2015 WSEC RESIDENTIAL COMPLIANCE CHECKLIST

THIS CHECKLIST MUST BE COMPLETED FOR ALL SINGLE FAMILY, TOWNHOME, RESIDENTIAL MULTIFAMILY 3 STORIES OR LESS AND DUPLEX NEW CONSTRUCTION AND ADDITIONS.

THIS CHECKLIST ALONG WITH THE APPROVED PLANS MUST BE KEPT ON THE JOB AT ALL TIMES. INSPECTORS CANNOT PERFORM INSPECTIONS WITHOUT IT.

1. **Responsibility for information:** Although staff members will help you with general questions about completing this checklist, it is ultimately your responsibility to provide detailed information about heating systems, glazing, insulation, and other building specifications.

2. **Page 1 Prescriptive Requirements** – all of these requirements must be met

3. **Page 2 & 3 Credit Options:** Select credit options. Besides meeting the basic requirements you must also include credits in your home design.

Since this checklist will be evaluated for completeness and accuracy, you can avoid unnecessary permit delays by carefully providing all required information

**EFFECTIVE 7/1/2016**

ALL RESIDENTIAL OCCUPANCIES

ALL FUEL TYPES
# PRESCRIPTIVE REQUIREMENTS

<table>
<thead>
<tr>
<th>CEILINGS: WITH ATTICS</th>
<th>R-49</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAULTED AND RASIED HIPS</td>
<td>R-38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WALLS: ABOVE GRADE</th>
<th>R-21 INT - R-10 Rigid Insulation Required at Headers</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELOW GRADE INTERIOR</td>
<td>R-21 TB - R-5 Thermal Break Required between slab and foundation wall</td>
</tr>
<tr>
<td>Or RIGID EXTERIOR</td>
<td>R-15 TB (Preferred method for moisture control)</td>
</tr>
<tr>
<td></td>
<td>R-10 TB (Preferred method for moisture control)</td>
</tr>
<tr>
<td></td>
<td>No vapor barriers required or allowed on below grade walls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLOOR: SLAB ON GRADE:</th>
<th>R-30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R-10</td>
</tr>
<tr>
<td></td>
<td>Exterior – from top of slab - 24” vertically - Protected from sun and pests</td>
</tr>
<tr>
<td></td>
<td>Interior – from top of slab - 24” vertically or horizontally – 2” nailer allowed</td>
</tr>
</tbody>
</table>

| BELOW GRADE SLAB | R-5 Thermal Break Required between slab and foundation wall |

<table>
<thead>
<tr>
<th>GLAZING MAX: % OF FLOOR VERTICAL</th>
<th>Unlimited</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-FACTOR - OVERHEAD (Skylights)</td>
<td>.30</td>
</tr>
<tr>
<td>DOOR U-VALUE</td>
<td>.50</td>
</tr>
</tbody>
</table>

R-values are for wood frame assemblies only
Additions < 500 sq ft are required to have .5 credit

Small dwelling units < 1500 sq ft and additions between 500 and 1500 sq ft are required to have 1.5 credits

Medium dwelling unit 1500 sq ft to 4999 sq ft are required to have 3.5 credits

Large dwelling unit greater than 5000 sq ft are required to have 4.5 credits

EVERY OPTION YOU CHOOSE MUST BE SHOWN ON PLANS

OPTIONS

☐ 1a EFFICIENT ENVELOPE
U-value =.28, Floor R-38, full slab insulation

☐ 1b EFFICIENT ENVELOPE
Floor R-38, U-value - .25, Walls R-21 + R-4 foam, full slab

☐ 1c EFFICIENT ENVELOPE
Floor R-38, U-value - .22, Walls R-21 + R-12 foam, full slab

☐ 1d EFFICIENT ENVELOPE
U-value - .24
You may not use 1a, 1b, or 1c

☐ 2a AIR LEAKAGE CONTROL
Air leakage to 3.0 AC/HR
and high efficiency fan for Whole House fan not interconnected with furnace
Whole house fan: Manufacturer/Model #: _____________________________
Location: ______________  Sone rating: __________

☐ 2b AIR LEAKAGE CONTROL
Air leakage to 2.0 AC/HR
and HRV w/ efficiency of .70
Heat Recovery System: Manufacturer/Model #: _____________________________
Efficiency Rating: __________________

☐ 2c AIR LEAKAGE CONTROL
Air leakage to 1.5 AC/HR
and HRV w/ efficiency of .85
Heat Recovery System: Manufacturer/Model #: _____________________________

