

# DEPARTMENT OF ENERGY

## DIVISION 70

### TAX CREDIT ELIGIBILITY CRITERIA FOR RESIDENTIAL ALTERNATIVE ENERGY DEVICES

#### 330-070-0010

##### Purpose

- (1) The department will grant or deny tax credits in accordance with ORS 469.160 through 469.180 which allow tax credits for Alternative Energy Devices (AEDs).
- (2) These rules establish the criteria and standards for issuance of tax credits for AEDs. None of these rules replace any building code requirements.
- (3) All decisions made by the department regarding AED eligibility, issuance of tax-credit technician certification, complaints regarding performance of tax-credit certified technician, revocation of technician tax-credit certification and other matters relating to the administration of this program after the effective date of these rules will be made consistent with the criteria and standards contained in these rules.

#### 330-070-0013

##### Definitions

For the purposes of Oregon Administrative Rules, Chapter 330, Division 70 the following definitions apply unless the context requires otherwise:

- (1) "AED" -- Alternative Energy Device.
- (2) "AED Agreement" -- A contractual agreement between a homeowner and a third party financing entity, where the homeowner agrees to purchase energy generated by an AED or make a lease payment for equipment that was installed under a third party financing model.
- (3) "Active Solar Heating" -- A solar system that uses air or water that is moved by pumps or fans to collect, store and distribute the sun's energy to a dwelling or part of a dwelling.
- (4) "AHRI" -- Air-Conditioning, Heating, and Refrigeration Institute.
- (5) "Alternative Energy Device" (AED) -- A device or system that reduces the amount of conventional energy used by a dwelling. AEDs include, but are not limited to, systems that collect and use solar energy; ground source heat pump systems; energy-efficient appliances,

energy-efficient heating, ventilating and air conditioning systems; premium efficiency biomass combustion devices, fuel cell systems; alternative fuel vehicles and related alternative fuel devices or wind devices that supply, offset or supplement electricity used for a dwelling or that supply electricity to a utility.

- (6) "Alternative Fuel" -- Electricity, natural gas, ethanol, methanol, propane, and any other fuel approved by the Director.
- (7) "Alternative Fuel Device" -- An alternative fuel vehicle, equipment necessary to convert a vehicle to use an alternative fuel, or a fueling system necessary to operate an alternative fuel vehicle.
- (8) "Annual Fuel Utilization Efficiency" (AFUE) -- The energy output divided by the energy input, calculated on an annual basis and including part load and cycling effects. AFUE ratings shall be determined using the U.S. Department of Energy test procedures (10 CFR Part 430) and listings in the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Directory of Certified Furnace and Boiler Efficiency Ratings.
- (9) "Applicant" -- A person who applies for a residential alternative energy device tax credit under this section, which may include:
  - (a) A person who files an Oregon tax return and applies for a residential alternative energy device tax credit under this section, or
  - (b) An Oregon Investor Owned Utility (IOU) as defined in ORS 757.005 or its subsidiaries and affiliated interests as defined in 757.015 that is designated by an applicant under OAR 330-070-0013(7)(a) to receive the residential tax credit certificate for a qualifying alternative fuel device on behalf of that designated applicant.
- (10) "ARI" -- Air Conditioning and Refrigeration Institute.
- (11) "ASHRAE" -- American Society of Heating, Refrigerating and Air Conditioning Engineers.
- (12) "AWEA" -- American Wind Energy Association.
- (13) "Btu" -- British Thermal Unit.
- (14) "CEF" -- Energy Factor for Combined Systems: A non-dimensional descriptor of efficiency for combined space and water heating systems during operation in the water-heating mode only. This part of the three-part rating (which also includes space heating efficiency and combined efficiency) takes into account the standby losses from the storage tank, if any. A higher energy factor denotes better efficiency. Testing is accomplished using the ANSI/ASHRAE 124 test method.

- (15) “Coefficient of Performance” (COP) -- The ratio calculated by dividing the usable output energy by the electrical input energy. Both energy values must be expressed in equivalent units.
- (16) “Combined Annual Fuel Utilization Efficiency” (CAFUE) -- The effective efficiency of the combined appliance in performing the function of space heating. A descriptor of efficiency for combined space and water heating systems during operation in the space heating mode only. This part of the three-part rating (which also includes water heating efficiency and combined efficiency) does not count standby losses from the storage tank, if any. A higher AFUE denotes better efficiency. Testing is accomplished using the ANSI/ASHRAE 124-1991 test method.
- (17) “Consumer Disclosure” – A department approved form completed by the TCCT and provided to the buyer of AEDs, except for energy-efficient appliances and alternative fuel devices, including estimated energy savings of the AED, required conservation items, required maintenance, and freeze protection information.
- (18) “Domestic Water Heating” -- The heating of water used in a dwelling for bathing, clothes washing, dishwashing and other related functions.
- (19) “Ductless Mini-split Heat Pump” -- An air-source heat pump consisting of an outdoor unit connected directly to one or more indoor units where the refrigerant is condensed and conditioned air is delivered directly to the room or zone of a home rather than through a central air handler.
- (20) “Dwelling” -- means real or personal property inhabited as a principal or secondary residence. "Dwelling" includes, but is not limited to, a single-family residence and an individual unit within multiple unit residential housing.
- (a) Principal residence is the dwelling owned by the applicant who on the date of the application has legal title to a dwelling, including the mortgagor under a duly recorded mortgage of real property, the trustor under a duly recorded deed of trust or a purchaser under a duly recorded contract for the purchase of real property, and who inhabits the dwelling for no fewer than 14 days in a calendar year.
- (b) Secondary residence is a vacation or other dwelling owned by the applicant that is not the applicant’s principal residence.
- (c) A dwelling does not include a motor home or recreational vehicle as defined in ORS 446.003.
- (21) “Electric Load” -- Appliance and lighting exclusive of any water or space heating use.
- (22) “Energy Efficiency Ratio” (EER) -- EER is calculated by dividing the cooling capacity in Btu per hour (Btu/hr) by the power input in watts at any given set of rating conditions, expressed in Btu/hr per watt.

- (23) “Energy-Efficient Appliance” -- A clothes washer, clothes dryer, water heater, refrigerator, dishwasher, space conditioning system, solar electric alternating current (AC) module, or any other major household appliance that has been certified by the department to have premium energy efficiency characteristics.
- (24) “Energy Factor” (EF) -- Energy Factor is the ratio of useful energy output from the water heater to the total amount of energy delivered to the water heater. EF is a metric used to compare relative efficiencies of water heaters. The higher the EF is, the more efficient the water heater. EF is determined by the DOE test procedure, Code of Federal Regulations, Title 10, Section 430.
- (25) “Energy Yield Chart” -- Chart approved by the department showing first year energy yield of an AED.
- (26) “Energy Recovery Ventilator” (ERV) -- A device or system designed and installed to provide balanced fresh air ventilation for homes with the ability to transfer energy from the outgoing air stream to the incoming air stream that is also capable of at least 30 percent Latent Recovery/Moisture Transfer (LRMT) at 32 degrees F when operating at the lowest fan speed.
- (27) “EUI (FURNACE)” -- The Energy Use Index for a furnace, used to determine its electric efficiency, and calculated by the following formula, with inputs derived from the appropriate values in the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Directory of Certified Efficiency Ratings for Heating and Water Heating Equipment:  $3.412 \times E_{AE} / (3.412 \times E_{AE} + 1,000 \times E_F) \leq 2.0$  percent.
- (28) “EUI (HERV)” -- The Energy Use Index for an HRV or ERV, used to determine its electric efficiency, and calculated by dividing a model's power consumption, in watts, by the net supply air delivered, in cubic feet per minute (cfm), while the unit is operating in the lowest speed for which performance data is provided in the Home Ventilating Institute (HVI) Directory.
- (29) “FERC” -- Federal Energy Regulatory Commission.
- (30) “First Year Energy Yield” -- Usable energy produced under average conditions by an AED in its first year of operation. Expressed in kWh, usable energy is the gross energy contribution minus any parasitic energy used to operate the system.
- (31) “Fuel Cell Stack” -- The portion of a fuel cell system where the electrochemical reactions take place, generally consisting of an anode, an electrolyte, and a cathode and supporting systems bringing fuel to the stack and carrying away the electricity, electrochemical products and thermal energy generated.
- (32) “Fuel Cell System” -- A system for producing electricity electrochemically and non-reversibly, using a hydrogen rich fuel and oxygen, and producing an electric current, water, and thermal energy.

- (33) “Ground Source Heat Pump” -- A heating, ventilating and air-conditioning system, also known as a ground source heat pump, earth-coupled heat pump, geothermal heat pump or ground loop AED, that utilizes a subsurface closed loop heat exchanger to extract or reject heat to the earth.
- (34) “Heat Recovery Ventilator” (HRV) -- A device or system designed and installed to provide balanced fresh air ventilation for homes with the ability to transfer energy from the outgoing air stream to the incoming air stream.
- (35) “Heating Season Performance Factor” (HSPF) -- The total heating output of a heat pump during its normal annual usage period for heating divided by the total electric power input in watt-hours during the same period. HSPF is measured according to test procedures defined by AHRI in its Standard 210/240 as well as ASHRAE Standard 116 and the DOE Test Procedure in 10 CFR; Part 430, Appendix M (ARI, 2003).
- (36) “HUD” -- U.S. Department of Housing and Urban Development.
- (37) “Hybrid Vehicle” -- An alternative fuel vehicle that draws propulsion energy from on-board sources of stored energy that include both an internal combustion or heat engine and a rechargeable energy storage system.
- (38) “Hydronic Space Heating System” -- A system that uses hot or warm water to deliver heat from a boiler or water heater to the living spaces in a home.
- (39) “Installed Output” -- The rated capacity of a photovoltaic system measured in average alternating current watts for the purpose of determining the tax credit. Installed output equals 0.7 multiplied by the rated direct current capacity as measured at standard test conditions.
- (40) “IREC” -- Interstate Renewable Energy Council.
- (41) “kWh” -- Kilowatt-hour;  $1 \text{ kWh} = 3413 \text{ BTUs}$  for purposes of department calculations.
- (42) “Latent Recovery Moisture Transfer” (LRMT) -- In an HRV or ERV, moisture recovered to the ventilation supply air stream divided by moisture being exhausted, corrected for cross leakage, if any.  $\text{LRMT} = 0$  would indicate that no exhausting moisture is recovered for the incoming supply air stream.  $\text{LRMT} = 1$  would indicate that all exhausting moisture is transferred.
- (43) “MCFC” -- Molten carbonate fuel cell.
- (44) “Modified Energy Factor” (MEF) -- The non-dimensional efficiency rating for clothes washers. This measure, unlike the EF, takes into account the moisture removed from the wash load in the spin cycle, thereby changing energy use in the drying cycle. A higher MEF denotes a more efficient clothes washer.
- (45) “MM” -- Million ( $M = 1000$ ,  $M \times M = 1000 \times 1000 = 1,000,000$ ).

