



STATE OF WASHINGTON

STATE BUILDING CODE COUNCIL

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Final Cost Benefit Analysis for the 2021 International Mechanical Code

I. Code Adoption and Significant legislative Rules

1. Introduction

The Washington State Building Code Council (SBCC) is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council by-laws. Since 1985, the Council has been responsible for the adoption to update to new editions of the model codes per RCW 19.27.074, including the International Mechanical Code (IMC). The IMC is updated every three years by the International Code Council (ICC). 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.

The Council adopts the building codes in accordance with the Administrative Procedures Act (APA). The general procedures for rulemaking are laid out in part III of the Act (RCW 34.05.310 through RCW 34.05.395). Administrative rules governing the procedures for agency rulemaking have been adopted by the Office of the Code Reviser and are found at WAC 1-21-005 through WAC 1-21-180.

2. Adoption of 2021 International Mechanical Code

The Council filed a permanent rule to adopt the 2021 edition of the International Mechanical Code (IMC), (WAC 51-52). The Preproposal Statement of Inquiry (CR 101) to initiate the development of the 2021 IMC, as adopted through WAC 51-52, was filed as WSR 22-03-026 on January 10, 2022. On February 18, 2022, the Council opened a submittal period for proposals for statewide amendments to the 2021 IMC. All stakeholders and interested parties could submit proposals to meet the legislative goals. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent is required to identify if the proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance.

The Council has adopted a definition of cost-effectiveness based on RCW 39.35 as recommended by Department of Commerce. A guide on how to evaluate cost-effectiveness is therefore defined by the Council as a code change that has a net present savings over a 50-year life cycle of a building utilizing the Life Cycle Cost Tool (LCCT) as developed by the Washington State Office of Financial Management (OFM). The methodology of the LCCT is based on the NIST Handbook 135 methodology and utilizes specific inputs as determined by the Council with guidance from the Washington State Department of Commerce. The cost effectiveness analysis uses the average useful life years from Appendix 7 of the BOMA

Preventive Maintenance Guidebook for all building components that are evaluated. Each submitted code change proposal that is not editorial or explanatory, is required to include this analysis. The proponents are also allowed to use an alternate cost benefit analysis.

In considering amendments to the model code, the Council established and consulted with a technical advisory group (TAG), including representatives of appropriate state agencies, local governments, general contractors, building owners and managers, design professionals, utilities, and other interested parties. The TAG was tasked with reviewing the proposals, identifying pros and cons and whether it helped achieve the broader goals of ensuring buildings and facilities constructed in the state are safe and healthy for building occupants, accessible to persons with disabilities and the elderly, and energy efficient. The TAG also discussed whether modifications were needed to ensure the provisions were correlated with other requirements, technically feasible, commercially available, and cost-effective to building owners and tenants, or if changes were necessary to mitigate any disproportionate impact on small business.

Fifteen proposals were submitted during the submittal period. After hours of discussions, the IMC TAG recommended approval of thirteen proposals as submitted or as modified. The Council approved fifteen proposals to be included in the CR-102. Three proposals were identified by the TAG as having a cost increase.

The proposed rule adopts by reference the 2021 IMC with new and existing amendments. Many of the existing amendments are modified to incorporate changes to the model codes or to clarify language. There are five significant changes to the model code with economic impact. However, the model code changes are exempt under RCW 19.85.025(3) and RCW 34.05.310 (4)(c) and are not part of this analysis.

The Council filed the CR102 Proposed Rule on August 23, 2022, under WSR 22-17-147. The public review process consists of a public comment period and two public hearings. The Council received written comments between August 23, 2022, and October 14, 2022. Oral testimony was received at two public hearings – one in Yakima (September 30, 2022) and one in Olympia (October 14, 2022). After the public hearings, the Council held a work session to review testimony and receive clarification on issues raised by Council members. The Council recommended several modifications to the initial proposal; the 2021 IMC with State amendments, as modified, was adopted at the meeting on November 4, 2022.

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 2021 IMC. All businesses, including 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 are existing within the construction industry as required by the local authority having jurisdiction.

The proposed rule makes the IMC consistent with national standards. Businesses with new products or updated test or design standards are recognized in the updated building code. The update will result in some cost outlay for some businesses for specific building projects, for a transition period. Other businesses would see an increase in revenue. The primary intent of the amendments is to improve the safety features in buildings and provide consistency and fairness

across the state, for a predictable business environment. The amendments should result in enhanced safety and value in buildings.

