

WSR 20-21-078
EXPEDITED RULES
DEPARTMENT OF REVENUE

[Filed October 19, 2020, 10:47 a.m.]

Title of Rule and Other Identifying Information: WAC 458-18-220 Refunds—Rate of interest, 458-30-262 Agricultural land valuation—Interest rate—Property tax component, and 458-30-590 Rates of inflation—Publication—Interest rate—Calculation.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: The department proposes to amend:

- WAC 458-18-220 to provide the rate of interest for treasury bill auction year 2020, which is used when refunding property taxes paid in 2021, as required by RCW 84.69.100.
• WAC 458-30-262 to provide the interest rate and property tax component used when valuing classified farm and agricultural land during the 2021 assessment year, as required by RCW 84.34.065.
• WAC 458-30-590 to provide the rate of inflation published in 2020, which is used in calculating interest for deferred special benefit assessments of land removed or withdrawn from classification during 2021, as required by RCW 84.34.310.

Reasons Supporting Proposal: The department is specifically and explicitly required by statute to annually update these rules to provide the information identified above.

Statutory Authority for Adoption: RCW 84.34.065, 84.34.141, 84.34.360, and 84.69.100.

Statute Being Implemented: RCW 84.34.055, 84.34.065, 84.34.141, 84.34.310, 84.34.360, 84.68.030, and 84.69.100.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: Department of revenue, governmental.

Name of Agency Personnel Responsible for Drafting: Leslie Mullin, 6400 Linderson Way S.W., Tumwater, WA, 360-534-1589; Implementation and Enforcement: John Ryser, 6400 Linderson Way S.W., Tumwater, WA, 360-534-1605.

This notice meets the following criteria to use the expedited adoption process for these rules:

Adopts or incorporates by reference without material change federal statutes or regulations, Washington state statutes, rules of other Washington state agencies, shoreline master programs other than those programs governing shorelines of statewide significance, or, as referenced by Washington state law, national consensus codes that generally establish industry standards, if the material adopted or incorporated regulates the same subject matter and conduct as the adopting or incorporating rule.

Content is explicitly and specifically dictated by statute.

Explanation of the Reason the Agency Believes the Expedited Rule-Making Process is Appropriate: The department is required by Washington state statutes to annually update these rules.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Leslie Mullin, Department of Revenue, P.O. Box 47453, Olympia, WA 98504-7453, phone 360-534-1589, fax 360-534-1606, email Leslie Mu@dor.wa.gov, AND RECEIVED BY December 21, 2020.

October 19, 2020
Atif Aziz
Rules Coordinator

AMENDATORY SECTION (Amending WSR 20-02-056, filed 12/24/19, effective 1/1/20)

WAC 458-18-220 Refunds—Rate of interest. ((The following rates of interest apply)) (1) Introduction. Interest applies to refunds of taxes made pursuant to RCW 84.69.010 through 84.69.090 in accordance with RCW 84.69.100. ((The following rates)) Interest also ((apply)) applies to judgments entered in favor of the plaintiff pursuant to RCW 84.68.030.

(2) Calculation of interest rate. The interest rate is ((derived)) calculated from the equivalent coupon issue yield of the average bill rate for twenty-six week treasury bills as determined at the first bill market auction conducted after June 30th of the calendar year preceding the date the taxes were paid.

(3) Interest rates. The ((rate is)) following rates are applied to the amount of the judgment or the amount of the refund, until paid:

Table with 3 columns: Year tax paid, Auction Year, Rate. Rows range from 1984 to 1998 with corresponding rates from 9.29% to 5.14%.

Year tax paid	Auction Year	Rate	COUNTY	PERCENT	COUNTY	PERCENT
1999	1998	5.06%	Clark	((1.01)) <u>1.08</u>	Pend Oreille	((0.96)) <u>1.01</u>
2000	1999	4.96%	Columbia	((1.18)) <u>1.19</u>	Pierce	((1.19)) <u>1.27</u>
2001	2000	5.98%	Cowlitz	1.05	San Juan	0.73
2002	2001	3.50%	Douglas	((1.02)) <u>1.09</u>	Skagit	((1.00)) <u>1.08</u>
2003	2002	1.73%	Ferry	((0.98)) <u>1.02</u>	Skamania	((0.98)) <u>1.07</u>
2004	2003	0.95%	Franklin	((0.98)) <u>0.99</u>	Snohomish	((1.01)) <u>1.03</u>
2005	2004	1.73%	Garfield	((0.90)) <u>1.02</u>	Spokane	((1.17)) <u>1.21</u>
2006	2005	3.33%	Grant	((1.12)) <u>1.15</u>	Stevens	((0.96)) <u>0.95</u>
2007	2006	5.09%	Grays Harbor	((1.17)) <u>1.22</u>	Thurston	((1.14)) <u>1.26</u>
2008	2007	4.81%	Island	((0.88)) <u>0.90</u>	Wahkiakum	((0.78)) <u>0.82</u>
2009	2008	2.14%	Jefferson	((0.96)) <u>1.00</u>	Walla Walla	((1.15)) <u>1.24</u>
2010	2009	0.29%	King	((0.96)) <u>0.99</u>	Whatcom	((1.01)) <u>1.05</u>
2011	2010	0.21%	Kitsap	((1.01)) <u>1.03</u>	Whitman	((1.33)) <u>1.41</u>
2012	2011	0.08%	Kittitas	((0.92)) <u>0.90</u>	Yakima	((1.11)) <u>1.20</u>
2013	2012	0.15%	Klickitat	((0.94)) <u>1.01</u>		
2014	2013	0.085%				
2015	2014	0.060%				
2016	2015	0.085%				
2017	2016	0.340%				
2018	2017	1.130%				
2019	2018	2.085%				
2020	2019	2.040%				
<u>2021</u>	<u>2020</u>	<u>0.165%</u>				

AMENDATORY SECTION (Amending WSR 20-02-056, filed 12/24/19, effective 1/1/20)

WAC 458-30-262 Agricultural land valuation—Interest rate—Property tax component. For assessment year ~~((2020))~~ 2021, the interest rate and the property tax component that are used to value classified farm and agricultural lands are as follows:

- (1) The interest rate is ~~((5.47))~~ 5.70 percent; and
- (2) The property tax component for each county is:

COUNTY	PERCENT	COUNTY	PERCENT
Adams	((1.22)) <u>1.24</u>	Lewis	1.09
Asotin	((1.02)) <u>1.07</u>	Lincoln	((1.09)) <u>1.15</u>
Benton	((1.09)) <u>1.15</u>	Mason	((1.05)) <u>1.15</u>
Chelan	((0.98)) <u>0.99</u>	Okanogan	((1.08)) <u>1.15</u>
Clallam	((0.96)) <u>1.01</u>	Pacific	1.20

AMENDATORY SECTION (Amending WSR 20-02-056, filed 12/24/19, effective 1/1/20)

WAC 458-30-590 Rate of inflation—Publication—Interest rate—Calculation. (1) **Introduction.** This rule provides the rates of inflation discussed in RCW 84.34.330 and WAC 458-30-550 Exemption—Removal or withdrawal. It also explains the department of revenue's (department) obligation to annually publish a rate of inflation and the manner in which this rate is determined.

(2) **General duty of department - Basis for inflation rate.** Each year the department determines and publishes a rule establishing an annual rate of inflation. This rate of inflation is used in computing the interest that is assessed when farm and agricultural or timber land, which are exempt from special benefit assessments, is withdrawn or removed from current use classification.

(a) The rate of inflation is based on the implicit price deflator for personal consumption expenditures calculated by the United States Department of Commerce. This rate is used to calculate the rate of interest collected on exempt special benefit assessments.

(b) The rate is published by December 31st of each year and applies to all withdrawals or removals from the farm and agricultural or timber land classifications that occur the following year.

(3) **Assessment of rate of interest.** An owner of classified farm and agricultural or timber land is liable for interest on the exempt special benefit assessment. Interest accrues from the date the local improvement district is created until the land is withdrawn or removed from classification. Interest accrues and is assessed in accordance with WAC 458-30-550.

(a) Interest is assessed only for the time (years and months) the land remains classified under RCW 84.34.020 (2) or (3).

(b) If the classified land is exempt from the special benefit assessment for more than one year, the annual inflation rates are used to calculate an average rate of interest. This average is determined by adding the inflation rate for each year the classified land was exempt from the special benefit assessment after the local improvement district was created. The sum of the inflation rates is then divided by the number of years involved to determine the applicable rate of interest.

(c) Example. A local improvement district for a domestic water supply system was created in January ~~((1990))~~ 2010 and the owner used the statutory exemption provided in RCW 84.34.320. On July 1, ~~((1997))~~ 2017, the land was removed from the farm and agricultural classification. An average interest rate was calculated using the inflation rates for ~~((1990))~~ 2010 through ~~((1997))~~ 2017. The owner was then notified of the amount of previously exempt special benefit assessment, plus the average interest rate.

(4) **Rates of inflation.** The rates of inflation used to calculate the interest as required by WAC 458-30-550 are as follows:

YEAR	PERCENT	YEAR	PERCENT
1976	5.6	1977	6.5
1978	7.6	1979	11.3
1980	13.5	1981	10.3
1982	6.2	1983	3.2
1984	4.3	1985	3.5
1986	1.9	1987	3.7
1988	4.1	1989	4.8
1990	5.4	1991	4.2
1992	3.3	1993	2.7
1994	2.2	1995	2.3
1996	2.2	1997	2.1
1998	0.85	1999	1.42
2000	2.61	2001	1.89
2002	1.16	2003	1.84
2004	2.39	2005	2.54
2006	3.42	2007	2.08
2008	4.527	2009	-0.85 (negative)
2010	1.539	2011	2.755

YEAR	PERCENT	YEAR	PERCENT
2012	1.295	2013	1.314
2014	1.591	2015	0.251
2016	0.953	2017	1.553
2018	2.169	2019	1.396
<u>2020</u>	<u>0.602</u>		

WSR 20-21-096
EXPEDITED RULES
BUILDING CODE COUNCIL
 [Filed October 20, 2020, 1:58 p.m.]

Title of Rule and Other Identifying Information: Chapter 51-54A WAC, making corrections to the state amendments to the 2018 International Fire Code.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Making editorial changes, correcting section references and correlating state amendments with other model code amendments.

WAC	Section	Changes in 2018	Discussion
51-54A-0101	101.2.1	Scope and general requirements deleted	Omission missed in previous CR-103
51-54A-0319	319.1	Change system to section	Typo
51-54A-0401	401.2	Added by the fire official	Added for clarification
51-54A-0406	406.1	Corrected code section numbers	Typo
51-54A-0406	406.3	Corrected code section numbers	Typo
51-54A-0406	406.4	Delete	Code section does not exist
51-54A-0607	607.2.1	Added "E" to the table for hoods	Typo
51-54A-0609	609	Deleted and reserved the section	Duplicate entry

Reasons Supporting Proposal: After adoption and publication of the amendments to the 2018 Fire Code, chapter 51-54A WAC, errors and omissions of an editorial nature were discovered; these must be corrected to ensure consistent enforcement of the code. The amendments to the fire code must be correlated with amendments to other parts of the state building code to ensure there are no conflicts within the codes.

Statutory Authority for Adoption: RCW 19.27.074.

Statute Being Implemented: RCW 19.27.074.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: [No information supplied by agency], governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Ray Shipman, 1500 Jefferson Street S.E., Olympia, WA, 360-407-8047; and Enforcement: Local jurisdictions.

This notice meets the following criteria to use the expedited adoption process for these rules:

- Corrects typographical errors, make address or name changes, or clarify language of a rule without changing its effect.

NOTICE

THIS RULE IS BEING PROPOSED UNDER AN EXPEDITED RULE-MAKING PROCESS THAT WILL ELIMINATE THE NEED FOR THE AGENCY TO HOLD PUBLIC HEARINGS, PREPARE A SMALL BUSINESS ECONOMIC IMPACT STATEMENT, OR PROVIDE RESPONSES TO THE CRITERIA FOR A SIGNIFICANT LEGISLATIVE RULE. IF YOU OBJECT TO THIS USE OF THE EXPEDITED RULE-MAKING PROCESS, YOU MUST EXPRESS YOUR OBJECTIONS IN WRITING AND THEY MUST BE SENT TO Richard Brown, State Building Code Council, 1500 Jefferson Street S.E., phone 360-407-9277, email Richard.brown@des.wa.gov, and received by December 22, 2020.

