



THE TOWN OF WOODWAY

23920 113th Place W. · Woodway · WA 98020
206.542.4443 · 206.546.9453 fax
<http://www.townofwoodway.com/permits/development.htm>

Permit #:
Date Received:

2006 WASHINGTON STATE ENERGY CODE • 2006 VENTILATION AND AIR QUALITY CODE SUBMITTAL FORMS: ALL HEAT TYPES

GENERAL INFORMATION - Check all appropriate boxes

Job type:	<input type="checkbox"/> New	<input type="checkbox"/> Addition	<input type="checkbox"/> Remodel	Conditioned sq. ft. _____
Occupancy:	<input type="checkbox"/> Single family	<input type="checkbox"/> Multi-family - Number of buildings: _____		<input type="checkbox"/> Number of units _____
Heating fuel:	<input type="checkbox"/> Electric	<input type="checkbox"/> LPG (Propane)	<input type="checkbox"/> Gas	<input type="checkbox"/> Other fuels _____
Heating system:	<input type="checkbox"/> Forced air	<input type="checkbox"/> Room heaters	<input type="checkbox"/> Hydronic	<input type="checkbox"/> Other _____

WHOLE HOUSE VENTILATION SYSTEMS - Check the "whole house ventilation system" that will be used:

- Intermittent whole house ventilation using exhaust fans.
NOTE: Exhaust only ventilation systems do not require outdoor air inlets if the home has a ducted forced air heating system that communicates with all habitable rooms and the interior doors are undercut to a minimum of 1/4-inch above the surface of the finish floor covering.
- Intermittent whole house ventilation integrated with a forced-air system.
- Intermittent whole house ventilation using a supply fan.
- Intermittent whole house ventilation using a heat recovery ventilation system.
- Engineered "whole house ventilation system" designed in compliance with Section 302, WAC 51-13.
NOTE: In addition to the required "whole house ventilation system," "source specific exhaust ventilation" is required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where excess water vapor or cooking odor is produced.

EXEMPT FROM WHOLE HOUSE VENTILATION SYSTEMS - If applicable, check one of the following:

- Building additions with less than 500 square feet of conditioned floor area.
- Replacement of air-handling/conditioning equipment without altering or repairing the associated air distribution system.

VAPOR RETARDER - Check the type of "vapor retarder" that will be used:

Floor:	<input type="checkbox"/> 4 mil Poly	<input type="checkbox"/> Face stapled backed batts	<input type="checkbox"/> Ext. T&G Plywood
Wall:	<input type="checkbox"/> 4 mil Poly	<input type="checkbox"/> Face stapled backed batts	<input type="checkbox"/> PVA – paint
Ceiling:	<input type="checkbox"/> 4 mil Poly	<input type="checkbox"/> Face stapled backed batts	<input type="checkbox"/> PVA – paint

2006 WSEC Chapter 6 Qualification Form - *Zone 1*, Residential Prescriptive Options for All Heat Sources ^{0, 1}

Instructions:

1. Carefully review the requirements for each of the options below. Choose an option that best suits your dwelling design. Glazing percentage typically determines which option to choose. Your building must match the selected option requirements without exceptions or substitutions. **Most applicants select Option IV.**
2. Check the box above the requirements of your option. Disregard components or equipment that do not apply to your project. Your permit will be processed more efficiently if you provide all of the requested information.

Can't Comply? If none of the Prescriptive (Chapter 6) options are acceptable, consider the Component Performance (Chapter 5) Approach. The main advantage is flexibility to juggle individual R and U-factors as long as an overall maximum value isn't exceeded. Note that the Component Performance requirements are no less stringent than the Prescriptive requirements. Worksheets and additional information about Chapter 5 WSEC are available on the Washington State University Energy Program Web site at www.energy.wsu.edu/code.

