



PROPOSED RULE MAKING

CR-102 (December 2017) (Implements RCW 34.05.320)

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STATE OF WASHINGTON
FILED

DATE: December 24, 2019

TIME: 8:57 AM

WSR 20-02-057

Agency: Washington State Building Code Council

Original Notice

Supplemental Notice to WSR _____

Continuance of WSR _____

Preproposal Statement of Inquiry was filed as WSR 19-06-073 ; or

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

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

Proposal is exempt under RCW _____.

Title of rule and other identifying information: (describe subject) WAC 51-51, Amendments of the 2018 International Residential Code.

Hearing location(s):

Date: **Time:** **Location:** (be specific) **Comment:**

Date:	Time:	Location: (be specific)	Comment:
March 13, 2020	10:00 am	Department of Enterprise Services Presentation Room (1213) 1500 Jefferson Street Olympia, WA 98504	

Date of intended adoption: April 10, 2020 (Note: This is **NOT** the **effective** date)

Submit written comments to:

Name: Doug Orth

Address: 1500 Jefferson St SE, Olympia, WA 98504

Email: SBCC@des.wa.gov

Fax:

Other:

By (date) March 6, 2020

Assistance for persons with disabilities:

Contact Carrie Toebbe

Phone: 360-407-9255

Fax:

TTY:

Email: carrie.toebbe@des.wa.gov

Other:

By (date) March 6, 2020

Purpose of the proposal and its anticipated effects, including any changes in existing rules:

The proposed rules address proposed state amendments to the 2018 edition of the International Residential Code, published by the International Code Council, as adopted by the Washington State Building Code Council. The rules will provide increased clarity and life safety measures for building construction in Washington State.

SUMMARY OF PROPOSED CHANGES

**2018 IRC
Amendments to WAC 51-51***

	WAC	Section	Changes in 2018	Discussion
1	51-51-020	Definitions	Deleted definition for Air-Impermeable Insulation	
2			Defined Balanced Whole House Ventilation	New
3			Defined Battery System, Stationary Storage	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
4			Defined Building, Existing	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
5			Defined Building	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
6			Defined Distributed Whole House Ventilation	New
7			Modified the definition for Dwelling Unit	Clerical – This was an approved change but is included here because this change had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
8			Defined Egress Roof Access Window	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
9			Defined Energy Storage Systems (ESS)	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
10			Defined Floor Area	Clerical – This was an approved definition but is included here because this definition had an

				effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
11			Defined Landing Platform	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
12			Defined Local Exhaust	New
13			Defined Lot	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
14			Defined Lot Line	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
15			Defined Sleeping Loft	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
16			Defined Townhouse	Modification addressing exposure to yard or public way.
17			Defined Townhouse Unit	Clerical – This was an approved definition but is included here because this definition had an effective date of July 1, 2020 and only one group of modifications to a WAC can have the same effective date.
18	51-51-1505	1505 Mechanical ventilation	Amendment renumbered from M1505.1 to M1503.2.1	Clerical
19		M1505.4.1 System design	Addresses ERV/HRVs. Requires ducted outdoor air.	Modified model code language
20		M1505.4.1.1 Whole house system component requirements	Addresses efficiency and sound rating requirements with exceptions	New text
21		M1505.4.1.2 Exhaust fans	Addresses requirements including ducting directly to the outside	New text

22		M1505.4.1.3 Supply fans.	Addresses requirements	New text
23		M1505.4.1.4 Balanced whole house ventilation system	Addresses requirements	New text
24		M1505.4.1.5 Furnace integrated supply	Prohibits space heating and/or cooling air handler fans for outdoor air supply distribution with a n exception	New text
25		M1505.4.1.6 Testing	Addresses requirements. Allows building official to require testing by a third party.	New text
26		M1505.4.1.7 Certificate	Requires a posted permanent compliance certificate	New text
27		M1505.4.2 System controls	Addresses control requirements	Modified model code language
28		M1505.4.3 Mechanical ventilation rate	Gives a minimum CFM per dwelling unit	Modified model code language
29		Table M1505.4.3(1) Whole House mechanical ventilation airflow rate	Modifies ranges and airflow requirements.	Modified model code table
30		M1505.4.3.1 Ventilation quality adjustment	Addresses minimum whole house ventilation rate formula adjustments	New text
31		Table M1505.4.3(2) System coefficient	Addresses balanced and not balanced	New table
32		M1505.4.3.2 Intermittent off operation	Controls must provide for intermittent off operation	New text
33		Table M1505.4.3(3) Intermittent off whole house mechanical ventilation rate factors	Modifies segments	Modified model code table
34		M1505.4.4 Local exhaust rates	Clarifies reference	Clarification
35		M1505.4.4.1 Local exhaust	Addresses bathrooms, toilet rooms and kitchens.	Modified model code language
36		M1505.4.4.2 Whole house exhaust controls	Addresses combining local exhaust with whole house ventilation system.	New text
37		Table M1505.4.4(1) Minimum local exhaust rates	Addresses bathrooms, toilet rooms and kitchens.	Modified model code language
38		M1505.4.4.3 Local exhaust fans	Addresses requirements	New text

39		Table M1505.4.4(2) Prescriptive exhaust duct sizing	Addresses exhaust duct sizing	New table
40	51-51-1507	Section - Mechanical ventilation	Reserved	Section renumbered in model code Moved to 1505.
41		M1507.1 General	Deleted	See Section 1505
42		M1507.2 Recirculation of air	Deleted	See Section 1505
43		M1507.3 Whole house mechanical ventilation system	Deleted	See Section 1505
44		M1507.4 Local exhaust	Moved to M1505.5	Move
45		Table M1507.4 Minimum required local exhaust rates	Moved to Table M1505.5	Moved
46		M1507.4.1 Local exhaust fans	Moved to M1505.5.1	Moved
47		M1507.4.2 Local exhaust controls	Moved to M1505.5.2	Moved
48		P2904.1.1 Required sprinkler locations	Addresses Uninhabitable attics	Changes "attic" to "uninhabitable attics".

