WASHINGTON STATE UNIVERSITY
Energy Program

R406 Dwelling Size and Credit Options

Table of Contents

Credits required for WSEC-R20212nd printing

R406.3 Additional Energy Efficiency Requirements:

Each unit in a residential building shall comply with sufficient options from Tables R406.2 and R406.3 to achieve the following minimum number of credits: This document provides the credit selections from the WSEC-R 2021 sections R406.2. Be sure to pay attention to the footnotes in this section as well as the corresponding documents sections based on the R406.3 credit options.

Small Dwelling Unit: **5 credits**

Dwelling units less than 1500 square feet in conditioned floor area **with less than 300 square feet of fenestration area**. Additions to existing buildings greater than 500 square feet of heated floor area but less than 1500 square feet.

Medium Dwelling Unit: **8 credits**

For combustion heating equipment meeting minimum federal efficiency standards for the equipment listed in Table C403.3.2(5) or C403.3.2(6)

Large Dwelling Unit: **9 credits**

For an initial heating system using a heat pump that meets federal standards for the equipment listed in Table C403.3.2(2) and supplemental heating provided by electric resistance or a combustion furnace meeting minimum standards listed in Table C403.3.2(5)b

Dwelling Units servicing R-2b: **6.5 credits**

For heating system based on electric resistance only (either forced air or Zonal)

Additions of 150 square feet to 500 square feet **2 credits**

The drawings included with the building permit application shall identify which options have been selected and the point value of each option, regardless of whether separate mechanical, plumbing, electrical, or other permits are utilized for the project.

PRO TIP: Additions that are less than 150 square feet and assessor structures do not need to select energy credit from R406.2 & R406.3. If you exceed the small credit fenestration restriction of less than 300 square feet of fenestration you will be required to utilize the medium dwelling unit credit selection requirements.

Energy Credit Options (Table R406.3)

R406.3 Credit Selections:

Based on the size adjustment factor above select a total number of credits **from both** R406.2 and R 406.3. See document on the R 406.2 equalization credits based on the primary heating source for the unit. Table R-406.3, based on WSEC-R 2021 2nd Printing for digital assessable purposes.

1.0 Efficient Building Envelope Options:

Only one option from Items 1.1 through 1.4 may be selected in this category. Compliance with the conductive UA targets is demonstrated using Section R402.1.5, Total alternative, where [1-(Proposed UA/Target UA)] > the required ¾UA reduction.

1.1 Efficient Building Envelope Option:

Prescriptive compliance is based on Table R402.1.3 with the following modifications:

Vertical fenestration U = 0.22.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

1.2 Efficient Building Envelope Option:

Prescriptive compliance is based on Table R402.1.3 with the following modifications:

Vertical fenestration U = 0.25

FloorR-38

Basement wall R-2 t +R-5 ci

Ceiling and single-rafter or joist-vaulted R-60 advanced

Slab on grade R-10 perimeter and under entire slab

Below grade slab R-10 perimeter and under entire slab

OR

Compliance based on Section R402.1.5: Reduce the Total conductive UA by 15%.

(Credits: All others: 1.0 credits / Group R-2b: 1.0 credits)

1.3 Efficient Building Envelope Option 3:

Prescriptive compliance is based on Table R402.1.3 with the following modifications:

Vertical fenestration U = 0.18

Ceiling and single-rafter or joist-vaulted R-60 advanced
Floor R-38
Basement wall R-21 int plus R-12 ci
Slab on grade R-10 perimeter and under entire slab
Below grade slab R-10 perimeter and under entire slab

OR

Compliance based on Section R402.1.5: Reduce the Total conductive UA by 22.5%.

(Credits: All others: 1.5 credits / Group R-2b: 0.5 credits)

1.4 Efficient Building Envelope Option 4:

Prescriptive compliance is based on Table R402.1.3 with the following modifications:
Vertical fenestration U = 0.18
Ceiling and single-rafter or joist-vaulted R-60 advanced
Wood frame wall R-21 int plus R-16 ci
Floor R-38
Basement wall R-21 int plus R-16 ci
Slab on grade R-20 perimeter and under entire slab
Below grade slab R-20 perimeter and under entire slab

OR

Compliance based on Section R402.1.5: Reduce the Total conductive UA by 30%.

