

2018 Washington State Energy Code Summary of Proposed Changes

Note: Sections that had no changes are not shown in the filing.

The summary below also indicates whether the change came from a **Proposed State Amendment** or **2018 IECC Change**. Changes which only renumber sections are not itemized. Sections that had no changes are not shown in this filing.

1. **Section C101.2 Scope** (*Proposed State Amendment*): A sentence was added to clarify that hotel-type buildings, regardless of size, need to comply with the commercial portion of the energy code.
2. **Section C101.4.1 Mixed residential and commercial buildings** (*2018 IECC Change*). Clarification on code applications for residential mixed use buildings.
3. **Section C101.6 Appendices** (*Proposed State Amendment*): Clarifications on applicability of appendices.
4. **Section C102.1 General (Alternate Materials & Methods)** (*2018 IECC Change*): Editorial changes for consistency between the model codes.
5. **Section C103.6 Building documentation** (*2018 IECC Change*): Sets the deadline for receipt of construction documents to within 90 days of receipt of the certificate of occupancy.
6. **Section C103.6.1 Record documents** (*Proposed State Amendment*). Specifies who is responsible for providing record drawings.
7. **Section C103.6.2 Building operations and maintenance information** (*2018 IECC Change*). This section was clarified in the 2018 IECC and relocated to Section 408.1.1. The WSEC relocated it back to the construction documents section with similar requirement.
8. **Section C103.6.2.1 Manuals** (*Proposed State Amendment*): Restores a sentence inadvertently removed in the 2015 adoption and relocation to chapter 1.
9. **Section C104 General (Inspections)** (*2018 IECC Change*). This section was revised for clarity and consistency with other codes and the inspections required therein.
10. **Section C104.2.2 Thermal envelope** (*Proposed State Amendment*). Clarifies that insulation details for tenant build outs need to be shown in the documentation.
11. **Definitions (Chapter 2)** (*2018 IECC Changes*).
 - Access (To) and Ready Access (To)** replace the terms Accessible and Readily Accessible for clarity.
 - Air Barrier** was revised for clarity; **Continuous Air Barrier** was removed as redundant.
 - Alteration** was revised to remove the term “that requires a permit” for consistency with other codes.
 - Approved** was revised for consistency with other codes
 - Approved Agency** was revised across all ICC codes for clarity.
 - Building Thermal Envelope** – minor editorial corrections for clarity.
 - Captive Key Device** is a new definition added in support of C405.2.5.
 - Cavity Insulation** is a new definition for clarification from continuous insulation.
 - Change of Occupancy** - new definition for consistency throughout International codes.

Demand Recirculation Water System This definition was modified for clarity and to better fit the requirements in Section C404.8.

Entrance Door was revised for clarity and grammar.

Fan System Design Conditions Revised to coordinate with the ASHRAE 90.1 definition.

Fenestration Editorial, for clarity and consistency.

IEC Design H Motor, IEC Design N Motor, NEMA Design A, B, and C Motor These definitions replace those for **General Purpose Electric Motor** Subtype 1 and 11.

Group R Provides a new definition for Group R as it applies in this code.

Labeled Editorial change for consistency with other codes.

Isolation Devices, Networked Guest Room Control System: New definitions to support the changes in Section C403.7.4.

Luminaire Level Lighting Controls is a new definition for ICC, but is adapted from a Washington state amendment.

Nameplate Horsepower was modified to change horsepower to output power for clarity, to specify that the output power is the rating to be used.

On-Site Renewable Energy – Biogas was added

Screw Lamp Holders Deletion of a term not used in the code.

Storefront was modified to strike “nonresidential”

Voltage Drop is a new definition to support the new section C405.11

12. Definitions (Proposed State Amendments).

Block, Total System Performance Ratio: These terms were added, along with modifications to the definitions to **Proposed Design** and **Standard Reference Design**, to support a new requirement for those buildings required to comply with the DOAS section.

Building Commissioning: was revised for clarity and eliminates areas that are outside the scope of the commissioning process.

Building Entrance: was revised to match the ASHRAE 90.1 language and exception 1 of C407.5.7.

Certified Commissioning Professional: was revised to delete the phrase “or a licensed professional engineer in Washington state.”

Computer Room: This definition was revised to coordinate with the addition of ASHRAE 90.4 for Data Centers.

Continuous Insulation: This term is clarified and now better aligns with the footnote to Table C402.1.3.

Data Center, Data Center Systems, Electrical Load Coefficient, Information Technology Equipment, Mechanical Load Coefficient: These definitions were added to coordinate with the inclusion of ASHRAE 90.4.

Decorative Appliance, Vented: New definition added in support of the new requirement in Section C403.4.7.1.

DX-Dedicated Outdoor Air System Units, Integrated Seasonal Coefficient of Performance, Integrated Seasonal Moisture Removal Efficiency: These definitions were added with the addition of two new equipment efficiency tables in C403.3.2, which come from ASHRAE 90.1, for DOAS units.

