



STATE OF WASHINGTON

## STATE BUILDING CODE COUNCIL

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### Energy Code Technical Advisory Group Meeting Review Notes for June 25, 2021

**TAG Members Present:** Kjell Anderson, Chair; \*Christopher Boroughs; CJ Brockway; Michael Fowler; Patrick Hayes; Gary Heikkinen; Scott Henderson; Luke Howard; Duane Jonlin; Mike McGivern; Allan Montpellier; \*Henry Odum; Irina Rasputnis; David Reddy; Lisa Rosenow; \*Poppy Storm; Gavin Tenold; Amy Wheelless

**TAG Members Absent:** Erik Bedell, Martin Connor, Chris Holliday, Erik Olton, Shaun Vig

**Visitors Present:** Rod Mutch, Caroline Traube, Howard Ahern, E. Anderson, Dave Baylon, Glenn Blackmon, Kelly Brown, Sean Denniston, Kevin Duell, John Frankel, Mark Frankel, Pieter Gagnon, Leslie Helibrunn, Adam Hutchinson, Stephanie Johnson, Mike Kennedy, Rob Marks, Kiyomi Morris, Robby Oylear, David Park, D. Scott Peterson, Kathleen Petrie, Alexander Ratcliff, Mark Rehley, Liz Reichart, Kat Rosenbaum, Michael Rosenberg, Louis Starr, Shilpa Surana, Kelly Thomas, Eric Vander Mey, Dave Winiarski

**Staff:** Krista Braaksma, John McEntyre

\* indicates an alternate member

Agenda Items	TAG Actions
1. Welcome and Introductions	<p>Meeting called to order at 8:31 a.m. Kjell Anderson welcomed everyone and roll was called.</p> <p>For the remainder of the meetings, the agenda will include a discussion of key topics at 10 am. This will allow a specific time for interested parties and experts to attend for the discussion without having to sit through an indefinite amount of time. This is the current schedule of key topics:</p> <p>July 9: Heat Pump Water Heaters (plus any remaining from today's agenda, DOAS, SWH and the lighting proposals)</p> <p>July 16: Heat Pump Space Heating (plus Chapter 5 proposals and any outstanding proposals previously heard)</p> <p>July 23: Section C406</p> <p>Kjell went over the rules of the meeting—using Zoom reactions to raise hands to speak or ask questions or use other icons to note agreement; removing reactions after they have been acknowledged; mute while not speaking.</p>

2. Review and Approve <a href="#">Agenda</a>	The agenda was approved as modified: moving 21-GP1-095 up to be heard after the key topic discussion and moving 21-GP1-184, 21-GP1-185 and 21-GP1-228 to the July 16 meeting. 21-GP1-051 was withdrawn by the proponent prior to the meeting.
3. Review and Approve meeting notes from <a href="#">June 4, 2021</a> and <a href="#">June 11, 2021</a>	The meeting notes for both meetings were approved as written.
4. Review of Proposals Remaining from June 11, 2021	
<a href="#">21-GP1-163</a>	<p>Duane Jonlin noted this reduction in the threshold for variable speed drives was from the Seattle code, where it has worked well. Variable flow motors are widely available in smaller sizes. Allan Montpellier noted that electronically commutated motors are popular and common.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as submitted</b>. Mike Fowler seconded the motion. Motion carried.</p>
<a href="#">21-GP1-173</a>	<p>Duane Jonlin introduced this proposal allowing longer pipe lengths for public lavatories. These lines are typically run in ceilings. This may introduce a slight decrease in efficiency. Lisa Rosenow agreed it was needed; it is unclear if the shorter lengths are actually being enforced, since it is hard to comply.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as submitted</b>. Mike McGivern seconded the motion. Motion carried.</p>
<a href="#">21-GP1-164</a>	<p>Duane Jonlin is also the proponent on this proposal to clarify that this requirement for packaged equipment over 6,000 Btu/h to be a heat pump also includes split systems.</p> <p><b>MOTION:</b> Allan Montpellier moved to recommend <b>approval as submitted</b>. Duane Jonlin seconded the motion. Motion carried.</p>
<a href="#">21-GP1-166</a>	<p>Duane Jonlin brought forward another change based on the Seattle Code and ASHRAE 90.1, capping the maximum flow rate to minimize pumping energy. It was noted 90.1 also includes a row for pipes 14 to 24 inches. Consensus was the line should be added. Robby Oylear felt the values in the 6-inch row seemed off. After discussion, the proposal was <b>tabled</b> for more research into the background of the values in the 6-inch row. Robby, Allan Montpellier, Duane and Mike Kennedy all volunteered to research.</p>
<a href="#">21-GP1-167</a>	<p>Duane Jonlin said this proposal for pressure independent control valves is a more efficient way to get water flow to where it is needed. Allan noted this is common practice. There was a TAG discussion of whether it should be limited to systems 10 gpm or higher, and ultimately agreeing on 5 gpm.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as modified</b>, changing the threshold from 10 gpm to 5 gpm. Allan Montpellier seconded the motion. The motion carried.</p>
<a href="#">21-GP1-227</a>	<p>Eric Vander Mey submitted this proposal to clarify where DDC systems are required. The first line in the table is not found in ASHRAE 90.1. There is</p>

