PROPOSED RULE MAKING

CR-102 (July 2022)
(Implements RCW 34.05.320)
Do **NOT** use for expedited rule making

CODE REVISER USE ONLY

OFFICE OF THE CODE REVISER
STATE OF WASHINGTON
FILED

DATE: August 23, 2022
TIME: 4:01 PM

WSR 22-17-149

Agency: State Building Code Council

☒ **Original Notice**

☐ **Supplemental Notice to WSR** _____

☐ **Continuance of WSR** _____

☐ **Preproposal Statement of Inquiry was filed as WSR** 22-03-027 **; or**

☐ **Expedited Rule Making--Proposed notice was filed as WSR** _____**; or**

☐ **Proposal is exempt under RCW 34.05.310(4) or 34.05.330(1); or**

☐ **Proposal is exempt under RCW** _____**.**

Title of rule and other identifying information: (describe subject) WAC 51-11R; Adoption and Amendment of the 2021 Washington State Energy Code, Residential Provisions

Hearing location(s):

Date:	**Time:**	**Location:** (be specific)	**Comment:**
September 29, 2022 October 14, 2022	10:00 am 10:00 am	129 N 2nd St; Yakima, WA 98901 1500 Jefferson St SE; Olympia, WA 98504	Please access the meetings in-person, or via Zoom or Conference call. The Zoom link and phone are provided in the agenda at sbcc.wa.gov

Date of intended adoption: November 4, 2022 (Note: This is **NOT** the **effective** date)

Submit written comments to:	**Assistance for persons with disabilities:**
Name: State Building Code Council	Contact Annette Haworth
Address: PO Box 41449, Olympia WA 98504-1449	Phone: 360-407-9255
Email: sbcc@des.wa.gov	Fax:
Fax:	TTY:
Other:	Email: sbcc@des.wa.gov
By (date) October 14, 2022	Other:
	By (date) September 16, 2022

Purpose of the proposal and its anticipated effects, including any changes in existing rules: Update from the 2018 edition of the Washington State Energy Code to the 2021 edition, incorporating changes from the 2021 International Energy Conservation Code and those code changes submitted to increase energy savings and provide better clarity. There are a few instances where two options are provided. Testimony on the preferred option is requested.

Below are highlights of the significant changes in the 2021 Washington State Energy Code. A complete description of all changes can be found at https://sbcc.wa.gov/sites/default/files/2022-08/2021%20WSEC-R%20full%20change%20description.pdf

Significant changes in IECC base model code:

	PROPOSED SECTION AND TITLE	TYPE OF CHANGE	DESCRIPTION
1.	**R402.1.2** Insulation and fenestration criteria	2021 IECC Change	Section R402 was revised to establish the U-factor table as the default performance basis, with the R-value as an alternate, rather than the other way around.
2.	**Table R402.1.2** Insulation and fenestration requirements by component	2021 IECC Change / *Code Change* (21-GP2-079)	The U-factor table was moved to be the first referenced table. Two values within the table were changed: the ceiling U-factor went from 0.026 to 0.024 in the 2021 IECC; *the fenestration U-factor went from 0.30 to 0.28 via code change proposa*l.

3.	**Table R402.1.3** Insulation minimum R-values and fenestration requirements by component	2021 IECC Change / *Code Change* (21-GP2-079)	The R-value had four values within the table changed: *the fenestration U-factor went from 0.30 to 0.28 via code change proposal*; and in the 2021 IECC, the ceiling U-factor went from R-49 to R-60, the wood frame wall value went from 21 int. to 20+5 or 13+10, and the slab insulation depth changed from 2 feet to 4 feet.
4.	**R403.3.5/R403.3.6** Duct testing	2021 IECC Change	The exception for ducts within the conditioned space was removed. The ducts must now be tested but are allowed double the leakage rate per Section R403.3.6.
5.	**Table R403.6.1** Mechanical ventilation system fan efficacy	2021 IECC Change	The table was edited for clarity and the fans redefined by type rather than installed location. The efficacy requirements were updated to the Energy Star Version 4.0 requirements.
6.	**R403.6.2** Testing	2021 IECC Change	A new requirement was added to the 2021 IECC requiring that the mechanical ventilation be tested and verified to meet the minimum flow rate requirements.
7.	**R404** Electrical power and lighting	2021 IECC Change	This section was expanded significantly to include lighting controls for both interior (R404.2) and exterior lighting (R404.3). Exterior lighting must follow the requirements in the commercial provisions (R404.1.1). Finally, all permanently installed lighting fixtures are required to contain high efficacy lighting sources.
8.	**R503.1.4** Lighting	2021 IECC Code Change	The threshold for lighting to comply with Section R404.1 was decreased from 50 percent replacement to 10 percent replacement.
9.	**R503.2** Change in space conditioning	2021 IECC Change	This section was moved to R502, Additions, since the change in space conditioning results in additional living space.