II. Code Proposals Identified as Significant.

1. Summary of Probable Benefits vs Probable Costs. (Detailed analysis begins on page 4)

1.1. Sections 403.4.7 New Table 403.4.7.3 (21-GP2-063):

This new section and table set minimum airflow rates or capture efficiencies for kitchen range hoods in residential dwellings based on the type of kitchen appliance installed. The intent is to reduce the exposure to detrimental health impacts from the pollutants produced by cooking, including nitrogen dioxide which can increase the risk of asthma. This proposal is solely based on health concerns from poorly ventilated gas appliances. A \$200 to up to \$1000 (if the make-up air requirement is triggered) incremental cost is estimated. There is no additional operation cost.

The proposed amendment is needed to address a critical life/safety need. It may increase construction cost; however, operational cost difference should be negligible between a compliant range hood and a non-compliant range hood¹. Operational cost difference should be negligible between a compliant range hood and a non-compliant range hood.

Construction Cost:

<i>Minimum Airflow Requirement</i>	<i>Dwelling Unit Square Footage</i>	<i>Microwave-Range Hood Incremental Cost*</i>	<i>Microwave-Range Hood Incremental Cost/sq ft*</i>	<i>Under Cabinet Incremental Cost*</i>	<i>Under Cabinet Incremental Cost/sq ft*</i>
250 cfm	1,000 ft ²	\$206	\$0.21/sq ft	\$415	\$0.42/sq ft

**Incremental compared to 180 cfm requirement, which 92% of products already meet*

If makeup air is triggered, it will add rough \$1,000 extra, or \$1-\$2 per sq ft, based on dwelling unit size. Where complying with the code requires installation of extra ductwork, the estimated cost is ~\$8/ft of 6" duct and ~\$77 for a termination. Assuming 10 ft of extra ductwork, this comes out to be \$157 extra, or \$0.1-\$0.2 per sq ft, based on dwelling unit size.

1.2. Section 605 Option 1 (21-GP2-098):

This change is intended to improve indoor air quality, by filtering out exterior pollutants, such as wildfire smoke, and interior sources such as airborne infectious particles. The change requires improved filters on various air handlers and ventilation systems, up to MERV 13. The anticipated incremental cost is about \$5.00 per filter. If replaced every three months, that would be an annual cost of \$20 per air handler. This was the option selected to become part of the Permanent Rule.

1.3. Section 605 Option 2 ([21-GP2-086](#)):

This is like the previous proposal but is focused solely on exterior pollutants and the ability for building inhabitants to respond to events with an increase in outdoor air pollution. This proposal requires that the air handler be capable of housing a MERV 13 filter and provide the required fan capacity. This also carries the same costs as the previous proposal, but the incremental cost may not be incurred every time the filter is changed, so the annual cost could be less than the estimated \$20 per air handler. This option was not adopted in the Permanent Rule. Option 1 was preferred by the Council to better protect the building occupant from both external air pollution hazards and internal air quality issues including viral and other infectious vectors.

2. List of Code Proposals.

Date: 08/27/2021

Log # [21-GP2-001](#)

Proponent and description: *Kevin Johnson, PE; 2021 IFGC Table 409.1.1 - NATURAL GAS VALVE STANDARDS.*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020](#) - Purposes—Objectives—Standards.

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.

(6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

As the code currently stands only ASME B16.44 valves are approved for use in natural gas systems with pipe 2-1/2" to 4". The proposed amendment adds the ASME standard for gas valves 2-1/2" to 12" up to 125 psig allowing an option for large gas valves in addition to ASME B16.44. ASME B16.44 valves are typically threaded joints, but the building piping industry seldom threads pipe greater than 2". A flanged valve option is needed.

The proposed amendment corrects errors and omissions.

Life Cycle Cost: *There is **no cost** associated with this proposal.*

Construction Cost: *None*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IFGC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-063](#)

Proponent and description: Mark Vossler; 2021 IMC 202 Definitions, 403.3.1.1 Minimum Ventilation Rates, 403.4.6.1 Exhaust Fans, 403.4.6.3 Balanced Whole House Ventilation System, 403.4.7 Local Exhaust, T403.4.7 Minimum Exhaust Rates, 403.4.7.2 Local Exhaust Fans, 403.4.7.3 Local Intermittent Kitchen Exhaust System, T403.4.7.3 Kitchen Range Hood Airflow Rates (CFM) and ASTM E3087 Capture Efficiency (CE) Ratings According To Kitchen Range Fuel Type, 403.4.7.3.1 Field Verification and Diagnostic Testing for Local Intermittent Kitchen Exhaust System, 501.4 Pressure Equalization, 505.3 Domestic Systems, Chapter 44 Referenced Standards

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

RCW 19.27.020 - Purposes—Objectives—Standards.