- (46) "Net Cost" -- The applicant's cost for the design, acquisition, construction, installation, permitting and inspection of an AED. Net cost may include the value of federal tax credits or utility incentives. Net cost does not include service contracts, rebates, or refunds.
- (47) "Net Generation" -- The gross kWh produced minus internal losses and parasitic loads. The net generation includes both the amount of generation available to serve dwelling loads and to provide to a utility.
- (48) "OG" -- Operating guidelines developed by the Solar Rating and Certification Corporation (SRCC) including system performance or component characteristics defined by SRCC in its directory.
- (49) "Owner-Built" -- An AED that is assembled and installed on an owner's property and with an owner's labor only.
- (50) "Parasitic Power" -- The electrical energy the system uses to operate.
- (51) "Passive" -- A solar AED that relies on heated liquid or air rising to collect, store and move heat without mechanical devices.
- (52) "Passive Solar Space Heating" -- A system or building design that collects and stores solar energy received directly through south facing windows. The system/design is without powered moving parts and includes provisions to collect, store and distribute the sun's energy using only convection, radiation and conduction of energy.
- (53) "Pass-Through Amount" -- The amount required to be passed through to an eligible AED owner in exchange for the right to claim the tax credit. The pass-through amount shall be determined periodically by the Director.
- (54) "Pass-Through Provider" -- An individual or business that pays the pass-through amount to an applicant and receives the tax credit in place of the applicant.
- (55) "Pass-Through Verification" -- A determination based on information collected by the department that the approved pass-through amount has been provided, that the applicant has relinquished his or her claim to a tax credit and has assigned the credit to the pass-through provider.
- (56) "Peak Power Ratio" -- The maximum power available from the electric motor of a hybrid vehicle providing propulsion energy when powered by the rechargeable energy storage system, divided by the total of such maximum power and the SAE net power of the internal combustion or heat engine.
- (57) "Performance Checked Duct System" -- A forced air duct system that has been tested for duct leakage by a tax credit certified technician using the department's approved testing procedures, and that has been repaired or constructed for premium efficiency using the

department's approved materials to reduce duct air leakage. For purposes of the tax credit, performance checked duct systems are considered energy-efficient appliances.

- (58) "Performance Checked Heat Pump or Air Conditioner" -- A heat pump or air conditioner that has been tested and repaired or serviced for premium efficiency by a tax credit certified technician using department approved procedures to assure that refrigerant charge and system air flow are within ranges recommended by the equipment manufacturer. For purposes of the tax credit, performance tested heat pumps and air conditioners are considered energy-efficient appliances.
- (59) "Premium Efficiency Biomass Combustion Device" -- Any device that burns wood, compressed wood or other non-gaseous or non-liquid solid fuels of 100 percent organic origin for aesthetic or space-heating purposes.
- (60) "PV System" -- A complete solar electric power system capable of delivering power to either the main or sub-panel in a dwelling. Necessary components include solar electric modules, inverter, mounting system, and disconnection equipment.
- (61) "Seasonal Energy Efficiency Ratio" (SEER) -- A measure of the efficiency of a cooling system over the entire cooling season (cooling accomplished divided by power used), expressed in Btu/kWh.
- (62) "Solar Attic Fan" -- A device that uses photovoltaics to power a fan that pulls hot air out of an attic or roof space. Such a device may either be a complete, all-in-one unit or be comprised of a small photovoltaic panel and a DC powered attic fan designed to be run by photovoltaic panel.
- (63) "Solar Domestic Water Heating System" -- A configuration of solar collectors, pump, heat exchanger and storage tank designed to heat water. System types include forced circulation, integral collector storage, thermosyphon, and self-pumping. For the purpose of determining system yields, a configuration of components is considered a new system if changes occur in any of the following: type or size of collectors, heat exchanger type or effectiveness, size of storage tank, or system type.
- (64) "Solar Electric AC Module" -- A solar photovoltaic module coupled with a utility interactive inverter. The combined system must be Underwriters Laboratory (UL) listed and meet all current Institute of Electronic and Electrical Engineers (IEEE) 929 requirements.
- (65) "SRCC" -- Solar Rating and Certification Corporation.
- (66) "Sensible Recovery Efficiency" (SRE) -- In an HRV or ERV, the measurable (sensible) energy recovered to the ventilation supply air stream minus supply fan and preheat coil energy use divided by the total sensible energy being exhausted plus exhaust fan energy. This measure of efficiency accounts for the effects of cross leakage between air streams, purchased energy for fan controls, and defrost system energy use.

- (67) “Standard Test Conditions” (STC) -- 25 degrees Celsius cell temperature and 1000 watts per square meter.
- (68) “Sunchart” -- A chart or form issued or approved by the department, and completed, signed and dated by tax-credit certified technician showing the plotted path of the sun and any objects, including both plant life and structures, that block the sun from an AED. The viewpoint must be from the center of the lower edge of the collector, and must depict whether any plant life is made up of evergreen or leafy trees. A lack of shading on the AED must be indicated in writing on the chart.
- (69) “System Certification” -- Certification that an AED as described in an application for tax credit meets all criteria for the tax credit.
- (70) “System Owner” -- A person who owns the AED.
- (71) “Tax-Credit Certified Technician” (TCCT) -- A technician who has been approved by the department to implement the tax credit program. A tax-credit certified technician is responsible for assuring that AEDs are installed in accordance with the department’s rules and must verify system installation quality and performance.
- (72) “Tax-Credit Listed Company” -- A company that employs at least one tax-credit certified technician.
- (73) “Third Party Financing Model” -- A project financing model where an AED is installed at a dwelling but, financed and maintained by a third party financing entity.
- (74) “Total Solar Resource Fraction” -- The fraction of usable solar energy that is received by the solar panel/collector throughout the year, which accounts for impacts due to external shading, collector tilt and collector orientation.
- (75) “Unheated Spaces” -- Attics, garages, and any space with an average ambient temperature of 50 degrees Fahrenheit or below during the heating season.
- (76) “Used Equipment” -- Any product or any piece of equipment not under a current manufacturer’s warranty or which has been acquired by a previous owner or user.
- (77) “Wastewater Heat Recovery Device” -- A device designed to recover thermal energy from household wastewater streams for the purpose of returning a portion of this energy to the dwelling's hot water supply system.
- (78) “Water Factor” (WF) -- The measure of water efficiency in clothes washers, measured in gallons per cubic foot of tub capacity, per cycle (gal/ft<sup>3</sup>/cycle).
- (79) “Wind AED” -- A qualifying wind energy conversion system that uses wind to produce mechanical or electrical power or energy, including turbines, towers and their associated components needed to form a complete system.

### **330-070-0014**

#### **Pass-Through Eligibility**

- (1) Any person or business that purchases the approved tax credit from the AED system owner is eligible to claim the tax credit associated with that system in place of the AED system owner. Any person or business that purchases the approved tax credit from the AED system owner who owns or constructs an eligible alternative fuel station is entitled to claim the tax credit associated with that device in place of the system owner or contractor.
- (2) In accordance with ORS 469.170 (9) the department is establishing the following rates to be used in calculating the pass through amount:
  - (a) For tax credits greater than \$1,500 when the pass-through partner is a business, the pass through amount is 80 percent of the tax credit amount.
  - (b) For tax credits greater than \$1,500 when the pass-through partner is a resident, the pass through amount is 86 percent of the tax credit amount.
  - (c) For tax credits less than \$1,500 the pass-through amount is 95 percent of the tax credit amount.
- (3) In addition to other required information, verification information for tax credits obtained by pass-through providers shall include verification that the approved pass-through amount has been provided, and acknowledgement that the person originally eligible to receive a tax credit has relinquished his or her claim to the credit and has assigned the credit to the pass through provider.

### **330-070-0019**

#### **Net Cost**

- (1) Notwithstanding the definition in OAR 330-070-0013(46), an applicant who installed eligible AEDs on or after August 1, 2010 and prior to January 1, 2011, other than those under contract on or before August 13, 2010 and installed prior to January 1, 2011, must determine "net cost" by calculating the amount the applicant paid for design, acquisition, building and installation of the AED, including permit and inspection fees. The net cost must include the value of federal tax credits and utility incentives. Net cost does not include service contracts, rebates, or refunds.
- (2) An applicant:
  - (a) With an eligible AED installed prior to August 1, 2010 must clearly indicate on the application that the date of installation completion was prior to August 1, 2010; or
  - (b) With an eligible AED installed on or after August 1, 2010 and prior to December 31, 2010, who have a signed contract dated on or before August 13, 2010, must:

- (A) Have provided a copy of the contract for the installation of an eligible AED to the department no later than 5:00 p.m. on Friday, August 27, 2010;
  - (B) Indicate on the application that the project was completed on or before December 31, 2010; and
  - (C) Provide the department evidence of the completed installation in the form of a copy of the approved final inspection, dated on or before December 31, 2010, as issued by the local jurisdiction.
- (3) The department may grant an additional 15 days for project completion upon the written request of the applicant for good cause shown. The applicant must request the additional time in writing and explain the extenuating circumstances as to why the installation was not completed on or before December 31, 2010. Any project granted the additional time must be completed no later than Friday, January 14, 2011.

### **330-070-0020**

#### **Eligibility**

- (1) To qualify for a credit, a person must:
- (a) Have an income tax liability in Oregon; and
  - (b) Purchase an AED, complete construction and installation if applicable, and obtain a certification in accordance with OAR 330-070-0010 through 330-070-0097; and
  - (c) Be the owner or contract buyer of an Oregon dwelling served by the AED, or be a tenant of the dwelling owner; and
    - (A) Use the dwelling as a primary or secondary residence; or
    - (B) Rent or lease the dwelling to a tenant who uses the dwelling or dwellings as a principal or secondary residence.
- (2) If the basis for the credit is the installation of an energy-efficient appliance, the credit shall be allowed only to the taxpayer who actually occupies the dwelling as a principal or secondary residence.
- (3) If the basis for the credit is a fueling station necessary to operate an alternative fuel vehicle, unless the certificate is transferred, the company that constructs the dwelling that incorporates the fueling station or who installs the fueling station in the dwelling may claim the credit. If the alternative energy device is an alternative fuel vehicle or related equipment, the credit must be claimed by the system owner.
- (4) Any person that pays the present value of the tax credit for a qualified alternative energy device to the person who originally purchases the device shall be entitled to claim the credit in place of the original credit owner.