	<p>confusion on this issue—does it only apply to VAV systems or does it also apply to PTHP and mini splits?</p> <p>After discussion, the proposal was <b>tabled</b> for more research. Eric will work with Mike Kennedy, Lisa Rosenow and Chris Boroughs.</p>
<a href="#">21-GP1-240</a>	<p>Henry Odum said this corrects a correlation issue in the integrated draft regarding operable opening interlocks. The TAG discussed the size of the opening and whether it should be larger, or if there should be different requirements for different door size thresholds—turning off the system vs. temperature setback. It was also noted the proposal needs to be correlated with Section C403.4.1.6. The proposal was <b>tabled</b>, with Henry, Patrick Hayes and Duane Jonlin working on a rewrite based on the issues discussed.</p>
<p>5. Review of Consensus Mechanical Proposals from June 11, 2021</p> <p>Note: The following proposals were moved to the July 16 meeting:</p> <ul style="list-style-type: none"> <li>• <a href="#">21-GP1-184</a> PTHP Economizer Exception for Group R-1 and I-1</li> <li>• <a href="#">21-GP1-185</a> Group R-2 Exclusion for Economizer Exception 1</li> <li>• <a href="#">21-GP1-228</a> Airside Economizer Clarification</li> </ul>	
<a href="#">21-GP1-149</a>	<p>Lisa Rosenow noted this proposal is just a general cleanup of issues in the envelope section, with language from the Seattle code.</p> <p><b>MOTION:</b> Mike Fowler moved to recommend <b>approval as submitted</b>. Lisa Rosenow seconded the motion. The motion carried.</p>
<a href="#">21-GP1-162</a>	<p>Duane Jonlin presented this clarification that vestibules were not required for doors leading to outdoor dining areas.</p> <p><b>MOTION:</b> Mike McGivern moved to recommend <b>approval as submitted</b>. Duane Jonlin seconded the motion. The motion carried.</p>
<a href="#">21-GP1-152</a>	<p>Lisa Rosenow introduced this proposal introducing improvements from the Seattle code into the mechanical requirements. Eric Vander Mey suggested clarifying that DOAS systems were included in the zone isolation requirements of Section C403.2.1, rather than leaving it just HVAC systems. Lisa agreed. It was also noted that the exception in C403.8.1 should also include reference to Section C403.8.4.</p> <p><b>MOTION;</b> Duane Jonlin moved to recommend <b>approval as modified</b>, making the changes as noted above. Mike McGivern seconded the motion. The motion carried.</p>
<a href="#">21-GP1-154</a>	<p>Lisa Rosenow said the next proposal relocates language into the performance section and cleans up language that was buried within a section.</p> <p><b>MOTION:</b> Mike McGivern moved to recommend <b>approval as submitted</b>. Mike Fowler seconded the motion. The motion carried.</p>
<a href="#">21-GP1-105</a>	<p>This is just a section reference correction.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as submitted</b>. Mike McGivern seconded the motion. The motion carried.</p>