Washington State Code Change Proposals

LOG NUMBER	PROPOSED SECTION AND TITLE	TYPE OF CHANGE	DESCRIPTION
21-GP2-084	R202 Definition "**Residential building**"	Code Change (21-GP2-084)	This definition change alters the scope of the Washington State Energy Code, Residential Provisions to resemble more closely that of the International Residential Code. Multifamily buildings with dwellings directly accessed from the outdoors will remain in the residential provisions, but other R-2 buildings are moved under the commercial provisions.
	R401.1 Scope	Code Change (21-GP2-084)	The scope of the Washington State Energy Code, Residential Provisions was changed to resemble more closely the scope of the International Residential Code. Multifamily buildings with dwellings directly accessed from the outdoors will remain in the residential provisions, but other R-2 buildings are moved under the commercial provisions.
21-GP2-079	**Table R402.1.2** / **R402.1.3** Insulation and fenestration requirements by component	Code Change (21-GP2-079)	This proposal changes the fenestration U-factor from 0.30 to 0.28 in both tables.
21-GP2-011	**R402.1.4** R-value computation	Code Change (editorial) (21-GP2-011)	The code change removes a redundant sentence from the middle of the IECC language.
21-GP2-012	**Table R402.4.1.1** Air barrier, air sealing and insulation installation	Code Change (editorial) (21-GP2-012)	This code change revises the new IECC footnote b for clarity.
21-GP2-088 21-GP2-082	**R402.4.1.2** Testing	Code Change (21-GP2-082. 21-GP2-088)	The specifics on the testing standard were moved from the exception into the main body of the section and the test must include information on the time, date and location where performed. Requirements were also added that the testing personnel be trained by an accredited program. The second exception from the second set of

				exceptions was moved to Section R402.4.1.3. The volume adjustment capping the ceiling height at 8.5 feet was removed.
	21-GP2-082	**R402.4.1** Building thermal envelope air leakage	Code Change (21-GP2-082)	"Air leakage" is added to the title for clarity. An additional subsection is added so the section references are updated.
	21-GP2-082 **21-GP2-089**	**R402.4.1.3** Leakage rate	Code Change (21-GP2-082, 21-GP2-089)	A new set of subsections was added to separate out the requirements for single family and multifamily dwelling air leakage testing. The maximum leakage rate was reduced to 3 air changes per hour for single family and 0.25 cfm (the same as the commercial requirement) for multifamily.
	21-GP2-081	**R402.4.2** Fireplaces	Code Change / Editorial (21-GP2-081)	This section was moved to **R402.3.6**.
		R402.4.2.1 Gas fireplace efficiency	Code Change / Editorial (21-GP2-081)	This section was moved to Section **R403.7.2.**
		R402.4.4 Combustion air openings	Code Change / Editorial (21-GP2-081)	This section was moved to **R402.3.5.**
	21-GP2-015	**R403.12** Residential pools and permanent residential spas	Code Change / Editorial (21-GP2-015)	Removes "Where installed," at the beginning of the revised IECC section. (Note: no change is shown in R403.5.4 as ICC added this language for the 2021 code, but it was removed via 014, so there is no actual change.)
	21-GP2-013	**R403.5.1.1** Demand recirculation water systems serving an individual dwelling unit	Code Change / Editorial (21-GP2-013)	
	21-GP2-014	**R403.5.4** Drain water heat recovery	Code Change / Editorial (21-GP2-014)	
	21-GP2-065	**R403.13** Heat pump space heating	Code Change (21-GP2-065)	This new section requires that space heating be provided by a heat pump—either gas or electric—as a method to reduce greenhouse gas emissions and save energy. There are exceptions provided for dwellings with small heating loads and allowances for supplementary heating following the requirements of Section R403.1.2.
		Table R405.4.2(1) Specifications for the standard reference and proposed designs	Code Change (21-GP2-065)	Heating system is revised to align with the baseline of heat pump heating introduced in this code through 21-GP2-065.
		R503.1.2 Heating and cooling systems	Code Change (21-GP2-065)	An exception was added to this section to state that replacement heating equipment is not required to comply with the heat pump requirement as long as it does not exceed the heating capacity of the equipment being replaced.
	21-GP2-066	**R403.5.7** Heat pump water heating	Code Change (21-GP2-066)	This new section requires that service water heaters in single family dwellings, duplexes and townhouses be provided by heat pump water heaters. Exceptions are provided for small water heaters, small dwelling units, supplemental water heating systems, and some renewable energy systems. This includes allowances for both gas and electric heat pump water heaters.
		R403.5.7.1 Supplementary heat for heat pump water heating systems	Code Change (21-GP2-066)	This is a support section for R403.5.7 and sets requirements for when a supplemental water heating system can be used with the heat pump water heater.
		Table R405.4.2(1) Specifications for the standard	Code Change (21-GP2-066)	Service water heating was revised to align with the baseline of heat pump water heating as introduced in this code through 21-GP2-066.