- (5) For a qualified vehicle owned by a lessor during the period of first use of a new vehicle, the lessor may pass-through the right to claim the credit to the lessee exercising the first new use.
- (6) Notwithstanding (1)(b), a person may qualify for a credit of a third party financed AED by meeting the following additional requirements:
  - (a) Installations must include a minimum 10 year AED agreement or lease agreement.
  - (b) All equipment must be covered by a full service maintenance agreement provided by a third party financing entity for the entire length of the AED agreement or lease agreement.

### **330-070-0021**

#### **Eligible Devices**

- (1) To earn a tax credit, an AED must:
  - (a) Be a complete system. The system must be able to collect, store, convert, monitor, and distribute energy to the dwelling it serves. Additions to existing AED systems, except for pool, spa, or hot tub systems, are eligible when those additions increase the energy production capacity and the kWh saved by the system;
  - (b) Be a system that is built, installed, and operated in accordance with ORS 469.160 through 469.180;
  - (c) Be a system with manufacturers' warranties against defects in products and materials;
  - (d) Be a system that complies with general and specific standards in these rules as they apply to AED systems and be one of the following:
    - (A) A system that uses solar energy;
    - (B) A ground source heat pump ;
    - (C) A renewable energy system that heats or cools space, heats water, or makes electricity;
    - (D) An energy-efficient appliance including a wastewater heat recovery device;
    - (E) An alternative fuel device; vehicles licensed and registered for first new use on Oregon roadways and used vehicles being modified for first new use of a qualifying alternative fuel device are eligible for the tax credit.
    - (F) A fuel cell system;
    - (G) A heat pump water heater;

(H) A premium efficiency biomass combustion device;

(I) A ductless mini-split heat pump;.

(J) A gas Furnace;

(K) A boiler;

(L) A heat and Energy Recovery Ventilator; or

(M) An air Source Heat Pump.

(2) The following devices are not eligible for an AED tax credit:

(a) Standard efficiency furnaces;

(b) Standard backup heating systems;

(c) Wood stoves or wood furnaces, or any part of a heating system that burns wood except a qualifying premium efficiency biomass combustion device;

(d) Heat pump water heaters that are part of a geothermal heat pump space heating system;

(e) Structures that cover or enclose a swimming pool and are not attached to the dwelling;

(f) Swimming pools and hot tubs used to store heat;

(g) Photovoltaic systems installed on recreational vehicles;

(h) Additions to existing spa and hot tub systems;

(i) Above ground, un-insulated swimming pools, spas and hot tubs;

(j) Conversions of systems from one type to another. An example is a conversion of a draindown solar hot water system to a drainback solar hot water system;

(k) Used equipment;

(l) Repairs and maintenance of systems having received prior certification for an AED tax credit;

(m) Water source heat pump: A system that uses surface or subsurface water in a single pass without recirculation (open loop);

(n) Hydro systems;

- (o) Wind systems that are used to heat or cool buildings, or to heat domestic, swimming pool or hot tub water; and
- (p) Renewable energy systems that received certification under the Business Energy Tax Credit program as Homebuilder Installed Renewable Energy Facilities or as part of a High Performance Home.

### **330-070-0022**

#### **Amount of Tax Credit**

- (1) The amount of the AED tax credit is based on the first-year energy yield of an eligible AED. The energy yield basis for a solar tax credit may be adjusted by the department to account for less than optimal solar access.
- (2) The amount of the AED tax credit shall not exceed the lesser of:
  - (a) \$1,500 or the first-year energy yield of the AED in kWh multiplied by 60 cents for AEDs used for solar or geothermal space heating, cooling, electrical energy production or domestic water heating for tax years beginning on or after January 1, 1998. The amount of the credit may not exceed 100 percent of the cost of the system components and their installation. Only one tax credit for ground source heat pump systems will be issued per year per residence.
  - (b) For an alternative energy device used for swimming pool, spa or hot tub heating, the credit allowed must be based upon 50 percent of the cost of the device or the first year's energy yield in kilowatt hours per year multiplied by 15 cents, whichever is lower, up to maximum credit amounts set in subsections (a) through (c) of this section.
  - (c) For each alternative fuel device, the credit allowed is 25 percent of the eligible cost of the alternative fuel device, not to exceed \$750 for devices placed in service on or after January 1, 1998. Individual credit may be claimed for both an alternative fuel vehicle and an alternative fuel fueling system.
    - (A) Eligible cost is the difference in the cost between a conventional fueled vehicle of similar size with similar features and the cost of an alternative fuel vehicle and its charging or fueling systems.
      - (i) Conventional fuel vehicles manufactured by the same manufacturer with the same seating capacity and/or cab cubic volume or weight difference that are less than 20 percent, may be used to define eligible costs, provided that other features (upholstery, audio, suspension, body appointment) are similar.
      - (ii) Low-speed vehicles, as defined under ORS 801.331 (2009 Oregon Vehicle Code) and alternative fuel vehicles capable of using E-85 and gasoline (flex-fuel vehicles) are not eligible for a tax credit.

- (d) For fuel cell systems placed in service on or after January 1, 2007, one tax credit may be issued per year per residence based on the first-year energy yield of the AED in kWh multiplied by 60 cents, not to exceed \$6,000 and not to exceed 50 percent of the cost of the system. The maximum credit claimed per year will not exceed \$1,500.
  - (e) For photovoltaic systems installed on or after November 4, 2005, one \$6,000 tax credit per year per residence for four years (\$1,500 per year) not to exceed 50 percent of the cost of the system as defined in OAR 330-070-0022(4).
  - (f) For wind AEDs installed on or after January 1, 2007, one tax credit may be issued per year per residence based on the first-year energy yield of the AED in kWh multiplied by \$2.00, not to exceed \$6,000 and not to exceed 50 percent of the cost of the system. The maximum credit claimed per year will not exceed \$1,500.
- (3) For an energy-efficient appliance, the credit allowed under this section shall equal:
- (a) 40 cents per kilowatt hour saved, or the equivalent for other fuel saved. The total for each appliance is not to exceed 25 percent of the cost of the appliance.
  - (b) \$50 per 6,000 Btu/hr of rated capacity, up to \$400 or 25 percent of the cost, whichever is less, if the energy-efficient appliance is a very high efficiency air source ductless heat pump.
- (4) For photovoltaic systems:
- (a) Installed on or after November 4, 2005 and prior to January 1, 2011, the credit allowed under this section shall equal \$3 per watt of the installed capacity measure in watts of direct current at industry standard test conditions.
  - (b) Installed on or after January 1, 2011, the credit allowed under this section shall equal \$3 per watt of the installed output.
  - (c) A maximum of one credit valued at \$6,000 shall be issued per residence per year for the year in which it was installed in annual increments up to \$1,500 over a four-year period. The total credit shall not exceed 50 percent of the cost of the system. All photovoltaic systems installed at a dwelling within a 5 year period shall be considered a single device.
- (5) For premium efficiency biomass combustion devices, the credit allowed under this section shall be up to \$300 or 25 percent of the cost of the device, whichever is less, based upon the efficiency and the first year energy yield of the AED in kilowatt hours multiplied by 40 cents as determined by the department.
- (6) The amount of the tax credit must not exceed the net cost of the AED to the applicant. The sum of any rebates or cash payments, including public purpose organization or federal grants or credits and the residential energy tax credit may not exceed costs.

- (7) For purposes of the tax credit, the cost of the AED must:
- (a) Comply with OAR 330-070-0060 through 330-070-0097, as those rules apply;
  - (b) Be the net cost of acquiring the system.
    - (A) AEDs using an alternative energy source for only a part of their energy output or savings will have net cost prorated. Net cost must be based on that part of the AED's energy output or savings that is due to the alternative source;
    - (B) The department may find an AED to be too large for a dwelling. In such case net cost must be prorated. Net cost must be based on the largest useful size of an AED for the dwelling. The department must determine largest useful size based on the energy needs of the building; and
    - (C) The amount of credit for the original system and an addition may not exceed \$1,500 per year.
- (8) For purposes of the tax credit, the net eligible cost of the AED is only those costs necessary for the system to yield energy savings and must not include:
- (a) Unpaid labor including the applicant's labor;
  - (b) Operating and maintenance costs;
  - (c) Land costs;
  - (d) Legal and court costs;
  - (e) Patent search fees;
  - (f) Fees for use permits or variances;
  - (g) Loan interest;
  - (h) Amounts from vendors of an AED that reduce its cost. These include rebates, discounts and refunds;
  - (i) Service contracts;
  - (j) Cost of moving a used AED from one site to another;
  - (k) Cost of repair or resale of a system;
  - (l) Any part of the purchase price which is optional, such as an extended warranty; and

(m) Delivery fees.

### **330-070-0024**

#### **Year Credit Claimed**

- (1) The tax credit is must be claimed pursuant to ORS 316.116.
- (2) The tax credit may not exceed a person's tax liability. Unused credit may be carried forward for a maximum of 5 years as allowed under ORS 316.116.
- (3) Proof of purchase must be a contract or invoices dated in the year for which the applicant is claiming the credit.

### **330-070-0025**

#### **Application for System Certification**

- (1) Applicants for a tax credit must obtain a system certification from the department.
- (2) Applications for a system certification must be made in a form developed by the department:
  - (a) All applications must include a statement that the system and technician or owner-builder will meet all federal, state and local requirements;
  - (b) All applications must include the purchaser's social security number for use as an identification number in maintaining internal records. The purchaser's social security number may be shared with the Department of Revenue to establish the identity of an individual in order to administer state tax law.
  - (c) All applications must state:
    - (A) The net cost of the AED;
    - (B) The location of the AED;
    - (C) Estimated first-year energy yield of the AED provided by the technician or from the department's energy yield chart, if any; and
    - (D) That the purchaser has received an operating manual for the AED, except that no operating manual is required for sunspaces or direct gain space heating systems.
  - (d) All applications must state that the technician agrees to make any changes required by the department for the system to comply with ORS 469.160 through 469.180;

- (e) All applications must be signed by the purchaser and technician, if any, or, a form of electronic signature acceptable to the department shall be provided; and
- (f) A technician or applicant must not give the department false or misleading information about an AED.

(3) System certification applications for solar water heating AEDs must contain:

- (a) All the data required in section (2) and must also include:
- (b) The number of collectors;
- (c) The manufacturer and/or supplier;
- (d) The collector dimensions and/or the net area of the collectors;
- (e) The amount of heat storage;
- (f) The system type;
- (g) Declaration of SRCC certification status or equivalence as determined by the department;
- (h) A description of the freeze protection for the system;
- (i) A description of the over-heat protection for the system;
- (j) The system model;
- (k) Orientation and tilt of the collector;
- (l) A sunchart for the collector location;
- (m) A Consumer Disclosure signed by the applicant and technician or supplier, if any;
- (n) A statement that the purchaser has received a copy of consumer information supplied by the department; and
- (o) Other data the department requires to determine eligibility.