(Credits: All others: 2.5 credits / Group R-2b: 2.0 credits)

PRO TIP: Continuous insulation and other such assemblies can be difficult to achieve prescriptively all the time. Utilize the UA trade of compliance path to customize where you wish to upgrade the envelope. Be sure to look at alternative walls that may be equal to or close enough for the tradeoff pathway.

2.0 Air Leakage Control and Efficient Ventilation Options:

Only one option from Items 2.1 through 2.3 may be selected in this category.

2.1 Air Leakage Control Option:

Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 2.0 air changes per

hour maximum at 50 Pascals, or for R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.25 cfm/ft^2 maximum at 50 Pascals.

And

All whole house ventilation requirements as determined by Section M1505.3 of the *International Residential Code* or Section 403.8 of the *International Mechanical Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.65.

To qualify to claim this credit, the building permit drawings shall specify the option being selected, and shall specify the maximum tested building air leakage, and shall show the qualifying heat recovery ventilation system and its control sequence of operation.

(Credits: All others: 1.0 credits / Group R-2b: 1.0 credits)

2.2 Air Leakage Control Option:

Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 1.5 air changes per hour maximum at 50 Pascals, or for R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.20 cfm/ft^2 maximum at 50 Pascals.

And

All whole house ventilation requirements as determined by Section M1505.3 of the *International Residential Code* or Section 403.8 of the *International Mechanical Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.75.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.

(Credits: All others: 1.5 credits / Group R-2b: 1.5 credits)

Air Leakage Control Option 2.3:

Compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.6 air changes per hour maximum at 50 Pascals, or for R-2 Occupancies, optional compliance based on Section R402.4.1.2: Reduce the tested air leakage to 0.15 cfm/ft^2 maximum at 50 Pascals

And

All whole house ventilation requirements as determined by Section M1505.3 of the *International Residential Code* or Section 403.8 of the *International Mechanical Code* shall be met with a heat recovery ventilation system with minimum sensible heat recovery efficiency of 0.80. Duct insulation shall comply with Section R403.3.2.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the maximum tested building air leakage and shall show the heat recovery ventilation system.

(Credits: All others: 2.0 credits / Group R-2b: 2.0 credits)

PRO TIP: Be sure to pay attention to your fenestration rated air leakage rates as products offer a wide range of air leakage capabilities. All fenestrations leak; however, poor-quality windows will cause you to not achieve your target air leakage rates. There are many guides out there for air sealing and air sealing techniques, utilize one.

3.0 High Efficiency HVAC Equipment Options:

Only one option from Items 3.1 through 3.10 may be selected in this category. Item 3.11 may be taken with Items 3.1 or 3.2 only. Please note the footnotes designed for the HVAC selection process. The footnotes are covered at the end of the document.

3.1 System Type 1 (R-406.2) Furnace: Footnote A

For a System Type 1 in Table R406.2:

Energy Star rated (U.S. North) Gas or propane furnace with minimum AFUE of 95%

OR

Energy Star rated (U.S. North) Gas or propane boiler with minimum AFUE of 90%.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 1.0 credits / Group R-2b: 1.0 credits)

3.2 For secondary heating system serving System Type 2 in Table R406.2: Footnote A

For secondary heating system serving System Type 2 in Table R406.2:

Air-source centrally ducted heat pump with minimum HSPF of 9.5 Energy Star rated (U.S. North) Gas or propane furnace with minimum AFUE of 95%

OR

Energy Star rated (U.S. North) Gas or propane boiler with minimum AFUE of 90%.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

3.3 Air-source, centrally ducted heat pump with minimum HSPF2 of 8.1 (HSPF of 9.5): Footnote A, C, & D

In areas where the winter design temperature as specified in Appendix RC is 23°F or below, a cold climate heat pump found on the NEEP cc ASHP qualified product list shall be used.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 0.5 credits / Group R-2b: 0.0 credits)

PRO TIP: This unit should have a thermostat set balancing point of 17 degrees with electric resistance heating supplementary heating that initiate in stages to make up for lost capacity.