		reference and proposed designs		
		R503.1.3 Service hot water systems	Code Change (21-GP2-066)	An exception was added to this section to state that replacement water heating equipment is not required to comply with the heat pump requirement as long as it does not exceed the heating capacity of the equipment being replaced.
	21-GP2-032	**R403.3.4.1** Sealed air handler	Code Change (21-GP2-032)	This change requires the air handler to be located within the conditioned space.
	21-GP2-049	**R403.4.1** Protection of piping insulation	Code Change (21-GP2-049)	Clarification of the intent or equipment maintenance, along with a requirement that the insulation be removable near the equipment requiring maintenance.
	21-GP2-080	**R403.5.5** Water heater installation location	Code Change (21-GP2-080)	This section requires that water heaters be located within conditioned space except for highly efficient water heaters where the standby losses are overcome by the efficiency of the unit performance.
	21-GP2-046	**R403.5.2** Water volume determination (new)	Code Change (21-GP2-046)	This section just provides the reference and procedure for determining the volume of water in piping when selecting one of the new options for credits in Section R406. This is not a base code requirement.
		Table R406.3 Energy credits	Code Change (21-GP2-046)	New Option 5.2 provides half a credit for compact hot water distribution systems as is required in the commercial energy code provisions and as detailed in Section R403.5.2.
	21-GP2-070	**Table R405.2(2)** Carbon emissions factors	Code Change (21-GP2-070)	This table is moved from R405.3 to R405.2(2) and the metric for electricity is changes from 0.80 to 0.44 to better align with the commercial energy code, the Clean Buildings law and the OFM lifecycle cost tool.
	21-GP2-073	**R406.2** Carbon emission equalization	Code Change (21-GP2-073)	The last sentence was removed. It was deemed redundant.
		Table R406.2 Fuel normalization credits	Code Change (21-GP2-073)	There are two options being presented for this table. Both options revise the table to include more detailed descriptions of heating systems and supplemental systems. **Option 1** is the initial technical advisory group recommendation based on the original proposal and the goal of achieving the required energy savings for the cycle. **Option 2** is a revised proposal that takes into account the other code change proposals going forward to public hearing and the changes in equipment values based on the new requirements in the proposed rule.
		R406.3 Additional energy efficiency requirements	Code Change (21-GP2-073)	Again, there are two options being presented for this table. Both tables include a new 150 square foot threshold for additions to trigger this requirement. **Option 1** is the initial technical advisory group recommendation based on the original proposal and the goal of achieving the required energy savings for the cycle. **Option 2** is a revised proposal that takes into account the other code change proposals going forward to public hearing and the reduction in energy use based on the new requirements in the proposed rule.
		Table R406.3 Energy credits	Code Change (21-GP2-073)	This section also has two options. For both options, one half point is equivalent to a 600 kWh energy savings. Some options were eliminated due to the fact they are now a part of the base code requirements. **Option 1** is the initial technical advisory group recommendation based on the original proposal. The credits are based on the heating system type from Table R406.2.

			Option 2 is a revised proposal that takes into account the other code change proposals going forward to public hearing. Based on the heat pump space and water heating changes, there is no differentiating between the systems types for point values. Instead, there are options that are just not available with some systems types, as identified by footnote d. Some options are no longer available based on the fact that the base requirements now incorporate the provisions contained therein; some are just adjusted to yield a similar energy savings over the base code, or the point value is changed based on the savings reflected.
21-GP2-022	**R401.2** Compliance	Code Change (21-GP2-022)	This change corrects an error in the previous code that stated that compliance via Section R405 also required compliance with Section R406. R405 carries its own additional credit weighting and thus is not intended to also comply with Section R406.
	Table R405.2(1) Mandatory compliance measures for total building performance	Code Change (21-GP2-022)	An error is also corrected by removing reference to R406. The additional efficiency is covered by the energy reduction targets in items 2 through 5 of Section R405.2
21-GP2-034	**Table R406.3** Energy credits	Code Change (21-GP2-0234)	New Option 3.8 allows a half credit for a connected thermostat.
21-GP2-023	**Table R406.3** Energy credits	Code Change (21-GP2-023)	Option 3.2 requires a cold climate heat pump to be used in areas with a winter design temperature at 23° or below.
21-GP2-024	**Table R406.3** Energy credits	Code Change (21-GP2-024)	Option 3.5 allows an alternate cold climate 10 HSPF heat pump to be substituted for an 11 HSPF heat pump but will require a cold climate heat pump similar to Option 3.2 in 023, above.
21-GP2-025	**Table R406.3** Energy credits	Code Change (21-GP2-025)	Option 3.6 also allows a substitution of a 9 HSPF heat pump for the required 10 HSPF in some cases.
21-GP2-050	**Table R406.3** Energy credits	Code Change (21-GP2-050)	New Option 3.7 provides credit for an air to water heat pump with a COP rating of 3.2.
21-GP2-047	**Table R406.3** Energy credits	Code Change (21-GP2-047)	New Option 5.2 provides half a credit for compact hot water distribution systems as is required in the commercial energy code provisions and as detailed in Section R403.5.2.
	R403.5.2 Water volume determination (new)	Code Change (21-GP2-047)	This section just provides the reference and procedure for determining the volume of water in piping when selecting one of the new options for credits in Section R406. This is not a base code requirement.
21-GP2-035	**R406.3** Additional energy efficiency requirements	Code Change (21-GP2-035)	Both options include a new 150 square foot threshold for additions to trigger this requirement.
	R502.1 General (Additions)	Code Change / Editorial (21-GP2-035)	The phrase “except as specified in this chapter” was added to support the new section R502.3.1.1.
	R502.1.1 Small additions	Code Change (21-GP2-035)	A new section was added to exempt small additions (less than 150 ft^2) from the requirement to obtain additional energy efficiency credits in Section R406.
	R502.3.1.1 Existing ceilings with attic spaces	Code Change (21-GP2-035)	This new section requires that when additions over 150 square feet adjoin existing attic spaces, the existing attic space needs to be brought into full compliance with the envelope provisions in R402.
	R502.3.2 Heating and cooling systems	Code Change (21-GP2-035)	The section is reworded for clarity, and exception 1 is correlated with the change in R502.1.1. Former exception 3 is deleted to correlate with the IECC change to require all ducts to be tested.