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- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All

proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Add differentiated ventilation requirements of hood ranges based on fuel type to reduce personal exposure and health impacts from ranges. These requirements are based on research done by Lawrence Berkeley National Laboratory where they found that dwellings are currently not adequately ventilating their stoves, which can increase the risk of asthma for children living in these dwellings.

Life Cycle Cost: Operational cost difference should be negligible between a compliant range hood and a non-compliant rangehood.

Construction Cost:

Minimum Airflow Requirement	Dwelling Unit Square Footage	Microwave-Range Hood Incremental Cost*	Microwave-Range Hood Incremental Cost/sq ft*	Under Cabinet Incremental Cost*	Under Cabinet Incremental Cost/sq ft*
250 cfm	1,000 ft ²	\$206	\$0.21/sq ft	\$415	\$0.42/sq ft

*Incremental compared to 180 cfm requirement, which 92% of products already meet

If make up air is triggered, it will add roughly \$1,000 extra, or \$1-\$2 per sq ft, based on dwelling unit size.

Where complying with the code requires installation of extra ductwork, the estimated cost is ~\$8/lf of 6" duct and ~\$77 for a termination. Assuming 10 ft of extra ductwork, this comes out to be \$157 extra, or \$0.1-\$0.2 per sq ft, based on dwelling unit size.

Product availability:

1. https://title24stakeholders.com/wp-content/uploads/2020/10/MF-IAQ_Final-CASE-Report_Statewide-CASE-Team_Final.pdf, page 115-117
2. <https://efiling.energy.ca.gov/getdocument.aspx?tn=236201> , page 9 - 15
3. <https://drive.google.com/file/d/1HFKNTzrnw6kJXThmr86sjspijEpsZ08J/view?usp=sharing>
4. <https://drive.google.com/file/d/1uNrpolF1Te1As0vOqzq7YjWZwkt3T-T2/view?usp=sharing>

Table 2. Count of Microwave Range Hoods Meeting Proposed Requirements

Rated CFM	Proportion of Compliant Products		Number of Brands with Compliant Products	
	Horizontal (n=66)	Vertical (n=66)	Horizontal (n=20)	Vertical (n=20)
>=110	100%	100%	20	20
>=130	100%	100%	20	20
>=160	100%	100%	20	20
>=180	92%	92%	20	20
>=250	48%	79%	16	19
>=280	17%	30%	6	7

Table 3. Count of Undercabinet Range Hoods Meeting Proposed Requirements

Rated CFM	Proportion of Compliant Products		Number of Brands with Compliant Products	
	Horizontal (n=30)	Vertical (n=43)	Horizontal (n=8)	Vertical (n=9)
>=110	100%	100%	8	9
>=130	100%	100%	8	9
>=160	100%	100%	8	9
>=180	100%	98%	8	9
>=250	77%	91%	8	9
>=280	63%	72%	5	9

Table 4. Count of Chimney Range Hoods Meeting Proposed Requirements

Rated CFM	Proportion of Compliant Products		Number of Brands with Compliant Products	
	Horizontal (n=3)	Vertical (n=64)	Horizontal (n=1)	Vertical (n=11)
>=110	100%	100%	1	11
>=130	100%	100%	1	11
>=160	100%	100%	1	11
>=180	100%	100%	1	11
>=250	100%	100%	1	11
>=280	100%	94%	1	11

Code Enforcement: *This proposal should have no impact on small businesses because it is targeted to Group R occupancies.*

Small Business Impact: *This proposal should have no impact on small businesses because it is targeted to Group R occupancies.*

Housing Affordability: *This should have a small impact on housing affordability.*

Other: *Exposure to poorly ventilated gas stove pollutants, such as nitrogen dioxide (NO₂), can increase the risk of asthma in household occupants, particularly children. The Environmental Protection Agency (EPA) states that homes with a gas stove have 50-400% higher average NO₂ levels than homes with an electric stove. The EPA found that even short-term exposure to NO₂ is linked to asthma and other chronic respiratory illnesses. In addition to respiratory effects NO₂ exposure has been linked to diabetes, cardiovascular disease, and birth outcomes. This risk of exposure to NO₂ can be lowered when high performing externally vented range hoods are installed and used to decrease concentrations of NO₂, and other pollutants released from gas combustion. These findings could translate to a significant health and economic benefit from the regulation of gas stove combustion.*

Per person costs of asthma in one California study were estimated to be \$3,288 annually. This estimate included costs of medications as well as office and emergency room visits. Assuming similar health costs for Washington, we could see a significant economic and medical benefit for the 9% of residents affected by asthma and other respiratory illnesses if exposure to gas stove pollution is reduced.