CREDITS

.5

1.0

2.0

.5

1.0

1.5
Only one HVAC system may be chosen

☐ 3a High Efficiency HVAC  
Gas furnace AFUE of 94% or Gas Boiler AFUE of 92%  
Furnace or Boiler: Manufacturer/Model #: ____________________________  
BTU Output: __________________ Efficiency Rating: __________________

☐ 3b High Efficiency HVAC  
Air-source Heat Pump HSPF of 9.0  
Heat Pump: Manufacturer/Model #: ____________________________  
BTU Output: __________________ Efficiency Rating: __________________

☐ 3c High Efficiency HVAC  
Ground-source Heat Pump with COP of 3.3 or Water source Heat Pump with COP 3.6  
Heat Pump: Manufacturer/Model #: ____________________________  
BTU Output: __________________ Efficiency Rating: __________________

☐ 3d High Efficiency HVAC  
Ductless Heat Pump – Required to be installed in largest zone of dwelling  
Heat Pump: Manufacturer/Model #: ____________________________  
BTU Output: __________________ Efficiency Rating: __________________

☐ 4 High Efficiency Distribution  
All heating/cooling system parts must be within conditioned space and layout must be shown on plans  
Electric resistance zonal and Ductless heat pumps cannot use this option  
System efficiency of less than 80% not allowed

☐ 5a EFFICIENT WATER HEATING  
Low flow plumbing fixtures – Showerhead and kitchen sink ≤ 1.75 GPM  
All other lavatory faucets rated at 1 GPM or less

☐ 5b EFFICIENT WATER HEATING  
Gas water heater with EF of .74 or ground source water heater meeting 3c  
Water Heater: Manufacturer/Model #: ____________________________  
Efficiency Rating: __________________

☐ 5c EFFICIENT WATER HEATING  
Gas water heater with EF of .91 or Electric Heat Pump with EF of 2.0 or Solar Supplemental  
Water Heater: Manufacturer/Model #: ____________________________  
Efficiency Rating: __________________

☐ 5d EFFICIENT WATER HEATING  
A drain water heat recovery unit(s) installed which captures waste water heat from all showers  
Plumbing layout required to show all specifics of design

☐ 6 RENEWABLE ELECTRIC ENERGY  
On-site wind or solar generation - .5 credit for each 1200 kWh to a maximum of 3 credits

Efficiency Rating: __________________
**VENTILATION**

Exhaust ventilation shall be provided for each dwelling unit as follows:

### Table M1507.3.3(1)
Continuous Whole-House Mechanical Ventilation System Airflow Rate Requirements

<table>
<thead>
<tr>
<th>Dwelling Unit Floor Area (square feet)</th>
<th>0-1</th>
<th>2-3</th>
<th>4-5</th>
<th>6-7</th>
<th>&gt;7</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000 - 4,500</td>
<td>60</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td>120</td>
</tr>
<tr>
<td>4,500 - 6,000</td>
<td>75</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td>135</td>
</tr>
<tr>
<td>6,000 - 7,500</td>
<td>90</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>&gt;7,500</td>
<td>105</td>
<td>120</td>
<td>135</td>
<td>150</td>
<td>165</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum CFM</th>
<th>Manufacturer and Model#</th>
<th>CFM (.1 W.G.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen fan</td>
<td>100 CFM / 25 CFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom fan</td>
<td>65 CFM / 20 CFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom fan</td>
<td>65 CFM / 20 CFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathroom fan</td>
<td>65 CFM / 20 CFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laundry fan</td>
<td>65 CFM / 20 CFM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole house fan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Whole house fan – Continuous Operation - Per above CFM requirements**

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum CFM</th>
<th>Manufacturer and Model#</th>
<th>CFM (.1 W.G.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sone Rating</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table M1507.3.3(2)
Intermittent Whole-House Mechanical Ventilation Rate Factors

<table>
<thead>
<tr>
<th>Run-Time Percentage in Each 4-Hour Segment</th>
<th>25%</th>
<th>33%</th>
<th>50%</th>
<th>66%</th>
<th>75%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>

<sup>a</sup> For ventilation system run time values between those given, the factors are permitted to be determined by interpolation.

<sup>b</sup> Extrapolation beyond the table is prohibited.

**Intermittent Whole house fan size required:** Example: 3500 sf house with 4 beds needs 90 CFM fan running at 50% of the time = 90 x 2 = 180 CFM fan required. Fan must meet this CFM rated at .25wg.