(4) System certification applications for active solar space heating AEDs must contain:

- (a) All the data required in sections (2) and (3) of this rule;
- (b) A heat loss estimate for the home;
- (c) The type and amount of thermal storage;

- (d) A sunchart for the collector location; and
- (e) Other data the department requires to determine eligibility.

(5) System certification applications for passive solar space heating AEDs must contain:

- (a) All the data required in section (2) above and must also contain:
  - (a) A copy of the building permit plans;
  - (b) A copy of the window specifications used;
  - (c) The type and amount of thermal storage;
  - (d) A sunchart taken at the center of the solar glazing; and
  - (e) Other data the department requires to determine eligibility.

(6) System certification applications for photovoltaic AEDs must contain:

- (a) The data required in section 2 and must also contain:
  - (b) The number of modules;
  - (c) The brand name of the module(s);
  - (d) The module(s) area;
  - (e) The rated DC output in watts of the module(s) under Standard Test Conditions (STC);
  - (f) A description of the storage provided if storage is a part of the system;
  - (g) Storage brand and model;
  - (h) Storage capacity in kWh;
  - (i) The brand name of the inverter if an inverter is part of the system;
  - (j) The capacity of the inverter;
  - (k) Orientation and tilt of the array;
  - (l) A sunchart of the array location;
  - (m) Other data the department requires to determine eligibility; and

(n) Must submit copy of final inspection after system has been permitted by applicant's local jurisdiction.

(7) System certification applications for ground source heat pumps must contain:

(a) All the data required in section (2) of this rule and must also contain:

(b) For all systems connected to a well, data on the well including:

(A) Depth;

(B) Diameter (cased);

(C) Temperature;

(D) Static water level below grade;

(E) A copy of the well driller's log, if available; and

(F) Other data the department requires to determine eligibility.

(c) For systems connected to a heat pump:

(A) Brand name and model number of the heat pump;

(B) Rated output at the entering water temperature;

(C) Estimated system COP rated by ARI under Standard 325 -85 at an entering water temperature of 50 degrees Fahrenheit; and

(D) Any other data the department requires to determine eligibility.

(d) For ground loop heat pump systems:

(A) All the information in subsection (7)(b) of this rule; and

(B) Brand name, rated output, estimated COP;

(C) Length and depth of the loop;

(D) Materials and spacing used;

(E) Type of heat transfer fluid; and

(F) Other data the department requires to determine eligibility.

(8) System certification applications for energy-efficient appliances must contain:

- (a) All the data required in section (2) of this rule and must also contain;(d) The dealer's business location;
- (e) The brand name, make, model number, capacity and/or size of the appliance;
- (f) A signed copy of the sales agreement, which will include all of the following:
  - (A) Verification of purchaser's name and address; and
  - (B) Verification of model of appliance; and
  - (C) Verification of actual price paid for appliance.
- (g) Certification of new equipment warranty; and
- (h) Other data the department requires to determine eligibility.

(9) System certification applications for alternative fuel devices must contain:

- (a) Taxpayer's name;
- (b) Taxpayer i.d. or social security number;
- (c) State of Oregon vehicle registration number;
- (d) Installation location by street address;
- (e) The name of the licensed and bonded company employing the technician;
- (f) The company's business location;
- (g) The brand name, make, model number, or component list of the AFD;
- (h) A signed copy of the sales agreement, which will include all of the following:
  - (A) Verification of purchaser's name and address; and
  - (B) Verification of model of, or components used for AFD; and
  - (C) Verification of actual price paid for the AFD.
- (i) Certification of new equipment warranty;

(j) An optional letter attached to the application declaring that the applicant designates an Investor Owned Utility (IOU) or other qualifying entity as the eligible recipient of the credit certificate on behalf of the project owner applicant that includes:

(A) Name, address, contact person, phone number, facsimile number of the IOU or designated qualifying party; and

(B) Signature, or form of electronic signature acceptable to the department, of an authorized representative of the IOU or other designated qualifying party stating willingness to accept the tax credit certificate; and

(k) Other data the department requires to determine eligibility.

(10) System certification applications for fuel cells must provide information regarding:

(a) The data required in section (2) and must also contain:

(b) The rated fuel cell stack peak capacity, in kW;

(c) The rated fuel cell system peak capacity, in kW (this rating includes peak capacity enhancing devices such as batteries and other storage devices or systems);

(d) Whether or not the system is grid connected;

(e) The fuel used by the system;

(f) The type of fuel stack (PEM, PAFC, SOFC, etc.);

(g) An estimate of the average load, in kW, expected to be placed on the system;

(h) The thermal energy production rate, in Btu/hour, at peak capacity and at the average load specified in (10)(f) above;

(i) Whether or not the system has provisions for thermal heat recovery, and if so, where the thermal energy is designed to be used (domestic hot water, space heating, etc.); and

(j) Other data the department requires to determine eligibility.

(11) System certification applications for premium efficiency biomass combustion devices must provide information regarding:

(a) The manufacturer, model, capacity, serial number; and

(b) The device characteristics defined as catalytic, non-catalytic, or pellet stove or boiler; and

(c) Vendor name and address; and

- (d) Price paid for the device, any parts or installation; and
  - (e) A signed certification from the applicant verifying that any wood burning device which is being replaced has been rendered unusable and will be retired permanently from service; and
  - (f) The efficiency and grams of smoke per hour published in the List of EPA Certified Wood Stoves; or
  - (g) The efficiency and grams of smoke per hour published in a third-party list approved by the Director in the year in which the device was purchased; or
  - (h) A certificate of performance including the grams of smoke per hour and efficiency for the specific manufacturer and model of wood burning device from a currently US EPA certified woodstove testing laboratory.
  - (i) Other data the department required to determine eligibility.
- (12) A system certification may be transferred by an applicant who does not qualify for tax relief to the first eligible buyer of the dwelling.
- (13) For a third party financed system, the application must provide copies of an energy purchase or lease agreement and full service maintenance agreement.

**330-070-0026**

### **Technician Tax Credit Certification**

- (1) Technicians may on a voluntary basis apply for the department's tax-credit certification for a technology listed in subsection (2) of this section. Certification is intended to assist consumers with the state tax credit program, ensure that the systems are installed according to department rules, and verify system installation quality and performance. Technician certifications are valid for three years and must be renewed to remain in effect.
- (2) A tax-credit certified technician applies only to the following products:
- (a) Solar water heating systems;
  - (b) Ground source heat pumps (geothermal);
  - (c) Photovoltaic systems;
  - (d) Performance-tested ducts; and
  - (e) Air source heat pumps/air conditioning systems.

- (3) The tax-credit certified technician's qualification is based on the following:
- (a) Knowledge and understanding of the tax credit program requirements and expectations;
  - (b) Ability to provide systems that are designed and installed consistent with the manufacturer's warranty; and
  - (c) Employment by a company with a Construction Contractors Board (CCB) license.
  - (d) Those who do not maintain these competencies are subject to revocation of the certification.
- (4) A Tax-credit certified technician qualification entitles a technician to:
- (a) Inform the AED system owner that he or she has attended the department's periodic training classes and is familiar with the rules and requirements of the Residential Energy Tax Credit Program.
  - (b) Verify that installation of tax-credit qualified equipment and systems meet department standards for performance and longevity.
- (5) Tax-credit certified technician status requires that the technicians must follow department requirements including:
- (a) Duct and air-source heat pump/air conditioning technicians must have a current or valid certification with Performance Tested Comfort System (PTCS) or Proctor Engineering CheckMe! Programs.
  - (b) Solar technicians must show a valid or current (North American Board of Certified Energy Practitioners-NABCEP certification or Limited Renewable Energy Technician (LRT) license for solar electric, Solar Thermal License (STL) for solar thermal, or pass the department's competency testing with a score of 70 or above for the technology. On or after May 4, 2009, new applicants for tax credit certified solar technicians must show NABCEP photovoltaic (PV) certification or or successfully passed the NABCEP PV Entry-Level Exam or Limited Renewable Energy Technician (LRT) license or Solar Thermal License (STL) or other certification approved by the Director to be a tax credit certified solar technician. On and after May 4, 2010 all tax credit certified solar technicians must show proof of appropriate NABCEP or LRT or STL certification or other certification approved by the Director to maintain their tax credit solar certification with the department.
  - (c) First-time geothermal technician applicants must show proof of successful completion of International Ground Source Heat Pump Association training (IGSHPA) or IGSHPA certified manufacturer's installer training program or other training approved by the Director.

- (d) Solar and geothermal tax credit certified technician applicants must participate in periodic department tax-credit training at least once every three years unless otherwise specified in department rule..
- (e) Technicians must verify the AED owner has user manual for equipment/system.
- (f) Technicians must provide the AED owner with a completed application and a copy of the final itemized dated invoice for the system that is marked “inspected and paid for.” Verify owner has a written full warranty for the system that lasts no less than 24 months after the system is installed.
- (g) Technicians must maintain tax-credit certification status by completing the following technology-specific requirements during the previous three years:
  - (A) For solar technology:
    - (i) Submit and approve two (2) Residential or Business Energy Tax Credit applications for systems in technology in which technician is certified and complete four (4) hours of related technical continuing education; or
    - (ii) Submit and approve one (1) Residential or Business Energy tax Credit application for system in technology in which technician is certified and complete six (6) hours of related technical continuing education; or
    - (iii) Complete eight (8) hours of related technical education.
  - (B) For air source heat pumps/air conditioning: Must have a current or valid certification with PTCS or Proctor Engineering CheckMe! Programs.
  - (C) For performance tested duct systems: Must have a current or valid certification with PTCS.
  - (D) For ground-source heat pumps: Have submitted and approved a minimum of one (1) tax credit application or proof of having completed at least two hours of relevant installer training, community college HVAC course, or other training approved by the Director.
- (6) Tax credits for installation of air source heat pumps/air conditioning systems, performance-tested ducts, geothermal systems, solar electric and solar thermal systems must be verified by a department tax-credit certified technician.
- (7) A tax-credit certified technician must notify the department within 30 days if changes are made in any of the information in the certification application.
- (8) The department will list companies employing duct and air-source heat pump/air conditioning technicians. A listed company must:

- (a) Employ a tax credit certified technician who has a valid or current certification with PTCS or Proctor Engineering CheckMe! Programs.
- (b) Apply in writing and renew their listing on an annual basis.
- (c) Have a minimum of two key administrative staff participate in the department's periodic update training.
- (d) Tax credit certified technicians that do not meet the minimum requirements are suspended for one-year after which they may reapply.