October 19, 2020
Diane Glenn
Council Chair

AMENDATORY SECTION (Amending WSR 20-01-162, filed 12/18/19, effective 7/1/20)

WAC 51-54A-0101 Section 101((Scope and general requirements)).

((401.2.1 Appendices. Provisions in the appendices shall not apply unless specifically adopted.)) Reserved.

AMENDATORY SECTION (Amending WSR 19-24-058, filed 11/27/19, effective 7/1/20)

WAC 51-54A-0319 Mobile food preparation vehicles.

319.1 General. Mobile food preparation vehicles that are equipped with appliances that produce smoke or grease-laden vapors or utilize LP-gas systems or CNG systems shall comply with this ((system)) section.

AMENDATORY SECTION (Amending WSR 13-04-063, filed 2/1/13, effective 7/1/13)

WAC 51-54A-0401 General.

401.2 Approval. Where required by the fire code official, fire safety plans, emergency procedures and employee training programs shall be approved by the fire official.

AMENDATORY SECTION (Amending WSR 20-01-162, filed 12/18/19, effective 7/1/20)

WAC 51-54A-0406 Employee training and response procedures.

406.1 General. Employees in the occupancies listed in Section 403 shall be trained in the emergency procedures described in their emergency plans. Training shall be based

on these plans and as described in Section 406.2 ((and 406.3)) through 406.3.4.

406.2 Frequency. Employees shall receive training in the contents of the emergency plans and their duties as part of new employee orientation and at least annually thereafter. Records shall be kept and made available to the fire code official upon request.

406.3 Employee training program. Employees shall be trained in fire prevention, evacuation, sheltering-in-place, and fire safety in accordance with Sections 406.3.1 through ((406.3.3)) 406.3.4.

406.3.5 Emergency shelter-in-place training. Where a facility has a shelter-in-place plan, employees shall be trained on the alert and recall signals, communication system, location of emergency supplies, the use of the incident notification and alarm system, and their assigned duties and procedures in the event of an alarm or emergency.

((406.4 Emergency lockdown training. This section is not adopted.))

AMENDATORY SECTION (Amending WSR 19-24-058, filed 11/27/19, effective 7/1/20)

WAC 51-54A-0609 ((Section 607 Commercial kitchen hoods.)) Reserved.

((607.2 Where required. A Type I hood shall be installed at or above all commercial cooking appliances and domestic cooking appliances used for commercial purposes that produce grease laden vapors.

- EXCEPTIONS:
1. A Type I hood shall not be required for an electric-cooking appliance where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m³ or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m³/s) in accordance with Section 17 of UL 710B.
 2. A Type I hood shall not be required to be installed in an R-2 occupancy, an assisted living facility licensed under chapter 388-78A WAC, or a residential treatment facility licensed under chapter 246-337 WAC with not more than 16 residents.

607.2.1 Domestic cooking appliances used for commercial purposes. Domestic cooking appliances utilized for commercial purposes shall be provided with Type I, Type II or residential hoods as required for the type of appliances and processes in accordance with Table 607.2.1 or Sections 507.2 and 507.3 of the International Mechanical Code.

Table 607.2.1

Type of Hood Required for Domestic Cooking Appliances in the Following Spaces^{a,b}

Type of Space	Type of Cooking	Type of Hood
Church	1. Boiling, steaming and warming precooked food	Residential hood ^a or Type II hood

Type of Space	Type of Cooking	Type of Hood
	2. Roasting, pan-frying and deep-frying	Type I hood
Community or party room in apartment and condominium	1. Boiling, steaming and warming precooked food	Residential hood ^a or Type II hood ^d
	2. Roasting, pan-frying and deep-frying	Type I hood
Day care	1. Boiling, steaming and warming precooked food	Residential hood ^a or Type II hood ^d
	2. Roasting, pan-frying and deep-frying	Type I hood
Dormitory, assisted living facility, nursing home	1. Boiling, steaming and warming precooked food	Residential hood ^a or Type II hood
	2. Roasting, pan-frying and deep-frying	Type I hood
Office lunch room	1. Boiling, steaming and warming precooked food	Residential hood ^a or Type II hood ^d
	2. Roasting, pan-frying and deep-frying	Type I hood

^a Commercial cooking appliances shall comply with Section 507.2 of the *International Mechanical Code*.

^b Requirements in this table apply to electric or gas fuel appliances only. Solid fuel appliances or charbroilers require Type I hoods.

^c Residential hood shall ventilate to the outside.

^d Type II hood required when more than one appliance is used.

^e Hoods are not required where the HVAC design meets IMC 507.3.

607.3 Operations, inspection and maintenance. Commercial cooking systems shall be operated, inspected and maintained in accordance with Sections 607.3.1 through 607.3.4 and Chapter 11 of NFPA 96.)

**WSR 20-21-097
EXPEDITED RULES
BUILDING CODE COUNCIL**

[Filed October 20, 2020, 2:04 p.m.]

Title of Rule and Other Identifying Information: Chapter 51-52 WAC, making corrections to the state amendments to the 2018 International Mechanical Code.

Purpose of the Proposal and Its Anticipated Effects, Including Any Changes in Existing Rules: Making editorial changes, correcting section references and correlating state amendments with other model code amendments.

WAC	Section	Changes in 2018	Discussion
51-52-403	403.4.5	Was not in the original CR-102	Omitted by error
51-52-403	403.4.6.1	Corrected table number	Typo
51-52-403	403.4.6.3	Corrected section and table numbers	Typo
51-52-403	403.4.7.2	Corrected table numbers	Typo
51-52-1200	1209.5	Corrected section number	Typo
51-52-1500	1500	Reference standards corrected	Clerical error corrected

Reasons Supporting Proposal: After adoption and publication of the amendments to the 2018 Mechanical Code, chapter 51-52 WAC, errors and omissions of an editorial nature were discovered; these must be corrected to ensure consistent enforcement of the code. The amendments to the mechanical code must be correlated with amendments to other parts of the state building code to ensure there are no conflicts within the codes.