Heat Trap, Pipe Configured: New definition added to clarify requirements for heat traps.

Heated water Circulation System: A new definition added to help differentiate between demand recirculation systems and heated water circulation systems.

Luminaire Level Lighting Controls is a new definition for ICC, but is adapted from a Washington state amendment. The WSEC definition is modified for clarity.

Mass Transfer Deck Slab Edge: This definition is revised for clarity, and an illustration is added.

Mechanical Cooling, Mechanical Heating: These two definitions from ASHRAE 90.1 were added for clarity.

Power Over Ethernet Lighting: New definition for clarity.

Public Lavatory Faucet: Definition added for clarity.

Replacement Air: Definition from ASHRAE 90.1 is added for clarification.

Retrofit, Building Envelope: Added definition to help clarify existing building compliance.

Roof Assembly: Definition was amended with pointers to the various roof types.

Sensible Recovery Effectiveness: Added a new term for use in efficiency ratings for energy recovery associated with DOAS units.

Sidelit, Toplit: The IECC redefined daylighting as either toplit (skylights) or sidelit (windows). These definitions were added to the WSEC for clarity and ease of use.

Single-Rafter Roof: Added definition to complete the list of referenced roof types.

Space Conditioning Category: Added definition to help clarify how buildings with more than one type of conditioned space type (i.e., semi-heated, conditioned, etc.) are handled.

Tubular Daylighting Device: Adding a new type of daylighting device as addressed in Section C402.4.2.

Visible Transmittance; Visible Transmittance, Annual: Modified the definition to address ratings for tubular daylighting devices.

13. **Section C303.1.1 Building thermal envelope insulation (2018 IECC Change).** An exception was added to the labeling requirements for insulation to allow above deck roof insulation to be labeled per the material standard.
14. **Section C303.1.1.1 Blown or sprayed insulation (2018 IECC Change).** Editorial, for clarity.
15. **Section C303.1.3 Fenestration product rating (2018 IECC Change):** Revised to reflect that ANSI/DASMA 105 covers rolling doors in addition to garage doors.
16. **Table C303.1.3(1) Default glazed window, glass door and skylight U-factors (2018 IECC Change):** “Fenestration” was replaced with “Window, Glass Door and Skylight” in the title of the table.
17. **Section C303.1.5 Spandrel panels in glass curtain walls (Proposed State Amendment).** Default table and associated equations and specifications for curtain wall and spandrel panels is added from the Seattle Energy Code/Title 24.
18. **Section C303.2.2 Multiple layers of continuous insulation (2018 IECC Change).** This section was moved to Chapter 3 from Section C402.2.1. It was felt that Chapter 3 was the more appropriate location for installation detailing.
19. **Section C303.3 Maintenance information (2018 IECC Changes/Proposed State Amendment):** The IECC moved this section back to the commissioning section. The state amendment locates it to C103.6.2 with the rest of the construction documentation requirements.
20. **Section C401.2 Application (Proposed State Amendment).** The scoping/general section of the code has been revised to reflect the changes to Section C407, which now lists those code sections that must be met when using the Total Building Performance option. In addition, citations in section headings referencing Prescriptive or Mandatory have all been struck. Item 3 of this section now references the proposed appendix that may be adopted by jurisdictions.

21. **Section C402.1.1 Low energy buildings, semi-heated buildings and greenhouses** (*Proposed State Amendment*). This section is revised to include subsections addressing the three types of unconditioned or partially conditioned building types: low energy, semi-heated and greenhouses. The low energy subsection was revised to strike reference to greenhouses. The semi-heated subsection was revised to reference the definition for energy use limitations and add specific allowances for freeze protection. A new subsection was added to address greenhouses to specify what conditions must be met to exempt them from the envelope requirements of the code.
22. **Section C402.1.2 Equipment buildings** (*Proposed State Amendment*). The requirements outlining the exemptions for equipment buildings clarifies that cooling is allowed, if it falls below the threshold stated or is provided via a heat pump with an efficiency greater than that specified in the equipment tables.
23. **Section C402.1.2.1 Stand-alone elevator hoistways** (*Proposed State Amendment*). A subsection is added to equipment buildings that specifically addresses elevator hoistways.
24. **Section C402.1.3 Insulation component R-value method** (*2018 IECC Change*). The last three sentences of this section were moved to their own sections to more specifically address insulation of doors and below grade walls.
Table C402.1.3 (*Proposed State Amendment*) was revised to add an R-value for mass transfer deck slab edges and provide a footnote on how it is applied. There are additional configurations provided for various wall insulation types.
25. **Section C402.1.4 Assembly U-factor, C-factor or F-factor based method** (*2018 IECC Change*). Similar to the changes in Section C402.1.3, portions of this paragraph were relocated into specific subsections to address doors and below grade walls.
Table C402.1.4 (*Proposed State Amendment*). A footnote was added to address peripheral edges of concrete floors and mass transfer deck slab edges. The wood frame wall U-value was adjusted to match the R-value.
(*2018 IECC Change*) a U-value for garage doors was added.
26. **Section C402.1.5 Component performance alternative** (*Proposed State Amendment*). The component performance (UA compliance) equations were revised for clarity and ease of use. Additional direction was added for buildings using more than one space conditioning category.
27. **Section C402.2.1 Roof assembly** (*2018 IECC change*). *Deletion* (Multiple layers of continuous insulation): See Item 18—this section was moved to Chapter 3. (Roof assembly): Text applying to skylight curbs was moved to its own section.
Addition (Roof assembly): Details from the previously deleted section were added to make it clear it applies to the roof assembly as well as general wall assemblies. The sentence from below the exceptions was moved up into the main body of the section.
Section C402.2.1 (*Proposed State Amendment*): The IECC added new exception 3 addressing tapered insulation at roof drains. The proposed amendment adds further detail.
28. **Section C402.2.1.1 Skylight curbs** (*2018 IECC Change*). The details from skylight curbs formerly under Roof assembly were moved to this new subsection without change.
29. **Section C402.2.1.2 Rooftop HVAC equipment curbs** (*Proposed State Amendment*). A new section is added detailing how to handle rooftop equipment curbs.
30. **Sections C402.2.3 Above grade walls and C402.2.5 Floors** (*2018 IECC Change*). Clarifications on detailing for mass floors and walls.