3.4 Ground loop Geothermal Systems): Footnote D

Closed-loop ground source heat pump; with a minimum COP of 3.3

OR

Open loop water source heat pump with a maximum pumping hydraulic head of 150 feet and minimum COP of 3.6.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 1.5 credits / Group R-2b: 1.0 credits)

PRO TIP: The balancing point is crucial to get correctly for the installation of these units. Based on the loop system installation, the ground temperature may not always be the 32 degrees we designed for.

3.5 Ductless mini-split heat pump system: Footnote D

Ductless mini-split heat pump system, zonal control: In homes where the primary space heating system is zonal electric heating, a ductless mini-split heat pump system with a minimum HSPF2 of 9 (HSPF of 10.0) shall be installed and provide heating to the largest zone of the housing unit.

To qualify to claim this credit, the building permit drawings shall specify the option selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 1.5 credits / Group R-2b: 2.0 credits)

PRO TIP: this credit matches R406.2 equalization option 5 as it is based on electric resistance

heating which falls under option 3 or option 5.

3.6 Air-source, centrally ducted heat pump with minimum HSPF2 of 9.4 (HSPF of 11.0): Footnote D

Air-source, centrally ducted heat pump with minimum HSPF2 of 9.4 (HSPF of 11.0).

A centrally ducted air source cold climate variable capacity heat pump (cc VCHP) found on the NEEP cc VCHP qualified product list with a minimum of HSPF2 (10 HSPF) may be used to satisfy this requirement.

In areas where the winter design temperature as specified in Appendix RC is 23°F or below, an air source centrally ducted heat pump shall be a cold climate variable capacity heat pump as listed on the NEEP qualified product list.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 1.0 credits / Group R-2b: 0.0 credits)

PRO TIP: This unit is designed utilizing ACCA calculations; to operate a full capacity @ 17 degrees F. at which time the cold climate unit may utilize electric resistive heating to make up the lost capacity in stages.

3.7 Ductless split system heat pumps with no electric resistance heating: Footnote A, D, & E

Ductless split system heat pumps with no electric resistance heating in the primary living areas. A ductless heat pump system with a minimum HSPF2 of 9 (HSPF of 10) shall be sized and installed to provide heat to entire dwelling unit at the design outdoor air temperature.

Exception: In homes with total heating loads of 24,000 or less using multi-zone mini-split systems with nominal ratings of 24,000 or less, the minimum HSPF s to claim this credit shall be 8.19 HSPF2 (or 9 HSPF).

To qualify to claim this credit, the building permit drawings shall specify the option being selected, the heated floor area calculation, the heating equipment type(s), the minimum equipment efficiency, and total installed heat capacity (by equipment type).

(Credits: All others: 2.0 credits / Group R-2b: 3.0 credits)

PRO TIP: This unit HVAC configuration is calculated utilizing ACCA calculations; to operate a full capacity at 17 degrees F. See the footnote on electric resistive heating. This is a difficult credit to achieve in the colder climate zone 5 section of the state.

3.8 Air-to-water heat pump: Footnote A & D

Air-to-water heat pump with minimum COP of 3.2 at 47°F, rated in accordance with AHRI 550/590 by an accredited or certified testing lab.

To qualify to claim this credit, the building permit drawings shall specify the option being selected, the heated floor area calculation, the heating equipment type(s), the minimum equipment efficiency, and total installed heat capacity (by equipment type).

(Credits: All others: 2.0 credits / Group R-2b: 2.0 credits)

PRO TIP: Not all units are capable of offer air conditioning in the form of cooling. Be sure to understand how these units work and the design temperature again should be set to 17 degrees F.

3.9 Air-to-water heat pump: Footnote

Gas-fired heat pump(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15.

For R-2 Occupancy, gas-fired heat pump(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall serve all units.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and the minimum equipment efficiency.

