STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

Log No. 14-E14

1. State Building Code to be Amended:

- ☐ International Building Code
- ☐ ICC ANSI A117.1 Accessibility Code
- ☐ International Existing Building Code
- ☐ International Residential Code
- ☐ International Fire Code
- ☐ Uniform Plumbing Code
- ☒ State Energy Code
- ☐ International Mechanical Code
- ☐ International Fuel Gas Code
- ☐ NFPA 54 National Fuel Gas Code
- ☐ NFPA 58 Liquefied Petroleum Gas Code
- ☐ Wildland Urban Interface Code

Section(s):
2012 WSEC C403.3.1

Title:
Economizers, Simple for Server Rooms

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

Proponent: **Eric Vander Mey, PE, Rushing Company**
Title: **Principal**
Date: **2/28/2014**

3. Designated Contact Person:

Name: **Eric Vander Mey**
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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) 2012 WSEC
Section(s) C403.3.1

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

C403.3.1 Economizers. Each cooling system that has a fan shall include an air economizer meeting the requirements of Sections C403.3.1.1 through C403.3.1.1.4.

Exception: Economizers are not required for the systems listed below:

1. Qualifying small equipment: This exception shall not be used for unitary cooling equipment installed outdoors or in a mechanical room adjacent to the outdoors. This exception is allowed to be used for other cooling units and split systems with a total cooling capacity rated in accordance with Section C403.2.3 of less than 33,000 Btu/h (hereafter referred to as qualifying small systems) provided that these are high-efficiency cooling equipment with SEER and EER values more than 15 percent higher than minimum efficiencies listed in Tables C403.2.3 (1) through (3), in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. The total capacity of all qualifying small equipment without economizers shall not exceed 72,000 Btu/h per building, or 5 percent of its air economizer capacity, whichever is greater. That portion of the equipment serving residential occupancies is not included in determining the total capacity of all units without economizers in a building. Redundant units are not counted in the capacity limitations. This exception shall not be used for the shell-and-core permit or for the initial tenant improvement or for Total Building Performance.

2. Systems with dehumidification that affect other systems so as to increase the overall building energy consumption. New humidification equipment shall comply with Section C403.2.3.4.

3. For residential occupancies, cooling units installed outdoors or in a mechanical room adjacent to outdoors with a total cooling capacity less than 20,000 Btu/h and other cooling units with a total cooling capacity less than 54,000 Btu/h provided that these are high-efficiency cooling equipment with IEER, SEER, and EER values more than 15 percent higher than minimum efficiencies listed in Tables C403.2.3 (1) through (10), in the appropriate size category, using the same test procedures. Equipment shall be listed in the appropriate certification program to qualify for this exception. For split systems and VRF systems, compliance is based on the cooling capacity of individual fan coil units.

4. Where the cooling efficiency meets or exceeds the efficiency requirements in Table C403.3.1(2)

TABLE C403.3.1(2)
EQUIPMENT EFFICIENCY PERFORMANCE EXCEPTION FOR ECONOMIZERS

CLIMATE ZONES	COOLING EQUIPMENT PERFORMANCE IMPROVEMENT (EER OR IPLV)
2B	10% Efficiency Improvement
3B	15% Efficiency Improvement
4B	20% Efficiency Improvement

5. Equipment used to cool any dedicated server room, electronic equipment room or telecom switch room provided the system complies with Exception 5 of Section 403.4.1. The total allowance for equipment utilizing exception 5 of Section 403.4.1 includes the sum of both simple and complex 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.

Add amendment so that simple systems can comply the server room economizer exception in complex systems Section C403.4.1 Exception 6.

This amendment would avoid designers finding creative ways of classifying simple systems as complex systems.

Exception 5 of Section C403.4.1 is shown below for reference:

5. Equipment used to cool any dedicated server room, electronic equipment room or telecom switch room provided that they completely comply with Option a, b, or c in the table below. The total capacity of all systems without economizers shall not exceed 240,000 Btu/h per building or 10 percent of its air economizer capacity, whichever is greater. This exception shall not be used for Total Building Performance.