Reasons supporting proposal:

To coordinate sections of the International Residential Code with adopted amendments to the International Mechanical Code to avoid conflicting regulations as well as to make additional modifications to coordinate adopted amendments in the IRC.

Statutory authority for adoption: 19.27.031, 19.27.074

Statute being implemented: 19.27.031, 19.27.074

Is rule necessary because of a:

- Federal Law? Yes No
 Federal Court Decision? Yes No
 State Court Decision? Yes No

If yes, CITATION:

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

Name of proponent: (person or organization) State Building Code Council

- Private
 Public
 Governmental

Name of agency personnel responsible for:			
	Name	Office Location	Phone
Drafting:	Richard Brown	1500 Jefferson St. SE, Olympia, WA 98504	360-407-9277
Implementation:	Richard Brown	1500 Jefferson St. SE, Olympia, WA 98504	360-407-9277
Enforcement:	Local Jurisdictions Having Authority		

Is a school district fiscal impact statement required under RCW 28A.305.135? Yes No

If yes, insert statement here:

The public may obtain a copy of the school district fiscal impact statement by contacting:

Name:
Address:
Phone:
Fax:
TTY:
Email:
Other:

Is a cost-benefit analysis required under RCW 34.05.328?

Yes: A preliminary cost-benefit analysis may be obtained by contacting:

Name: Richard Brown
Address: 1500 Jefferson St. SE, Olympia, WA 98504
Phone: 360-407-9277
Fax:
TTY:
Email: Richard.brown@des.wa.gov
Other:

No: Please explain:

Regulatory Fairness Act Cost Considerations for a Small Business Economic Impact Statement:

This rule proposal, or portions of the proposal, **may be exempt** from requirements of the Regulatory Fairness Act (see chapter 19.85 RCW). Please check the box for any applicable exemption(s):

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

Citation and description:

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

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

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

<input type="checkbox"/> RCW 34.05.310 (4)(b) (Internal government operations)	<input type="checkbox"/> RCW 34.05.310 (4)(e) (Dictated by statute)
<input type="checkbox"/> RCW 34.05.310 (4)(c) (Incorporation by reference)	<input type="checkbox"/> RCW 34.05.310 (4)(f) (Set or adjust fees)
<input type="checkbox"/> RCW 34.05.310 (4)(d) (Correct or clarify language)	<input type="checkbox"/> RCW 34.05.310 (4)(g) ((i) Relating to agency hearings; or (ii) process requirements for applying to an agency for a license or permit)

This rule proposal, or portions of the proposal, is exempt under RCW _____.
Explanation of exemptions, if necessary:

COMPLETE THIS SECTION ONLY IF NO EXEMPTION APPLIES

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

No Briefly summarize the agency's analysis showing how costs were calculated. _____

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

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

Small Business Economic Impact Statement (RCW 19.85.040)

Description

The Washington State Building Code Council (SBCC) is filing a proposed rule to adopt the updated 2018 edition of the International Residential Code (IRC) (WAC 51-51). Since 1985 the state building code council has been responsible to update to new editions of the building code per RCW 19.27.074. The IRC 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. See www.iccsafe.org for more information about the model code development process.

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

Professional Services

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

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

Costs of Compliance for Businesses

The cost of compliance incurred by Washington businesses includes training and educational materials. The IRC 2018 model code costs \$99 + tax shipping and handling. This publication is also available on line at <http://codes.iccsafe.org/l-Codes.html>. The ICC chapters offer training for continuing education credits to architects, engineers and building inspectors for \$285 (in 2016).

The Building Code technical advisory group (TAG) determined there is a cost for compliance on businesses for the following proposed state amendments.

1. All proposed changes to section M1505 will result in an estimated \$1.20/square foot (\$950/dwelling unit – multi-family only) with an anticipated full system payback in 11.2 years.

Loss of Sales or Revenue

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 small businesses for specific building projects, for a transition period. Other small businesses would see an increase in revenue. The amendments to all the building codes affect over 25,000 (in 2012) small businesses in the state, where construction activity occurs. The primary intent of these amendments are to improve energy efficiency in buildings and provide consistency and fairness across the state, for a predictable business environment. The amendments should result in enhanced value in buildings.

Cost of Compliance for Small Businesses (Determine whether the proposed rule will have a disproportionate cost impact on small businesses, compare the cost of compliance for small business with the cost of compliance for the ten percent of businesses that are the largest businesses.)

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

Reducing the Costs of the Rule on Small Businesses

The SBCC conducted a detailed review process, including participation at the national code development hearings, to document significant economic impacts of the proposed code amendments.

Small Businesses Involved in the Development of the Rule

For the IRC, the SBCC conducted 10 open public meetings of the building code technical advisory group, available via telephone conference bridge and over the internet, and allowed comment on every item on every agenda. For the IRC TAG the SBCC appointed 6 representatives of all segments of the business and construction community to serve on the technical advisory groups.