<p><a href="#">21-GP1-132</a></p>	<p>Mike Kennedy said this proposal just updates the boiler efficiency requirements from the latest DOE rule. It was modified previously by the TAG to remove the second column since the DOE minimum efficiency requirements go into effect before the code will become effective.</p> <p><b>MOTION:</b> Mike McGivern moved to recommend <b>approval as modified</b>. Mike Fowler seconded the motion. The motion carried</p>
<p><a href="#">21-GP1-209</a></p>	<p>Lisa Rosenow said this was a TAG assignment from March, cleaning up the duct insulation language. The TAG discussed the moved and changed sentence “Shaft and plenum surfaces included as part of the building envelope shall not be used in the calculation of maximum glazing area as described in Section C402.4.1.” The TAG ultimately decided to strike that sentence from the initial paragraph and reinstate the original language in the second paragraph.</p> <p><b>C403.10.1.1 Ducts, shafts and plenums conveying outdoor air.</b> <del>Ducts, Shafts and plenums conveying outdoor air from the exterior of the building to the mechanical system shall meet all air leakage and building envelope insulation requirements of Section C402, plus building envelope vapor control requirements from the International Building Code. <u>Shaft and plenum surfaces included as part of the building envelope shall not be used in the calculation of maximum glazing area as described in Section C402.4.1.</u></del></p> <p><b>Exception:</b> <u>Unheated equipment rooms with combustion air louvers, provided they are isolated from conditioned space at sides, top and bottom of the room with R-11 nominal insulation.</u></p> <p><del>Extending Ductwork</del> <u>Ducts conveying outdoor air shall be insulated continuously from the building exterior to an automatic shutoff damper or heating or cooling equipment. For the purposes of building envelope insulation requirements, Duct surfaces shall be insulated with the minimum insulation values in Table C403.10.1.1. Duct surfaces included as part of the building envelope shall not be used in the calculation of maximum glazing area as described in Section C402.4.1.</u></p> <p><b>Exceptions:</b> Outdoor air ducts serving individual supply air units with less than 2,800 cfm of total supply air capacity, provided these are insulated to the minimum insulation values in Table C403.10.1.1.</p> <p><del>2. Unheated equipment rooms with combustion air louvers, provided they are isolated from conditioned space at sides, top and bottom of the room with R-11 nominal insulation.</del></p> <p><b>C403.10.2 Duct construction.</b> Ductwork shall be constructed and erected in accordance with the International Mechanical Code. <u>For the purposes of this section, longitudinal seams are joints oriented in the direction of airflow. Transverse joints are connections of two duct sections oriented perpendicular to airflow. Duct wall penetrations are openings made by any screw, fastener, pipe, rod or wire. All other connections are considered transverse joints, including but not limited to spin-ins, taps and other branch connections, access door frames and jambs, and duct connections to equipment.</u></p>

	<p><b>MOTION:</b> Lisa Rosenow moved to recommend <b>approval as modified</b> above. Duane Jonlin seconded the motion. The motion carried, with a vote of 9 to 1 with 4 abstentions.</p>
<a href="#">21-GP1-153</a>	<p>Lisa Rosenow noted this proposal just corrects an error in the code where the language for two exceptions was inadvertently merged.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as submitted</b>. Mike McGivern seconded the motion. The motion carried.</p>
<a href="#">21-GP1-151</a>	<p>Lisa Rosenow spoke to this proposal on roof replacement, with language from the Seattle code. It specifies that buildings with no insulation, as well as those with insulation entirely above the deck, need to be brought up to code when doing a roof replacement.</p> <p><b>MOTION:</b> Lisa Rosenow moved to recommend <b>approval as submitted</b>. Duane Jonlin seconded the motion. The motion carried.</p>
<a href="#">21-GP1-090</a>	<p>Mike Fowler introduced his <a href="#">modified proposal</a> that updated the EUI values based on the values from the <a href="#">progress report</a> to the legislature on the 2018 Energy Code. Values were only adjusted downward, where appropriate.</p> <p><b>MOTION:</b> Mike Fowler moved to recommend <b>approval as modified</b>. Duane Jonlin seconded the motion. The motion carried.</p>
<a href="#">21-GP1-129</a>	<p>Mike Kennedy noted that this was not intended to expand the scope nor a change to the requirements. It was to just move a requirement inside the mechanical section that addresses lighting and service water into the general section.</p> <p><b>MOTION:</b> Mike McGivern moved to recommend <b>approval as submitted</b>. Mike Fowler seconded the motion. The motion carried.</p>
<a href="#">21-GP1-138</a>	<p>The discussion was <b>tabled</b> due to the absence of the proponent.</p>
<a href="#">21-GP1-008</a>	<p>Mike McGivern stated he was moving the new section on fault detection and diagnostics into the mechanical controls section as a more appropriate location. There was a lot of TAG discussion around the added exception for buildings equipped with DDC systems and whether this was warranted, as not all DDC systems have fault detection. It was also noted that Section C403.5.5 had very similar language and should be correlated. Eric Vander Mey suggested a definition of HVAC system would be helpful. The discussion was <b>tabled</b> and Eric Vander Mey, Mike McGivern and David Reddy agreed to work on a revision.</p>
<a href="#">21-GP1-139</a>	<p>Mike Kennedy, in Nick O'Neil's absence, said that this adds California Title 24 language on boiler controls, and most of it has been in effect for several years. A couple of the thresholds were recently moved down.</p> <p><b>MOTION:</b> Mike Fowler moved to recommend <b>approval as submitted</b>. Lisa Rosenow seconded the motion. The motion carried.</p>