	Equipment Type	Higher Equipment Efficiency	Part-Load Control	Economizer
Option a	Tables C403.2.3(1) and C403.2.3(2)[a]	.+15%[b]	Required over 85,000 Btu/h[c]	None Required
Option b	Tables C403.2.3(1) and C403.2.3(2)[a]	.+5%[d]	Required over 85,000 Btu/h[c]	Waterside Economizer
Option c	ASHRAE Standard 127[f]	.+0%[g]	Required over 85,000 Btu/h[c]	Waterside Economizer

Notes for Exception 5:

a. For a system where all of the cooling equipment is subject to the AHRI standards listed in Tables C403.2.3(1) and C403.2.3(2), the system shall comply with all of the following (note that if the system contains any cooling equipment that exceeds the capacity limits in Table C403.2.3(1) or C403.2.3(2), or if the system contains any cooling equipment that is not included in Table C403.2.3(1) or C403.2.3(2), then the system is not allowed to use this option).

b. The cooling equipment shall have an EER value and an IPLV value that is a minimum of 15 percent greater than the value listed in Tables C403.2.3(1) and C403.2.3(2) (1.15 x values in Tables C403.2.3(1) and C403.2.3(2)).

c. For units with a total cooling capacity over 85,000 Btu/h, the system shall utilize part-load capacity control schemes that are able to modulate to a part-load capacity of 50 percent of the load or less that results in the compressor operating at the same or higher EER at part loads than at full load (e.g., minimum of two-stages of compressor unloading such as cylinder unloading, two-stage scrolls, dual tandem scrolls, but hot gas bypass is not credited as a compressor unloading system).

d. The cooling equipment shall have an EER value and an IPLV value that is a minimum of 5 percent greater than the value listed in Tables C403.2.3(1) and C403.2.3(2) (1.05 x values in Tables C403.2.3(1) and C403.2.3(2)).

e. The system shall include a water economizer in lieu of air economizer. Water economizers shall be capable of providing the total concurrent cooling load served by the connected terminal equipment lacking airside economizer, at outside air temperatures of 50°F dry-bulb/45°F wet-bulb and below. For this calculation, all factors including solar and internal load shall be the same as those used for peak load calculations, except for the outside temperatures. The equipment shall be served by a dedicated condenser water system unless a nondedicated condenser water system exists that can provide appropriate water temperatures during hours when waterside economizer cooling is available.

f. For a system where all cooling equipment is subject to ASHRAE Standard 127.

g. The cooling equipment subject to the ASHRAE Standard 127 shall have an EER value and an IPLV value that is equal or greater than the value listed in Tables C403.2.3(1) and C403.2.3(2) when determined in accordance with the rating conditions ASHRAE Standard 127 (i.e., not the rating conditions in AHRI Standard 210/240 or 340/360). This information shall be provided by an independent third party.

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:

   Amendment is needed for clear code enforcement across the state.

   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[1]		Enforcement[2]		Operations & Maintenance[3]	
Building Type	Costs	Benefits[4]	Costs	Benefits[4]	Costs	Benefits[4]
Residential	N/A	N/A	N/A	N/A	N/A	N/A
Single family	N/A	N/A	N/A	N/A	N/A	N/A
Multi-family	N/A	N/A	N/A	N/A	N/A	N/A
Commercial/Retail	N/A	N/A	N/A	N/A	N/A	N/A
Industrial	N/A	N/A	N/A	N/A	N/A	N/A
Institutional	N/A	N/A	N/A	N/A	N/A	N/A

Please send your completed proposal to: sbcc@ga.wa.gov

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

[1] $ / 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.

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

[3] Cost to building owner/tenants over the life of the project.

[4] Measurable benefit.