(Credits: All others: 1.5 credits / Group R-2b: 1.5 credits)

PRO TIP: These are emerging technologies type units that utilize gas fired energy as eh source for the heat pump unit. As these are newer to our market area, they are not as efficient as the electric versions. This technology should increase in achieved efficiency.

3.10 Air-to-water heat pump: Footnote C

Combination water heating and space heating system shall include one of the following:
Gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.

OR

For R-2 Occupancy, gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0., shall serve all units.

OR

For R-2 Occupancy, gas-fired heat pump(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall serve all units.

To qualify to claim this credit, the building permit drawings shall specify the option being

selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.

(Credits: All others: 2.5 credits / Group R-2b: 2.5 credits)

PRO TIP: These are emerging technologies type units that utilize gas fired energy as eh source for the heat pump unit. As these are newer to our market area, they are not as efficient as the electric versions. This technology should increase in achieved efficiency.

3.11 Air-to-water heat pump: Footnote C

Connected thermostat meeting ENERGY STAR Certified Smart Thermostats/EPA ENERGY STAR specifications.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the thermostat model.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

PRO TIP: These connected behavioral devices are available with the HVAC options 3.1 and 3.2. The issue is there is no industry standard for thermostat commination language. Some of these devices original thermostats contain algorithms that are necessary to maintain the tested efficiency of the unit.

4.0 HVAC Equipment Distribution Options:

This credit covers the HVAC distribution; this includes ventilation systems delivering air conditioning.

4.1 Ducts inside conditioned space:

HVAC equipment and associated duct system(s) installation shall comply with the requirements of Section R403.3.2.

Electric resistance heat, hydronic heating, and ductless heat pumps are not permitted under this option. Direct combustion heating equipment with AFUE less than 80% is not permitted under this option.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the heating equipment type and shall show the location of the heating and cooling equipment and all the ductwork.

(Credits: All others: 0.5 credits / Group R-2b: 0.0 credits)

PRO TIP: Design and effective communication upfront are key for this to be successful. Visit ductinside.org for more information about duct inside conditioned space.

5.0 Efficient Water Heating & Distribution Options:

This credit covers the HVAC distribution; this includes ventilation systems delivering air conditioning.

5.1 Drain Water Heat Recovery Device:

A drain water heat recovery unit(s) shall be installed, which captures waste water heat from at least two showers, including tub/shower combinations. It is acceptable, but not required, for sink water to be connected. Unit shall have a minimum efficiency of 40% if installed for equal flow or a minimum efficiency of 54% if installed for unequal flow. Such units shall be rated in accordance with CSA B55.1 or IAPMO IGC 346-2017 and be so labeled.

To qualify to claim this credit, the building permit drawings shall include a plumbing diagram that specifies the drain water heat recovery units and the plumbing layout needed to install it. Labels or other documentation shall be provided that demonstrates that the unit complies with the standard.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

PRO TIP: With useful design a single unit could meet the multiple bathrooms connected to meet the requirement of the credit. Multiple drain water recovery units are not necessary. If combined with a recirculation pump you should bring the water back to the cold-water supply inlet. This will help with stratification of the tank unit.

5.2 Drain Water Heat Recovery Device:

For Compact Hot Water Distribution system credit, the volume shall store not more than 16 ounces of water between the nearest source of heated water and the termination of the fixture supply pipe where calculated using Section R403.5.2. *Construction documents* shall indicate the ounces of water in piping between the hot water source and the termination of the fixture supply. When the hot water source is the nearest primed plumbing loop or trunk, this must be primed with an On Demand recirculation pump and must run a dedicated ambient return line from the furthest fixture or end of loop to the water heater.

To qualify for this credit, the dwelling must have a minimum of 1.5 bathrooms.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

PRO TIP: With useful design a single unit could meet the multiple bathrooms connected to meet the requirement of the credit. Multiple drain water recovery units are not necessary. If combined with a recirculation pump you should bring the water back to the cold-water supply inlet. This will help with stratification of the tank unit.

5.3 Tanked Gas/Propane unit:

Water heating system shall include the following:

Energy Star rated gas or propane water heater with a minimum UEF of 0.80.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency.

