliance by an area weighted average number of credits”.*

**QUESTION 6:** Is it allowable to include different additional efficiency package options within the same occupancy type if the areas are tracked separately per Section C406.1?

**ANSWER 6:** **Yes. As an example, a 20 story high-rise apartment building could utilize a set of Section C406 package options for the lower 10 floors of Group R-2 dwelling units and a second group of options for the upper 10 floors of Group R-2 dwelling units as long as the entire conditioned and enclosed building area is included and the area weighed average is greater than the minimum number of credits required.**

**QUESTION 7:** Do tenant spaces require an additional six credits when built out per Section C406.1.1?

**ANSWER 7:** **No. The intent of Sections C406.1.1 and C406.1.1.1 is to require a total of six credits for the initial core shell permit and the tenant improvement permit. It does not matter whether the building is constructed all at once or phased as core shell with separate tenant space improvements if the minimum ~~of six~~ required credits is achieved for the total buildout. [The required credits must be achieved prior to the space being occupied.](#)**

**QUESTION 8:** Can residential corridors or other accessory spaces to the Group R-2 occupancy be included in the Group R-2 occupancy category for compliance with minimum number of efficiency package credits per Section C406.1 and Table C406.1?

**ANSWER 8:** **Yes, residential corridors and other accessory spaces to the Group R-2 [occupancy](#) (as [accessory-defined](#) per 2018 IBC Section 302) may be grouped either with the Group R-2 occupancy category or with the “All Other” occupancy category as long as the areas [are](#) tracked consistently through the building.**

**QUESTION 9:** Do credits from Section C406.3 reduced lighting power and Section C406.4 enhanced digital lighting controls apply to all interior lighting for both conditioned and unconditioned areas in the building?

**ANSWER 9:** **Yes. Sections C406.3 and C406.4 apply to all interior lighting as governed by Section C405.4, but does not apply to exterior lighting governed by Section C405.5.**

**BACKGROUND:** ***C406.5 On-site renewable energy. A whole building, building addition or tenant space shall be provided with on-site renewable energy systems with an annual production per square foot of no less than the value specified in Table C406.5 based on the total conditioned floor area of the whole building. The on-site renewable used in this option shall be separate from on-site renewables used as part of Section C406.7 or used to qualify for any exception in this code. [Emphasis added]***

**QUESTION 10:** Can the credit from Section C406.5 on-site renewable energy be applied to unconditioned areas of a building by using the “other” building area type category of Table C406.5?

**ANSWER 10:** Yes. Even though Section C406.5 states that it only applies to the total conditioned floor areas of a building, in the case of a building with open or enclosed parking garage areas that are outside the building envelope, these building areas may use the “other” space type building area type category of Table C406.5 to comply with area weighted credit calculation of Section C406.1

**BACKGROUND:** *C406.6 Dedicated outdoor air system (DOAS). No less than 90 percent of the total conditioned floor area of the whole building, building addition or tenant space, excluding floor area of unoccupied spaces that do not require ventilation per the International Mechanical Code, shall be served by DOAS installed in accordance with Section C403.3.5. This option is not available to buildings subject to the prescriptive requirements of Section C403.3.5. [Emphasis added]*

**QUESTION 11:** Is the reference to “unoccupied spaces that do not require ventilation per IMC” meant to refer to spaces that do not require outdoor airflow rates per IMC Table 403.3.1.1.

**ANSWER 11:** Yes. This is meant to refer to unoccupied spaces in IMC Table 403.3.1.1 that do not require outdoor airflow. It is not meant to refer to spaces that require exhaust airflow without outdoor airflow requirements.

**QUESTION 12:** For a mixed occupancy building, does credit from Section C406.6 dedicated outdoor air system (DOAS) require the ventilation system to serve the 90% or more of the total conditioned area of the building?

**ANSWER 12:** No. Per Section C406.1, the credit may be applied to just 90% of the conditioned floor area of the occupancy categories that are claiming this credit. The dedicated outdoor air system does not have to serve 90% of the total building conditioned floor area.

**QUESTION 13:** Is credit from Section C406.6 not applicable to an entire mixed occupancy building where some occupancies are subject to the prescriptive requirements of C403.3.5?

**ANSWER 13:** No. Section C406.6 may be tracked by occupancy type. For example, in a mixed occupancy building including Group R-1 hotel areas and Group A meeting rooms areas, credit from Section C406.6 could be applied to the Group R-1 hotel areas that are not required to comply with Section C403.3.5.

**QUESTION 14:** Can Group R-2 dwelling and sleeping units that are required to have balanced ventilation systems with heat recovery (with minimum 60% sensible effectiveness) per Section C403.3.6 claim the Section C406.5 credit?

**ANSWER 14:** Yes, as long as the heat recovery system meets the requirements of Sections C406.6 and C403.3.5.

**QUESTION 15:** Does credit Section C406.7 high performance dedicated outdoor air system (DOAS) credit apply to 100% of the total conditioned floor area of building occupancy category?

**ANSWER 15:** Yes. Unlike credit from Section C406.6, the high-performance DOAS must serve 100% of the spaces requiring outdoor air per IMC Table 403.3.1.1 with the occupancy category that is claiming this credit.

**QUESTION 16:** Can the credit from Section C406.8 reduced energy use in service water heating only be pursued by buildings with 90% of the conditioned floor area in the occupancy categories of listed in Section C406.8.1?