31. **Section C402.2.4 Below grade walls** (2018 IECC Change). This section was modified to include text relocated from Section C402.1.4.
32. **Section C402.2.7 Airspaces** (2018 IECC Change). A section is added to provide guidance on R-value assignments for airspaces taken from ASHRAE 90.1.
33. **Section C402.2.8 Insulation of radiant heating systems** (2018 IECC Change). Editorial only.
34. **Table C402.4 Fenestration U-factor and SHGC** (Proposed State Amendment). This table was revised to include Class AW windows for curtain wall systems and similar fenestration. All other metal windows will now be included in the same category as non-metal windows and will need to meet those U-factors.
35. **Sections C402.4.1 through C402.4.1.1.3 Maximum area (Fenestration)** (Proposed State Amendment). This section was revised to improve clarity and to coordinate with the change to Table C402.4. It also sets a threshold for visible transmittance of glass for the daylighting increase and requires that 50% of the floor area is within a daylight zone.
36. **Section C402.4.1.1.4** (Proposed State Amendment). The allowance for increased fenestration for DOAS systems is deleted.
37. **Section C402.4.2 Skylight fenestration area** (Proposed State Amendment). This section now has allowances and calculations for the use of Tubular Daylighting Devices. There is also a modification to clarify that skylights are required in single-story portions of buildings with multiple heights. The correlating exception to this requirement calls for better lighting.
38. **Section C402.4.2.3 Daylight zones** (2018 IECC Change). A pointer section for daylighting is added.
39. **Section C402.4.4 Doors** (2018 IECC Change). Clarification of the requirements for opaque doors.
40. **Section C402.5.1.1 Air barrier construction** (2018 IECC Change): Editorial only
41. **Section C402.5.1.2 Air Leakage Testing** (Proposed State Amendment). The allowable air leakage rate was reduced to 0.25 cfm per square foot, and the building is required to meet this threshold without exception. A correlated change was made to Section C406.9 to lower the infiltration rate in the additional energy credit section to 0.17 cfm per square foot.
42. **Section C402.5.3 Rooms containing fuel burning appliances** (2018 IECC Change): Editorial change to the requirements for combustion air for clarification.
43. **Section C402.5.6 Loading dock weatherseals** (2018 IECC Change): The code now specifically requires that loading dock doors provide weatherseals that provide direct contact with the top and sides of vehicles.
44. **Section C405.2.7 Vestibules** (Proposed State Amendment): Modification to make it clear that exception 4 is for a space that is enclosed and separated from the other building entrances and stairwell/elevator lobbies and any doors to the rest of the building must be closed.
45. **Mechanical Systems – General** (2018 IECC Change). **Section C403** of the 2018 International Energy Conservation Code was extensively reorganized to be easier to use, reduce redundancies and be more specific to equipment type. Most of this language is marked as a change, but the language itself has not changed in most cases—just the location. These changes are reflected in the 2018 Washington State Energy Code. For a crosswalk of the section relocations, go to <https://fortress.wa.gov/es/apps/sbcc/File.ashx?cid=8370>.