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

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(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-087](#)

Proponent and description: Austin Bonnes; 2021 IMC 306.6 Appliances Above Ceilings

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

RCW 19.27.020 - Purposes—Objectives—Standards.

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(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Enforceable code language must be used. The proposed language improves local jurisdiction's ability to enforce the code.

Life Cycle Cost: *This proposal has no cost impact, just a clarification to help with enforcement.*

Construction Cost: *The proposed amendment corrects errors and omissions; there is **no cost** associated with it.*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 03/01/2022

Log # [21-GP2-009](#)

Proponent and description: Michael Lubliner; 2021 IMC 202 Definitions, 403.4 Group R Whole House Mechanical Ventilation System, 403.4.1 System Design

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

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- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

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The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law,

which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

The proposal is an option, for those seeking higher ventilation rates to further improve IAQ in accordance with ASHRAE Standard 62.2. Higher ventilation rates can dilute and thereby reduce indoor air pollutants beyond the current IMC-WA rate options. The use of 62.2 as an alternative will help avoid confusion and duplication of efforts, when builders seek to comply with requirements for high performance voluntary programs such as USEPA Energy Star, EPA Indoor Air Plus, Passive House and IRS-45L for new home builder tax credits. Allowing 62.2 as an option provides an acknowledged path for WA builders. Note that IMC already references ASHRAE 62.1 for nonresidential dwelling units. This proposal seeks to clarify that 62.2-2019 can be used for low-rise R2 multifamily dwellings, provided that a balanced ventilation systems as is currently required in IMC-WA amended is employed. This proposal seeks to require the use of a balanced system, when using the 62.2- 2019 option is taken. Justification for this proposal is discussed in WSEC-R training.

Life Cycle Cost: *There is **no cost** associated with this proposal. This is an option for achieving acceptable IAQ using mechanical ventilation standard 62.2-2019. The use of current approaches for mechanical ventilation are still allowed.*

Construction Cost: *None*

Code Enforcement: *The AHJ should be already verifying ventilation systems requirements at the plan review and field verification/commissioning phases of inspection. Training ventilation system sizing and commissioning is available from WSU Energy Program Web WSEC-R Web page: <https://www.energy.wsu.edu/EventsTrainings.aspx>*

<https://www.energy.wsu.edu/BuildingEfficiency/EnergyCode.aspx#Permit>

The Code Compliance Calculator can be used to size the ventilation system: See WSU Energy Program Training Videos (10 minutes each) and available at:

Calculating Ventilation Rates:

<https://www.youtube.com/watch?v=IGu0HS0V5UU>

Filling Out the Compliance Certificate for Ventilation Systems:

<https://www.youtube.com/watch?v=C2W6mP9Mts4>

See Code Compliance Calculator (C3) form at:

https://www.energy.wsu.edu/Documents/Certificate%202018%20WSEC_rev%207-21-21.pdf

WSU-Low-rise multifamily ventilation training Dr. Iain Walker:

[2020-10-15 SeaBEC Meeting](#) - YouTube

WSU-Low-rise multifamily ventilation training Mike Lubliner:

https://energy.wsu.edu/videos/wsec_2018-residential_updates_20200716/

Small Business Impact: *None*

Housing Affordability: *None*

Other: *The proposal is a clearly defined option, for those seeking higher ventilation rates to further improve IAQ in accordance with ASHRAE Standard 62.2. Note that IMC already*

references ASHRAE 62.1 for nonresidential dwelling units. Higher ventilation rates can dilute and thereby reduce indoor air pollutants beyond the current IMC rate options. Reduced IAQ pollutants saves on health care costs to the dwelling occupants and society. Higher dilution of moisture generated by occupants and other sources reduces risk for condensation and help reduce mold, building structural decay and maintenance/repair expenses. The use of 62.2 as an alternative will help avoid confusion and duplication of efforts, when used by builders for high performance voluntary programs such as USEPA Energy Star, EPA Indoor Air Plus, and Passive House and IRS-45L for new home builder tax credits. IRS 45L and WA utility incentives may help reduce the first cost of the home and improve purchase affordability. This proposal seeks to clarify that 62.2-2019 can be used for low-rise R2 multifamily dwellings, provided that a balanced ventilation systems as is currently required in IMC-WA amended is employed. This proposal seeks to require the use of a balanced system, when using the 62.2-2019 option is taken.

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-077](#)

Proponent and description: *Eric Vander Mey; IMC 401.4 Intake Opening Location*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

RCW 19.27.020 - Purposes—Objectives—Standards.