List of Industries

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

North American Industry Classification System (NAICS) Code	NAICS Code Definition	Number of Establishments in Washington State	TOTAL Annual Payroll	TOTAL Annual Revenue	AVG Annual Payroll	AVG Annual Revenue	1% of Avg Annual Payroll	0.3% of Avg Annual Revenue
236115	New single-family housing construction (except for-sale builders)	1261	\$186,272,000	---	\$147,718	---	\$1,477	---
236116	New multifamily housing construction (except for-sale builders)	45	\$54,622,000	---	\$1,213,822	---	\$12,138	---
236118	Residential remodelers	2777	\$318,180,000	\$1,536,217,000	\$114,577	\$553,193	\$1,146	\$1,660
236210	Industrial building construction	53 (s)	\$99,790,000	---	---	---	---	---
236220	Commercial and institutional building construction	862	\$772,473,000	\$6,925,925,000	\$896,140	\$8,034,716	\$8,961	\$24,104
238110	Poured concrete foundation and structure contractors	511	\$144,643,000	\$479,256,000	\$283,059	\$937,879	\$2,831	\$2,814
238120	Structural steel and precast concrete contractors	68	\$93,454,000	\$336,100,000	\$1,374,324	\$4,942,647	\$13,743	\$14,828
238130	Framing contractors	417	\$79,196,000	\$279,226,000	\$189,918	\$669,607	\$1,899	\$2,009
238140	Masonry contractors	293	\$74,067,000	\$215,274,000	\$252,788	\$734,724	\$2,528	\$2,204
238150	Glass and glazing contractors	141	\$67,626,000	\$237,985,000	\$479,617	\$1,687,837	\$4,796	\$5,064
238160	Roofing contractors	537	\$179,942,000	\$660,911,000	\$335,088	\$1,230,747	\$3,351	\$3,692
238170	Siding contractors	327	\$58,557,000	\$286,471,000	\$179,073	\$876,058	\$1,791	\$2,628

238190	Other foundation, structure, and building exterior contractors	113	\$37,585,000	\$123,771,000	\$332,611	\$1,095,319	\$3,326	\$3,286
238210	Electrical contractors and other wiring installation contractors	1847	\$940,854,000	\$3,026,762,000	\$509,396	\$1,638,745	\$5,094	\$4,916
238220	Plumbing, heating, and air-conditioning contractors	1664	\$959,976,000	\$3,169,548,000	\$576,909	\$1,904,776	\$5,769	\$5,714
238290	Other building equipment contractors	81	\$117,696,000	---	\$1,453,037	---	\$14,530	---
238310	Drywall and insulation contractors	653	\$282,929,000	\$723,945,000	\$433,276	\$1,108,644	\$4,333	\$3,325
238990	All other specialty trade contractors	547	\$182,710,000	\$573,308,000	\$334,022	\$1,048,095	\$3,340	\$3,144
321213	Engineered wood member (except truss) manufacturing	11	\$14,216,000	\$79,051,000	\$1,292,364	\$7,186,455	\$12,924	\$21,559
321214	Truss manufacturing	22	---	---	---	---	---	---
321219	Reconstituted wood product manufacturing	3	---	---	---	---	---	---
321911	Wood window and door manufacturing	39	\$37,814,000	\$145,137,000	\$969,590	\$3,721,462	\$9,696	\$11,164
321992	Prefabricated wood building manufacturing	18	\$6,891,000	---	\$382,833	---	\$382,833	---
327310	Cement manufacturing	7	---	---	---	---	---	---
327320	Ready-mix concrete manufacturing	93	\$74,457,000	---	\$800,613	---	\$8,006	---
327331	Concrete block and brick manufacturing	18	\$11,218,000	---	\$623,222	---	\$6,232	---
332311	Prefabricated metal building and component manufacturing	9	\$3,564,000	---	\$396,000	---	\$3,960	---

332312	Fabricated structural metal manufacturing	94	\$125,755,000	---	\$1,337,819	---	\$13,378	---
332321	Metal window and door manufacturing	16	\$23,776,000	---	\$1,486,000	---	\$14,860	---
332322	Sheet metal work manufacturing	122	\$122,956,000	\$573,443,000	\$1,007,836	\$4,700,352	\$10,078	\$14,101
335121	Residential electric lighting fixture manufacturing	9	---	---	---	---	---	---
335122	Commercial, industrial, and institutional electric lighting fixture manufacturing	8	\$2,625,000	---	\$328,125	---	\$3,281	---
335129	Other lighting equipment manufacturing	4	---	---	---	---	---	---
423720	Plumbing and heating equipment and supplies (hydronics) merchant wholesalers	168	\$82,225,000	\$897,748,000	\$489,435	\$5,343,738	\$4,894	\$16,031
541310	Architectural services	635	\$326,798,000	\$921,033,000	\$514,643	\$1,450,446	\$5,146	\$4,351
541330	Engineering services	1599	\$1,758,825,000	\$3,946,553,000	\$1,099,953	\$2,468,138	\$11,000	\$7,404
541350	Building inspection services	154	\$9,724,000	\$28,297,000	\$63,143	\$183,747	\$631	\$551
561621	Security systems services (except locksmiths)	109	\$86,072,000	\$233,388,000	\$789,651	\$2,141,174	\$7,897	\$6,424

Note: Data is blank in some fields to protect data source.
Data Source: Economic Census of the United States

Estimate of the Number of Jobs That Will Be Created or Lost

The adoption of these amendments is not expected to significantly impact the number of jobs in the construction industry. These rules are likely to be job neutral overall, i.e., they will not result in any job gains or losses. The scheduled effective date of amendments is July 1, 2020. Building permits issued prior to that date will be vested under the 2015 building code. Permits issued for projects under the 2018 code edition will generally start with the 2021 construction season.

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

Name: Richard Brown
Address: 1500 Jefferson St. SE, Olympia, WA 98504

Phone: 360-407-9277

Fax:

TTY:

Email: Richard.brown@des.wa.gov

Other:

Date: December 24, 2019

Name: Doug Orth

Title: Council Chair

Signature:

A handwritten signature in blue ink, appearing to read "Doug Orth", is written over the signature line. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

WAC 51-51-0202 Section R202—Definitions.