Statutory Authority for Adoption: RCW 19.27.074.

Statute Being Implemented: RCW 19.27.074.

Rule is not necessitated by federal law, federal or state court decision.

Name of Proponent: [No information supplied by agency], governmental.

Name of Agency Personnel Responsible for Drafting and Implementation: Ray Shipman, 1500 Jefferson Street S.E., Olympia WA, phone 360-407-8047; and Enforcement: Local jurisdictions.

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October 19, 2020
Diane Glenn
Council Chair

AMENDATORY SECTION (Amending WSR 20-03-041, filed 1/8/20, effective 7/1/20)

WAC 51-52-0403 Section 403—Mechanical ventilation.

403.1 Ventilation system. Mechanical ventilation shall be provided by a method of supply air and return or *exhaust air*. The amount of supply air shall be approximately equal to the amount of return and *exhaust air*. The system shall not be prohibited from producing negative or positive pressure. The system to convey ventilation air shall be designed and installed in accordance with Chapter 6.

403.2 Outdoor air required. The minimum *outdoor airflow rate* shall be determined in accordance with Section 403.3.

- EXCEPTIONS:
1. Where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of *outdoor air* ventilation determined in accordance with Section 403.3, the minimum required rate of *outdoor air* shall be reduced in accordance with such engineered system design.
 2. Alternate systems designed in accordance with ASHRAE Standard 62.1 Section 6.2, Ventilation Rate Procedure, shall be permitted.

403.2.1 Recirculation of air. The air required by Section 403.3 shall not be recirculated. Air in excess of that required by Section 403.3 shall not be prohibited from being recirculated as a component of supply air to building spaces, except that:

1. Ventilation air shall not be recirculated from one dwelling to another or to dissimilar occupancies.
2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other spaces where 10 percent or more of the resulting supply airstream consists of air recirculated from these spaces.
3. Where mechanical exhaust is required by Note b in Table 403.3.1.1, recirculation of air from such spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.1.1.
4. Where mechanical exhaust is required by Note g in Table 403.3.1.1, mechanical exhaust is required and recirculation from such spaces is prohibited where more than 10 percent of the resulting supply airstream consists of air recircu-

lated from these spaces. Return air from such spaces shall only be permitted to be recirculated when returned to an energy recovery ventilation system complying with Section 514. Recirculation of air that is contained completely within such spaces shall not be prohibited.

403.3 Outdoor air and local exhaust airflow rates. Group R occupancies shall be provided with outdoor air and local exhaust in accordance with Section 403.4. All other buildings intended to be occupied shall be provided with outdoor air and local exhaust in accordance with Section 403.3.1.

403.3.1.1 Outdoor airflow rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. In each occupiable space, the ventilation system shall be designed to deliver the required rate of outdoor airflow to the breathing zone. Outdoor air shall be supplied directly to each occupiable space from an air handling unit through a fully ducted path or ducted to within 12 inches of the return air opening of a fan-powered terminal unit used to transfer the outdoor air to the occupiable space. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3.1.1. Ventilation rates for occupancies not represented in Table 403.3.1.1 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis. The ventilation system, including transfer fan-powered terminal units shall be designed to supply the required rate of ventilation air continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.

With the exception of smoking lounges, the ventilation rates in Table 403.3.1.1 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3.1.1 in accordance with accepted engineering practice.

EXCEPTION: Where occupancy density is known and documented in the plans, the outside air rate may be based on the design occupant density. Under no circumstance shall the occupancies used result in outside air less than one-half that resulting from application of Table 403.3.1.1 estimated maximum occupancy rates.

**Table 403.3.1.1
REQUIRED OUTDOOR VENTILATION AIR**

Occupancy Classification	Occupant Density #/1000 ft ^{2a}	People Outdoor Airflow Rate in Breathing Zone R _p cfm/Person	Area Outdoor Air- flow Rate in Breath- ing Zone R _a cfm/ft ^{2a}	Exhaust Airflow Rate cfm/ft ^{2a}
Offices				
Conference rooms	50	5	0.06	—
Kitchenettes ^k	25	5	0.06	0.30
Office spaces	5	5	0.06	—
Reception areas	30	5	0.06	—
Telephone/data entry	60	5	0.06	—

Occupancy Classification	Occupant Density #/1000 ft ^{2a}	People Outdoor Airflow Rate in Breathing Zone R _p cfm/Person	Area Outdoor Air- flow Rate in Breath- ing Zone R _a cfm/ft ^{2a}	Exhaust Airflow Rate cfm/ft ^{2a}
Main entry lobbies	10	5	0.06	—
Private dwellings, single and multiple				
Garages, common for multiple units ^b	—	—	—	0.75 See Table 403.4.7
Living areas ^c	—	See Table 403.4.2	—	—
Toilet rooms, bathrooms and laundry areas ^{g, i}	—	—	—	See Table 403.4.7
Public spaces				
Corridors serving other than Group R occu- pancies	—	—	0.06	—
Corridors serving Group R dwelling or sleep- ing units with whole house exhaust system	—	—	0.12	—
Corridors serving Group R dwelling or sleep- ing units with other than whole house exhaust system	—	—	0.06	—
Courtrooms	70	5	0.06	—
Elevator car	—	—	—	1
Elevator lobbies in parking garage	—	—	1.0	—
Legislative chambers	50	5	0.06	—
Libraries	10	5	0.12	—
Museums (children's)	40	7.5	0.12	—
Museums/galleries	40	7.5	0.06	—
Places of religious worship	120	5	0.06	—
Shower room (per showerhead) ^g	—	—	—	50/20 ^f
Smoking lounges ^b	70	60	—	—
Toilet rooms—Public ^g	—	—	—	50/70 ^e
Sports and amusement				
Disco/dance floors	100	20	0.06	—
Bowling alleys (seating areas)	40	10	0.12	—
Game arcades	20	7.5	0.18	—
Ice arenas, without combustion engines ^j	—	—	0.30	0.5
Gym, stadium, arena (play area) ^j	—	—	0.30	—
Spectator areas	150	7.5	0.06	—
Swimming pools (pool and deck area)	—	—	0.48	—
Health club/aerobics room	40	20	0.06	—
Health club/weight room	10	20	0.06	—
Storage				
Janitor closets, trash rooms, recycling rooms	—	—	—	1.0
Repair garages, enclosed parking garage ^{b, d}	—	—	—	0.75
Storage rooms, chemical	—	—	—	1.5
Warehouses	—	—	0.06	—
Workrooms				
Bank vaults/safe deposit	5	5	0.06	—
Darkrooms	—	—	—	1.0
Copy, printing rooms	4	5	0.06	0.5
Freezer and refrigerated spaces (<50°F)	0	10	0	0
Meat processing ^c	10	15	—	—
Pharmacy (prep. area)	10	5	0.18	—
Photo studios	10	5	0.12	—
Computer (without printing)	4	5	0.06	—