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

The added exception will allow small systems to intake less than 25' above a street or parking lot. Multiple jurisdictions enforce this requirement of the code differently. Requiring residential ERV intakes to be 25' above a surface parking lot or open parking garage on the level below adds considerable cost and complexity to a project. ASHRAE 62.1-2019 Table 5-1 only requires a 5' separation from the anticipated exhaust source location from a driveway, street, or parking place to air intakes.

Life Cycle Cost & Construction Cost: *For residential projects there is a cost savings of \$500-\$1000 per residential unit to not provide "snorkel" outdoor air duct up to the floor above. Cost savings include ductwork, duct insulation, rated enclosure to separate duct from floor above or fire damper in floor above. Costs due not include lost revenue due to loss of floor space within the residential unit.*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

- (1)(i) A state statute explicitly allows the agency to differ from federal standards; or
- (1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and
- (1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-0085](#)

Proponent and description: Austin Bonnes; IMC 401.4 Intake Opening Location

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

RCW 19.27.020 - Purposes—Objectives—Standards.

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

This is just requiring items meet a specific testing requirement and helps to align with ASHRAE 62.2. Not typical to see differences in prices with equipment. Below is the clip from ASHRAE62.2.

Life Cycle Cost: *There is **no cost** associated with this proposal.*

Construction Cost: *None*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

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The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 03/15/2022

Log # [21-GP2-010](#)

Proponent and description: Michael Lubliner; 2021 IMC 403.4.4.1 Whole House Ventilation in Group R-2 Occupancies

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law,

which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

This proposal seeks to put more flexible options for H/ERV in the WSEC-R for Low Rise Multi-family LRMF dwelling units and not “back door it in” using the IMC-WA, since the IRC-WA is not an energy code. The economic impact is positive in that it reduces the first costs by not mandating H/ERV in each dwelling unit. Instead, it continues to be an option for low rise multi-family dwelling units that are built in compliance with WSEC-R. The proposal continues to allow the builder to decide other approaches to meeting the 4.5 energy credits using higher efficiency envelope enclosures etc. This proposal is NOT intended to apply to WSEC-C. High and mid-rise R2 built under the WSEC-C still require an H/ERV. The proposer who believes that requiring H/ERV was not intended to apply to low rise multi-family garden style or heated corridor entry dwelling units using WSEC-R. These building types rarely use a centralized HVAC where ventilation is serving multiple apartments.

The WSEC-R R406 currently allows the H/ERV along with a tighter envelope as a credit option. Clearly there was an oversight in applying 403.4.4.1 to WSEC-R scope LRMF dwelling. Why would there be credit options for the H/ERV if it was mandated. WSEC-R also references the current IMCWA that the whole house ventilation system be balanced in accordance with section C403.3.6. The proposal does NOT seek to change that balanced requirement. Correctly installed and maintained balanced systems along with unit-to-unit air leakage reduction (compartmentalization) reduce pollutant from entering a dwelling unit from other dwelling units, hallways etc. The IMC is focused on the health and safety implications NOT energy.

The proposer has provided significant discussion and documentation from WSU Energy Program web site to justify this proposal. Providing the builder an option to use an H/ERV in WSEC-R is the credible way to write code and meet the intent as discussed in the following trainings provided to thousands of WSEC-R over the past 2 years:

Training Resources: <https://www.energy.wsu.edu/EventsTrainings.aspx>

Link to LRMF training resources:

https://www.youtube.com/watch?app=desktop&v=1_cxL3txdfs2

Screen shot from training web page:

Video training

- Recording of *Opportunities for R2 Low-Rise Multifamily: Introducing a New ABAA Certification* webinar on December 10, 2021: [watch now](#) (3 hr). Mike Lubliner discussed 2018 WSEC-R compliance requirements and provided insights that apply when designing multifamily new construction, additions and remodels. Laverne Dalglish, Executive Director of the Air Barrier Association of America, and Dan Auer, Project Manager at the King County Housing Authority, discussed a new Air Leakage Control Technician Training Course that will be offered by ABAA in January 2022 for those involved with performing air leakage testing of low-rise R2 MF buildings.
- Recording of *2018 WSEC-R Multifamily Updates* presentation to Housing Development Consortium of Seattle-King County in July 2020: [watch now](#) (1 hr 11 min)
- Recording of *Multifamily Build Tight, Ventilate Right* presentation to Seattle Building Enclosure Council in Oct. 2020: [watch now](#) (1.5 hr)

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-076](#)

Proponent and description: *Eric Vander Mey; 2021 IMC 403.4.4.6 Whole House Ventilation Component Requirements*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

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(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law,

which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Clarify residential ventilation code requirements based on SBCC interpretations for 2018 WSMC and other items that have not been clear with the new residential ventilation code from 2018. Specifically, corrections are recommended for the adjoining space criteria, not balanced, and not distributed adjustment coefficients.