ADULT FAMILY HOME means a dwelling in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services.

~~((**AIR-IMPERMEABLE INSULATION.** An insulation having an air permeance equal to or less than 0.02 L/s-m² at 75 Pa pressure differential tested in accordance with ASTM E2178 or ASTM E283.))~~

ATTIC, HABITABLE. A conditioned area complying with all of the following requirements:

1. The occupiable floor area is at least 70 square feet (6.5 m²), in accordance with Section R304.
2. The occupiable floor area has a ceiling height in accordance with Section R305.
3. The occupiable space is entirely enclosed by the roof assembly above, knee walls (if applicable) on the sides, and the floor-ceiling assembly below.

A habitable attic is not considered a story.

BALANCED WHOLE HOUSE VENTILATION. Balanced whole house ventilation is defined as any combination of concurrently operating residential unit mechanical exhaust and mechanical supply whereby the total mechanical exhaust airflow rate is within 10 percent or 5 cfm, whichever is greater, of the total mechanical supply airflow rate. 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.

BATTERY SYSTEM, STATIONARY STORAGE. This definition is not adopted.

BUILDING, EXISTING. A building or structure erected prior to the adoption of this code, or one that has passed a final inspection.

BUILDING. Any one- or two-family dwelling or townhouse, or portion thereof used or intended to be used for human habitation, for living, sleeping, cooking or eating purposes, or any combination thereof, or any accessory structure.

CHILD CARE, FAMILY HOME. A child care facility, licensed by Washington state, located in the dwelling of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

CHILD DAY CARE, shall, for the purposes of these regulations, mean the care of children during any period of a 24 hour day.

CONDITIONED SPACE. An area, room or space that is enclosed within the building thermal envelope and that is directly or indirectly heated or cooled. Spaces are indirectly heated or cooled where they communicate through openings with conditioned spaces, where they are separated from conditioned spaces by uninsulated walls, floors or ceilings, or where they contain uninsulated ducts, piping or other sources of heating or cooling.

DISTRIBUTED WHOLE HOUSE VENTILATION. A whole house ventilation system shall be considered distributed when it supplies outdoor air directly (not transfer air) to each dwelling or sleeping unit habitable space (living room, den, office, interior adjoining spaces, or bedroom), and exhausts air from all kitchens and bathrooms directly outside.

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation. Dwelling units may also include the following uses:

1. Adult family homes, foster family care homes and family day care homes licensed by the Washington state department of social and health services.

2. Offices, mercantile, food preparation for off-site consumption, personal care salons or similar uses which are conducted primarily by the occupants of the dwelling unit and are secondary to the use of the unit for dwelling purposes, and which do not exceed 500 square feet (46.4 m²).

~~(3. One accessory dwelling unit, which need not be considered a separated dwelling unit, provided:~~

~~a. The accessory dwelling unit is constructed within an existing dwelling unit.~~

~~b. Either the accessory dwelling unit or primary dwelling unit is owner-occupied.~~

~~c. All required smoke alarms in the accessory dwelling unit and the primary dwelling unit are interconnected in such a manner that the actuation of one alarm will activate all alarms in both the primary dwelling unit and the accessory dwelling unit.)~~

EGRESS ROOF ACCESS WINDOW. A skylight or roof window designed and installed to satisfy the emergency escape and rescue opening requirements of Section R310.2.

ENERGY STORAGE SYSTEMS (ESS). One or more devices, assembled together, capable of storing energy in order to supply electrical energy at a future time.

FIRE SEPARATION DISTANCE. The distance measured from the foundation wall or face of the wall framing, whichever is closer, to one of the following:

1. To the closest interior lot line; or
2. To the centerline of a street, an alley or public way; or
3. To an imaginary line between two buildings on the lot.

The distance shall be measured at a right angle from the wall.

FLOOR AREA. The area within the inside perimeter of exterior walls of the building. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above.

LANDING PLATFORM. A landing provided as the top step of a stairway accessing a sleeping loft.

LOCAL EXHAUST. An exhaust system that uses one or more fans to exhaust air from a specific room or rooms within a residential dwelling or sleeping unit.

LOT. A measured portion or parcel of land considered as a unit having fixed boundaries.

LOT LINE. The line which bounds a plot of ground described as a lot in the title to the property.

MEZZANINE, LOFT. An intermediate level or levels between the floor and ceiling of any story.

SALT WATER COASTAL AREA. Those areas designated as salt water coastal areas by the local jurisdiction.

SLEEPING LOFT. A sleeping space on a floor level located more than 30 inches (726 mm) above the main floor and open to the main floor one or more sides with a ceiling height of less than 6 feet 8 inches (2032 mm).

SMALL BUSINESS. Any business entity (including a sole proprietorship, corporation, partnership or other legal entity) which is owned and operated independently from all other businesses, which has the purpose of making a profit, and which has fifty or fewer employees.

TOWNHOUSE. A building that contains three or more attached townhouse units in which each unit extends from foundation to roof. Each single-family dwelling unit shall have a yard or public way on not less than two sides that extends at least 50 percent of the length of each of these two sides.

TOWNHOUSE UNIT. A single-family dwelling unit in a townhouse that extends from foundation to roof and that has a yard or public way on not less than two sides that extends at least 50 percent of the length of each of these two sides.

WHOLE HOUSE VENTILATION SYSTEM. A mechanical ventilation system, including fans, controls, and ducts, which replaces, by direct ((or indirect)) means, air from the habitable rooms with outdoor air.

AMENDATORY SECTION (Amending WSR 16-03-025, filed 1/11/16, effective 7/1/16)

WAC 51-51-1505 Section M1505—(~~Overhead exhaust hoods~~) Mechanical ventilation.