**Whole house fan – Intermittent Operation - Per calculation**

<table>
<thead>
<tr>
<th>Size of fan in CFM</th>
<th>CFM required from M1507.3.3(1) times Run time factor from M1507.3.3(2)</th>
<th>Location</th>
</tr>
</thead>
</table>
Whole house fan required in all new houses/dwelling units and all additions >500 square feet
Whole house fan must be ultra quiet and must be labeled “Whole House Ventilation”

Fresh air shall be provided for each dwelling unit as follows:
- Tested, screened, controllable, through wall port
- Vented window frames
- Integrated with a Central forced air furnace which delivers outside makeup air through ducting system and requires furnace fan to be controlled by a timer set at 8 hours/day

FRAMING PHASE

Vapor retarders shall be installed toward the warm surface and required to be rated at 1 perm dry cup or less
Select one option for floors, walls, and ceilings:
Floors:
- Plywood w/ exterior glue
- Poly ≥ 4 Mill
- Backed batts
Walls:
- Poly ≥ 4 Mill
- Face-stapled backed batts
- Vapor Retarder Paint
Ceilings:
- Not required where ventilation space > 12" above insulation
- Face stapled backed batts
- Poly ≥ 4 Mill
- Vapor Retarder Paint

FINAL PHASE
Blower door test must be completed and Residential Building Air Leakage Test form must be on jobsite. (See attachment)

Energy code Compliance Certificate must be completed and attached to wall within 3 feet of electrical panel. (See attachment)

Covers to be removed from exhaust fans so Inspector can verify compliance with code.
Residential Building Air Leakage Test (Blower Door Test) Results

Permit #: _____________________________

House address or lot number: ______________________________________________________

City: _______________________ Zip: _______________________

Cond. Floor Area (ft²): __________ Age of house: _______________________

Source (circle one): Plans Estimated Measured

Results shall be reported as Air Changes per Hour at 50 Pascals (ACH₅₀) and shall be calculated as follows:

\[ \text{ACH}_{50} = \frac{\text{CFM}_{50} \times 60}{\text{Volume}} \]

Where:

\( \text{CFM}_{50} = \text{Blower door fan flow at 50 Pascal pressure difference} \)
\( \text{Volume} = \text{Conditioned Floor Area of the housing unit x ceiling height} \)

Blower Door Test Result: ___________ ACH₅₀

___________ CFM@50Pa

Ring (circle one if applicable): Open A B C

Blower Door Fan Location: __________________________ Weather Conditions: __________________

I certify that these blower door results are accurate and determined using standard industry protocol.

Company Name: ________________________________ Technician: __________________________

Technician Signature: ________________________ Date: __________ Phone Number: ______________

2015 Washington State Energy Code reference:

R402.4.1.2 Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 5 air changes per hour. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). Where required by the code 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 code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope. Once visual inspection has confirmed sealing (see Table R402.4.1.1), operable windows and doors manufactured by small business shall be permitted to be sealed off at the frame prior to the test.
During testing:
1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures;
2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
3. Interior doors, if installed at the time of the test, shall be open, access hatches to conditioned crawl spaces and conditioned attics shall be open;
4. Exterior openings for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
6. Supply and return registers, if installed at the time of the test, shall be fully open.
### 2015 WSEC Residential Energy Compliance Certificate

**Property Address:**

**Conditioned Floor Area:**

**Date:**

**Builder or registered design professional:**

**Signature:**

#### R-Values

<table>
<thead>
<tr>
<th>Ceiling</th>
<th>R- Value</th>
<th>Floors</th>
<th>R- Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaulted</td>
<td></td>
<td>Over unconditioned space</td>
<td></td>
</tr>
<tr>
<td>Attic</td>
<td></td>
<td>Slab on grade floor</td>
<td></td>
</tr>
<tr>
<td>Walls: Above grade</td>
<td></td>
<td>Doors:</td>
<td></td>
</tr>
<tr>
<td>Below, int.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below, ext.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U-Factors and SHGC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFRC rating (or):</td>
</tr>
<tr>
<td>Windows: U-</td>
</tr>
<tr>
<td>Skylights: U-</td>
</tr>
</tbody>
</table>

| Default rating (Appendix A WSEC 2015): |
| SIHGC- N/A |

<table>
<thead>
<tr>
<th>Table 406.2 Option(s)</th>
<th>Total 406.2 Credits</th>
</tr>
</thead>
</table>

#### Heating, Cooling & Domestic Hot Water

<table>
<thead>
<tr>
<th>System</th>
<th>Type</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIIW</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Duct & Building Air Leakage

**All ducts & HVAC in conditioned space (yes/no):** Insulation R-

**Air handler present (yes/no):**

<table>
<thead>
<tr>
<th>Test Target</th>
<th>CFM@25Pa</th>
<th>Test Result</th>
<th>CFM@25Pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building air leakage: ACH\textsubscript{50} &lt; 5.0 - Tested leakage: ACH\textsubscript{50} =</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Onsite Renewable Energy Electric Power System

| System type: __________________ | Rated annual generation: __________________ | KWh |