Life Cycle Cost: *There is **no cost** associated with this proposal.*

Construction Cost: *None*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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- (1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and
- (1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 02/28/2022

Log # [21-GP2-019](#)

Proponent and description: City of Bellevue; 2021 IMC 501.3.1 Location of Exhaust Outlet

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

RCW 19.27.020 - Purposes—Objectives—Standards.

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
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- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

This code section should separate enclosed parking garage exhaust from transformer exhaust. Garage exhaust is defined in the IMC as environmental air. Transformer exhaust is not mentioned in the IMC. Transformer exhaust requirements are in the NEC 450.45. The air exhausted from a transformer vault (under normal conditions) is heat only. The exhaust fan shuts off due to a set max temperature. In the event of an explosion the fan is off and the duct acts as a relief for fire and smoke.

Life Cycle Cost: *There is **no cost** associated with this proposal.*

Construction Cost: *None*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

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(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 02/28/2022

Log # [21-GP2-020](#)

Proponent and description: *City of Bellevue; 2021 IMC 504.10 #9 Common Exhaust Systems for Clothes Dryers Located in Multistory Structures*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

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- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law,

which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary: This proposal corrects a typo. The correct code section is for makeup air IMC 504.6.

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-086](#)

Proponent and description: *Austin Bonnes; 2021 IMC 605.5 Smoke Filtration Capability*

This option was not adopted in the Permanent Rule. Option 1 was preferred by the Council to better protect the building occupant from both external air pollution hazards and internal air quality issues including viral and other infectious vectors. See the analysis of 21-GP2-098 for the Air Filtration proposal moving forward as a Permanent Rule.

Date: 04/08/2022

Log # [21-GP2-098](#)

Proponent and description: Mike Fowler; 2021 IMC 605.1 General, 605.4 Particulate Matter Removal, 605.5 Outdoor Air

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Proposal is to adopt language currently in the 2018 Seattle Mechanical Code. This will protect occupant health by providing a filtration level needed to reduce fine particulates such as diesel emissions, vehicle exhaust, pesticide spray, dust, wood smoke, and wildfire smoke.

6/1/22 per TAG meeting input, modification has been made to 605.1 and 605.4 which aligns with California for recirculated and outdoor air filtration at MERV 13, though this proposal focuses that filtration level public, education, institutional, and residential occupancies.

See last page for ASHRAE Epidemic Task Force, Core Recommendation for Reducing Airborne Infectious Aerosol Exposure, October 19, 2021, to have MERV 13 or better levels of performance for air recirculated by HVAC system.

Life Cycle Cost: See Below

Construction Cost: Better filters cost a little more than less effective filters. For an example:

20x20x2 MERV 8 Pleated Air Filter

MERV 8 / 3 Month
STANDARD
3 Month Filter

- 20x20x2 MERV 8 Filters made and manufactured by FilterBuy
- Actual Size 19.5x19.5x1.75"
- Traps and blocks over 90% of pollen, dust mites, mold, larger dust particles, and more.
- Ideal for standard and residential commercial use
- Designed to last 90 days. Replace regularly for optimum performance.
- Free shipping on all orders!
- Learn more about 20x20x2 Air Filters.

Free Delivery Monday April 11
If you order within 36 hours and 57 miles

\$95.64
~~\$250.28~~

Qty	Price per Filter
1	\$10.91
2	\$10.50
3	\$10.20
4	\$9.90
5	\$9.59
6-11	\$9.28
12+	\$7.97

20x20x2 MERV 13 Pleated Air Filter

MERV 13 / 3 Month
BEST
3 Month Filter

- 20x20x2 MERV 13 Filters made and manufactured by FilterBuy
- Actual Size 19.5x19.5x1.75"
- Hospital Grade. Attracts and captures airborne particles or allergens less than one micron in size such as pollen, fine dust, pet dander. Also captures bacteria, viruses carrying particles, mold spores and smoke.
- Ideal for standard and residential commercial use
- Designed to last 90 days. Replace regularly for optimum performance.
- Free shipping on all orders!
- Learn more about 20x20x2 Air Filters.

