

STATE OF WASHINGTON STATE BUILDING CODE COUNCIL

# Washington State Energy Code Development Standard Energy Code Proposal Form

Jan 2022

Log No. 24-GP1-223 Rev 2 Received 5/1/25

Code being amended:

Commercial Provisions

Residential Provisions

### Code Section # Table C402.1.2 and Table C402.1.3

**Brief Description:** Refrigerant piping shafts that require ventilation per mechanical code chapter 11 create a "donut hole" penetration usually through multiple floors of a project. As the energy code currently stands, these shaft walls must be constructed as prescriptively compliant exterior walls, and this creates a large penalty in the thermal envelope compliance component performance (UA) calculation and/or requires significant depth of assemblies, reducing usable floor area. Multifamily projects utilizing VRF systems (and other systems with A2L refrigerants) will typically require several of these shafts to meet compliance.

The envelope penalty associated with maintaining life safety on projects should be removed by permitting ventilated refrigerant shaft walls to meet a more **realistic** *interior stud wall performance target* and subsequently *exclude* the corresponding assembly (SF) area from the prescriptive component performance calculation and the maximum window-to-wall ratio calculation.

### Proposed code change text:

	CLIMATE ZONE 5 AND MARINE 4				
	All Other	Group R			
Roofs					
Insulation entirely above deck	U-0.027	U-0.027			
Metal buildings	U-0.031	U-0.031			
Attic and other	U-0.021	U-0.021			
Joist or single rafter	U-0.027	U-0.027			
Walls, Above Grade <sup>k,I</sup>					
Mass <sup>g</sup>	U-0.090	U-0.078			
Mass transfer deck slab <sup>j</sup>	U-0.20	U-0.20			
Metal building	U-0.050	U-0.050			
Steel framed	U-0.055	U-0.055			
Wood framed and other	U-0.051	U-0.051			
Walls, Below Grade					
Below-grade wall <sup>b,g</sup>	U-0.090	U-0.078			

### Table C402.1.2 OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, U-FACTOR METHOD

L. Interior wall assemblies that enclose ventilated refrigerant piping shafts, required by Chapter 11 of the International Mechanical Code, that do not serve conditioned, semi-heated, or indirectly conditioned spaces, shall have a minimum U-factor of 0.118 (equivalent to a 4-inch metal stud wall with R-15 cavity insulation per Table A103.3.6.1(1)). These shaft wall assemblies shall comply with the air barrier requirements of Section C402.5.1. The surface area of such walls shall be excluded from the building thermal envelope component performance (UA) calculation and the maximum window-to-wall ratio calculation.

### <mark>AND</mark>

## TABLE C402.1.3 OPAQUE BUILDING THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE METHOD

	CLIMATE ZONE 5 AND MARINE 4				
	All Other	Group R			
	Roofs				
Insulation entirely above deck	R-38ci R-38ci				
Metal buildings <sup>b</sup>	R-25 +	R-25 +			
	R-22 LS	R-22 LS			
Attic and other	R-49	R-49 R-49			
Joist or single rafter	U-0.027 U-0.027				
	Walls, Above Grade <u>m</u>	•			
Mass <sup>j</sup>	R-11.4º ci	R-13.3ci			
Mass transfer deck slab edge <sup>g</sup>	See Table C402.1.2	See Table C402.1.2			
Metal building	R-13 + R-14ci	R-13 + R-14ci			
Steel framed <sup>h,i</sup>	R-0 + R-15.2ci or	R-0 + R-15.2ci			
	R-13 + R-10ci or	or R-13 + R10ci			
	R-20 + R-9ci	or R-20 + R-9ci			
Wood framed and other <sup>h,i</sup>	R-0 + R-16ci std or	R-0 + R-16ci std or			
	R-13 + R-7.5ci std or	R-13 + R-7.5ci std or			
	R-20+R-3.8ci std or	R-20+R-3.8ci std or			
	R-27 std	R-27 std			
Walls, Below Grade					
Below-grade wall <sup>d,j</sup>	Exterior: R-10 ci Interior: R-19 wood stud, or R-13 + R-6 ci metal stud	Exterior: R-10 ci Interior: R-19 wood stud, or R-13 + R-6 ci metal stud			

m. Interior wall assemblies that enclose ventilated refrigerant piping shafts, required by Chapter 11 of the International Mechanical Code, that do not serve conditioned, semi-heated, or indirectly conditioned spaces, shall meet a minimum R-value performance of R-15. These shaft wall assemblies shall comply with the air barrier requirements of Section C402.5.1. The surface area of such walls shall be excluded from the building thermal envelope component performance (UA) calculation and the maximum window-to-wall ratio calculation.

### Purpose of code change:

The purpose of this code change is to remove the penalty associated with maintaining life safety on projects that have refrigerant piping shafts which require ventilation per mechanical code chapter 11. These walls should not be treated as above grade exterior walls, as this creates a large penalty in the thermal envelope compliance calculation and/or forces the project to lose usable floor area by requiring significant depth of these refrigerant shaft assemblies.

Your amendment m	ust meet one of the f	ollowing criteria. Sele	ct at least one:	
Addresses a critical life/safety need.		Consistency with state or federal regulations.		
<ul> <li>The amendment clarifies the intent or application of the code.</li> <li>Addresses a specific state policy or statute. (Note that energy conservation is a state policy)</li> </ul>		<ul> <li>Addresses a unique character of the state.</li> <li>Corrects errors and omissions.</li> </ul>		
Check the building t	ypes that would be in	npacted by your code	change:	
Single family/duplex/townhome Multi-family 4 +		stories	Institutional	
🔀 Multi-family 1 –	3 stories	🔀 Commercial / Re	tail	Industrial
Your name	Rachel Thompson		Email address	Rachel.A.Thompson@imegcorp.com
Your organization	IMEG		Phone number	206 285 7100
Other contact name	Nathan Miller			

# **Economic Impact Data Sheet**

# Is there an economic impact: $\square$ Yes $\square$ No

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants, and businesses. If you answered "No" above, explain your reasoning.

This proposed code change would reduce the cost of projects with ventilated refrigerant piping shafts, by avoiding the installation of additional insulation to offset the penalty in the envelope compliance calculation.

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

\$Click here to enter text./square foot (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

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

Click here to enter text.KWH/ square foot (or) Click here to enter text.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

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

No change in code enforcement/review time.

Small Business Impact. Describe economic impacts to small businesses:

NA

Housing Affordability. Describe economic impacts on housing affordability:

Housing affordability is increased by reducing a significant item impacting insulation cost and space allocation.

**Other.** Describe other qualitative cost and benefits to owners, to occupants, to the public, to the environment, and to other stakeholders that have not yet been discussed:

The energy code encourages the use of heat pumps and VRF for space conditioning, but the combination of ventilation requirements for A2L refrigerants and the requirements of insulating those walls to the full prescriptive targets introduce significant cost and space allocation issues on projects intending to use VRF and high-efficiency heat-pumps.

<u>Instructions</u>: Send this form as an email attachment, along with any other documentation available, to: <u>sbcc@des.wa.gov</u>. For further information, call the State Building Code Council at 360-407-9255.

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