For SI: 1 cubic foot per minute = 0.0004719 m³/s, 1 ton = 908 kg, 1 cubic foot per minutes per square foot = 0.00508 m³/(s•m²), °C = [(°F) -32]/1.8, 1 square foot = 0.0929 m².

- a. Based upon *net occupiable floor area*.
- b. Mechanical exhaust required and the recirculation of air from such spaces is prohibited. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Item 3).
- c. Spaces unheated or maintained below 50°F are not covered by these requirements unless the occupancy is continuous.
- d. Ventilation systems in enclosed parking garages shall comply with Section 404.
- e. Rates are per water closet or urinal. The higher rate shall be provided where the exhaust system is designed to operate intermittently. The lower rate shall be permitted only where the exhaust system is designed to operate continuously while occupied.
- f. Rates are per room unless otherwise indicated. The higher rate shall be provided where the exhaust system is designed to operate intermittently. The lower rate shall be permitted only where the exhaust system is designed to operate continuously while occupied.
- g. Mechanical exhaust is required and recirculation from such spaces is prohibited except that recirculation shall be permitted where the resulting supply airstream consists of not more than 10 percent air recirculated from these spaces. Return air from such spaces only be permitted to be recirculated when returned to an energy recovery ventilation system complying with Section 514. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Items 2 and 4).
- h. For nail salons, each manicure and pedicure station shall be provided with a *source capture system* capable of exhausting not less than 50 cfm per station. Exhaust inlets shall be located in accordance with Section 502.20. Where one or more required source capture systems operate continuously during occupancy, the exhaust rate from such systems shall be permitted to be applied to the exhaust flow rate required by Table 403.3.1.1 for the nail salon.
- i. A laundry area within a kitchen or bathroom is not required to have local exhaust. For the laundry area to qualify as being within the kitchen, the laundry room door must open directly into the kitchen and not into an adjacent corridor. Where there are doors that separate the laundry area from the kitchen or bathroom the door shall be louvered.
- j. When combustion equipment is intended to be used on the playing surface, additional dilution ventilation and/or source control shall be provided.
- k. Kitchenettes require exhaust when they contain a domestic cooking appliance range or oven that is installed in accordance with Table 507.2.1. Kitchenettes that only contain a microwave cooking appliance are not required to have exhaust. A kitchenette may not contain commercial cooking appliances that require Type I or Type II exhaust as these occupancies are required to be exhausted to the kitchen category in Table 403.3.1.1.

403.3.1.1.2.3 Multiple zone recirculating systems. For ventilation systems wherein one or more air handlers supply a mixture of outdoor air and recirculated air to more than one ventilation zone, the outdoor air intake flow (V_{ot}) shall be determined in accordance with Sections 403.3.1.1.2.3.1 through 403.3.1.1.2.3.4.

403.3.1.1.2.3.1 Uncorrected outdoor air intake. The uncorrected outdoor air intake flow (V_{ot}) shall be determined in accordance with Equation 4-5.

$$V_{ou} = D \sum_{all\ zones} (R_p \times P_z) + \sum_{all\ zones} (R_a \times A_z) \quad \text{(Equation 4-5)}$$

403.3.1.1.2.3.1.1 Occupant diversity. The occupant diversity ratio (D) shall be determined in accordance with Equation 4-6 to account for variations in population within the ventilation zones served by the system.

$$D = P_s / \sum_{all\ zones} P_z \quad \text{(Equation 4-6)}$$

where:

P_s = System population: The total population in the area served by the system.

EXCEPTION: Alternative methods to account for occupant diversity shall be permitted, provided the resulting V_{ou} value is no less than that determined using Equation 4-5.

403.3.1.1.2.3.1.2 Design system population. Design system population (P_s) shall equal the largest (peak) number of people expected to occupy all ventilation zones served by the ventilation system during use.

Note: Design system population is always equal to or less than the sum of design zone population for all zones in the area served by the system because all zones may or may not be simultaneously occupied at design population.

403.3.1.1.2.3.2 System ventilation efficiency. The system ventilation efficiency (E_v) shall be determined in accordance with Section 403.3.1.1.2.3.3 for the Simplified Procedure or Appendix A of ASHRAE 62.1 for the Alternative Procedure.

Note: These procedures also establish zone minimum primary airflow rates for VAV systems.