### **330-070-0027**

#### **Application Review Process**

- (1) The department must review applications for AED tax credit approval. AEDs must comply with OAR 330-070-0010 through 330-070-0097. Specific rules for each type of AED are provided in OAR 330-070-0060 through 330-070-0097.
- (2) The department will return applications that are not complete and will identify the additional information needed.
- (3) The department must act on a complete application within 60 days after it is received. The department may require more details within 30 days of receipt of an initial application. In some cases another 60-day review period may be needed. If so, the department will explain to the applicant why more time is needed:
  - (a) If the department fails to meet these deadlines, the application for tax credit is considered approved;
  - (b) If the department requests additional data, the review period will be extended until required data is received;
  - (c) During review, the department may ask for proof that the AED complies with OAR 330-070-0010 through 330-070-0097. The department may also ask for changes to allow the AED and application to comply with these rules.
- (4) To obtain the information needed to evaluate an application or to verify eligibility and first year energy yield, the department may, with the owner's consent, inspect an installed AED:
  - (a) The department may deny a system certification or request Department of Revenue (DOR) to initiate proceedings for the forfeiture of a tax credit if an owner refuses to allow the department to inspect the AED;
  - (b) The department may require corrections to make the AED or tax credit application comply with OAR 330-070-0010 through 330-070-0097 to be made within 30 days; and

- (c) If such changes are not made within this time limit, the department may reject the application.
- (d) The department may use the results of utility inspections in lieu of its own inspection.
- (5) The department may reject any application if the AED does not comply with ORS 469.160 through 469.180 and OAR 330-070-0010 through 330-070-0097. The department will explain all rejected applications in writing. Approved requests for lesser cost than claimed by the applicant will also include a written explanation of the basis for the determination.
- (6) If the department rejects an application for system certification or approves a certification for lesser cost than claimed by the applicant, an applicant may appeal the rejection. The appeal must be filed within 60 days of the mailing of the rejection notice by the department, in accordance with ORS 183.310 through 183.500.
- (7) If the department receives an application(s) for a qualifying alternative fuel device accompanied by a letter from the applicant designating an IOU or other qualifying party as the recipient of the tax credit certificate, then the department may aggregate such applications and issue a single tax credit certificate to designated qualifying party quarterly for applications for projects to be completed in that calendar year.

### **330-070-0040**

#### **Other Rules and Regulations**

- (1) AEDs must comply with all state, federal and local laws and rules that apply. These OARs change no one's responsibility to comply with such laws.
- (2) The policy of the Department of Energy is:
  - (a) To accept the findings of local, state and federal agencies which license or permit projects to be built or run;
  - (b) To avoid influencing any of those agencies to approve or deny a license or a permit; and
  - (c) To provide facts from tax credit files to such agencies when asked.
- (3) Each applicant must:
  - (a) Obtain each local, state, and federal permit and license that applies to a project;
  - (b) Agree to comply with the express terms and conditions of each permit and license; and
  - (c) Agree to comply with all state rules and laws that apply to the project.

- (4) System certification and tax credit technician certifications are based on the applicant's promise that each needed local, state and federal license and permit has been or will be obtained. Failure to obtain those approvals will cause ODOE approval to be revoked.
- (5) If any license or permit named in these rules does not apply to the project, the licensing or permitting agency must certify that the license or permit is not required. Exception: This does not apply to residential DHW, pool, spa and hot tub systems.
- (6) AED technicians must install all systems in compliance with the system manufacturer's published specifications.
- (7) ODOE must assign a yield for all solar domestic water heating systems. For systems approved by ODOE that are not SRCC OG-300 certified, ODOE must assign a yield based on requirements determined comparable to SRCC OG-300.

### **330-070-0045**

#### **Enforcement**

- (1) Applicant's actions that are cause for revocation of a residential alternate energy tax credit:
  - (a) A system certification may be revoked pursuant to ORS 469.180 if the Director finds that:
    - (A) The applicant obtained the system certification as a result of misrepresentation;
    - (B) The AED has not been installed or operated in substantial compliance with the plans, specifications or procedures specified in the application or certificate, such as:
      - (i) Failure to follow applicable standards;
      - (ii) Failure to comply with required codes or obtain required permits or inspections;
      - (iii) Return of the AED to the seller or installer for a refund;
      - (iv) Sale or removal of the device so that it no longer operates on the property of the applicant; or
    - (C) The applicant refuses to allow the department to inspect the AED after a reasonable written request by the department. A reasonable request must allow applicant to choose a day within three weeks of the request from the department.
  - (b) Following revocation, the applicant must forfeit the tax credit, and the department of Revenue must proceed to collect any taxes not paid by the taxpayer because of this credit.
- (2) A technician's tax credit certification may be revoked pursuant to ORS 469.180 if the Director finds that::

- (a) The system or technician tax-credit certification was obtained by fraud or misrepresentation by the technician. The Director may find that fraud or misrepresentation occurred if false statements were made regarding the technician's licenses held, products or warranties carried by the tax-credit certified technician's employing company, the company's range of product cost, personnel employed in the business, or any other item in the application for technician tax-credit certification as defined in OAR 330-070-0026.
- (b) The technician's performance regarding sales or installation of the alternative energy device for which the technician is issued a tax credit certificate under ORS 469.170 does not meet industry standards. The Director may find that the technician's performance does not meet industry standards under the following conditions:
  - (A) The technician's employing company is not registered with the Construction Contractors Board or does not carry the required level of insurance, licensure or bonding; or
  - (B) The technician and/or employing company fails to obtain the required state, federal or local permits required to install the AED as defined in OAR 330-070-0040; or
  - (C) The technician fails to install the AED system in compliance with standards adopted under OAR 330-070-0060 through 330-070-0097; or
  - (D) The technician fails to install the AED system to comply with manufacturers' published specifications; or
  - (E) The technician and employing company fail to honor contract provisions when there is no legitimate excuse for nonperformance of the obligation; or
  - (F) The technician and employing company fail to honor a warranty which they are contractually obligated to perform; and
  - (G) The technician and/or employing company fail to make corrections to remedy failure to comply with paragraphs (A) through (G) of this subsection requested by the department within 30 days of written notification from the department of the problem, unless a time extension is granted by the department.
  - (H) A tax credit for an AED sold or installed under the technician tax-credit certification is ordered revoked under subsection (2)(a) of this rule; or
  - (I) New information indicates that the AEDs installed under the technician tax-credit certification and his or her employing company does not meet eligibility requirements.
- (c) The technician or employing company has misrepresented to the customer either the tax credit program or the nature or quality of the alternative energy device. The Director may find that the technician or employing company has misrepresented the tax credit program or the AED under the following conditions:

- (A) The technician or employing company has provided false or misleading information to the customer regarding the availability of the tax credit, amount and nature of the tax credit, procedures for tax credit application, eligibility standards for credit, or any other misleading information about the program implemented under ORS 469.160 through 469.180; or
- (B) The technician or employing company has misrepresented the nature of the performance of the AED or claimed savings in excess of those on a yield chart without providing accurate calculations to the customer and to the department to substantiate the yield. For geothermal heat pumps, the technician or employing company has claimed savings higher than other units of similar efficiency; or
- (C) The technician or employing company has misrepresented the cost of a system. For example, the technician or employing company omits costs in the contract for features necessary for basic installation and/or operation of the system and/or costs to comply with the AED eligibility under ORS 469.160 through 469.180; or
- (D) The technician or employing company has misrepresented a competitor's product or service; and
- (E) The technician or employing company fails to make corrections requested in writing to the department to remedy violations of (A)-(D) of this subsection within 30 days, unless more time is allowed by the department; or
- (F) The technician or employing company fails to remedy the construction and/or warranty claim as directed by order of the Construction Contractors Board.

### **330-070-0048**

#### **Administrative Process for Review and Revocation of Technician Tax Credit Certification**

- (1) If ODOE receives a complaint, the tax-credit certified technician and employing company must be notified and given an opportunity to respond.
  - (a) If the complaint relates to issues that the Construction Contractors Board (CCB) has authority to resolve, the complaint must be referred to the CCB for resolution. The CCB generally has authority to address construction, warranty claims or complaints involving dishonest or fraudulent conduct. Failure to comply with the order of the CCB must be grounds for revocation of technician tax-credit certification or civil penalty.
  - (b) In all other cases, ODOE must evaluate the technician's or employing company's response and determine whether a violation occurred. ODOE must notify the technician and employing company of its determination and, if appropriate, the necessary remedy. ODOE must give the technician and employing company 30 days to remedy a violation. ODOE may grant the technician and employing company additional time where appropriate.

- (2) If the technician and employing company do not take appropriate action within the time specified, ODOE must begin enforcement proceedings. An enforcement proceeding may be brought to revoke the technician tax-credit certification, remove company name from ODOE listing, and/or to impose a civil penalty.
- (3) ODOE must commence an enforcement proceeding by sending the technician and employing company a notice of violation. The notice must describe the violation(s) and notify the technician and employing company of the proposed penalty (revocation and/or civil penalty).
- (4) Civil Penalties: The technician and employing company may be subject to a civil penalty if a system certification or technician tax-credit certification is revoked by the Director. The amount of the penalty must be the total amount of tax relief estimated to have been provided to purchasers of the system for which a system or technician tax-credit certification is revoked under this rule.
- (5) Before the Director imposes a penalty, the technician and/or employing company must be given 21 days in which to request a hearing pursuant to ORS 183.310-183.550 and the Attorney General's Uniform and Model Rules of Procedure, January 1, 2006 edition. The hearing will be to contest the revocation of a system or technician tax-credit certification based on actions listed under OAR 330-070-0045.
- (6) Re-application: To reapply after the revocation of a technician tax-credit certification, the technician and employing company must prove to the satisfaction of the department that the problem causing revocation has been corrected. Revocation must be in effect for at least one year before that technician or employing company or any other firm with any of the same shareholders may reapply for certification.

### **330-070-0055**

#### **Consumer Information**

- (1) A tax credit certified technician must inform the owner in simple terms:
  - (a) How to tell if the device is running right. Who to call if it is not;
  - (b) How to tell if the freeze protection is in effect. Who to call if it is not;
  - (c) What maintenance is needed, annually and long term;
  - (d) Who will honor warranties; and
  - (e) The conditions of the warranties including but not limited to how to start and keep warranties in force.
- (2) A tax-credit certified technician or employing company must provide all AED purchasers with a copy of materials listed in section (1) of this rule prior to sale of the system.