Free Delivery Monday April 11
If you order within 36 hours and 57 miles

\$155.52
~~\$250.04~~

Qty	Price per Filter
1	\$27.57
2	\$26.59
3	\$25.60
4	\$24.61
5	\$23.62
6-11	\$22.63
12+	\$21.64

\$5 more per filter (20x20x2), replaced every 3 months, \$1.67 per month per filter.

Code Enforcement: No increase

Small Business Impact: Small increase in filter cost

Housing Affordability: Small increase in filter cost

Other:

More public health information is available at Washington State Department of Ecology website: <https://ecology.wa.gov/Air-Climate/Air-quality/Smoke-fire/Health-effects> See below for ASHRAE Epidemic Task Force, Core Recommendation for Reducing Airborne Infectious Aerosol Exposure, October 19, 2021.



ASHRAE EPIDEMIC TASK FORCE

Core Recommendations for Reducing Airborne Infectious Aerosol Exposure

The following recommendations are the basis for the detailed guidance issued by ASHRAE Epidemic Task Force. They are based on the concept that within limits ventilation, filtration, and air cleaners can be deployed flexibly to achieve exposure reduction goals subject to constraints that may include comfort, energy use, and costs. This is done by setting targets for equivalent clean air supply rate and expressing the performance of filters, air cleaners, and other removal mechanisms in these terms.

1. **Public Health Guidance** – Follow all current regulatory and statutory requirements and recommendations, including vaccination, wearing of masks and other personal protective equipment, social distancing, administrative measures, circulation of occupants, hygiene, and sanitation.
2. **Ventilation, Filtration, Air Cleaning**
 - 2.1 Provide and maintain at least required minimum outdoor airflow rates for ventilation as specified by applicable codes and standards.
 - 2.2 Use combinations of filters and air cleaners that achieve **MERV 13 or better levels of performance for air recirculated by HVAC systems.**
 - 2.3 Only use air cleaners for which evidence of effectiveness and safety is clear.
 - 2.4 Select control options, including standalone filters and air cleaners, that provide desired exposure reduction while minimizing associated energy penalties.
3. **Air Distribution** - Where directional airflow is not specifically required, or not recommended as the result of a risk assessment, promote mixing of space air without causing strong air currents that increase direct transmission from person-to-person.
4. **HVAC System Operation**
 - 4.1 Maintain temperature and humidity design set points.
 - 4.2 Maintain equivalent clean air supply required for design occupancy whenever anyone is present in the space served by a system.
 - 4.3 When necessary to flush spaces between occupied periods, operate systems for a time required to achieve three air changes of equivalent clean air supply.
 - 4.4 Limit re-entry of contaminated air that may re-enter the building from energy recovery devices, outdoor air, and other sources to acceptable levels.
5. **System Commissioning** – Verify that HVAC systems are functioning as designed.

October 19, 2021

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(f) Determine that the rule does not require those to whom it applies to take an action that violates requirements of another federal or state law:

The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-075](#)

Proponent and description: Eric Vander Mey; 2021 IMC 607.5.2 Fire Barriers, 607.5.3 Fire Partitions

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
- (2) To require standards and requirements in terms of performance and nationally accepted standards.
- (3) To permit the use of modern technical methods, devices and improvements.
- (4) To eliminate restrictive, obsolete, conflicting, duplicating and unnecessary regulations and requirements which could unnecessarily increase construction costs or retard the use of new materials and methods of installation or provide unwarranted preferential treatment to types or classes of materials or products or methods of construction.
- (5) To provide for standards and specifications for making buildings and facilities accessible to and usable by physically disabled persons.
- (6) To consolidate within each authorized enforcement jurisdiction, the administration and enforcement of building codes.

(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

The Council is required to adopt and maintain the state building code, as provided in chapters 19.27, 19.27A, and 70.92 RCW, and the state legislature. The primary objective of the Council is to encourage consistency in the building code throughout the state of Washington and to maintain the building code consistent with the state's interest as provided in RCW 19.27.020. The statewide code adoption process is defined in WAC 51-04 and the Council bylaws. All proposals are submitted in writing on the appropriate form with the indicated supporting documentation. Each proponent must identify where a proposed amendment has an economic impact and estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law,

which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Clarifies continuous duct requirement for the 26-gage ductwork where vibration isolation connectors are required for acoustical vibration isolation or per equipment support/seismic tiedown requirements per ASCE 7.