403.3.1.1.2.3.3 Simplified procedure.

403.3.1.1.2.3.3.1 System ventilation efficiency. System ventilation efficiency (E_v) shall be determined in accordance with Equation 4-6a or 4-6b.

$$E_v = 0.88 \times D + 0.22 \quad \text{for } D < 0.60 \quad \text{(Equation 4-6a)}$$

$$E_v = 0.75 \quad \text{for } D \geq 0.60 \quad \text{(Equation 4-6b)}$$

403.3.1.1.2.3.3.2 Zone minimum primary airflow. For each zone, the minimum primary airflow (V_{pz-min}) shall be determined in accordance with Equation 4-7.

$$V_{pz-min} = V_{oz} \times 1.5 \quad \text{(Equation 4-7)}$$

403.3.1.1.2.3.4 Outdoor air intake. The design outdoor air intake flow (V_{ot}) shall be determined in accordance with Equation 4-8.

$$V_{ot} = V_{ou} / E_v \quad \text{(Equation 4-8)}$$

403.3.2 Group R-2, R-3 and R-4 occupancies. This section is not adopted. See Section 403.4.

403.3.2.1 Outdoor air for dwelling units. This section is not adopted.

403.3.2.2 Outdoor air for other spaces. This section is not adopted.

403.3.2.3 Local exhaust. This section is not adopted.

403.4 Group R whole house mechanical ventilation system. Each dwelling unit or sleeping unit shall be equipped with a whole house mechanical ventilation system that complies with Sections 403.4.1 through 403.4.6. Each dwelling unit or sleeping unit shall be equipped with local exhaust complying with Section 403.4.7. All occupied spaces, including public corridors, other than the Group R dwelling units and/or sleeping units, that support these Group R occupancies shall meet the ventilation requirement of natural ventilation

requirements of Section 402 or the mechanical ventilation requirements of Sections 403.1 through 403.3.

403.4.1 System design. The whole house ventilation system shall consist of one or more supply fans, one or more exhaust fans, or an ERV/HRV with integral fans; and the associated ducts and controls. Local exhaust fans shall be permitted to serve as part of the whole house ventilation system when provided with the proper controls in accordance with Section 403.4.5. The systems shall be designed and installed to supply and exhaust the minimum outdoor airflow rates per Section 403.4.2 as corrected by the balanced and/or distributed whole house ventilation system coefficients in accordance with Section 403.4.3 where applicable.

Table 403.4.2
WHOLE HOUSE MECHANICAL VENTILATION AIRFLOW RATE
(CONTINUOUSLY OPERATING SYSTEMS)

Floor Area (ft ²)	Bedrooms ¹				
	1	2	3	4	>5
<500	30	30	35	45	50
500 - 1000	30	35	40	50	55
1001 - 1500	30	40	45	55	60
1501 - 2000	35	45	50	60	65
2001 - 2500	40	50	55	65	70
2501 - 3000	45	55	60	70	75
3001 - 3500	50	60	65	75	80
3501 - 4000	55	65	70	80	85
4001 - 4500	60	70	75	85	90
4501 - 5000	65	75	80	90	95

¹ Minimum airflow (Q_r) is set at not less than 30 cfm for each dwelling units.

403.4.2 Whole house mechanical ventilation rates. The sleeping unit whole house mechanical ventilation minimum outdoor airflow rate shall be determined in accordance with the breathing zone ventilation rates minimum outdoor airflow rate shall be determined in accordance with the breathing zone ventilation rates requirements of Section 403.3.1.1.1.2 using Equation 4-2. The dwelling unit whole house mechanical ventilation minimum outdoor airflow rate shall be determined in accordance with Equation 4-10 or Table 403.4.2.

$$Q_r = 0.01 * A_{\text{floor}} + 7.5 * (N_{\text{br}} + 1) \text{ (Equation 4-10)}$$

where:

Q_r = Ventilation airflow rate, cubic feet per minute (cfm) but not less than 30 cfm for each dwelling unit.

A_{floor} = Conditioned floor area, square feet (ft²)

N_{br} = Number of bedrooms, not less than one.

Table 403.4.3
SYSTEM COEFFICIENT (C_{system})

System Type	Distributed	Not Distributed
Balanced	1.0	1.25
Not Balanced	1.25	1.5

403.4.3 Ventilation quality adjustment. The minimum whole house ventilation rate from Section 403.4.2 shall be adjusted by the system coefficient in Table 403.4.3 based on the system type not meeting the definition of a balanced whole house ventilation system and/or not meeting the definition of a distributed whole house ventilation system.

$$Q_v = Q_r * C_{\text{system}} \text{ (Equation 4-11)}$$

where:

Q_v = Quality-adjusted ventilation airflow rate in cubic feet per minute (cfm)

Q_r = Ventilation airflow rate, cubic feet per minute (cfm) from Equation 4-10 or Table 403.4.1

C_{system} = System coefficient from Table 403.4.3

403.4.4 Whole house ventilation residential occupancies. Residential dwelling and sleeping unit whole house ventilation systems shall meet the requirements of Sections 403.4.4.1 or 403.4.4.2 depending on the occupancy of the residential unit.

403.4.4.1 Whole house ventilation in Group R-2 occupancies. Residential dwelling and sleeping units in Group R-2 occupancies system shall include supply and exhaust fans and be a balanced whole house ventilation system in accor-

dance with Section 403.4.6.3. The system shall include a heat or energy recovery ventilator with a sensible heat recovery effectiveness as prescribed in Section C403.3.6 of the *Washington State Energy Code*. The whole house ventilation system shall operate continuously at the minimum ventilation rate determined in accordance with Section 403.4. The whole house supply fan shall provide ducted outdoor ventilation air to each habitable space within the residential unit.

403.4.4.2 Whole house ventilation for other than Group R-2 occupancies. Residential dwelling and sleeping units in other than Group R-2 occupancies, including I-1 condition 2 occupancies, shall have a whole house mechanical ventilation system with supply and exhaust fans in accordance with Section 403.4.6.1, 403.4.6.2, 403.4.6.3, or 403.4.6.4. The whole house ventilation system shall operate continuously at the minimum ventilation rate determined in accordance with Section 403.4.2 unless configured with intermittent off controls in accordance with Section 403.4.6.5. The whole house supply fan shall provide ducted outdoor ventilation air to each habitable space within the residential unit.

403.4.5 Whole house ventilation controls.

1. The whole house ventilation system shall be controlled with manual switches, timers or other means that provide for automatic operation of the ventilation system that are readily accessible by the occupant;

2. Whole house mechanical ventilation system shall be provided with controls that enable manual override off of the system by the occupant during periods of poor outdoor air quality. Controls shall include permanent text or a symbol indicating their function. Recommended control permanent labeling to include text similar to the following: "Leave on unless outdoor air quality is very poor." Manual controls shall be provided with ready access for the occupant.