## **330-070-0059**

### **Solar Pool and Spa AEDs**

- (1) Installations must be of professional quality, be installed according to manufacturer's instructions; and comply with all applicable state, county, or local codes and regulations.
- (2) Consumers who purchase a solar water heating system must receive written operating and maintenance instructions. These instructions must at a minimum include:
  - (a) Clear instructions on how to monitor the system performance;
  - (b) Description and recommended frequency of homeowner maintenance;
  - (c) Diagram of the system noting location of valves and monitoring devices; and
  - (d) What to do and who to call in an emergency and when the system needs professional maintenance and repairs;
- (3) Pool heating system designs and installations must comply with the following additional requirements:
  - (a) Collectors and piping must be securely mounted to withstand local wind loads;
  - (b) Piping and pump sizing must consider collector area, total flow rates, pressure drop across collectors, length of run from collectors to pump, and maximum allowable pressure drop for the system;
  - (c) Any building insulation disturbed due to the system installation must be restored to previous condition;
  - (d) Pool collector materials must come with a minimum 10-year manufacturer's full warranty (to ensure that equipment designed for temporary installation is not used).
  - (e) System must have a method to show that it is operating correctly. This equipment must be a permanent part of the system, not require any special tools, and be in an easily accessible location.
  - (f) Collectors must be mounted in a manner to enable seasonal drainage by gravity for proper freeze protection.
  - (g) Pool collectors must be equal to not less than 40 percent of the pool surface area if equipped with swimming pool blanket or not less than 60 percent if no pool blanket is present.

- (4) Spa heating system designs and installations must comply with the following additional requirements:
  - (a) System design must be approved by the department. Approval is based on complete system design documentation and calculation of annual energy savings.
  - (b) Controls must be capable of maintaining safe spa temperatures.
  - (c) Spa or hot tub must be insulated with not less than R-15 perimeter and bottom insulation and have a cover rated to not less than R-5.
- (5) The department will provide technicians with a means of estimating annual energy savings for a pool heating system. Spa heating system performance will be determined on a case-by-case basis. For the purposes of determining the tax credit, the annual energy savings will be reduced by
  - (a) 25 percent if the total solar resource fraction for the site is less than 75 percent, and by 100 percent if the total solar resource fraction for the site is less than 50 percent for systems installed prior to January 1, 2011.
  - (b) 100 percent if the total solar resource fraction for the site is less than 75 percent for systems installed on or after January 1, 2011.
- (6) The costs listed in subsection (7)(a) through (h) of this rule do not include all eligible costs. Other costs will qualify if justified to the department's satisfaction as part of a solar water heating AED. Only total systems will qualify for the tax credit. All systems must comply with OAR 330-070-0010 through 330-070-0097.
- (7) Eligible costs include:
  - (a) The cost of solar collectors;
  - (b) The cost of thermal storage devices;
  - (c) The cost of monitors, meters and controls;
  - (d) The cost of photovoltaic devices used to supply electricity to parts of the system;
  - (e) Installation charges;
  - (f) Fees paid for design or building;
  - (g) The cost of swimming pool blankets, if they are installed with a solar pool heating system;  
and

- (h) Up to \$200 of the cost of solar access easements. A certified copy of the recorded easement and proof of the cost must be submitted with an application.
- (8) The addition of more energy producing capacity to an existing solar pool heating system may be eligible for an AED tax credit if:
  - (a) The system addition increases first year energy yield; and
  - (b) The system addition is built, installed and operated in accord with OAR 330-070-0010 through 330-070-0097.
- (9) The department will calculate first year energy yield of a system addition by subtracting the estimated savings of the original AED from the increased first year energy yield with the addition.
  - (a) The department will not recalculate the original AED's estimated energy savings, even if the AED produces less than estimated.
  - (b) Any AED which received an AED tax credit in a prior year shall be assumed to remain in place, for purposes of calculating a tax credit for a system addition.

### **330-070-0060**

#### **Solar Domestic Water Heating AEDs**

- (1) Installations must be of professional quality, comply with all applicable state, county, or local codes and regulations and be verified by a tax-credit certified solar technician.
- (2) Consumers who purchase a solar water heating system must receive written operating and maintenance instructions. These instructions must be plainly mounted/displayed on or near the solar storage or backup water-heating tank. These instructions must at a minimum include:
  - (a) Clear instructions on how to determine if the system is functioning properly;
  - (b) Description and recommended frequency of homeowner maintenance;
  - (c) Diagram of the system noting location of valves and monitoring devices;
  - (d) What to do and who to call in an emergency and when the system needs professional maintenance and repairs; and
  - (e) How to protect the system from overheating due to stagnation during periods when the system is not in use during the summer months.
- (3) System designs and installations must comply with the following additional requirements:

- (a) Collectors and piping must be securely mounted to withstand local wind loads;
  - (b) Piping and pump sizing must consider collector area, total flow rates, pressure drop across collectors, length of run from collectors to pump, and maximum allowable pressure drop for the system;
  - (c) Pipe insulation must be installed on all solar pipe runs and protected against damage from exposure in outdoor conditions and be rated for design condition temperatures;
  - (d) Any building insulation disturbed due to the system installation must be restored to previous condition;
  - (e) For systems using pressurized anti-freeze fluids, a pressure gauge must be installed to indicate pressure in the system; and
  - (f) Piping containing pressurized water in attics 24 hours a day must be of the appropriate material allowed by applicable Oregon plumbing codes. A minimum number of fittings must be used in the attic, and the fittings shall be copper or brass.
  - (g) Pipe materials (e.g. copper, PEX, polybutylene) must be capable of handling the temperature ranges that they will be exposed to (e.g. freezing or collector stagnation).
- (4) Freeze protection must be provided for systems where the heat transfer fluid may freeze. The freeze protection method must follow these rules:
- (a) The method must be clearly stated in the owner's manual.
  - (b) The method must work in the absence of utility electric power.
  - (c) Systems using tanks, piping, pumps and other components containing water in unheated spaces must be adequately protected from freezing.
  - (d) Recirculation is not an acceptable freeze protection measure, unless the collector used is a heat pipe type.
  - (e) Drain-down or manual drain systems are not acceptable freeze protection methods for solar domestic water heating systems.
  - (f) Thermosyphon systems may not connect power to the electric element in roof-mounted tanks as a freeze protection or backup measure.
- (5) The annual energy requirement for domestic water heating must be reduced by setting the water heater thermostat to 120 degrees F.
- (6) A method to show that the system is operating correctly must be provided.

- (a) For passive systems this must be a thermometer in line between solar storage and backup tank.
- (b) For an active system this must be a flow meter in the supply line to the collectors and a thermometer on the outlet port of the solar storage tank.
- (c) Equipment meeting this requirement must:
  - (A) Be a permanent part of the system;
  - (B) Not require any special tools or equipment to monitor; and
  - (C) Be in an accessible location.
- (7) The costs listed in subsection (8)(a) through (j) of this rule do not include all eligible costs. Other costs will qualify if justified to the department's satisfaction as part of a solar water heating AED. Only total systems will qualify for the tax credit.
- (8) Eligible costs include:
  - (a) The cost of solar collectors;
  - (b) The cost of thermal storage devices;
  - (c) The cost of ductwork, piping, fans, pumps and controls that move heat from solar collectors to storage and to heat buildings;
  - (d) The cost of monitors, meters and controls;
  - (e) The cost of photovoltaic devices used to supply electricity to parts of the system;
  - (f) Installation charges;
  - (g) Fees paid for design or building;
  - (h) The cost of swimming pool blankets, if they are installed with a solar pool heating system;
  - (i) The cost of hot water conservation measures installed with a water heating AED; and
  - (j) Up to \$200 of the cost of solar access easements. A certified copy of the recorded easement and proof of the cost must be submitted with an application.
- (9) The department will provide a table of estimated annual energy savings or "yield chart" for most OG-300 systems common to Oregon and R&D systems. Annual energy savings will be based on the annual performance simulations provided by the SRCC modified for conditions

required under state law. Yields must be developed for each of the three weather zones defined by ODOE and updated at least annually.

- (a) OG-300 systems that meet the department's approval do not have to be on the yield chart if there has been no request by a tax-credit certified technician that they appear on the yield chart.
  - (b) For the purposes of determining the tax credit, the annual energy savings will be reduced by:
    - (A) 25 percent if the total solar resource fraction for the site is less than 75 percent, and by 100 percent if the total solar resource fraction for the site is less than 50 percent for systems completed prior to January 1, 2011.
    - (B) 100 percent if the total resource fraction is less than 75 percent for systems completed on or after January 1, 2011.
- (10) All systems must meet the standards established by the SRCC OG-300 system certification in effect at the time the rules are adopted, or equivalent requirements as determined by the Director.
- (a) Prior to January 1, 2011, temporary authorization will be granted to non-OG-300 systems under a special "Research & Development" status. The department will extend this temporary authorization for up to 12 systems of a specific design. The solar technician will need to submit a complete copy of the system design and operation documents provided to the consumer to the department for approval. The department shall determine that such system will perform well under the conditions it is designed for and will likely last in excess of 15 years without replacement of major components. Tax credit amounts under this status will be determined by the department based on 90 percent of the estimated annual energy output. On or after January 1, 2011, the temporary authorization provided in this section expires.
  - (b) Prior to January 1, 2011, temporary authorization may be extended to non-OG-300 systems under an "OG-300 Applicant" status providing the system manufacturer is currently applying for OG-300 certification from SRCC. The department will extend an unlimited quantity of systems to be installed in a 12-month period, providing the department has reviewed a copy of the SRCC application and determined it to be reasonably likely to achieve OG-300 certification within the 12-month period.
  - (c) On or after January 1, 2011, temporary authorization may be extended to non-OG-300 systems under an "OG-300 Applicant" status the system must comply with all local codes and the manufacturer must have submitted an application to the SRCC for OG-300 certification. The department must review and approve a copy of the SRCC application including the operations manual prior to the installation of the system.
- (11) All technician tax-credit certified-installed systems must:

- (a) Include an O&M manual which specifies installation instructions, operation instructions, maintenance plan, fluid quality, service and replacement parts, hazards, and warranty coverage;
  - (b) Provide clear labeling of on/off/bypass controls and safety issues;
  - (c) Have a means of indicating proper operation of the solar water heating system (flow indicators/meter or thermometers);
  - (d) Be installed to meet local building codes; and
  - (e) Have a tempering valve to prevent greater than 120 degree F. water downstream of the valve.
- (12) Systems shall be installed with the OG-300 certification sticker located on the manual cover. The manual and any supporting documentation shall be placed in a waterproof, clear plastic bag located on or near the solar or domestic hot water heater.
- (13) Owner-built and site-built domestic water heating systems are exempt from the testing requirements. The department will evaluate the system design and assign it a yield based on 50 percent of its estimated annual energy performance.

[Publications: Publications referenced are available from the agency.]