Life Cycle Cost:

*Proposal clarifies intent of the code. Allows the similar provisions for fire partitions as that are allowed for fire barriers in 2021 IMC/IBC. There is **no cost** associated with this proposal.*

Construction Cost: None

Code Enforcement: None

Small Business Impact: None

Housing Affordability: None

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

- (1)(i) A state statute explicitly allows the agency to differ from federal standards; or
- (1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and
- (1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-074](#)

Proponent and description: *Eric Vander Mey; 2021 IMC 915 Engine and Gas Turbine-Powered Equipment and Appliances*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020 - Purposes—Objectives—Standards.](#)

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

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which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary:

Enforceable code language must be used. The proposed language improves local jurisdiction's ability to enforce the code.

Life Cycle Cost: *There is no cost associated with this proposal.*

Construction Cost: *None*

Code Enforcement: *None*

Small Business Impact: *None*

Housing Affordability: *None*

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

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The primary objective of the Council is to encourage consistency in the building code throughout the state, and to maintain the building code consistent with the state's interest. The rule does not require those to whom it applies to take an action that violates requirements of another federal or state law.

(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

The adoption and amendment of the 2021 IMC do not impose more stringent performance requirements on private entities than on public entities.

(1)(h) Determine if the rule differs from any federal regulation or statute applicable to the same activity or subject matter and, if so, determine that the difference is justified by the following:

This does not differ from any federal regulations or statute applicable to the same activity.

(1) (i) A state statute explicitly allows the agency to differ from federal standards; or

(1) (ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

Date: 04/08/2022

Log # [21-GP2-078](#)

Proponent and description: *Eric Vander Mey; 2021 IMC 1305.7 Vent Piping*

Compliance with RCW 34.05.328 Significant legislative rules, other selected rules

(1)(a) Clearly state in detail the general goals and specific objectives of the statute that the rule implements

[RCW 19.27.020](#) - Purposes—Objectives—Standards.

The purpose of this chapter is to promote the health, safety and welfare of the occupants or users of buildings and structures and the general public by the provision of building codes throughout the state. Accordingly, this chapter is designed to effectuate the following purposes, objectives, and standards:

- (1) To require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire and life safety.
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(1)(b) Determine that the rule is needed to achieve the general goals and specific objectives stated under (a) of this subsection, and analyze alternatives to rule making and the consequences of not adopting the rule:

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(1)(d) Determine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented:

Summary: Proposal updates section to be consistent with NPFA 30 Section 27.8.1

*Life Cycle Cost: There is **no cost** associated with this proposal.*

Construction Cost: None

Code Enforcement: None

Small Business Impact: None

Housing Affordability: None

(1)(e) Determine, after considering alternative versions of the rule and the analysis required under (b), (c), and (d) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection:

There are no alternatives to this procedure. If the rule is not adopted, this will be a violation of the State Law, which will affect the promotion of fire and life safety in buildings consistent with accepted standards.

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(1)(g) Determine that the rule does not impose more stringent performance requirements on private entities than on public entities unless required to do so by federal or state law:

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(1)(i) A state statute explicitly allows the agency to differ from federal standards; or

(1)(ii) Substantial evidence that the difference is necessary to achieve the general goals and specific objectives stated under (a) of this subsection; and

(1)(iii) Coordinate the rule, to the maximum extent practicable, with other federal, state, and local laws applicable to the same activity or subject matter.

3. Modifications to CR-102

3.1 Modifications to Proposals

Log # [21-GP2-009](#)

Proponent and description: *Michael Lubliner; 2021 IMC 202 Definitions, 403.4 Group R Whole House Mechanical Ventilation System, 403.4.1 System Design*

The proposal was modified after the public comment period and the public hearings, and adopted by the Council. This modification makes some editorial corrections and clarifies code language. It also adds a reference to the "AHAM Certified Range Hood Directory" to facilitate ease of use. There is no intended change in regulatory effect; there is no need for modifications to the preliminary cost benefit analysis.

Log # [21-GP2-019](#)

Proponent and description: *City of Bellevue; 2021 IMC 501.3.1 Location of Exhaust Outlet*

The proposal was modified after the public comment period and the public hearings, and adopted by the Council. The modification includes specific language from NFPA 70 regarding distances required between exhaust outlets and various openings and exterior features. The inclusion of specific distances makes compliance and inspection easier. There is no intended change in regulatory effect; there is no need for modifications to the preliminary cost benefit analysis.

Log # [21-GP2-086](#)

Proponent and description: *Austin Bonnes; 2021 IMC 605.5 Smoke Filtration Capability*

This proposal was not adopted as part of the final Permanent Rule after the public comment period and public hearings. The Council determined they preferred the other option for air filtration that also included filtering interior air to address issues of infectious particles that may be present in interior circulated air. The cost benefit analysis of Proposal No. 21-GP2-098 will supersede the analysis of this proposal, as it was the option selected by the Council to move forward.