46. **Section C403.1 General (Mechanical Systems)** (*Proposed State Amendment*): Editorial changes and the addition of a reference to the new requirements for data centers.
47. **Section C403.1.1 HVAC total system performance ratio** (*Proposed State Amendment*): HVAC total system performance ratio (HVAC TSPR). A new requirement is added for those buildings required to comply with the DOAS section. This section, along with new Appendix D, compares the intended mechanical system against a prototype system to ensure a baseline efficiency is met. PNNL is expected to release a tool to perform the calculations; however, the Appendix provides all inputs for alternate computer modeling to be used.
48. **Section C403.1.3 Data centers** (*Proposed State Amendment*): New requirements for data centers. This section sets ASHRAE standard 130, with some modifications, as the standard for data centers.
49. **Section C403.2 System design** (*2018 IECC Change*). System design is intended as a routing section and subsequent subsections relate to general mechanical system requirements.
50. **Section C403.2.1 Zone isolation** (*Proposed State Amendment*): Zone isolation was modified for clarity and to bring the language closer to that in ASHRAE 90.1.
51. **Section C403.2.2.1 Ventilation** (*Proposed State Amendment*): Deletes the exception for energy recovery systems and adds an exception for chilled beam systems to the maximum ventilation requirement.
52. **Section C403.2.2.2 Exhaust** (*Proposed State Amendment*). A new section is added to cap exhaust rates to 150% of mechanical code requirements similar to the previous section for ventilation rates, for clarification that the limitation was intended for both.
53. **Section C403.2.3 Variable flow capacity** (*2018 IECC Change/Proposed State Amendment*). This section was moved from C403.2.13 in the IECC C403 reorganization. The state amendment is changing “pressure boosting” to “pressure-booster” for term consistency and clarity.
54. **Section C403.3 Equipment selection** (*2018 IECC Change*): New heading/scoping section.
55. **Section/Tables C403.3.2 Equipment efficiency** (*Proposed State Amendment*). Two ASHRAE 90.1 tables are added (C403.3.2.11 and C403.3.2.12) for DOAS equipment. Minor updates for consistency with federal standards and/or ASHRAE. Clarifying footnotes added to Table C403.3.2(5)
56. **Section C403.3.2.1 Chillers** (*Proposed State Amendment*). Chillers are broken out of the previous paragraph as a new subsection. This clarifies that the exceptions apply to chiller equipment. A new exception is added to clarify that air to water heat pumps providing both heating and cooling are exempt from the maximum tonnage requirements.
57. **Section C403.3.5 DOAS** (*Proposed State Amendment*): Added a table showing which occupancy types are required to meet DOAS provisions, based on the IBC occupancy types associated with the previously listed building types in an attempt to clarify requirements. Modifications were made to exception 2 to coordinate changes between the increased occupancy requirements for DOAS with the requirements for variable air volume and demand control ventilation for assembly spaces. The reference to Section C407 was also removed to coordinate with the proposal to adopt ASHRAE 90.1 Appendix G for total building performance.

58. **Section C403.3.5.1 Energy recovery ventilation with DOAS** (*Proposed State Amendment*): The energy recovery requirements for DOAS were clarified and a minimum effectiveness was included.
59. **Section C403.3.5.3 Decoupled DOAS supply air** (*Proposed State Amendment*): Adds a new section requiring DOAS supply air to be delivered directly to the space, with exceptions for three types of systems.
60. **Section C403.3.6 Ventilation for Group R-2 occupancy** (*2018 IECC Change/Proposed State Amendment*): Section moved from C403.2.2.1 (*IECC change*) and modified to provide balanced ventilation with heat recovery (*Proposed amendment*).
61. **Section C403.4.1 Thermostatic controls** (*Proposed State Amendment*): Adds an exception to Thermostatic controls to allow DOAS units to control discharge air temperature rather than space temperature.
62. **Section C403.4.1.4 Heated or cooled vestibules** (*2018 IECC Change/Proposed State Amendment*): Section added to set limits on heating and cooling vestibules (*IECC change*). The exception was modified to remove reference to site-recovered energy as this is now included as an option in Section C406 and should not be a tradeoff for other requirements; a second exception was added for heating for freeze protection of piping (*Proposed amendment*).
63. **Section C403.4.1.6 Door switches for HVAC system thermostatic control** (*Proposed State Amendment*): A new section was added to limit energy loss when doors to the outside are left open, based on a California requirement.
64. **Section C403.4.2.3 Automatic start and stop** (*Proposed State Amendment*): This section now adds requirements for automatic stop controls for HVAC systems in addition to automatic start.
65. **Sections C403.4.2.4, C403.4.2.5 Off-hour controls** (*Proposed State Amendment*). New sections for off hour scheduling for fan systems.
66. **Section C403.4.3.3.2 Heat rejection** (*2018 IECC Change/Proposed State Amendment*): Modification of the heat rejection requirements to be consistent across climate zones and consistent with ASHRAE 90.1 (*IECC change*). Language on the low leakage positive closure dampers is removed as it is not a product available on closed circuit cooling towers (*Proposed amendment*). Clarification is provided for freeze protection (*Proposed amendment*).
67. **Section C403.4.4 Part load controls** (*2018 IECC Change*): The part-load controls section was modified to reduce the threshold for variable flow and variable speed drives, and requirements for VSD on heat pumps were added. In addition, an exception was added for freeze protection and a table added for clarity.
68. **Section C403.4.6 Variable flow controls** (*Proposed State Amendment*): Modification to allow new technology for variable speed pump systems.
69. **Section C403.4.7.1 Combustion decorative vented appliance, combustion fireplace and fire pit controls** (*Proposed State Amendment*). New section that introduces requirements to shut down combustion appliances and combustion fireplaces and fire pits when the space is unoccupied
70. **Section C403.4.8 Group R-1 hotel/motel guestrooms** (*Proposed State Amendment*): Pointer section to direct users to the general HVAC system control section for hotel/motel controls.
71. **Section C403.4.9/C403.4.10 Group R-2 dwelling and sleeping units** (*Proposed State Amendment*): Editorial changes for consistency. Deadband changed from 10 degrees to 5 degrees to work with more thermostats.