### **330-070-0062**

#### **Passive Solar Space Heating AEDs**

- (1) Installations must be of professional quality and comply with all applicable state, county or local codes and regulations.
- (2) The estimated first year energy yield must be the net usable energy produced under average environmental conditions in one year.
- (3) Passive solar space heating systems must produce energy savings equal to not less than 20 percent of the annual energy used for space heating in the dwelling to be eligible for a tax credit. Such systems must:
  - (a) Have sufficient solar access, not jeopardized by future buildings or tree growth;
  - (b) Provide usable heat for the heated space;
  - (c) Provide adequate thermal storage for solar heat gained;
  - (d) Prevent overheating of the heated space that requires mechanical space cooling; and

- (e) In addition, sunspaces must:
  - (A) Have no backup heating device; and
  - (B) Be able to be isolated from the heated space.
- (4) Determination of annual performance shall be based on one of the following approved methods:
  - (a) Using the department's prescriptive passive solar heating path to achieve 20 percent savings.
  - (b) Annual hourly simulation using an approved energy modeling software (e.g. Energy-10).
  - (c) Monitored data from system before and after installation of AED.
- (5) Solar device costs eligible for passive space heating systems include:
  - (a) The cost of mass or water walls for thermal storage;
  - (b) The cost of movable window insulation that is part of a passive system. It must tightly seal on all sides of the window. It must also have an R- value of at least three;
  - (c) The cost of south-facing windows, if the requirements of section (4) of this rule are met; and
  - (d) The cost of passive heat distribution components.
- (6) The department will use data supplied by the applicant to determine if the requirements of OAR 330-070-0022 are met.

[Publications: Publications referenced are available from the agency.]

### **330-070-0063**

#### **Combined Active Solar Space and Domestic Water Heating AEDs**

- (1) Installations must be of professional quality, made to manufacturer's instructions, comply with all applicable state, county and local codes and regulations, and be verified by a tax-credit certified solar technician.
- (2) Active solar space heating systems must produce energy savings equal to not less than 15 percent of the annual energy used for space heating in the dwelling to be eligible for a tax credit.
- (3) The estimated first-year energy savings shall be based on the following:

- (a) The house design prior to installation of the solar energy equipment, not a base code design or reference design.
  - (b) The total energy savings from both space heating and domestic hot water heating, with not less than 50 percent of the savings coming from solar heating.
  - (c) An annual solar utilization calculation method approved by the Director that accounts for the operating temperature of the energy storage and collector system and gives no credit for any insulation measures not directly associated with the solar AED.
  - (d) Typical residential occupancy setpoints and operating behavior. Savings will not be granted for consumer behavior options, with the exception of nighttime window insulation which will be evaluated at 50 percent of maximum effectiveness.
- (4) Applicant must provide the following information:
- (a) Complete system design documentation with component list and controls sequence;
  - (b) Annual estimated savings calculations; and
  - (c) Solar equipment specifications and performance test data.
- (5) Solar device costs eligible for the tax credit for active space heating systems include:
- (a) The cost of solar collectors;
  - (b) The cost of thermal storage devices;
  - (c) The cost of ductwork, piping, fans, pumps and controls that move heat from solar collectors to storage and to heat buildings;
  - (d) The cost of monitors, meters, and controls;
  - (e) The cost of photovoltaic devices used to supply electricity to parts of the system;
  - (f) Installation charges; and
  - (g) Fees paid for design or building.
- (6) The department will use data supplied by the applicant to determine if the requirements of OAR 330-070-0022 are met.

[Publications: Publications referenced are available from the agency.]

**330-070-0064**

## **Photovoltaic AEDs**

- (1) Installations must be professional quality, comply with all applicable Oregon codes and be verified by a tax-credit certified solar technician.
- (2) A photovoltaic tax credit for a system installed on or after November 4, 2005, shall be limited to \$6,000 per PV system. The amount of the credit shall be based on \$3 per watt of installed output. The maximum tax credit given in a calendar year is \$1,500. If a system results in a tax credit larger than \$1,500, the remainder will be applied on to the subsequent year until either the \$6,000 limit or the total tax credit is provided.
- (3) System size shall be determined by the sum of all the photovoltaic module DC wattage ratings under standard test conditions (STC).
- (4) The minimum system size must be 200 Watts DC output under STC.
- (5) Photovoltaic AED costs eligible for the tax credit include the cost of:
  - (a) Photovoltaic modules;
  - (b) Inverters;
  - (c) Storage systems and regulators;
  - (d) Monitors, meters, and controls;
  - (e) Wiring and framing materials;
  - (f) Trackers;
  - (g) Installation charges; and
  - (h) Permits and fees, including up to \$200 of the cost of solar access easements. A certified copy of the recorded easement and proof of the cost must be submitted with an application.
- (6) For the purposes of determining the tax credit, the annual energy savings will be reduced by:
  - (a) 25 percent if the total solar resource fraction for the site is less than 75 percent and by 100 percent if the total solar resource fraction for the site is less than 50 percent for projects completed prior to January 1, 2011.
  - (b) 100 percent if the total solar resource fraction for the site is less than 75 percent for projects completed on or after January 1, 2011.

[Publications: Publications referenced are available from the agency.]

## **330-070-0070**

### **Ground-Source Heat Pump**

- (1) Only total systems will qualify for a tax credit. All systems must comply with OAR 330-070-0025 and 330-070-0040 and be of closed loop design and operation. See also OAR 330-070-0027.
- (2) Systems must limit waste of the resource.
- (3) Systems must not have adverse effects on:
  - (a) Other systems; and
  - (b) Water quality applying the standards of the Department of Environmental Quality.
- (4) Systems must not create hazards such as:
  - (a) Steam or water vapor;
  - (b) Vapors or odors;
  - (c) Noise; and
  - (d) Hazardous wellhead design.
- (5) System parts must have adequate:
  - (a) Structural strength;
  - (b) Resistance to weather and fire;
  - (c) Ease of upkeep; and
  - (d) Durability.
- (6) No system will cause harmful physical effects on people or unwanted tastes or odors.
- (7) Some heat transfer fluids need special handling. These include toxic, corrosive, and explosive fluids. Such fluids shall only be used when the system is designed to safely handle them.
- (8) Under normal operation, any part of a system that may be touched by people must be cooler than 141 degrees F. If this cannot be done, any part that reaches more than 140 degrees F. must have warning labels. Each system must include a device to limit water for domestic use to 140 degrees F.

- (9) Each system and nearby structures must be protected against pressures, vacuums and temperatures.
- (10) Systems must fully protect drinking water as specified in the Oregon Plumbing Specialty Code.
- (11) Systems must use storage tanks built by accepted methods. Each tank must be tested for leaks.
- (12) Expansion and contraction due to changing heat levels must not cause undue strain or distortion.
- (13) Systems that use heat transfer fluids that may freeze must have freeze protection.
- (14) Systems must use accepted methods to guard against the known corrosion/scaling level of the water.
- (15) Systems must also be designed for the least effect on groundwater.
- (16) Ground loop systems must cover enough ground to meet total annual heating requirements, as required by manufacturers' recommended design standards. Ground loops used for cooling must restore soil moisture.
- (17) Downhole heat exchangers (direct use geothermal systems) must include a summary report from Oregon Institute of Technology or other source approved by the Director which describes the system and indicates that it will deliver sufficient heat and the design meets current good practice guidelines. They will be reviewed on a case-by-case basis.
- (18) The system COP must be at least 3.3 for closed loop systems and 3.5 for direct expansion (DX) systems, including energy used by pumps. COP shall be determined by the following methods:
  - (a) For water source heat pumps, the COP must be determined in accordance with ARI Standard 325-85, at an entering water temperature of 50 degrees F.
  - (b) For water source or ground loop heat pumps using ambient surface water as an energy source and for solar assisted heat pumps, the COP must be the measured ratio of the heating season energy output divided by the heating season energy input. Both energy values must be expressed in the same units.
- (19) All other types of ground source heat pumps must be reviewed on their COP.
- (20) Bermed or earth covered buildings will not qualify for the geothermal tax credit.
- (21) All ground source heat pumps must include setting the water heater thermostat to 120 degrees F as a hot water conservation measure.

(22) A ground source heat pump system may receive a supplemental tax credit amount, determined by the department, based on additional energy savings, if the duct system to which it is attached is tested and certified in accordance with the protocols specified in Section 330-070-0073(9)(a) through 330-070-0073(9)(g). This amount is in addition to the tax credit amount for the ground source heat pump system itself, and in addition to the tax credit amount provided for the duct testing and certification itself. In order to earn the supplemental tax credit amount, the ground source system must be installed, the duct system must be tested and certified, and the applications for all tax credit amounts associated with the system must be received, as a single package, by the department by April 1st of the tax year following the tax year for which the credits are being claimed.

### **330-070-0073**

#### **Energy-Efficient Appliances and Alternative Fuel Devices**

(1) Energy-efficient appliances must meet or exceed the following energy efficiency ratings, as measured in accordance with current United States Department of Energy (USDOE) test procedures where applicable, and be currently listed with the department as qualifying premium efficiency appliances. In the event that the same model number has more than one energy efficiency rating, one of which is non-qualifying, all units with that model number will be declared ineligible and removed from the department's qualifying list of premium efficiency appliances. Models declared ineligible due to multiple energy efficiency ratings may be reinstated upon demonstration by the manufacturer that the problem has been remedied, but not earlier than 12 months from the time of removal from the list.

(2) Where USDOE test procedures do not exist, the department will designate a nationally recognized test procedure that will apply instead.

#### **(3) Clothes washers.**

(a) For the purpose of this program, clothes washer efficiency performance is determined using the USDOE Appendix J1 test procedure for residential clothes washers in effect at the time the rules are adopted.

(b) Clothes washers purchased on or after:

(A) April 1, 2007 and prior to January 1, 2011 must have a minimum Modified Energy Factor (MEF) of 2.0 ft<sup>3</sup>/kWh/cycle and a maximum Water Factor (WF) of 6.4 gal/ft<sup>3</sup>/cycle.

(B) January 1, 2011 must have a minimum Modified Energy Factor (MEF) of 2.2 ft<sup>3</sup>/kWh/cycle and a maximum Water Factor (WF) of 4.5 gal/ft<sup>3</sup>/cycle.

(c) Equipment efficiency requirements are based on ENERGY STAR<sup>®</sup> listing or other third-party certified list approved by the department.

**(4) Refrigerator-Freezers.**

(a) Refrigerator-Freezers purchased:

- (A) prior to January 1, 2011 must have at least 20 percent lower energy consumption than that allowed by the July 1, 2001 USDOE standard for refrigerator/freezers;
- (B) on or after January 1, 2011 must have at least 30 percent lower energy consumption than that allowed by the July 1, 2001 USDOE standard for refrigerator/freezers.