Reasons supporting proposal: The proposal helps increase energy efficiency and decrease greenhouse gas emissions as stated in RCW 19.27A.020 and 19.27A.160, and provides additional clarity in regulations to assist both builders and enforcers.

Statutory authority for adoption: RCW 19.27A.020, 19.27A.045, 19.27A.160

Statute being implemented: RCW 19.27A

Is rule necessary because of a:

Federal Law?	☐ Yes	☒ No
Federal Court Decision?	☐ Yes	☒ No
State Court Decision?	☐ Yes	☒ No

If yes, CITATION:

Agency comments or recommendations, if any, as to statutory language, implementation, enforcement, and fiscal matters: None

Type of proponent: ☐ Private ☐ Public ☒ Governmental
Name of proponent: (person or organization) Washington State Building Code Council and various stakeholders

Name of agency personnel responsible for:

	Name	Office Location	Phone
Drafting:	Krista Braaksma	1500 Jefferson SE, PO Box 41449, Olympia WA	360-407-9278
Implementation:	Krista Braaksma	1500 Jefferson SE, Box 41449, Olympia WA	360-407-9278
Enforcement:	Local Jurisdictions		

Is a school district fiscal impact statement required under RCW 28A.305.135? ☐ Yes ☒ No
If yes, insert statement here:

The public may obtain a copy of the school district fiscal impact statement by contacting:
Name:
Address:
Phone:
Fax:
TTY:
Email:
Other:

Is a cost-benefit analysis required under RCW 34.05.328?

☒ Yes: A preliminary cost-benefit analysis may be obtained by contacting:
Name: Stoyan Bumbalov
Address: PO Box 41449, Olympia WA 98504-1449
Phone: 360-407-9255
Fax:
TTY:
Email: sbcc@des.wa.gov
Other:

☐ No: Please explain:

Regulatory Fairness Act and Small Business Economic Impact Statement
Note: The Governor's Office for Regulatory Innovation and Assistance (ORIA) provides support in completing this part.

(1) Identification of exemptions:
This rule proposal, or portions of the proposal, **may be exempt** from requirements of the Regulatory Fairness Act (see chapter 19.85 RCW). For additional information on exemptions, consult the exemption guide published by ORIA. Please check the box for any applicable exemption(s):

☐ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.061 because this rule making is being adopted solely to conform and/or comply with federal statute or regulations. Please cite the specific federal statute or regulation this rule is being adopted to conform or comply with, and describe the consequences to the state if the rule is not adopted.
Citation and description:

☐ This rule proposal, or portions of the proposal, is exempt because the agency has completed the pilot rule process defined by RCW 34.05.313 before filing the notice of this proposed rule.

☐ This rule proposal, or portions of the proposal, is exempt under the provisions of RCW 15.65.570(2) because it was adopted by a referendum.

☒ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.025(3). Check all that apply:

- ☐ RCW 34.05.310 (4)(b) (Internal government operations)
- ☒ RCW 34.05.310 (4)(c) (Incorporation by reference)
- ☒ RCW 34.05.310 (4)(d) (Correct or clarify language)
- ☐ RCW 34.05.310 (4)(e) (Dictated by statute)
- ☐ RCW 34.05.310 (4)(f) (Set or adjust fees)
- ☐ RCW 34.05.310 (4)(g) ((i) Relating to agency hearings; or (ii) process requirements for applying to an agency for a license or permit)

☐ This rule proposal, or portions of the proposal, is exempt under RCW 19.85.025(4) (does not affect small businesses).

