



**Permit Center**  
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## Residential Energy/VIAQ Code

### Multi Family – Three or more units

<b>Project Address:</b>	<b>Date Submitted:</b>
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### Effective July 1, 2007

This form is not a substitute for the energy code itself. To obtain a copy of the energy or ventilation codes go to <http://www.energy.wsu.edu/code/code2006.cfm>

Option	Glazing Area % of Floor	Glazing U-Factor		Door U-Factor	Ceiling	Vaulted Ceiling <sup>1</sup>	Wall Above Grade	Wall-int Below Grade	Wall-ext Below Grade	Floor	Slab on Grade
		Vertical	Overhead								
I	10%	0.32	0.58	0.2	R-38	R-30	R-15	R-15	R-10	R-30	R-10
III	25% Group R-1 and R-2 Only	0.4	0.58	0.2	R-38/ U=0.031	R-30/ U=0.034	R-21/ U=0.057	R-15	R-10	R-30/ U=0.029	R-10
V	Unlimited Group R-1 and R-2 Only	0.35	0.58	0.2	R-38/ U=0.031	R-30/ U=0.034	R-21	R-21	R-10	R-30/ U=0.029	R-10

Requirement applicable only to single rafter or joist vaulted ceiling where both (a) the distance between the top of the ceiling and the underside of the roof sheathing is less than 12 inches and (b) there is a minimum 1-inch vented airspace above the insulation. Other single rafter or joist vaulted ceiling shall comply with the "ceiling" requirements. This option is limited to 500 square feet of ceiling area for any one dwelling unit.

1. **Submit a glazing schedule and percentage calculation** if not all the windows, skylights and doors comply with the maximum U-factor requirement OR you have selected Option I or III above.
2. Select the method for providing whole-house ventilation, applies only to buildings four stories or less:

- A. Ventilation Using Exhaust Fans.** Kitchen, bath or laundry room fans with a sone rating of 1.5 or less can be used to provide outside air. Refer to Tables 3-2 & 3-3 below to determine required ventilation rates and exhaust duct sizes. Outdoor air must be distributed to each habitable room by individual outdoor air inlets with a net free area of at least 4 square inches per room. Doors shall be undercut one-half inch.
- B. Ventilation Integrated with Forced-Air System.** Outdoor air can be distributed to habitable rooms by means of a dampered outdoor air inlet duct connected to the return air plenum upstream of the blower and outside the furnace cabinet. Refer to the Tables 3-2 & 3-5 below to determine ventilation rates and inlet air duct sizes.
- C. Ventilation using a Supply Fan.** Outdoor air can be distributed to habitable rooms by means of an inline supply fan in the forced-air system ducts or in a dedicated duct system. Supply fan systems must have the capacity to provide the amount of outside air specified in Table 3-2. See VIAQ Section 303.4.3 for additional requirements.
- D. Ventilation Using a Heat Recovery System.** See VIAQ Section 303.4.4 for requirements.

3. Calculate the maximum allowable HVAC system output:

_____ Sq.Ft. x 20 = _____	_____ BTU/hr
Heated Floor Area	Maximum Allowable Output

**NOTE:**

- Minimum AFUE for forced air heating systems = 0.78
- All appliances must be labeled as conforming to 1987 National Energy Conservation Act.

**WSEC TABLE 3-1  
MINIMUM SOURCE SPECIFIC VENTILATION CAPACITY REQUIREMENTS**

	<b>Bathrooms/Laundry</b>	<b>Kitchens</b>
Intermittently operating	50 cfm	100 cfm
Continuous operation	20 cfm	25 cfm

**WSEC TABLE 3-2  
VENTILATION RATES FOR ALL GROUP R OCCUPANCIES FOUR STORIES AND LESS\*  
Minimum and Maximum Ventilation Rates: Cubic Feet Per Minute (CFM)**

Floor Area, ft <sup>2</sup>	Bedrooms													
	2 or less		3		4		5		6		7		8	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
<500	50	75	65	98	80	120	95	143	110	165	125	188	140	210
501-1000	55	83	70	105	85	128	100	150	115	173	130	195	145	218
1001-1500	60	90	75	113	90	135	105	158	120	180	135	203	150	225
1501-2000	65	98	80	120	95	143	110	165	125	188	140	210	155	233
2001-2500	70	105	85	128	100	150	115	173	130	195	145	218	160	240
2501-3000	75	113	90	135	105	158	120	180	135	203	150	225	165	248
3001-3500	80	120	95	143	110	165	125	188	140	210	155	233	170	255
3501-4000	85	128	100	150	115	173	130	195	145	218	160	240	175	263
4001-5000	95	143	110	165	125	188	140	210	155	233	170	255	185	278

\*For residences that exceed 8 bedrooms, increase the minimum requirement listed for 8 bedrooms by an additional 15 CFM per bedroom. The maximum CFM is equal to 1.5 times the minimum.

**WSEC TABLE 3-3  
PRESCRIPTIVE EXHAUST DUCT SIZING**

Fan Tested CFM @0.25" W.G.	Minimum Flex Diameter	Maximum Length Feet	Minimum Smooth Diameter	Maximum Length Feet	Maximum Elbows <sup>1</sup>
50	4 inch	25	4 inch	70	3
50	5 inch	90	5 inch	100	3
50	6 inch	No Limit	6 inch	No Limit	3
80	4 inch <sup>2</sup>	NA	4 inch	20	3
80	5 inch	15	5 inch	100	3
80	6 inch	90	6 inch	No Limit	3
100	5 inch <sup>2</sup>	NA	5 inch	50	3
100	6 inch	45	6 inch	No Limit	3
125	6 inch	15	6 inch	No Limit	3
125	7 inch	70	7 inch	No Limit	3

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

**WSEC TABLE 3-5  
PRESCRIPTIVE INTEGRATED FORCED AIR SUPPLY DUCT SIZING**

Required Flow (CFM) Per Table 3-2	Minimum Smooth Duct Diameter	Minimum Flexible Duct Diameter	Maximum Length <sup>1</sup>	Maximum Number of Elbows <sup>2</sup>
50-80	6"	7"	20'	3
80-125	7"	8"	20'	3
115-125	8"	10"	20'	3
170-240	9"	11"	20'	3

- For lengths over 20' increase duct diameter 1 inch.
- For elbows numbering more than 3, increase duct diameter 1 inch.

**NOTE:**

- In all cases the ventilation system shall be controlled by a 24-hour clock timer set to operate the system for at least 8 hours a day.