(~~(M1505.1 General. Domestic open-top broiler units shall have a metal exhaust hood, having a minimum thickness of 0.0157-inch (0.3950 mm) (No. 28 gage) with 1/4 inch (6.4 mm) clearance between the hood and the underside of combustible material or cabinets. A clearance of not less than 24 inches (610 mm) shall be maintained between the cooking surface and the combustible material or cabinet. The hood shall be not less than the width of the broiler unit, extend over the entire unit, and when located inside the building envelope, shall discharge to the outdoors and be equipped with a backdraft damper or other means to control infiltration/exfiltration when not in operation. Broiler units incorporating an integral exhaust system, and listed and labeled for use without an exhaust hood, or broiler units permanently installed outside the building envelope and having the cooking surface at least 5'0" below a 1-hour fire resistance rated ceiling, need not have an exhaust hood.))~~ **M1505.4 Whole-house mechanical ventilation system.** Each dwelling unit shall be equipped with a ventilation system. The

whole-house mechanical ventilation systems shall be designed in accordance with Sections M1505.4.1 through M1505.4.4.

M1505.4.1 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, associated ducts and controls. Whole-house mechanical ventilation system with supply and exhaust fans per Sections M1505.4.1.2, M1505.4.1.3, M1505.4.1.4, and M1505.4.1.5. Local exhaust fans are permitted to serve as part of the whole house ventilation system when provided with the proper controls per Section M1505.4.2. The systems shall be designed and installed to supply and exhaust the minimum outdoor airflow rates per Section M1505.4.3 as corrected by the balanced and/or distributed whole house ventilation system coefficients per Section M1504.5.3.1 where applicable. The whole house ventilation system shall operate continuously at the minimum ventilation rate determined per Section M1505.4.2 unless configured with intermittent off controls per Section M1505.4.3.2.

M1505.4.1.1 Whole house 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. Design and installation of the system or equipment shall be carried out in accordance with manufacturers' installation instructions. Whole house ventilation fans shall be rated for sound at no less than the minimum airflow rate required by Section M1505.4.3.1. Ventilation fans shall be rated for sound at a maximum of 1.0 sone. This sound rating shall be at a minimum of 0.1 in. w.c. (25 Pa) static pressure in accordance with HVI procedures specified in Sections M1505.4.1.2 and M1505.4.1.3.

EXCEPTION: HVAC air handlers, ERV/HRV units, and remote mounted fans need not meet the sound requirements. To be considered for this exception, a remote mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways, and there must be at least 4 ft (1 m) of ductwork between the fan and the intake grille.

The whole house supply fan shall provide ducted outdoor ventilation air to each habitable space within the residential unit.

EXCEPTION: Interior joining spaces provided with a 30 cfm whole house transfer fan or a permanent opening with an area of not less than 8 percent of the floor area of the interior adjoining space but not less than 25 square feet do not require ducted outdoor ventilation air to be supplied directly to the space. Whole house transfer fans shall meet the sone rating of Section M1505.4.1.1 and shall have whole house ventilation controls that comply with Section M1505.4.2.

M1505.4.1.2 Exhaust fans. Exhaust fans required shall be ducted directly to the outside. Exhaust air outlets shall be designed to limit the pressure difference to the outside to limiting the outlet free area maximum velocity to 500 ft per min 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 the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure). 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 403.8.3 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 403.8.6.7.

M1505.4.1.3 Supply fans. Supply fans used in meeting the requirements of this section shall supply outdoor air from intake openings in accordance with IMC 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 ft per min and when designed for intermittent off operation shall be equipped with motorized dampers in accordance with Washington State Energy Code. Supply fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Airflow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure). 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 accessible for regular maintenance and replacement. The filter shall have a Minimum Efficiency Rating Value (MERV) of at least 8.

M1505.4.1.4 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 M1505.4.1.7. The exhaust fan shall meet the requirements of Section M1505.4.1.2. The supply fan shall meet the requirements of Section M1505.4.1.3. For dwelling units required by the Washington State Energy Code to have a balanced system, the system is required to have *balanced whole house ventilation* but is not required to have *distributed whole house ventilation* where the distributed system coefficient from Table 403.8.2 is utilized to correct the whole-house mechanical ventilation rate. 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.

M1505.4.1.5 Furnace integrated supply. Systems using space heating and/or cooling air handler fans for outdoor air supply distribution are not permitted.

EXCEPTION: Air handler fans shall have multispeed or variable speed supply airflow control capability with a low speed operation not greater than 25 percent of the rated supply airflow capacity during ventilation only operation. Outdoor air intake openings must meet the provisions of Sections R303.5 and R303.6 and must include a motorized damper that is activated by the whole house ventilation system controller. 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 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 M1505.4.1.7.

M1505.4.1.6 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 M1505.4.3 and M1505.4.4. 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 be posted in the dwelling unit per Section M1505.4.1.7.

M1505.4.1.7 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 M1505.4.3.1.

M1505.4.2 System controls. The whole-house mechanical ventilation system shall be provided with controls that comply with the following:

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 readily accessible by the occupant;

3. Whole house ventilation systems shall be configured to operate continuously except where intermittent off controls and sizing are provided per Section M1505.4.3.2.

M1505.4.3 Mechanical ventilation rate. The whole-house mechanical ventilation system shall provide outdoor air at a continuous rate as determined in accordance with Table M1505.4.3(1) or Equation 15-1.