☐ This rule proposal, or portions of the proposal, is exempt under RCW _____.

Explanation of how the above exemption(s) applies to the proposed rule: Those portions of the rule that are exempt from the Regulatory Fairness Act are changes that adopt a national model code provision by reference and are those noted as "2021 IECC Change" in the complete description of all changes found at https://sbcc.wa.gov/sites/default/files/2022-08/2021%20WSEC-R%20full%20change%20description.pdf.

(2) Scope of exemptions: *Check one.*

☐ The rule proposal is fully exempt *(skip section 3)*. Exemptions identified above apply to all portions of the rule proposal.

☒ The rule proposal is partially exempt *(complete section 3)*. The exemptions identified above apply to portions of the rule proposal, but less than the entire rule proposal. Provide details here (consider using this template from ORIA): Those portions of the rule that are exempt from the Regulatory Fairness Act are those noted as "2021 IECC Change" in the complete description of all changes found at https://sbcc.wa.gov/sites/default/files/2022-08/2021%20WSEC-R%20full%20change%20description.pdf. These are changes that adopt a national model code provision by reference.

☐ The rule proposal is not exempt *(complete section 3)*. No exemptions were identified above.

(3) Small business economic impact statement: *Complete this section if any portion is not exempt.*

If any portion of the proposed rule is **not exempt**, does it impose more-than-minor costs (as defined by RCW 19.85.020(2)) on businesses?

☐ No Briefly summarize the agency's minor cost analysis and how the agency determined the proposed rule did not impose more-than-minor costs. _____

☒ Yes Calculations show the rule proposal likely imposes more-than-minor cost to businesses and a small business economic impact statement is required. Insert the required small business economic impact statement here:

There are costs imposed by the proposed rules, but the costs do not fall disproportionately on small businesses. These rules will not affect the distribution of impacted work, whether by small businesses or not, doing the work. The rules do not impact employment, reporting or record keeping

Description

The Washington State Building Code Council (Council) is filing a proposed rule to adopt the updated 2021 edition of the International Energy Conservation Code with state amendments, known as the 2021 Washington State Energy Code (WSEC): WAC 51-11R. Since 1985 the state building code council has been responsible to update to new editions of the building code per RCW19.27.074 and 19.27A.025.

The administrative compliance requirements are under the authority of the local government as dictated by RCW19.27.050. Enforcement activities including permit issuance, plan review and approval, and inspections occur at the local level. Requirements for construction document submittal and other reporting requirements are determined by the local jurisdiction and are consistent with previously established policies. The proposed amendments to WAC 51-11R include specific technical requirements for building construction to be consistent with national standards.

The WSEC is updated every three years by the Council. The code development process conducted by the model code organization is open to all interest groups within the design and construction industry and from governmental organizations. See www.iccsafe.org for more information about the model code development process.

Professional Services

Washington has had a statewide building code in effect since 1974. The local enforcement authority having jurisdiction administers the codes through the building and/or fire departments. Administrative procedures for state building code compliance are established and will not be changed by the adoption of the update to the current building codes. Small businesses will employ the same types of professional services for the design and construction of buildings and systems to comply with the state building code.

The proposed rule updates the state building code and does not require additional equipment, supplies, labor or other services. Services needed to comply with the building code and as required by the local authority having jurisdiction.

Costs of Compliance for Businesses

The statewide code amendment proposal process is defined in WAC 51-04 and the Council by-laws. The Council accepts proposals to amend the WSEC to meet the legislative goals stated in RCW 19.27A.020 and 19.27A.160. Proposals must increase the energy efficiency in buildings. Each proponent must identify the economic impact of the proposed amendment and quantify costs. The Council developed a specific set of forms for the Washington state energy code, so proponents could identify where a proposed amendment was editorial, technical or a policy change.

The Council received 44 proposals to improve the Washington state energy code. The energy code technical advisory group (TAG) recommended approval of 29 amendments as submitted or as modified. Eight proposed amendments were identified by the TAG as having a significant cost, with another seven having a minor or optional cost. None of these were identified as having a significant impact on small business.

The Energy Code technical advisory group (TAG) determined there is a cost for compliance on businesses for the following proposed state amendments. The Council recommended filing the proposed rule to allow input through the public hearing process.