EXCEPTION: Central whole house mechanical systems with supply air and/or exhaust that serve more than one dwelling or sleep units are not required to have manual override off controls accessible to the occupant.

3. Whole house ventilation systems shall be configured to operating continuously except where intermittent off controls are provided in accordance with Section 403.4.6.5 and allowed by Section 403.4.4.2.

403.4.6 Whole house ventilation system component requirements. Whole house ventilation supply and exhaust fans specified in this section shall have a minimum efficacy as prescribed in the *Washington State Energy Code*. The fans shall be rated for sound at a maximum of 1.0 sone at design airflow and static pressure conditions. Design and installation of the system or equipment shall be carried out in accordance with manufacturer's installation instructions.

EXCEPTIONS: 1. Central supply or exhaust fans serving multiple residential units do not need to comply with the maximum fan sone requirements.
2. Interior joining spaces provided with a 30 cfm transfer fan or a 25 square foot permanent opening do not require supply ventilation air directly to the space. Transfer fans shall meet the sone rating above and have whole house ventilation controls in accordance with Section 403.4.5.

403.4.6.1 Exhaust fans. Exhaust fans required shall be ducted directly to the outside in accordance with Section 501.3. Exhaust air outlets shall be designed to limit the pressure difference to the outside to limiting the outlet free area maximum velocity to 500 feet per minute and equipped with backdraft dampers or motorized dampers in accordance with *Washington State Energy Code*. Exhaust fans shall be tested and rated in accordance with HVI 915, HVI 916, and HVI 920. Exhaust fans required in this section may be used to provide local ventilation. Exhaust fans that are designed for intermittent exhaust airflow rates higher than the continuous exhaust airflow rates in Table ((403.4.3)) 403.4.2 shall be provided with occupancy sensors or humidity sensors to automatically override the fan to the high speed airflow rate. The exhaust fans shall be tested and the testing results shall be submitted and posted in accordance with Section 403.4.6.7.

EXCEPTION: Central exhaust fans serving multiple residential units do not need to comply with the HVI testing requirements.

403.4.6.2 Supply fans. Supply fans used in meeting the requirements of this section shall supply outdoor air from intake openings in accordance with Sections 401.4 and 401.5. Intake air openings shall be designed to limit the pressure difference to the outside to limiting the inlet free area maximum velocity to 500 feet per minute and when designed for intermittent off operation shall be equipped with motorized dampers in accordance with the *Washington State Energy Code*. Supply fans shall be tested and rated in accordance with HVI 915, HVI 916, and HVI 920. Where outdoor air is provided to each habitable dwelling unit or sleeping unit by supply fan systems the outdoor air shall be filtered. The filter shall be provided with access for regular maintenance and replacement. The filter shall have a Minimum Efficiency Rating Value (MERV) of at least 8.

EXCEPTION: Central supply fans serving multiple residential units do not need to comply with the HVI testing requirements.

403.4.6.3 Balanced whole house ventilation system. A balanced whole house ventilation system shall include both supply and exhaust fans. The supply and exhaust fans shall have airflow that is within 10 percent of each other. The tested and balanced total mechanical exhaust airflow rate is within 10 percent or 5 cfm, whichever is greater, of the total mechanical supply airflow rate. The flow rate test results shall be submitted and posted in accordance with Section ((403.4.6.6)) 403.4.6.7. The exhaust fan shall meet the requirements of Section ((403.4.6.2)) 403.4.6.1. The supply fan shall meet the requirements of Section ((403.4.6.3)) 403.4.6.2. For R-2 dwelling and sleeping units, the system is required to have balanced whole house ventilation but is not required to have distributed whole house ventilation where the net distributed system coefficient from Table ((403.4.2)) 403.4.3 is utilized to correct the whole house mechanical ventilation rate. The system shall be design and balanced to meet the pressure equalization requirements of Section 501.4. Intermittent dryer exhaust, intermittent range hood exhaust, and intermittent toilet room exhaust airflow rates above the residential dwelling or sleeping unit minimum ventilation rate are exempt from the balanced airflow calculation.

403.4.6.4 Furnace integrated supply. Systems using space condition heating and/or cooling air handler fans for outdoor air supply air distribution are not permitted.

EXCEPTION: Air handler fans shall be permitted that have multi-speed or variable speed supply airflow control capability with a low speed operation not greater than 25 percent of the rated supply air flow capacity during ventilation only operation. Outdoor air intake openings must meet the provisions of Sections 401.4 and 401.5 and must include a motorized damper that is activated by the whole house ventilation system controller. Intake air openings shall be designed to limit the pressure difference to the outside to limiting the inlet free area maximum velocity to 500 ft per min. The motorized damper must be controlled to maintain the outdoor airflow intake airflow within 10 percent of the whole house mechanical exhaust airflow rate. The supply air handler shall provide supply air to each habitable space in the residential unit. The whole house ventilation system shall include exhaust fans in accordance with Section ((403.4.6.2)) 403.4.6.1 to meet the pressure equalization requirements of Section 501.4. The flow rate for the outdoor air intake must be tested and verified at the minimum ventilation fan speed and the maximum heating or cooling fan speed. The results of the test shall be submitted and posted in accordance with Section ((403.4.6.6)) 403.4.6.7.

403.4.6.5 Intermittent off operation. Whole house mechanical ventilation systems shall be provided with advanced controls that are configured to operate the system with intermittent off operation and shall operate for a least two hours in each four-hour segment. The whole house ventilation airflow rate determined in accordance with Section 403.4.2 as corrected by Section 403.4.3 shall be multiplied by the factor determined in accordance with Table 403.4.6.5.

Table 403.4.6.5

INTERMITTENT WHOLE HOUSE MECHANICAL VENTILATION RATE FACTORS^{a,b}

Run-time Percentage in Each 4-hour Segment	50%	66%	75%	100%
Factor ^a	2	1.5	1.3	1.0

^a For ventilation system run-time values between those given, the factors are permitted to be determined by interpolation.

^b Extrapolation beyond the table is prohibited.