Equation 15-1

$$\text{Ventilation rate in cubic feet per minute} = (0.01 \times \text{total square foot area of house}) + [7.5 \times (\text{number of bedrooms} + 1)] \text{ but not less than } 30 \text{ cfm for each dwelling unit}$$

**Table M1505.4.3(1)
Whole-House Mechanical Ventilation Airflow Rate**

Dwelling Unit Floor Area (square feet)	Number of Bedrooms				
	0 - 1	2	3	4	5 or more
	Airflow in cfm				
< 500	30	30	35	45	50
501 - 1,000	30	35	40	50	55
1,001 - 1,500	30	40	45	55	60
1,501 - 2,000	35	45	50	60	65
2,001 - 2,500	40	50	55	65	70
2,501 - 3,000	45	55	60	70	75
3,001 - 3,500	50	60	65	75	80
3,501 - 4,000	55	65	70	80	85
4,001 - 4,500	60	70	75	85	90
4,501 - 5,000	65	75	80	90	95

M1505.4.3.1 Ventilation quality adjustment. The minimum whole house ventilation rate from Section 1505.4.3 shall be adjusted by the system coefficient in Table M1505.4.3(2) 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*.

$$Q_v = Q_r * C_{system}$$

(Equation 15-2)

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 15-1 or Table M1505.4.3(1).

C_{system} = System coefficient from Table 1505.4.3(2).

Table M1505.4.3 (2)
System Coefficient (C_{system})

<u>System Type</u>	<u>Distributed</u>	<u>Not Distributed</u>
<u>Balanced</u>	<u>1.0</u>	<u>1.25</u>
<u>Not balanced</u>	<u>1.25</u>	<u>1.5</u>

M1505.4.3.2 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 shall operate for a least two hours in each four-hour segment. The whole house ventilation airflow rate determined in accordance with Section M1505.4.3 as corrected by Section M1505.4.3.1 is multiplied by the factor determined in accordance with Table M1505.4.3(3).

Table M1505.4.3 (3)
Intermittent Off Whole House-Mechanical Ventilation Rate Factors^{a,b}

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

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.

M1505.4.4 Local exhaust rates. Local exhaust systems shall be designed to have the capacity to exhaust the minimum airflow rate determined in accordance with Table M1505.4.4(1). If the local exhaust fan is included in the whole house ventilation system, in accordance with Section 1505.4.1, then the exhaust fan shall be controlled to operate as specified in Section M1505.4.2.

M1505.4.4.1 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 M1505.4.4(1). 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 readily accessible in the room served by the fan.

Table M1505.4.4 (1)

Minimum Local Exhaust Rates

<u>Area to Be Exhausted</u>	<u>Exhaust Rates</u>	
	<u>Intermittent</u>	<u>Continuous</u>
<u>Kitchens</u>	<u>100 cfm</u>	<u>30 cfm</u>
<u>Bathrooms - Toilet rooms</u>	<u>50 cfm</u>	<u>20 cfm</u>

M1505.4.4.2 Local exhaust fans. Exhaust fans shall meet the following criteria:

1. Exhaust fans shall be tested and rated in accordance with the airflow and sound rating procedures of the Home Ventilating Institute (HVI 915, HVI Loudness Testing and Rating Procedure, HVI 916, HVI Air-flow Test Procedure, and HVI 920, HVI Product Performance Certification Procedure).

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 M1505.4.4(1). 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 M1505.4.4(1).

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 M1505.4.4(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 M1505.4.4 (2)
Prescriptive Exhaust Duct Sizing

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

a. For each additional elbow, subtract 10 feet from length.

b. Flex ducts of this diameter are not permitted with fans of this size.

WAC 51-51-1507 ((Section M1507 Mechanical ventilation.)) Re-served.

~~(M1507.1 General. Local exhaust and whole-house mechanical ventilation systems and equipment shall be designed in accordance with this section.~~

~~**M1507.2 Recirculation of air.** Exhaust air from bathrooms and toilet rooms shall not be recirculated within a residence or to another dwelling unit and shall be exhausted directly to the outdoors. Exhaust air from bathrooms and toilet rooms shall not discharge into an attic, crawl space or other areas of the building.~~

~~**M1507.3 Whole-house mechanical ventilation system.** Whole-house mechanical ventilation systems shall be designed in accordance with Sections M1507.3.1 through M1507.3.3.~~

~~**M1507.3.1 System design.** Each dwelling unit or guestroom shall be equipped with a ventilation system complying with Section M1507.3.4, M1507.3.5, M1507.3.6 or M1507.3.7. Compliance is also permitted to be demonstrated through compliance with the International Mechanical Code or ASHRAE Standard 62.2.~~

~~**M1507.3.2 Control and operation.**~~

~~1. Location of controls. Controls for all ventilation systems shall be readily accessible by the occupant.~~

~~2. Instructions. Operating instructions for whole-house ventilation systems shall be provided to the occupant by the installer of the system.~~

~~3. Local exhaust systems. Local exhaust systems shall be controlled by manual switches, dehumidistats, timers, or other approved means.~~

~~4. Continuous whole-house ventilation systems. Continuous whole-house ventilation systems shall operate continuously and be equipped with an override control. A "fan on" switch shall be permitted as an override control. Controls shall be capable of operating the ventilation system without energizing other energy-consuming appliances. A clearly visible label shall be affixed to the controls that reads "Whole House Ventilation (see operating instructions)."~~

~~5. Intermittent whole-house ventilation systems. Intermittent whole-house ventilation systems shall comply with the following:~~

~~5.1. They shall be capable of operating intermittently and continuously.~~

~~5.2. They shall have controls capable of operating the exhaust fans, forced-air system fans, or supply fans without energizing other energy-consuming appliances.~~

~~5.3. The ventilation rate shall be adjusted according to the exception in Section 403.8.5.1.~~

~~5.4. The system shall be designed so that it can operate automatically based on the type of control timer installed.~~

~~5.5. The intermittent mechanical ventilation system shall operate at least one hour out of every four.~~

~~5.6. The system shall have a manual control and automatic control, such as a 24-hour clock timer.~~

5.7. At the time of final inspection, the automatic control shall be set to operate the whole-house fan according to the schedule used to calculate the whole-house fan sizing.