Log Number	Proposed Section and Title / Description	Economic Impact
21-GP2-065	**R403.13** Heat pump space heating **Table R405.4.2(1)** Specifications for the standard reference and proposed designs **R503.1.2** Heating and cooling systems This requires that space heating be provided by a heat pump—either gas or electric—as a method to reduce greenhouse gas emissions and save energy. There are exceptions provided for dwellings with small heating loads and allowances for supplementary heating following the requirements of Section R403.1.2. Replacement heating equipment is not required to comply with the heat pump requirement as long as it does not exceed the heating capacity of the equipment being replaced.	Cost: Estimated at $2,725 per dwelling unit or $1.14 per square foot Energy Savings: Estimated annual energy savings of 3.85 kWh per dwelling or 5.5 kBTU per square foot.
21-GP2-066	**R403.5.7** Heat pump water heating **R403.5.7.1** Supplementary heat for heat pump water heating systems **Table R405.4.2(1)** Specifications for the standard reference and proposed designs **R503.1.3** Service hot water systems This requires that service water heaters in single family dwellings, duplexes and townhouses be provided by heat pump water heaters. Exceptions are provided for small water heaters, small dwelling units, supplemental water heating systems, and some renewable energy systems. This includes allowances for both gas and electric heat pump water heaters. Replacement water heating equipment is not required to comply with the heat pump requirement as long as it does not exceed the heating capacity of the equipment being replaced.	Cost: Estimated cost of $646 per dwelling or $0.27 per square foot. Energy Savings: 2.3 kWh or 3.2 kBTU per square foot.
21-GP2-084	R202 Definition "**Residential building**" **R401.1** Scope This definition change alters the scope of the Washington State Energy Code, Residential Provisions to resemble more closely that of the International Residential Code. Multifamily buildings with dwellings directly accessed from the outdoors will remain in the residential provisions, but other R-2 buildings are moved under the commercial provisions.	The proponent deemed that this would most likely be cost neutral. In some cases, there would be a cost savings for the buildings constructed under the commercial code, between the decreased envelope insulation requirements and the additional energy efficiency credits required for that code. There would be some education costs.
21-GP2-079	**Table R402.1.2** / **R402.1.3** Insulation and fenestration requirements by component	Cost: Estimated cost of about $400 per dwelling unit

	This proposal changes the fenestration U-factor from 0.30 to 0.28 in both tables.	Energy Savings: Estimated at 389 kBtu per dwelling or 0.18 kBtu per square foot
21-GP2-073	**Table R406.2** Fuel normalization credits There are two options being presented for this table. Both options revise the table to include more detailed descriptions of heating systems and supplemental systems. **Option 1** is the initial technical advisory group recommendation based on the original proposal and the goal of achieving the required energy savings for the cycle. **Option 2** is a revised proposal that takes into account the other code change proposals going forward to public hearing and the changes in equipment values based on the new requirements in the proposed rule.	The cost models were based on the changes moving forwards as Option 1. If Option 2 is the option moving forward, the cost will decrease from that of the 2018 code for most dwellings based on the reduced number of additional efficiency credits required. Costs will vary depending on the options selected. There was no comparison of the difference in cost between the 2018 and 2021 requirements, but only a measure by measure estimate of cost based on 6 prototype buildings. Those costs ranged from $173 to $5,245 per dwelling. Energy savings for various prototype buildings and systems range from 4 kWh to 1941 kWh annually.
	R406.3 Additional energy efficiency requirements Again, there are two options being presented for this table. Both tables include a new 150 square foot threshold for additions to trigger this requirement. **Option 1** is the initial technical advisory group recommendation based on the original proposal and the goal of achieving the required energy savings for the cycle. **Option 2** is a revised proposal that takes into account the other code change proposals going forward to public hearing and the reduction in energy use based on the new requirements in the proposed rule.	
	Table R406.3 Energy credits This section also has two options. For both options, one half point is equivalent to a 600 kWh energy savings. Some options were eliminated due to the fact they are now a part of the base code requirements. **Option 1** is the initial technical advisory group recommendation based on the original proposal. The credits are based on the heating system type from Table R406.2. **Option 2** is a revised proposal that takes into account the other code change proposals going forward to public hearing. Based on the heat pump space and water heating changes, there is no differentiating between the systems types for point values. Instead, there are options that are just not available with some systems types, as identified by footnote d. Some options are no longer available based on the fact that the base requirements now incorporate the provisions contained therein; some are just adjusted to yield a similar energy savings over the base code, or the point value is changed based on the savings reflected.	
21-GP2-080	**R403.5.5** Water heater installation location This section requires that water heaters be located within conditioned space except for highly efficient water heaters where the standby losses are overcome by the efficiency of the unit performance.	Cost: Estimated cost of about $746 per dwelling unit or $0.33 per square foot. Energy Savings: Estimated annual energy savings of 271 kWh per dwelling unit.
21-GP2-032	**R403.3.4.1** Sealed air handler This change requires the air handler to be located within the conditioned space.	Cost: Estimated incremental cost of $100 per dwelling unit. Energy Savings: Estimated annual energy savings is $30 to $60.
21-GP2-089	**R402.4.1.3** Leakage rate	It was deemed there is no increase in cost. While the leakage rate was reduced, the