(Credits: All others: 0.5 credits / Group R-2b: 0.5 credits)

PRO TIP: Many of these units still create a CAZ zone. This area is a combustion zone in which tests may need to be performed to ensure the combustion and the fuel gas are not leaking into the dwelling unit.

5.4 Water heating system shall include one of the following:

Water heating system shall include one of the following:

Energy Star rated gas or propane water heater with a minimum UEF of 0.91

OR

Solar water heating supplementing a minimum standard water heater. Solar water heating will provide a rated minimum savings of 85 therms or 2,000 kWh based on the Solar Rating and Certification Corporation (SRCC) Annual Performance of OG-300 Certified Solar Water Heating System

OR

Water heater heated by ground source heat pump meeting the requirements of Option 3.4.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.

(Credits: All others: 1.0 credits / Group R-2b: 1.0 credits)

PRO TIP: The first unit is a tankless water heating unit that is gas fired. There are no credits in WSEC-R for electric resistive tankless units. There are a couple of ways to claim this credit for the non-combustion options. Either the solar hot water systems is installed, and a transfer tank is utilized, or a geothermal unit is producing the hot water and storing in in a transfer tank.

5.5 Water heating systems shall include one of the following:

Water heating system shall include one of the following:

Gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.

OR

For R-2 Occupancy, gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced

Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0. shall supply domestic hot water to all units.

OR

For R-2 Occupancy, gas-fired heat pump water heater(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall supply domestic hot water to all units.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.

(Credits: All others: 1.5 credits / Group R-2b: 1.5 credits)

PRO TIP: This is similar to the electric systems where the gas fired heat pump provides the hot water until balance point at which time the unit switches over to gas combustion only to produce the hot water. This hot water generation may be stored in each dwelling or for R-2b you may use one main storage area and distribute to each unit. You must insulate the distribution like ducts, R-8.

5.6 Water heating systems shall include one of the following:

Water heating system shall include one of the following:

Electric heat pump water heater meeting the standards for Tier III of NEEA's advanced water heating specification.

OR

For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.

(Credits: All others: 2.0 credits / Group R-2b: 2.5 credits)

PRO TIP: NEEA’s TIER III approved systems are all in one tank with a heat pump located on top of the unit. These Heat pumps need a proper amount of flowing air and space for them to operate correctly. Shoving them in a closet is against the manufacturers’ recommendations without providing a ducted system to the water tank. This comes in the form of an add-on kit that can be attached to the water heating unit.

5.7 Water heating systems shall include one of the following:

Water heating system shall include one of the following:

Electric heat pump water heater with a minimum UEF of 2.9 and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors. Equipment shall meet Section 4, requirements for all units of the NEEA standard *Advanced Water Heating Specification* with the UEF noted above.

OR

For R-2 Occupancy, electric heat pump water heater(s), meeting the standards for Tier III of NEEA's advanced water heating specification and utilizing a split system configuration with the air-to-refrigerant heat exchanger located outdoors, shall supply domestic hot water to all units. If one water heater is serving more than one dwelling unit, all hot water supply and recirculation piping shall be insulated with R-8 minimum pipe insulation.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency.

(Credits: All others: 2.5 credits / Group R-2b: 3.0 credits)

PRO TIP: This is the split system heat pump which means the outdoor unit does all the work and transfers the water to a storage system. There is enormous potential here with controllers and other such devices that could increase savings. This may be used in conjunction with a shared centralized area in multifamily projects or it could be stored at each dwelling unit.

5.8 Combination Combustion Water and Space Heating Systems:

Water heating system shall include one of the following:

Combination water heating and space heating system shall include one of the following:

Gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0.

OR

For R-2 Occupancy, gas-fired heat pump water heater(s) meeting Tier 2 of the NEEA Advanced Water Heating Specification for Gas-Fueled Residential Storage Water Heaters Version 1.0., shall supply all units.