5.8. A label shall be affixed to the control that reads "Whole House Ventilation (see operating instructions)."

M1507.3.2.1 Operating instructions. Installers shall provide the manufacturer's installation, operating instructions, and a whole-house ventilation system operation description.

M1507.3.3 Mechanical ventilation rate. The whole-house mechanical ventilation system shall provide outdoor air to each dwelling unit at a continuous rate of not less than that determined in accordance with Table M1507.3.3(1).

EXCEPTION: The whole-house mechanical ventilation system is permitted to operate intermittently where the system has controls that enable operation for not less than 25 percent of each 4-hour segment and the ventilation rate prescribed in Table M1507.3.3(1) is multiplied by the factor determined in accordance with Table M1507.3.3(2).

Table M1507.3.3(1)

Continuous Whole-House Mechanical Ventilation System Airflow Rate Requirements

Dwelling Unit Floor Area (square feet)	NUMBER OF BEDROOMS				
	0-1	2-3	4-5	6-7	>7
	Airflow in CFM				
<1,500	30	45	60	75	90
1,501-3,000	45	60	75	90	105
3,001-4,500	60	75	90	105	120
4,501-6,000	75	90	105	120	135
6,001-7,500	90	105	120	135	150
>7,501	105	120	135	150	165

For SI: 1 square foot = 0.0929 m², 1 cubic foot per minute = 0.0004719 m³/s.

Table M1507.3.3(2)

Intermittent Whole-House Mechanical Ventilation Rate Factors^{a, b}

Run-Time Percentage in Each 4-Hour Segment	25%	33%	50%	66%	75%	100%
Factor ^a	4	3	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.

M1507.3.4 Whole-house ventilation using exhaust fans. This section establishes minimum prescriptive requirements for whole-house ventilation systems using exhaust fans. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole-house ventilation system.

M1507.3.4.1 Whole-house ventilation fans. Exhaust fans providing whole-house ventilation shall have a flow rating at 0.25 inches water gauge as specified in Table M1507.3.3(1). Manufacturers' fan flow ratings shall be determined according to HVI 916 or AMCA 210.

M1507.3.4.2 Fan noise. Whole-house fans located 4 feet or less from the interior grille shall have a sone rating of 1.0 or less measured at 0.1 inches water gauge. Manufacturer's noise ratings shall be determined as per HVI 915 (March 2009). Remotely mounted fans shall be

acoustically isolated from the structural elements of the building and from attached duct work using insulated flexible duct or other approved material.

M1507.3.4.3 Fan controls. The whole-house ventilation fan shall meet the requirements of Section M1507.3.2 and M1507.3.2.1.

M1507.3.4.4 Ventilation openings. Each habitable space shall be provided with outdoor air inlets or operable windows with an openable area not less than 4 square inches of net free area of opening for each 10 cfm of outdoor air required by Table M1507.3.3(1). Where outdoor air supplies are separated from exhaust points by doors, provisions shall be made to ensure air flow by installation of distribution ducts, undercutting doors, installation of grilles, transoms, or similar means. Doors shall be undercut to a minimum of 1/2 inch above the surface of the finish floor covering.

Individual room outdoor air inlets shall:

1. Have controllable and secure openings;
2. Be sleeved or otherwise designed so as not to compromise the thermal properties of the wall or window in which they are placed;
3. Any inlet or combination of inlets which provide 10 cfm at 10 Pascals are deemed equivalent to 4 square inches net free area.

Ventilation opening shall be screened or otherwise protected from entry by leaves or other material. Openings shall be controllable, securable and shall be designed to not compromise the thermal properties of the building envelope. Ventilation openings shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.
7. Asphalt roofs unless it is shown that no other location is permissible. In such cases the inlet opening shall be located a minimum of 2 feet from the nearest surface of the asphalt roofing, measured from the intake opening.

M1507.3.5 Whole-house ventilation integrated with a forced-air system. This section establishes minimum prescriptive requirements for whole-house ventilation systems integrated with forced-air ventilation systems. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole-house ventilation system.

M1507.3.5.1 Integrated whole-house ventilation systems. Integrated whole-house ventilation systems shall provide outdoor air at the rate calculated using Section M1507.3.3. Integrated forced-air ventilation systems shall distribute outdoor air to each habitable space through the forced-air system ducts. Integrated forced-air ventilation systems shall have an outdoor air inlet duct connecting a terminal element on the outside of the building to the return air plenum of the forced-air system, at a point within 4 feet upstream of the air handler. The outdoor air inlet duct connection to the return air stream shall be located upstream of the forced-air system blower and shall not be connected directly into a furnace cabinet to prevent thermal shock to the

heat exchanger. The system will be equipped with a motorized damper connected to the automatic ventilation control as specified in Section M1507.3.2. The required flow rate shall be verified by field testing with a flow hood or a flow measuring station.

M1507.3.5.2 Ventilation duct insulation. All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

M1507.3.5.3 Outdoor air inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

M1507.3.6 Whole-house ventilation using a supply fan. This section establishes minimum prescriptive requirements for whole-house ventilation systems using an inline supply fan. A system which meets all the requirements of this section shall be deemed to satisfy the requirements for a whole-house ventilation system.