	The maximum leakage rate was reduced to 3 air changes per hour for single family and 0.25 cfm (the same as the commercial requirement) for multifamily.	cost of testing remains the same. More attention must be paid to construction best practices to adequately seal the building thermal envelope.
21-GP2-035	**R502.3.1.1** Existing ceilings with attic spaces This new section requires that when additions over 150 square feet adjoin existing attic spaces, the existing attic space needs to be brought into full compliance with the envelope provisions in R402.	This proposal was tied to the new exception exempting additions less than 150 square feet from Section C406 compliance and was not evaluated separately for costs and energy savings. There would be an added cost based on the square footage of existing attic space needing to be upgraded. Estimated cost is between $0.80 and $2.60 per square foot. Estimated annual energy savings is approximately 0.6 percent.
21-GP2-088	**R402.4.1.2** Testing The specifics on the testing standard were moved from the exception into the main body of the section and the test must include information on the time, date and location where performed. Requirements were also added that the testing personnel be trained by an accredited program. The second exception from the second set of exceptions was moved to Section R402.4.1.3. The volume adjustment capping the ceiling height at 8.5 feet was removed.	There was some debate at the TAG as to whether there would be a cost associated with this measure, focusing on the requirement for training from an accredited program. Ultimately, it was determined that there would be little to no increase. There are no energy savings associated with this proposal, other than ensuring proper testing to achieve the originally intended savings.
The following proposals add options to the menu of additional energy efficiency credits to be selected. These are optional items that may be selected as part of the package for the required credits.		
21-GP2-023	**Table R406.3** Energy credits Option 3.2 requires a cold climate heat pump to be used in areas with a winter design temperature at 23° or below.	Cost: Estimated incremental cost is $1000 per dwelling unit. Energy savings: Estimated annual energy savings of 4,000 kWh, or $400 per year.
21-GP2-024	**Table R406.3** Energy credits Option 3.5 allows an alternate cold climate 10 HSPF heat pump to be substituted for an 11 HSPF heat pump but will require a cold climate heat pump similar to Option 3.2 in 023, above.	Cost: Estimated incremental cost is $1500 per dwelling unit. Energy savings: Estimated annual energy savings of 4,000 kWh, or $400 per year.
21-GP2-025	**Table R406.3** Energy credits Option 3.6 also allows a substitution of a 9 HSPF heat pump for the required 10 HSPF in some cases.	Cost: Estimated incremental cost is $1500 per dwelling unit. Energy savings: Negligible for single zone systems, but significant for multi-zone systems.
21-GP2-050	**Table R406.3** Energy credits New Option 3.7 provides credit for an air to water heat pump with a COP rating of 3.2.	Cost: Estimated incremental cost is $4000 per dwelling unit. Energy savings: Estimated annual energy savings of 6,000 to 12,000 kWh, or $700 to $1400 per year.
21-GP2-034	**Table R406.3** Energy credits New Option 3.8 allows a half credit for a connected thermostat.	Cost: Estimated incremental cost is $200 per dwelling unit. Energy savings: Estimated annual energy savings of 600 kWh, or $60 per year.

Loss of Sales or Revenue

The proposed rules make the state code for building construction consistent with national standards. Businesses with new products or updated testing or design standards are recognized in the updated building code. For these businesses there will be a gain in sales and revenue.

The results of reduced energy use in buildings include avoiding the need for new power generation, reducing environmental impact, and providing local employment. The legislative findings state that energy efficiency is the cheapest, quickest, and cleanest way to meet rising energy needs, confront climate change, and boost our economy.

Cost of Compliance for Small Businesses

The majority of businesses affected by the updates to the building codes are small businesses; over 95 percent of those listed in the construction and related industries have under 50 employees. The costs per employee are comparable between the largest businesses and the majority of small businesses. The cost to comply with the updated codes is not a disproportionate impact on small business. Where the Council found the cost of compliance for small businesses to be disproportionate, the proposed rule sought to mitigate the cost through modification of the proposal. The proposed rules include a definition of small business and provide exceptions for compliance with the updated rule.

Small Businesses Involved in the Development of the Rule

The SBCC conducted open public meetings of the energy code technical advisory group (TAG), available via zoom and telephone conference bridge, and allowed comment on every item on every agenda. The SBCC appointed over 100 representatives of all segments of the business and construction community to serve on the various technical advisory groups.