<a href="#">21-GP1-133</a>	<p>Mike Kennedy stated this was a published addendum from ASHRAE 90.1. He noted it would interact with some of the other system design proposals that have not yet been discussed.</p> <p><b>MOTION:</b> Mike McGivern moved to recommend <b>approval as submitted</b>. Duane Jonlin seconded the motion. The motion carried.</p>
<p>6. 10 am Key Issue Discussion: Carbon Emissions Proposals</p> <p>Carbon Emissions links provided during discussion:</p> <p><a href="#">PSE: Beyond Net Zero Carbon by 2045</a> (Website)</p> <p><a href="#">PSE: Pathway to Beyond Net Zero Carbon by 2045</a> (Will download white paper report)</p> <p>PSE: <a href="#">Natural Gas Analysis</a></p> <p>California Energy Commission: <a href="#">Deep Decarbonization in a High Renewables Future</a></p> <p>UC Davis: <a href="#">The Feasibility of Renewable Natural Gas as a Large-Scale, Low Carbon Substitute</a></p> <p>US Energy Information Administration: <a href="#">Washington Natural Gas Consumption</a></p> <p>Commerce PowerPoint: <a href="#">Transition to 100% Clean Electricity</a></p> <p>WA Dept. of Ecology: <a href="#">Washington State Greenhouse Gas Emissions Inventory: 1990-2018</a></p>	
<a href="#">21-GP1-142</a>	<p>In Dan Kirschner's absence, Chris Boroughs introduced the NW Gas Association proposal to replace the carbon emissions factor table in C407 with a table that combines both carbon and cost with a 50/50 weighted average. It is important to keep an eye on cost going through this process; as changes are made we can soon reach a critical mass where a gas system is no longer viable. The electricity factor uses marginal electricity and the natural gas factor anticipates a 10 percent mix of renewable natural gas.</p> <p>There was much TAG discussion on combining cost and emissions, and on the projected percentage of renewable natural gas and hydrogen. A number of different resources were cited and are linked in the opening paragraph.</p>
<a href="#">21-GP1-156</a>	<p>Emily Salzberg turned the presentation over to Glenn Blackmon. The proposal from commerce adjusts the electricity factor to correlate with the information from the Clean Energy Transformation Act (CETA).</p> <p>TAG discussion covered how much of the CETA compliance is met with renewable energy credits, site versus source energy, the effects of an increased electrical load on the grid, the possible incentives to increase the use of electric resistance heat, and seasonal load demands.</p>
<a href="#">21-GP1-141</a>	<p>Chris Boroughs said the same information was used to develop the new factors for electricity and natural gas found in 142, but this proposal does not use costs. He proposed that a small group discuss the issue rather than voting on the proposals today.</p>
<i>Motions:</i>	<p>Duane Jonlin moved to recommend <b>approval of Commerce's proposal 156</b>, with the caveat that if another proposal is adopted that impacts this proposal, this proposal will be reconsidered. Gavin Tenold seconded the motion. The <b>motion carried</b>, 12 to 1.</p>