Check One →	OPT IV <input type="checkbox"/>	OPT I <input type="checkbox"/>	OPT II* <input type="checkbox"/>	Footnotes
Glazing Maximum % of floor area ¹⁰	Unlimited	10%	15%	<p>*Reference Case</p> <p>0. Nominal R-values are for wood frame assemblies only or assemblies built in accordance with Section 601.1.</p> <p>1. Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 13%, it shall comply with all of the requirements of the 15% glazing option (or higher). Proposed designs that cannot meet the specific requirements of a listed option may calculate compliance by Chapter 4 or 5 of this Code.</p> <p>2. Requirement applies to all ceilings except single rafter or joist vaulted ceilings complying with note 3. "Adv" denotes Advanced Framed Ceiling</p> <p>3. Requirement applicable only to single rafter or joist vaulted ceilings 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 ceilings shall comply with the "ceiling" requirements. This option is limited to 500 square feet of ceiling area for any one dwelling unit.</p> <p>4. Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water-resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.</p> <p>5. Floors over crawl spaces or exposed to ambient air conditions.</p> <p>6. Required slab perimeter insulation shall be a water-resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.</p> <p>7. Not used in climate zone one.</p> <p>8. Not used in climate zone one.</p> <p>9. Doors, including all fire doors, shall be assigned default U-factors from Table 10-6C.</p> <p>10. Where a maximum glazing area is listed, the total glazing area (combined vertical + overhead) as a percent of gross conditioned floor area shall be less than or equal to that value. Overhead glazing with U-factor of U=0.40 or less is not included in glazing area limitations.</p> <p>11. Overhead glazing shall have U-factors determined in accordance with NFRC 100 or as specified in Section 502.1.5.</p> <p>12. Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.</p>
	Group R-3 Occupancy only			
Vertical Glazing U-Factor	0.35	0.32	0.35	
Overhead U-Factor ¹¹	0.58	0.58	0.58	
Door U-Factor ⁹ (or R-Factor)	0.20 (R-5)	0.20 (R-5)	0.20 (R-5)	
Ceilings: With attics ²	R-38	R-38	R-38	
Vaulted ³	R-30	R-30	R-30	
Walls: Above grade ¹²	R-21	R-15	R-21	
Below grade ⁴ interior or exterior	R-21 R-10	R-15 R-10	R-21 R-10	
Floor: ⁵	R-30	R-30	R-30	
Slab on grade: ⁶	R-10	R-10	R-10	

2006 Residential WSEC Chapters 5 and 6: Heating System Sizing

The energy and residential code requires a heating and cooling sizing calculations for all projects. Heating and or space cooling may not exceed 150% of the design loads as calculated in the 2006 Washington State Energy Code. There are a few exceptions contained in the code. If you are using this form to size the heating system, you will need to complete the window, skylight, and door sections of the form. It is important to note that the codes also require a cooling system size calculation. This form will not provide the cooling calculation. It does not have the needed solar gains function. If a cooling system is included in the submission, you will not be using the heating system sizing worksheet. A separate ASH RAE Manual J or equivalent calculation must be used and submitted.

Please read and check the appropriate boxes below and then either complete the remainder of this form or attach the requested alternative calculations.

- This project is using Prescriptive Option IV. All glazing and doors meet maximum U-factor and system does not provide for cooling. An alternative heating size method is attached. Approved alternative methods include the mechanical company's proprietary computer calculation programs, the heating sizing found in this form, and/or Manual J or equivalent.
- This project is using Prescriptive Option IV and provides a cooling system. It is important to note that the codes also require a cooling system size calculation. This form will not provide the cooling calculation. It does not have the needed solar gains function. If a cooling system is included in the submission, you will not be using the heating system sizing worksheet. A Manual J or equivalent calculation will be performed and attached.
- This project is using a heating and cooling system. A Manual J or equivalent calculation will be performed and attached.
- Natural gas or oil-fired space heating equipment will be used for this project and the total rated spaced heating output in any one dwelling unit is 40,000 Btu/h or less and is exempt from the sizing limit.
- Natural gas or oil-fired space heating equipment will be used for this project and installed equipment has an annual fuel utilization efficiency (AFUE) of 90% or greater. Larger than 40,000 Btu/h may exceed the 150% sizing limit but may not exceed 250%. Calculations attached.
- This project is using the attached forms for heating sizing and the glazing sections for window skylight and doors to size the heating system. The sections on the following pages will be completed.
- This project is using Manual J or the equivalent for sizing the heating - a copy is attached.

The following Outdoor Design Temperature (Design Dry Bulb 0.2% 0.6%) is from the Washington State Energy Code and should be used for the Town of Woodway.

Edmonds 24

Simple Heating System Size: Climate Zone I

Indoor Design Temperature	70
Outdoor Design Temperature	
Design Temperature Difference	
Indoor–Outdoor Design Temp	70
Conditioned Floor Area	
Conditioned Volume	

This field needs to be completed even if only using glazing portion of form.