List of Industries

Below is a list of industries required to comply with the commercial energy code:

2017 Industry NAICS Code	NAICS Code Title	Minor Cost Estimate	1% of Avg Annual Payroll	0.3% of Avg Annual Gross Business Income
236116	New Multifamily Housing Construction (except For-Sale Builders)	$ 32,067.43	$17,160.94* 2020 Dataset pulled from USBLS	$32,067.43 2020 Dataset pulled from DOR
236118	Residential Remodelers	$ 1,457.74	$1,457.74* 2020 Dataset pulled from USBLS	$901.20 2020 Dataset pulled from DOR
238110	Poured Concrete Foundation and Structure Contractors	$ 3,442.28	$5,027.07 2019 Dataset pulled from CBP	$3,442.28 2020 Dataset pulled from DOR
238120	Structural Steel and Precast Concrete Contractors	$ 15,401.97	$20,212.19 2019 Dataset pulled from CBP	$15,401.97 2020 Dataset pulled from DOR
238130	Framing Contractors	$2,234.30	$3,139.71 2019 Dataset pulled from CBP	$2,234.30 2020 Dataset pulled from DOR
238140	Masonry Contractors	$ 1,900.60	$3,582.13 2019 Dataset pulled from CBP	$1,900.60 2020 Dataset pulled from DOR
238150	Glass and Glazing Contractors	$5,255.36	$9,574.95 2019 Dataset pulled from CBP	$5,255.36 2020 Dataset pulled from DOR
238160	Roofing Contractors	$ 3,589.99	$5,007.86 2019 Dataset pulled from CBP	$3,589.99 2020 Dataset pulled from DOR

238170	Siding Contractors	$ 1,905.61	$2,485.86 2019 Dataset pulled from CBP	$1,905.61 2020 Dataset pulled from DOR
238190	Other Foundation; Structure; and Building Exterior Contractors	$ 4,622.07	$4,141.38 2019 Dataset pulled from CBP	$4,622.07 2020 Dataset pulled from DOR
238210	Electrical Contractors and Other Wiring Installation Contractors	$ 5,941.60	$9,599.33 2019 Dataset pulled from CBP	$5,941.60 2020 Dataset pulled from DOR
238220	Plumbing; Heating; and Air-Conditioning Contractors	$ 5,353.76	$11,047.00 2019 Dataset pulled from CBP	$5,353.76 2020 Dataset pulled from DOR
238290	Other Building Equipment Contractors	$ 4,335.21	$16,142.07 2019 Dataset pulled from CBP	$4,335.21 2020 Dataset pulled from DOR
238310	Drywall and Insulation Contractors	$3,725.66	$9,461.67 2019 Dataset pulled from CBP	$3,725.66 2020 Dataset pulled from DOR
238990	All Other Specialty Trade Contractors	$ 3,585.74	$3,677.28 2019 Dataset pulled from CBP	$3,585.74 2020 Dataset pulled from DOR
321214	Truss Manufacturing	$28,620.35	$23,341.04 2020 Dataset pulled from ESD	$28,620.35 2020 Dataset pulled from DOR
321911	Wood Window and Door Manufacturing	$ 45,151.12	$18,811.08 2020 Dataset pulled from ESD	$45,151.12 2020 Dataset pulled from DOR
327310	Cement Manufacturing	$ 50,878.29	$44,741.20 2020 Dataset pulled from ESD	$50,878.29 2020 Dataset pulled from DOR
327320	Ready-Mix Concrete Manufacturing	$64,317.30	$46,126.21 2020 Dataset pulled from ESD	$64,317.30 2020 Dataset pulled from DOR
327331	Concrete Block and Brick Manufacturing	$ 15,030.60	$15,030.60 2020 Dataset pulled from ESD	$10,431.02 2020 Dataset pulled from DOR
332312	Fabricated Structural Metal Manufacturing	$22,220.31	$16,337.10 2020 Dataset pulled from USBLS	$22,220.31 2020 Dataset pulled from DOR
332321	Metal Window and Door Manufacturing	$ 26,369.28	$14,505.40 2020 Dataset pulled from ESD	$26,369.28 2020 Dataset pulled from DOR
332322	Sheet Metal Work Manufacturing	$ 23,337.23	$23,337.23 2020 Dataset pulled from ESD	$16,556.52 2020 Dataset pulled from DOR
335121	Residential Electric Lighting Fixture Manufacturing	$ 2,011.37	$2,011.37 2020 Dataset	$1,502.01 2020 Dataset pulled from DOR

			pulled from USBLS	
335129	Other Lighting Equipment Manufacturing	$ 6,281.32	$6,281.32 2020 Dataset pulled from ESD	$2,494.40 2020 Dataset pulled from DOR
423720	Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers	$24,486.53	$16,589.10 2020 Dataset pulled from ESD	$24,486.53 2020 Dataset pulled from DOR
541310	Architectural Services	$ 9,221.65	$9,221.65 2020 Dataset pulled from ESD	$3,738.99 2020 Dataset pulled from DOR
541330	Engineering Services	$14,801.92	$14,801.92 2020 Dataset pulled from USBLS	$7,177.43 2020 Dataset pulled from DOR

The public may obtain a copy of the small business economic impact statement or the detailed cost calculations by contacting:

Name: Stoyan Bumbalov
Address: PO Box 41449, Olympia WA 98504-1449
Phone: 360-407-9255
Fax:
TTY:
Email: sbcc@des.wa.gov
Other:

Date: August 23, 2022	**Signature:** 
Name: Tony Doan	
Title: Council Chair	