**ANSWER 16:** No. For example, Group R-1 and R-2 occupancy categories of Table C406.1, credit from Section C406.8 can be applied where 90% of the conditioned area of the Group R-1 or R-2 occupancy is served by the service water heating system.

Note: all other occupancies listed in Section C406.8.1 (I-2, A-3 Restaurants, F Laundries, A-3 Health Clubs) would fall under the “All other” occupancy category of Table C406.1 and therefore may want to be tracked in a separate area group from other “All other” occupancies in the Section C406.1 area weighed calculation.

**QUESTION 17:** Must credits from Sections C406.10 enhanced envelope performance and C406.11 reduced air infiltration be applied to the whole building conditioned envelope?

**ANSWER 17:** No. Credits from Sections C406.10 and C406.11 may be applied to just an individual occupancy areas in a mixed occupancy building. In the case of Section C406.11, reduced air leakage for the building envelope, the occupancy area may need to be isolated from other occupancies to show compliance with this credit.

**QUESTION 18:** Can credit from Section C406.11 reduced air infiltration be applied to a low energy space that complies with Section C402.1.1.1 even though the credit refers to ~~the Section C406.11~~ the total conditioned floor area?

**ANSWER 18:** Yes, credit from Section C406.11 may be applied to low energy spaces.

**QUESTION 19:** Can a separate “All Other” occupancy area be set up for the Group A-2 commercial kitchen areas to show compliance with the Section C406.12 enhanced commercial kitchen equipment credit?

**ANSWER 19:** Yes. It is recommended that a separate “All Other” area category is set up for the Group A-2 commercial kitchens to track all Section C406 credits that apply to that building area.

**QUESTION 20:** If areas of a building were permitted as core shell spaces under the 2015 WSEC and tenant improvements are built-out permitted under the 2018 WSEC, does the 2018 WSEC apply?

**ANSWER 20:** Yes, the 2018 WSEC would apply to the tenant buildout. See response to question 7 for further details. Credits achieved for the core shell construction may be applied to the tenant space build out per 2015 WSEC Section C406.1.1 and may count toward the 2018 WSEC point total using the credit weighting in 2018 WSEC Table C406.1.

**SUPERSEDES:** None

**REQUESTED BY:** City of Bellevue



STATE BUILDING CODE OPINION 20-June04

**CODE:** 2018 International Mechanical Code

**SECTION:** 403.4.4, Whole house ventilation for residential occupancies

**BACKGROUND:** *DISTRIBUTED WHOLE HOUSE VENTILATION. A whole house ventilation system shall be considered distributed when it supplies outdoor air directly (not transfer air) to each dwelling or sleeping unit habitable space, (living room, den, office, interior adjoining spaces or bedroom), and exhausts air from all kitchens and bathrooms directly outside.*

**403.4.4.2 Whole house ventilation for other than Group R-2 occupancies.** *Residential dwelling and sleeping units in other than Group R-2 occupancies, including I-1 condition 2 occupancies, shall have a whole house mechanical ventilation system with supply and exhaust fans in accordance with Section 403.4.6.1, 403.4.6.2, 403.4.6.3, or 403.4.6.4. The whole house ventilation system shall operate continuously at the minimum ventilation rate determined in accordance with Section 403.4.2 unless configured with intermittent off controls in accordance with Section 403.4.6.5. The whole house supply fan shall provide ducted outdoor ventilation air to each habitable space within the residential unit.*

**QUESTION 1:** Is ducted outdoor ventilation air required to be distributed to each habitable space even if the whole house ventilation system airflow rate is corrected per the “Not Distributed” system coefficients in Table 403.4.3 with Equation 4-11?

**ANSWER 1:** **Yes. Per Section 403.4.4.2 whole house supply fan shall provide ducted outdoor ventilation to each habitable space within the residential unit. The intent is that whole house ventilation systems are only allowed to have exhaust that is “Not Distributed.” Therefore, the “Not Distributed” system coefficients in Table 403.4.3 are only applied to residential unit whole house ventilation airflows when intermittent local exhaust that is not part of the unit whole house ventilation system is provided in one or more of the bathrooms or kitchen of the residential unit.**

**BACKGROUND:** **403.4.2 Whole house mechanical ventilation rates.** *The sleeping unit whole house mechanical ventilation minimum outdoor airflow rate shall be determined in accordance with the breathing zone ventilation rates minimum outdoor airflow rate shall be determined in accordance with the breathing zone ventilation rates requirements of Section 403.3.1.1.1.2 using Equation 4-2. The dwelling unit whole house mechanical ventilation minimum outdoor airflow rate shall be determined in accordance with Equation 4-10 or Table 403.4.2.*

**QUESTION 2:** Section 403.4.2 of the 2018 Washington State Mechanical Code is unclear as to which Table the base ventilation rate for sleeping unit is selected from. Is the intent that ventilation rates for sleeping units are from Table 403.3.1.1?

**ANSWER 2:** **Yes. The intent of Section 403.4.2 is that ventilation rates for the appropriate occupancy classification are selected from Table 403.3.1.1 such as “Bedroom/living room in hotels, motels, resorts, and dormitories.” These ventilation rates are used to calculate the breathing zone outdoor airflow per Section 403.3.1.1.1.1 using Equation 4-1 and then are corrected by the zone air distribution effectiveness per Section 403.3.1.1.1.2 (E<sub>z</sub>) using Equation 4-2.**

**SUPERSEDES:** None

**REQUESTED BY:** City of Bellevue