72. **Section C403.5, Economizers** (*Proposed State Amendment*): Clarification that economizers are only required on cooling systems. Exception 1: Modifies the exception for DOAS units to include only ductless systems. Exceptions 5 and 7: These exceptions were removed since they are primarily associated with DOAS systems that can utilize Exception 1. New Exception 7 (previously Exception 9): Clarified to more clearly state when the exception applies. New Exception 8: New exception for heat recovery chillers.
73. **Table C403.5.3.3 High limit shutoff control settings** (*Proposed State Amendment*). High limits for cycling fans is added to the table to work with DOAS. The climate zone column was irrelevant and therefore removed.
74. **Section C403.6.1 VAV systems** (*2018 IECC Change/Proposed State Amendment*). VAV zone control was updated consistent with ASHRAE 90.1 to better reflect new technology and control strategies (*IECC change*). An exception was added for DOAS systems to allow ERV/HRV systems to serve multiple zones. The first exception was modified to remove reference to site-solar energy as this is now included as an option in Section C406 and should not be a tradeoff for other requirements (*Proposed amendment*).
75. **Section C403.6.4 Supply air temperature reset controls** (*Proposed State Amendment*). Exception 2 was modified to remove reference to site-solar energy as this is now included as an option in Section C406 and should not be a tradeoff for other requirements.
76. **Section C403.6.5 Multiple zone VAV system ventilation optimization controls** (*2018 IECC Change*): Consistent with ASHRAE 90.1, this change removes the exception to the VAV system ventilation optimization when ERV is installed. Analysis shows having VAV system ventilation optimization in addition to ERV is cost effective
77. **Section C403.6.6 Parallel-flow fan-powered VAV air terminal control** (*2018 IECC Change*): New requirement for controls for fan powered parallel VAV boxes.
78. **Section C403.6.10 High efficiency VAV systems** (*Proposed State Amendment*): Modifications for clarity. Specifies this path is for multiple zone systems, with a minimum of 5 zones. Each zone must serve a minimum of 3000 square feet. The sentence regarding Section C407 is removed as part of the adoption of ASHRAE Appendix G. Item 8 is deleted. An exception is added to item 11 for spaces such as conference rooms with demand control ventilation. Item 12 is simplified by removing extraneous references. Item 14 is modified to reference data centers and computer rooms as defined. Item 15 is modified to add sizing for hydronic heating coils.
79. **Section C403.7 Ventilation and exhaust systems** (*2018 IECC Change*): New ventilation pointer section.
80. **Section C403.7.1 Demand control ventilation** (*Proposed State Amendment*). Exception 1 was clarified to state that DOAS energy recovery was also exempted from demand control ventilation requirements in this section, when limited to the spaces indicated.
81. **Section C403.7.2 Occupancy sensors** (*Proposed State Amendment*). Clarify that occupancy sensor control requirements apply to spaces listed and other similar spaces from IMC Table 403.3 that have an occupancy load of greater than 25 people per 1000 SF. Adds exception to allow minimum ventilation per square foot allowance during occupied building hours to maintain minimal outdoor airflow to the space.
82. **Section C403.7.3 Ventilation air heating control** (*2018 IECC Change*): Language from ASHRAE 90.1 to limit DOAS supply air to 60°F when the majority of building requires cooling.