OR

For R-2 Occupancy, gas-fired heat pump(s) meeting ANSI Z21.40.2 and Z21.40.4 or CSA, with a minimum UEF of 1.15, shall supply all units.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall specify the water heater equipment type and the minimum equipment efficiency and, for solar water heating systems, the calculation of the minimum energy savings.

(Credits: All others: 2.5 credits / Group R-2b: 2.5 credits)

PRO TIP: This is the split system heat pump which means the outdoor unit does all the work and transfers the water to a storage system. There is enormous potential here with controllers and other such devices that could increase savings. This may be used in conjunction with a shared centralized area in multifamily projects or it could be stored at each dwelling unit.

6.0 Renewable Electric Energy Option:

This credit covers the renewable power and storage on site. This credit is calculated per unit/dwelling.

6.1 Renewable Electric Energy:

For each 600 kWh of electrical generation per housing unit provided annually by on-site wind or solar equipment a 0.5 credit shall be allowed, up to 4.5 credits. Generation shall be calculated as follows:

For solar electric systems, the design shall be demonstrated to meet this requirement using the National Renewable Energy Laboratory calculator PVWATTs or alternative approved by the code official. Documentation noting solar access shall be included on the plans.

For wind generation projects designs shall document annual power generation based on the following factors:

The wind turbine power curve; average annual wind speed at the site; frequency distribution of the wind speed at the site and height of the tower.

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the photovoltaic or wind turbine equipment type, provide documentation of solar and wind access, and include a calculation of the minimum annual energy power production.

(Credits: All others: 0.5 – 4.5 credits / Group R-2b: 0.5 – 4.5 credits)

PRO TIP: The onsite generation can be ground mounted, carport mounted, or roof mounted. As long as the panels and equipment are on the site with no double counting panels as a benefit for multiple units. So, each panel will get assigned a unit it is contributing to for the purposes of credits and the WSEC-R requirements.

7.0 High Performance Appliances:

This credit covers the renewable power and storage on site. This credit is calculated per unit/dwelling.

7.1 Renewable Electric Energy:

All of the following appliances shall be new and installed in the dwelling unit and shall meet the following standards:

1. Dishwasher, standard - Energy Star rated, Most Efficient 2021 or Dishwasher, compact - Energy Star rated (Version 6.0)
2. Refrigerator (if provided) - Energy Star rated (Version 5.1)
3. Washing machine (Residential) - Energy Star rated (Version 8.1)
4. Dryer - Energy Star rated, Most Efficient 2022

To qualify to claim this credit, the building permit drawings shall specify the option being selected and shall show the appliance type and provide documentation of Energy Star compliance. **At the time of inspection, all appliances shall be installed and connected to utilities. Dryer ducts and exterior dryer vent caps are not permitted to be installed in the *dwelling unit*.**

(Credits: All others: 0.5 credits / Group R-2b: 1.5 credits)

PRO TIP: Heat pump dryers without a ventilation duct is required. This removal of the electric resistive heating elements offer a massive savings potential as long as the equipment is used per the manufacture specifications. These units often fail due to a lack of understanding, not a technology issue. The duct is another penetration in the envelope that influences the final building testing results.

Footnotes A through F:

a. An alternative heating source, sized at a maximum of 0.5 Watts/ft^2 (equivalent) of heated floor area or 500 Watts, whichever is bigger, may be installed in the dwelling unit.

b. See Section R401.1 and *residential building* in Section R202 for Group R-2 scope.

c. Option 3.11 can only be taken with Options 3.1 and 3.2. To qualify to claim Option 3.11 with 3.2, the system shall be a 1-2 speed heat pump system. Variable capacity heat pumps are ineligible from claiming this option.

d. This option may only be claimed if serving System Type 4 or 5 from Table R406.2.

e. Primary living areas include living, dining, kitchen, family rooms, and similar areas.

f. Option 3.10 may be taken with Efficient Water Heating Option 5.1 or 5.2. Equipment sizing for space heating shall be calculated as provided in Section R403.7 with increased capacity to provide a minimum of 75 percent of peak hot water demand or shall be sized in accordance with *approved* manufacturer's specifications or guidance. Supplementary heat for water heating shall be in accordance with Section R403.5.7.