	<p>Gary Heikkinen moved to recommend <b>approval of 141 as submitted</b>. Patrick Hayes seconded the motion. <b>Motion failed</b>, 2 to 11 with one abstention.</p> <p>Gary Heikkinen moved to <b>modify 156</b> to change the natural gas factor from 11.7 to 10.53. Patrick Hayes seconded the motion. The <b>motion failed</b>, 1 to 12 with one abstention.</p> <p>Duane Jonlin moved to recommend <b>disapproval of 142</b>. Patrick Hayes seconded the motion. The <b>motion carried</b> 13 to 0 with one abstention.</p>
<p>7. Review of New Mechanical Proposals</p> <p>Note: The following proposals were tabled to the July 16 meeting:</p> <ul style="list-style-type: none"> <li>• <a href="#">21-GP1-117</a> Mandatory Requirements</li> <li>• <a href="#">21-GP1-119</a> HVAC TSPR</li> <li>• <a href="#">21-GP1-069</a> HVAC TSPR</li> </ul>	
<a href="#">21-GP1-070</a>	<p>Mike Rosenberg presented <a href="#">a slideshow</a> going over the five main points of the proposal. He noted that item 4, a 10 percent increase in stringency over the 2018 code, would need to be revisited once all the proposals had been reviewed. There were concerns expressed regarding off-site renewables associated with adding a site energy metric; maybe this should be discussed after other proposals on renewables were reviewed and discussed The proposal was <b>tabled</b> for later discussion.</p>
<a href="#">21-GP1-168</a>	<p>Duane Jonlin introduced his demand control ventilation proposal, stating it was just a rewrite for clarity on exception 4 and adding an exception for dormitories.</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as submitted</b>. Mike McGivern seconded the motion. The motion carried.</p>
<a href="#">21-GP1-190</a>	<p>The discussion was <b>tabled</b> due to the absence of the proponent.</p>
<a href="#">21-GP1-169</a>	<p>Duane Jonlin said this proposal is a clarification that repair garages are included in the exhaust ventilation system requirements. There was some discussion regarding the ability of some larger fan systems being unable to meet the minimum ventilation rates. It was suggested that the language in C403.7.5.1 be modified to read "Ventilation systems for enclosed loading docks shall operate continuously during unoccupied hours at 50 percent or less of design capacity, and shall be activated to the full required ventilation rate by one of the following:..." (remainder unchanged).</p> <p><b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as modified</b>. Mike McGivern seconded the motion. The motion carried.</p>
<a href="#">21-GP1-229</a>	<p>The discussion was <b>tabled</b> due to the absence of the proponent.</p>
<a href="#">21-GP1-236</a>	<p>The discussion was <b>tabled</b> due to the absence of the proponent.</p>
<a href="#">21-GP1-191</a>	<p>The discussion was <b>tabled</b> due to the absence of the proponent.</p>
<a href="#">21-GP1-170</a>	<p>Duane Jonlin presented language from the Seattle code to increase the energy recovery efficiency from 50 to 60 percent. He felt the 50 percent was out of date and 60 percent was easily achievable through commonly available equipment.</p>

	<b>MOTION:</b> Mike Fowler moved to recommend <b>approval as submitted</b> . Duane Jonlin seconded the motion. The motion carried.
<a href="#">21-GP1-051</a>	Withdrawn by the proponent prior to the meeting.
<a href="#">21-GP1-171</a>	Duane Jonlin said this proposal was to add language to better control the cooling tower return water temperature to make sure the full efficiency is achieved through the cooling tower. There was much discussion about whether this should regulate the water cooling tower supply or return, or to the chiller, and climate should be taken into account as well. The discussion was <b>tabled</b> for clarification of the intent. Duane and Allan Montpelier will work on the rewrite.
<a href="#">21-GP1-155</a>	Howard Ahern introduced his proposal on protection of piping insulation. He was the proponent of the change introducing this language into the IECC and from the discussion there he felt there was some additional clarification necessary. The TAG modified the language slightly, changing the second sentence to read "Protection shall be removable for no less than 6 feet from the equipment for maintenance."  <b>MOTION:</b> Duane Jonlin moved to recommend <b>approval as modified</b> . Lisa Rosenow seconded the motion. The motion carried.
<a href="#">21-GP1-226</a>	Robby Oylear presented this proposal in Eric Vander Mey's absence. This adds language from the Seattle code for refrigerant piping. Duane Jonlin and Lisa Rosenow both reported that this has been highly controversial in Seattle and should be further discussed with the industry before bringing this proposal into the state code. The issue was <b>tabled</b> and a workgroup assigned consisting of Eric Vander Mey, Robby Oylear, Howard Ahern and Duane Jonlin.
<a href="#">21-GP1-053</a>	Withdrawn by the proponent.
<a href="#">21-GP1-172</a>	Duane Jonlin introduced this proposal to extend the outdoor radiant heater requirement to unheated spaces. There was TAG discussion on how this would impact the various types of low energy buildings. The discussion was <b>tabled</b> and the proponent will work on a revision.
<a href="#">21-GP1-095</a>	Sean Denniston introduced this proposal on dehumidification requirements for indoor growing facilities. This proposal is based on new language developed for Title 24. The TAG discussed the need for this type of regulation, simultaneous heating and cooling with the use of a heat pump and how that could be further spelled out. The proposal was <b>tabled</b> to allow Sean, Allan Montpelier and Duane Jonlin to draft some new language.
5. Meeting Schedule	The next meeting will be next Friday, July 16, at 8:30am.
6. Other Business	None.
7. Adjourn	The meeting was adjourned at 3:00 p.m.