83. **Section C403.7.4 HVAC serving guestrooms** (2018 IECC Change): ICC added language for guest room controls from ASHRAE 90.1 that was similar to that found in former WSEC Section C403.2.4.9. The ICC language also has requirements for turning off ventilation air in unoccupied guest rooms.
84. **Section C403.7.6 Energy recovery ventilation systems** (Proposed State Amendment): New exception 11 was added to exempt equipment using condenser heat recovery from energy recovery ventilation systems.
85. **Section C403.7.1 Kitchen exhaust systems** (Proposed State Amendment). Editorial changes for clarity and to bring the Kitchen exhaust section more into alignment with ASHRAE 90.1
86. **Section C403.7.7.3 Transfer Air** (Proposed State Amendment). New section adding transfer air to the exhaust system requirements to clarify the code and bring in mechanical code requirements.
87. **Section C403.7.8 Shutoff dampers** (Proposed State Amendment). The section was reorganized for clarity, with a new charging section. Exceptions from the 2012 WSEC were reinstated for small exhaust fans, elevator hoistways and continuously operating systems.
88. **Section C403.8 Fan and fan controls** (2018 IECC Change): The section is modified to move the specification for motors over 5 hp from the charging section to Section C403.2.8.1. There are requirements in this section that apply to smaller motors. This also more closely mirrors ASHRAE 90.1.
(Proposed State Amendment) Section C403.8.1 is also modified to add a sentence to clarify how DOAS and zone terminal units are treated.
89. **Table C403.8.1 Fan power limitation pressure drop adjustment** (2018 IECC Change) Modified to correlate with ASHRAE 90.1. Clarifies the intent.
90. **Table C403.8.4 Group R exhaust fan efficacy** (Proposed State Amendment). Updates the table to the Energy Star 4.0 requirements.
91. **Section C403.8.5 Fan controls** (2018 IECC Change). Updated and clarified pointer section.
92. **Table C403.8.5.1 Fan control** (Proposed State Amendment). Lowers the threshold for fans in DX cooling systems and requires smaller fans to have two speed fan control.
93. **Section C403.9.1 Fan speed control** (2018 IECC Change). Motors on heat rejection equipment often are supplied with service factors in order to allow for startup and operation in all climates with no motor overload. To be sure to capture the energy savings per the intent of the code, the maximum motor horsepower based on the service factor (motor nameplate horsepower times the service factor) would be used to establish compliance.
94. **Sections C403.9.1.1 and C403.9.1.2** were relocated but unchanged.
95. **Sections C403.9.6 and C403.9.7** were relocated and the titles changed for clarity (Condensate systems to Steam condensate systems and Condenser heat recovery to Refrigeration condenser heat recovery).
96. **Section C403.9.8 Heat recovery for space heating** and subsections (Proposed State Amendment). New section to require heat recovery chillers where projects have a consistent heat sink for heat rejection.
97. **Section C403.10 Construction of HVAC system elements** (2018 IECC Change). New charging language.

98. **Section C403.10.1.1 and Table C403.10.1.1 Outdoor air duct insulation/C403.10.1.2 and Table C403.10.1.2 Other supply and return ducts** (*Proposed State Amendment*) Clarification of insulation requirements by pulling them from the various sections and creating a table. Additional detail from ASHRAE 90.1 is also incorporated.
99. **Section C403.11 Mechanical systems located outside of the building thermal envelope** (*2018 IECC Change*). New charging language.
100. **Section C403.11.2 Snow and ice melt system controls** (*Proposed State Amendment*). Allowance for a manual control for a 40° shutoff is removed.
101. **Section C403.12 High efficiency single zone VAV systems** (*Proposed State Amendment*). A new section for single zone high efficiency VAV systems is added.
102. **Section C403.13 Commissioning** (*Proposed State Amendment*) These pointer sections were removed from the 2018 IECC but are retained and relocated in the proposed 2018 WSEC.
103. **Section C404** (*Proposed State Amendment*). The title of the section was changed from Service water heating to Service water heating and pressure booster systems.
104. **Section C404.2 Service water heating equipment performance efficiency** (*2018 IECC Change*). Editorial change to remove the “also” to clarify that water heaters used for space heating must also meet the efficiency requirements.
105. **Sections C404.2.1/C404.2.2 High input rated service water heating systems** (*Proposed State Amendment*). Expands the scope from gas to all water heating equipment serving high-output systems and provides specific requirements for residential occupancies.
106. **Table C404.2 Minimum performance of water heating equipment** (*IECC/ASHRAE 09.1 Change*). Updates the efficiency requirements for water heating equipment to the latest federal requirements.
107. **Section C404.4 Heat traps for hot water storage tanks** (*2018 IECC Change*). The section was modified for clarity and to better match ASHRAE 90.1 language.
108. **Section C404.6 Insulation of piping** (*Proposed State Amendment*). Clarifying language added to specify that insulation needs to be provided in areas with hangers or supports.
109. **Section C404.7** (*2018 IECC Change*). Editorial.
110. **Section C404.7.1 Circulation systems (with subsections C404.7.1.1 and C404.7.1.2)** (*Proposed State Amendment*). Modified to better clarify the difference between demand recirculation systems and heated water circulation systems, with additional language from ASHRAE 90.1 on required controls.
111. **Section C404.8 Demand recirculation controls** (*2018 IECC Change*). Language is removed and included in a definition. Clarifies that the controls should be on the system rather than just the pump.
112. **Section C404.9 Domestic hot water meters** (*Proposed State Amendment*). Added an exemption for some dormitories and extended stay hotels.
113. **Section C404.11.4 Heat recovery** (*Proposed State Amendment*). Narrowed the exemption for pools using renewable energy to those using solar water heating systems that are not used to satisfy requirements in Section C406 or C407.
114. **Section C404.13 Service water pressure booster systems** (*Proposed State Amendment*). Adds ASHRAE 90.1 requirements for booster pump systems.