Glazing

Sum of UA from Glazing (doors, vertical, overhead, and single)

Attic	U-Factor	X	Area	=	UA	
R-38	0.031		<input type="text"/>		<input type="text"/>	
R-38 Scissor	0.035		<input type="text"/>			
R-38 Advanced	0.026		<input type="text"/>			
Other _____			<input type="text"/>			
Single Rafter Joist	U-Factor	X	Area	=	UA	
R-30	0.034		<input type="text"/>		<input type="text"/>	
R-38	0.027		<input type="text"/>			
Other _____			<input type="text"/>			
Above Grade Walls	U-Factor	X	Area	=	UA	
R-21 – lapped siding	0.057		<input type="text"/>		<input type="text"/>	
R-21 – T-111 siding	0.060		<input type="text"/>			
Other _____			<input type="text"/>			
Floors	U-Factor	X	Area	=	UA	
R-30	0.029		<input type="text"/>		<input type="text"/>	
Other _____			<input type="text"/>			
Below Grade Walls	U-Factor	X	Area	=	UA	
R-21 interior	0.037		<input type="text"/>		<input type="text"/>	
R-10 exterior	0.056		<input type="text"/>			
Other _____			<input type="text"/>			
Slab Below Grade	F-Factor	X	Length	=	UA	
R-21 interior walls	0.570		<input type="text"/>		<input type="text"/>	
R-10 exterior walls	0.420		<input type="text"/>			
Other _____			<input type="text"/>			
Slab on Grade	F-Factor	X	Length	=	UA	
R-10 perimeter insulation	0.540		<input type="text"/>		<input type="text"/>	
R-10 exterior walls	0.510		<input type="text"/>			
Uninsulated slab	0.730		<input type="text"/>			
Other _____			<input type="text"/>			
Sum of UA					<input type="text"/>	
Envelope Heat Load					<input type="text"/>	BTU / hour
Sum of UA x Design Temperature Difference						
Air Leakage Heat Load					<input type="text"/>	BTU / hour
((Volume x 0.6) x (Design Outdoor Temp x 0.018))						
Building Design Heat Load					<input type="text"/>	BTU / hour
Air Leakage + Envelope Heat Loss						
Building and Duct Heat Load					<input type="text"/>	BTU / hour
Use 1.15 if ducts are located in unconditioned space: Sum of Building Heat Loss x 1.15						
Use 1 if ducts are located in conditioned space: Sum of Building Heat Loss x 1						
Maximum Heat Equipment Output			150%		<input type="text"/>	BTU / hour
Building and Duct Heat Loss x 1.50						
Increase to Maximum Heat Equipment Output			250%		<input type="text"/>	BTU / hour
With 90% High Efficiency Furnace						

Overhead Glazing

Plan ID	Component Description	Ref	Glazing U-Factor	Qty	Width		Height		Glazing Area	UA
					Feet	Inch	Feet	Inch		
<i>Sums of Area and UA</i>										
<i>Area Weighted U - UA/Area</i>										

Single Glazing and Garden Windows Section 602.7.2 Exception

Plan ID	Component Description	Qty	Width		Height		Area
			Feet	Inch	Feet	Inch	
<i>Sums of Area</i>							
<i>Sum of Area x 3 (enter this value in the glazing area total)</i>							
<i>Glazing UA for Heating System Size Only - Area x 1.2</i>							

Exceptions:

602.6 Exterior Doors: Doors shall comply with Section 602.6.1 and 602.6.2

Exceptions:

1. Glazed doors whose area and U-factor are included in the calculations for compliance with the requirements for glazing in Section 602.7 shall be exempt from the door U-factor requirements prescribed in Table 6-1 or 6-2.
2. One unlabeled or untested exterior swinging door with the maximum area of 24 square feet may be installed per unit for ornamental, security, or architectural purposes. Products using this exception shall not be included in either the U-factor or glazing area calculation requirements.

602.7.2 Glazing U-Factor

Exceptions:

Single glazing for ornamental, security, or architectural purposes and double-glazed garden windows with a wood or vinyl frame shall be exempt from the U-factor calculations, but shall have its area tripled and shall be included in the percentage of the total glazing area as allowed for in Table 6-1 or 6-2. The maximum area (before tripling) allowed for the total of all single glazing and garden windows is 1% of the floor area.