M1507.3.6.1 Outdoor air. Supply fan ventilation systems shall distribute outdoor air to each habitable space through the forced-air system ducts or through dedicated ducts to each habitable space. Supply fans shall have the capacity to provide the amount of outdoor air specified in Table M1507.3.3(1) at 0.40 inches water gauge as per HVI 916. The outdoor air must be filtered before it is delivered to habitable spaces. The filter may be located at the intake device, in line with the fan, or, in the case of a connection to the return plenum of the air handler, using the furnace filter. An outdoor air inlet shall be connected to either the supply or return air stream.

M1507.3.6.2 Ducts. An outdoor air inlet duct connection to the supply air stream shall be located downstream of the forced-air system blower. An outdoor air inlet duct connection to the return air stream shall be located at least 4 feet upstream of the forced-air system blower and its filter. Neither type of duct shall be connected directly into a furnace cabinet to prevent thermal shock to the heat exchanger. The outdoor air inlet duct shall be prescriptively sized in accordance with Table M1507.3.6.2. The terminal element on the outside of the building shall be sized 2 inches in diameter larger than the outdoor air inlet duct.

**Table M1507.3.6.2
Prescriptive Supply Fan Duct Sizing**

Supply Fan Tested cfm at 0.40" wg		
Specified Volume from Table 1507.3.3(1)	Minimum Smooth Duct Diameter	Minimum Flexible Duct Diameter
50 - 90 cfm	4 inch	5 inch
90 - 150 cfm	5 inch	6 inch
150 - 250 cfm	6 inch	7 inch

Supply Fan Tested cfm at 0.40" wg		
Specified Volume from Table 1507.3.3(1)	Minimum Smooth-Duct Diameter	Minimum Flexible Duct Diameter
250-400 cfm	7 inch	8 inch

M1507.3.6.3 Dampers. The system shall be equipped with a back-draft damper and one of the following:

1. A calibrated manual volume damper installed and set to meet the measured flow rates specified in Table M1507.3.3(1) by field testing with a pressure gauge and/or following manufacturer's installation instructions; or
2. A manual volume damper installed and set to meet the measured flow rates specified in Table M1507.3.3(1) by field testing with a flow hood or a flow measuring station; or
3. An automatic flow-regulating device sized to the specified flow rates in Table M1507.3.3(1) which provides constant flow over a pressure range of 0.20 to 0.60 inches water gauge.

M1507.3.6.4 Ventilation duct insulation. All supply ducts in the conditioned space shall be insulated to a minimum of R-4.

M1507.3.6.5 Outdoor air inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.
4. A room or space having any fuel-burning appliances therein.
5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
6. Attic, crawl spaces, or garages.

M1507.3.7 Whole-house ventilation using a heat recovery ventilation system. This section establishes minimum prescriptive requirements for whole-house ventilation using a heat recovery ventilation system.

M1507.3.7.1 Heat recovery ventilation systems. All duct work in heat recovery systems shall be sized and installed per the manufacturer's instructions. System minimum flow rating shall be not less than that specified in Table M1507.3.3(1). Heat recovery ventilation systems shall have a filter on the upstream side of the heat exchanger in both the intake and exhaust airstreams with a minimum efficiency rating value (MERV) of 6.

M1507.3.7.2 Ventilation duct insulation. All supply ducts in the conditioned space installed upstream of the heat exchanger shall be insulated to a minimum of R-4.

M1507.3.7.3 Outdoor air inlets. Inlets shall be screened or otherwise protected from entry by leaves or other material. Outdoor air inlets shall be located so as not to take air from the following areas:

1. Closer than 10 feet from an appliance vent outlet, unless such vent outlet is 3 feet above the outdoor air inlet.
2. Where it will pick up objectionable odors, fumes or flammable vapors.
3. A hazardous or unsanitary location.

- 4. A room or space having any fuel-burning appliances therein.
- 5. Closer than 10 feet from a vent opening of a plumbing drainage system unless the vent opening is at least 3 feet above the air inlet.
- 6. Attic, crawl spaces, or garages.

M1507.4 Local exhaust. Local exhaust shall be provided in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where water vapor or cooking odor is produced. Local exhaust systems shall be designed to have the capacity to exhaust the minimum air flow rate determined in accordance with Table M1507.4.

**Table M1507.4
Minimum Required Local Exhaust Rates
For One- and Two-Family Dwellings**

Area to Be Exhausted	Exhaust Rates
Kitchens	100 cfm intermittent or 25 cfm continuous
Bathrooms-Toilet rooms Laundry rooms, indoor swimming pools, and spas	Mechanical exhaust capacity of 50 cfm intermittent or 20 cfm continuous

For SI: 1 cubic foot per minute = 0.0004719 m³/s.

M1507.4.1 Local exhaust fans. Exhaust fans providing local exhaust shall have a minimum fan flow rating not less than 50 cfm at 0.25 inches water gauge for bathrooms, laundries, or similar rooms and 100 cfm at 0.25 inches water gauge for kitchens. Manufacturers' fan flow ratings shall be determined as per HVI 916 (April 1995) or AMCA 210.

EXCEPTION: Where a range hood or down draft exhaust fan is used to satisfy the local exhaust requirements for kitchens, the range hood or down draft exhaust shall not be less than 100 cfm at 0.10 inches water gauge.

M1507.4.2 Local exhaust controls. Local exhaust systems shall be controlled by manual switches, dehumidistats, timers, or other approved means. Local exhaust system controls shall be readily accessible.)

NEW SECTION

WAC 51-51-2904 Section 2904—Dwelling unit fire-sprinkler systems.

P2904.1.1 Required sprinkler locations. Sprinklers shall be installed to protect all areas of a dwelling unit.

- EXCEPTIONS:
1. Uninhabitable attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In uninhabitable attics, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space.
 2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m²) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board.