115. **Section C405.1 General (Lighting)** (*Proposed State Amendments*). The IECC lighting requirements for residential are referred to the residential portion of the code. The WSEC retains the requirement for 90% of the fixtures to be high efficacy, or meet the control and lighting power allowance requirements. A pointer section for refrigerated construction was added in the IECC. The state amendment also includes a pointer to ASHRAE 90.4 for data centers.
116. **Section C405.2 Lighting controls** (*2018 IECC Change*). The IECC introduced the luminaire level lighting control concept in their code. The change to the WSEC removes it from the exceptions and mirrors the IECC language in the body of the code. (*Proposed State Amendment*): Exception 2 was modified to provide a limit to how much lighting in egress pathways is exempt to correlate with ASHRAE 90.1.
117. **Section C405.2.1/C405.2.1.1/C405.2.1.2/C405.2.1.3/C405.2.1.4/C405.2.1.5 Occupant sensor controls** (*Proposed State Amendment*). Modifications bring in language from ASHRAE 90.1-2016. Clarifications are also provided for warehouses, parking garages and stairways.
118. **Section C405.2.2.1 Time switch control function** (*Proposed State Amendment*). Modifications bring in language from ASHRAE 90.1-2016.
119. **Section C405.2.2.2 Light reduction controls** (*Proposed State Amendment*). Moved to Section C405.2.3.1.
120. **Section C405.2.3 Manual controls** (*Proposed State Amendment*). Incorporates language from ASHRAE 90.1.
121. **Section C405.2.3.1 Light reduction controls** (*Proposed State Amendment*). Section is moved to follow manual controls and the scope is increased to cover all lighting and not just time switched lighting. Difficult language to enforce is removed.
122. **Section C405.2.4 Daylight responsive controls** (*Proposed State Amendment*). The section is clarified to add that the primary and secondary daylight zones are taken together. The model code changed the terms sidelight and toplight to sidelit and toplit. This is also reflected through the next set of subsections. The state did not adopt the new IECC footnote 6 as this was less stringent than the current code.
123. **Section C405.2.4.2/C405.2.4.3 Sidelit/Toplit zones** (*2018 IECC Change*). The requirements for rooftop monitors was moved from the sidelit section to the toplit section. Figures for C405.2.4 are revised to show correct terminology and corrected dimensions to match the text.
124. **Section C405.2.5 Additional Lighting Controls** (*2018 IECC Change*). The section has been simplified and clarified to succinctly state the requirements for automatic controls.
125. **Section C405.2.6 Digital Timer Switch** (*Proposed State Amendment*). This section was incorporated into C405.2.1, Occupant sensors.
126. **Section C405.2.6 Exterior Lighting Controls** (*2018 IECC Change*). This section was rewritten for clarity and consistency with the rest of the code. The section was broken down into subsections to address each requirement individually and clearly.
127. **Section C405.2.6.2 Façade and Landscape Lighting Shutoff** (*Proposed State Amendment*): This section was modified from the 2018 IECC language to provide better guidance for exterior automatic shutoff requirements.
128. **Section C405.3 Exit signs** (*2018 IECC Change*). This section is removed since exit lights are addressed in the general exemptions.

129. **Section C405.4.1 Total Connected Interior Lighting Power** (*Proposed State Amendment*). This section was modified to allow easier use of LED and line voltage pin and screw base fixtures. (2018 IECC Change): The exceptions list was reorganized and clarified.
130. **Section C405.4.2.2.1 Additional Interior Lighting Power** (*2018 IECC Change*). The additional lighting wattage allowed for display lighting was reduced due to the increased use of LED lighting.
131. **Table C405.4.2 (1) and (2) Lighting Power Allowance** (*Proposed State Amendment*). There are three different proposals being put forward, saving 4.5%, 9% and 15% over the current LPA values. Not all of the proposed allowances are decreased; there are several categories where, based on other state and national lighting tables, it was felt the allowance should be a bit more generous than currently mandated. Testimony should be directed towards which option should be adopted. IECC did provide some clarifications on the various types of sports facilities in the footnotes. There are also some additional space categories provided. Additionally, there are new footnotes adapted from the California code that would provide additional allowances for specific task lighting.
132. **Section C405.5 Exterior Lighting Power Requirements** (*2018 IECC Change*). The exterior lighting section was reformatted to more closely match the interior lighting section, including the tables. This also includes Sections C405.5.2 and C405.5.3 and their subsections.
133. **Section C405.5.1 Exterior Building Grounds Lighting** (*Proposed State Amendment*). New exceptions are provided for lower efficacy luminaire sources if they are connected by automatic lighting controls, are solar-powered or exempted by another section.
134. **Section C405.5.4 Gas Lighting** (*2018 IECC Change*). Continuously burning pilots are prohibited, consistent with other gas appliances and similar provisions.
135. **Section C405.6 Electrical Transformers** (*2018 IECC Change*). Clarification that the transformers being regulated are those addressed in the associated table.
136. **Section C405.7 Dwelling Unit Electrical Meters** (*Proposed State Amendment*). Provides an exemption for dormitories with apartments and extended stay hotels.
137. **Section C405.8 Electric Motor Efficiency** and associated tables (*2018 IECC Change*). Updates requirements to the latest federal standards.
138. **Section C405.9.2 Escalators and Moving Walks** (*2018 IECC Change*). Correction to the exception to cite the technology that affects operating voltage.
139. **Section C405.11 Voltage Drop in Feeders and Branch Circuits** (*2018 IECC Change*). Incorporation of ASHRAE 90.1 requirements.
140. **Section C405.12 Commissioning** (*Proposed State Amendment*). Includes controlled receptacles in the commissioning process while removing “electrical power” commissioning.
141. **Section C406, Efficiency packages** (*Proposed State Amendments*). This section was reorganized, clarified and three new options were added. The section now provides a table with each option assigned a point value. Rather than following two options, it requires you achieve 6 points. The table also shows which options are applicable to specific occupancy types. New options were added for commercial kitchen equipment, high performance DOAS and multifamily service water heating. The applicability to existing buildings was also clarified, and allowances added for small additions and low energy buildings to achieve a lower point target. Clarifications were also made to the