403.4.6.6 Testing. Whole house mechanical ventilation systems shall be tested, balanced and verified to provide a flow rate not less than the minimum required by Sections 403.4.2 and 403.4.3. Testing shall be performed according to the ventilation equipment manufacturer's instructions, or by using a flow hood, flow grid, or other airflow measuring device at the mechanical ventilation fan's inlet terminals, outlet terminals or grilles or in the connected ventilation ducts. Where required by the building official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the building official and shall be posted in the residential unit in accordance with Section 403.4.6.7.

403.4.6.7 Certificate. A permanent certificate shall be completed by the mechanical contractor, test and balance contractor or other approved party and posted on a wall in the space where the furnace is located, a utility room, or an *approved* location inside the building. When located on an electrical panel, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels. The certificate shall list the flow rate determined from the delivered airflow of the whole house mechanical ventilation system as installed and the type of mechanical whole house ventilation system used to comply with Section 403.4.3.

403.4.7 Local exhaust. Bathrooms, toilet rooms and kitchens shall include a local exhaust system. Such local exhaust systems shall have the capacity to exhaust the minimum airflow rate in accordance with Table 403.4.7 and Table 403.3.1.1, including notes. Fans required by this section shall be provided with controls that enable manual override or automatic occupancy sensor, humidity sensor or pollutant sensor controls. An "on/off" switch shall meet this requirement for manual controls. Manual fan controls shall be provided with ready access in the room served by the fan.

Table 403.4.7

MINIMUM EXHAUST RATES

Area to be exhausted	Exhaust Rate	
	Intermittent	Continuous
Kitchens	100 cfm	30 cfm
Bathrooms - Toilet rooms	50 cfm	20 cfm

403.4.7.1 Whole house exhaust controls. If the local exhaust fan is included in a whole house ventilation system in accordance with Section 403.4.6, the exhaust fan shall be controlled to operate as specified in Section 403.4.5.

403.4.7.2 Local exhaust fans. Exhaust fans shall meet the following criteria.

1. Exhaust fans shall be tested and rated in accordance with HVI 915, HVI 916, and HVI 920.

EXCEPTION: Where a range hood or down draft exhaust fan is used for local exhaust for a kitchen, the device is not required to be rated per these standards.

2. Fan airflow rating and duct system shall be designed and installed to deliver at least the exhaust airflow required by Table ((403.4.4)) 403.4.7. The airflows required refer to the delivered airflow of the system as installed and tested using a flow hood, flow grid, or other airflow measurement device. Local exhaust systems shall be tested, balanced and verified to provide a flow rate not less than the minimum required by this section.

3. Design and installation of the system or equipment shall be carried out in accordance with manufacturers' installation instructions.

4. Fan airflow rating and duct system shall be designed and installed to deliver at least the exhaust airflow required by Table 403.4.3.

- EXCEPTIONS:
1. An exhaust airflow rating at a pressure of 0.25 in. w.g. may be used, provided the duct sizing meets the prescriptive requirements of Table 403.4.7.2.
 2. Where a range hood or down draft exhaust fan is used to satisfy the local ventilation requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 in. w.g.

**Table 403.4.7.2
PRESCRIPTIVE EXHAUST DUCT SIZING**

Fan Tested cfm at 0.25 inches w.g.	Minimum Flex Diameter	Maximum Length in Feet	Minimum Smooth Diameter	Maximum Length in Feet	Maximum Elbows ^a
50	4 inches	25	4 inches	70	3
50	5 inches	90	5 inches	100	3
50	6 inches	No Limit	6 inches	No Limit	3
80	4 inches ^b	NA	4 inches	20	3
80	5 inches	15	5 inches	100	3
80	6 inches	90	6 inches	No Limit	3
100	5 inches ^b	NA	5 inches	50	3
100	6 inches	45	6 inches	No Limit	3
125	6 inches	15	6 inches	No Limit	3
125	7 inches	70	7 inches	No Limit	3

- a. For each additional elbow, subtract 10 feet from length.
- b. Flex ducts of this diameter are not permitted with fans of this size.

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency and appear in the Register pursuant to the requirements of RCW 34.08.040.

AMENDATORY SECTION (Amending WSR 20-03-041, filed 1/8/20, effective 7/1/20)

WAC 51-52-1200 Chapter 12—Hydronic piping.

1209.5 Thermal barrier required. Radiant floor heating and snow melt systems shall be provided with a thermal barrier in accordance with Sections 1209.5.1 (~~through 1209.5.4~~) and 1209.5.2. Concrete slab-on-grade, asphalt and paver-system type pavements shall have a minimum of R-10 insulation installed under the area to be snow melted, or R-5 insulation shall be installed under and at the slab edges of the area to be snow melted. The insulation shall be located underneath the snow and ice melt hydronic piping or cable and along all edges of the pavement where the snow and ice melt system is installed in accordance with the snow and ice melt manufacturer's instructions.

1209.5.1 Slab-on-grade installation. Radiant piping utilized in slab-on-grade applications shall be provided with insulating materials installed beneath the piping as required by the *Washington State Energy Code*.

1210.7.6 Expansion tanks. Shutoff valves shall be installed at connections to expansion tanks. A method of draining the expansion tank downstream of the shutoff valve shall be provided.

AMENDATORY SECTION (Amending WSR 20-03-041, filed 1/8/20, effective 7/1/20)

WAC 51-52-1500 Chapter 15—Referenced standards. The following referenced standards are added to Chapter 15.

ANSI
UL 60335-2-40

ASHRAE
~~((15-2019))~~ 34-2019 Safety standards for refrigeration systems and designation and classification of refrigerants.

62.2-2016 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings 403.4.11

HVI address:
Home Ventilating Institute
1740 Dell Range Blvd., Suite H, PMB 450
Cheyenne, WY 82009

HVI 915-2015 Procedure for Loudness Testing of Residential Fan Products. 403.4.6.1, 403.4.6.2, 403.4.7.2

HVI 916-2015 Air Flow Test Procedure
. 403.4.6.1, 403.4.6.2, 403.4.7.2

HVI 920-2015 Product Performance Certification Procedure Including Verification and Challenge
. 403.4.6.1, 403.4.6.2, 403.4.7.2