HVAC and fan performance option, the reduced lighting power option, and the service water heating option.

142. **Section C407, Total building performance** (*Proposed State Amendment*). This section now sends you to ASHRAE 90.1 Appendix G for performance based compliance. A new table was added to reference all mandatory measures applicable to this path. The performance metric was switched to carbon emissions. A limit was also set on envelope reductions.
143. **Section C408, Commissioning** (*Proposed State Amendment*). The whole section was streamlined, with the process more clearly explained in Section C408.1. Refrigeration systems and controlled receptacles were added to the scope. An allowance for phased acceptance was added in C408.1.4.2. Outdated testing procedures for lighting controls were removed. Compliance tools were updated and requirements clarified.
144. **Section C409, Energy metering** (*Proposed State Amendment*). Section C409.1 adds end use metering requirements for on-site renewable energy and electric vehicle charging stations. The requirements for on-site systems is also further clarified in C409.2.4. Section C409.1.3 adds a pointer to other code sections with metering requirements for dwelling units. Section C409.3 adds an exemption for minor loads and some healthcare facility loads, as well as electrical circuits serving only sleeping units. Section C409.3 also adds additional end use metering requirements for lighting systems, plug loads and process loads. Some tenant spaces comprising the majority of a floor must have metering data available to the tenant. Section C409.4.3 details changes on the display and reporting of data.
145. **Section C410.2**, Walk-in coolers and freezers, refrigerated warehouse coolers and freezers. Clarifications were provided for the floor insulation and windows.
146. **Section C410.2.1 Performance standards** and tables (*2018 IECC Change*). New federal performance standards were added for various refrigeration equipment.
147. **Section C410.4 Commissioning** (*Proposed State Amendment*). A new commissioning charging section was added into the refrigeration section.
148. **Section C411, Solar readiness** (*Proposed State Amendment*). Requires 40% of net roof area to be minimally prepared for future installation of solar PV arrays, and for space to be provided near the electrical service entry for future equipment.
149. **Section C501.4 Compliance** (*Proposed State Amendment*). The International Existing Building Code is added to the list of codes.
150. **Sections C501.4.1, C504. 2** (*Proposed State Amendment*). New sections are added to clarify how existing buildings comply with envelope and mechanical requirements of the code.
151. **Section C501.7 Commissioning** (*Proposed State Amendment*). A new section is added to clarify that systems retrofitted into existing buildings must meet the commissioning requirements.
152. **Section C502.1 General** (Additions) (*2018 IECC Change*). Clarification that additions still must conform to the code requirements in Chapter 4.
153. **Sections C502.2.1, C502.2.2 Fenestration** (*Proposed State Amendment*). These sections were modified to clarify options for existing building compliance.
154. **Section C503, Alterations** (*Proposed State Amendment*). This entire section was reorganized and clarified. The economizer table was updated.

155. **Section C505, Change of occupancy** (*Proposed State Amendment*). Similar to the changes in C502.2 and C503, this section includes clarifications on options for compliance.
156. **Chapter 6, Referenced standards** (*2018 IECC Changes/Proposed State Amendment*). The referenced standards were updated to the current versions and standards were added for data centers (ASHRAE 90.4) and fenestration (NFRC 202/203).
157. **Appendix D: HVAC TSPR** (*Proposed State Amendment*) A new requirement is added for those buildings required to comply with the DOAS section. New Section C403.1.1, along with new Appendix D, compares the intended mechanical system against a prototype system to ensure a baseline efficiency is met.
158. **Appendix F: Outcome based energy budget** (*Proposed State Amendment*). This is an optional appendix that jurisdictions may adopt to provide an alternate outcome-based energy budget compliance option.