(b) Must have a total net volume (sum of the fresh food compartment and freezer compartment volumes) of at least 12 cubic feet, but less than 31 cubic feet; and

(c) Must have a fully automatic defrost cycle.

(d) Equipment efficiency requirements are based on listing by ENERGY STAR® or other third-party certified list approved by the Director.

**(5) Dishwashers.**

(a) Dishwashers purchased on or after:

(A) January 1, 2008 and prior to January 1, 2011 must have an Energy Factor of 0.70 cycles/kWh or higher;

(B) January 1, 2011, standard dishwashers as defined by ENERGY STAR®, must have an Energy Factor of at least 0.75 cycles/kWh or higher; and compact dishwashers, as defined by ENERGY STAR®, must have an Energy Factor of at least 1.00 cycles/kWh or greater.

(b) Dishwashers must have tax credit eligibility based on an Energy Factor derived from the DOE Dishwasher Test Procedure effective September 28, 2003.

(c) Equipment efficiency requirements are based on by ENERGY STAR® listings or other third-party certified list approved by the Director.

**(6) Water Heating Appliances.**

(a) Water heater efficiency requirements:

(A) Equipment efficiency requirements for units of nominal 1-ton or less capacity are based on listing by ENERGY STAR® or California Energy Commission or on the USDOE Energy Factor, as derived from the USDOE Appendix E test procedure for residential water heating equipment in effect at the time the rules are adopted. Efficiency requirements for units larger than 1-ton in capacity and smaller than 6-tons in capacity,

are based on the system COP at 47 degrees F outdoor air temperature or other rating point appropriate for the system deemed equivalent by the department.

- (B) Electric units of nominal 1-ton or less shall have an Energy Factor not less than 1.0; units with capacity greater than 1-ton and less than 6-tons shall have a COP rating of not less than 2.5.
- (C) Natural gas, propane, or oil-fired residential storage type water heaters, as defined by Title 10, Code of Federal Regulations, Chapter 11, Part 430, Subpart B, Appendix E, must have an Energy Factor of 0.80 or greater as tested with natural gas fuel.
- (D) Whole-home gas fired instantaneous water heaters, as defined by Title 10, Code of Federal Regulations, Chapter 11, Part 430, Subpart B, Appendix E, must have:
  - (i) an Energy Factor of at least 0.80, a maximum firing rate of at least 140,000 Btu/hour and a minimum firing rate no higher than 24,000 Btu/hour if installed prior to January 1, 2011;
  - (ii) an Energy Factor of at least 0.82 or greater if installed on or after January 1, 2011.
- (E) Equipment efficiency requirements are based on either the listing by ENERGY STAR<sup>®</sup>, the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), or other third-party certified list approved by the Director.
- (b) Combined space/water-heating system efficiency must be based on the water heating Energy Factor for Combined Systems ( $C_{EF}$ ) as derived from the American National Standards Institute/American Society of Heating, Refrigerating, and Air Conditioning Engineers (ANSI/ASHRAE) 124-1991 test method. Water heaters that are part of a combined space and water heating system may not receive a tax credit for space heating efficiency as a boiler in addition to the tax credit as a water heating appliance.

(7) **For Wastewater Heat Recovery Systems**, field performance data submitted to and approved by the department must be the basis for tax credit qualification. The following rules also apply:

- (a) The systems must meet all plumbing code requirements for vented double-wall heat exchangers;
- (b) The system must not interfere with the proper operation of the dwelling's wastewater system; and
- (c) Energy recovered must be re-introduced into the dwelling's hot water supply system.

(8) **Performance Checked Space Conditioning Duct Systems** must meet the following requirements:

- (a) All work must be done in accordance with Performance Tested Comfort Systems (PTCS) specifications, a regionally developed set of protocols with provisions for testing and sealing duct work that is maintained by the Regional Technical Forum (RTF), as adopted by the RTF and in effect at the time the work is performed.
- (b) If the home serviced by the performance checked duct system is new, or the building envelope is being altered, the house must meet residential energy conservation requirements of the Oregon Structural Specialty Code or of the Oregon One and Two Family Dwelling Code in effect at the time the home is constructed or structurally altered.
- (c) Duct leakage must be tested in accordance with Performance Tested Comfort Systems (PTCS) approved testing protocols.
- (d) Testing to verify that these standards have been achieved must be conducted by technicians approved by the department.
- (e) Measures eligible for the purpose of calculating a performance checked duct system tax credit include:

**(A) New construction.**

- (i) Duct sealing labor and materials;
- (ii) Heating and cooling load calculations;
- (iii) Duct system sizing and design calculations;
- (iv) Labor and materials for installing multiple returns;
- (v) Labor and materials for installing passive pressure relief grilles;
- (vi) Duct testing; and
- (vii) Labor and materials for bringing duct systems inside heated space.

**(B) New ducts in existing homes.**

- (i) Duct sealing labor and materials;
- (ii) Heating and cooling load calculations;
- (iii) Duct system sizing and design calculations;
- (iv) Labor and materials for installing multiple returns;
- (v) Labor and materials for installing passive pressure relief grilles; and

(vi) Duct testing.

**(C) Duct repair and sealing/existing ducts in existing homes.**

(i) Duct sealing labor and materials;

(ii) Labor and materials for installing multiple returns;

(iii) Labor and materials for installing passive pressure relief grilles; and

(iv) Duct testing.

(f) To apply for a performance checked duct tax credit, the following information must be submitted in a form approved by the department:

(A) Application form;

(B) Test results worksheet for “new construction,” “new duct systems in existing homes,” or “duct repair and sealing”/existing ducts in existing homes, as applicable; **or** inclusion of the PTCS identification number associated with the measure being submitted for tax credit on the application form.

(C) Copies of heating and cooling load calculations and/or duct sizing calculations, as applicable, shall be made available to the department upon request; and

(D) Itemized invoice identifying measures detailed in (e).

(g) The amount of the tax credit for performance checked duct systems must be 25 percent of the eligible costs detailed in (e), up to \$250.

**(9) Performance Checked Heat Pumps and Central Air Conditioners** must meet the following standards:

(a) Systems must be tested and serviced as needed to confirm correct refrigerant charge and air flow by technicians certified by the department and by an approved Performance Tested Comfort System (PTCS) provider.

(b) Testing shall be in accordance with PTCS specifications, a regionally developed set of protocols with provisions for testing the operation of air-source heat pumps and air conditioners that are maintained by the Regional Technical Forum (RTF), as adopted by the RTF and in effect at the time the work is performed.

(c) To verify electronically commutated motor (ECM) installation results, the wattage of the existing fan motor and new ECM fan motor must be measured using a wattmeter or by clocking the revenue meter using the following procedure:

- (A) Turn off all circuit breakers except the breaker to the AC/HP air handler.
  - (B) Turn on the air handler fan (cooling speed).
  - (C) At the meter, use a stopwatch, and for a period of at least 90 seconds, count the number of revolutions of the wheel. Record seconds and number of revolutions.
  - (D) Record meter data: kWh and multiplier if any.
  - (E) Calculate the watt draw of the fan:  $\text{Watts} = [\text{kWh} \times \text{number of revolutions} \times \text{multiplier} \times 3600] / \text{seconds}$ .
- (d) Eligible measures must be confirmed by the system diagnostic tests using PTCS protocols in use at the time of measure installation. Duplicate tax credits may not be claimed.
- (e) Measures eligible for the purpose of calculating a performance checked heat pump/air conditioner tax credit include:
- (A) System diagnostic tests;
  - (B) Adding or removing refrigerant when initial diagnostic tests indicate need for refrigerant adjustment and post repair tests indicate correct charge has been installed;
  - (C) Altering the duct system to improve air flow when initial diagnostic tests show low air flow and post repair tests show an air flow improvement of 10 percent or more;
  - (D) Cleaning the inside coil when initial diagnostic tests indicate low air flow and post repair tests show an air flow improvement of 10 percent or more;
  - (E) Replacing an existing inside fan motor with an electronically commutated motor (ECM) when initial diagnostic tests show low air flow and tests after ECM installation show an air flow improvement of 10 percent or more; and
  - (F) Control modifications necessary for the system to pass the diagnostic test.
- (f) To apply for a performance checked heat pump/air conditioner tax credit, the following information must be submitted in a form approved by the department:
- (A) Application form;
  - (B) Performance checked heat pump/AC diagnostics data entry form;
  - (C) Pre and post repair system air flow measurements using approved methods listed in (b), if applicable;
  - (D) Watt draw of existing fan motor and new ECM, if applicable; and

- (E) Itemized labor and materials cost information for applicable measures, testing, and repairs.
  - (g) The amount of the performance checked heat pump/AC tax credit must be 25 percent of the cost of testing and modifications to existing equipment, up to \$250.
- (10) **Alternative Fuel Vehicles** must have equipment installed to make the vehicle capable of storing and utilizing an alternative fuel for vehicle propulsion. Equipment may consist of original equipment manufacturer components; or
- (a) Components for natural gas powered vehicles that meet EPA1-A requirements current at the time these rules are adopted; or
  - (b) Components for hybrid vehicles must provide the hybrid vehicle with a combination of power between propulsion energy systems such that the peak power ratio of the vehicle is 0.10 or greater; or
  - (c) Other components as recognized by the department as necessary for alternative fuel use.
  - (d) Those applying for alternative fuel vehicle tax credits must acknowledge that they do not intend to transfer ownership of the vehicle to a non-Oregon resident for a period of one year.
- (11) **Alternative Fuel Fueling Systems** must be installed to meet all state and local fire and life safety codes and be capable of re-fueling /recharging an alternative fuel vehicle within 14 hours. The following rules also apply:
- (a) On-board charging systems that feed into the rechargeable energy storage system in a hybrid vehicle must be high-voltage systems of 100 Volts or higher that have an active regenerative braking system integrated into the recharging system of the hybrid vehicle; and
  - (b) The use of an on-board charging system on a hybrid vehicle must result in significant energy savings as determined by the Director.
- (12) **Energy Recovery Ventilators (ERVs)** must:
- (a) Be tested, rated and certified through the Home Ventilating Institute (HVI) Division of the Air Movement and Control Association (AMCA) International, Inc., and listed in the HVI directory;
  - (b) Be capable of at least 30 percent Latent Recovery/Moisture Transfer (LRMT) at 32°F when operating on the lowest fan speed;
  - (c) Have a maximum  $EUI_{(HERV)}$  of 1.5 watts/cfm at the lowest fan speed for which performance data is published in the HVI directory; and

- (d) Have a minimum Sensible Recovery Efficiency (SRE) of:
  - (A) 65 percent at 32°F/0°C when operating at the lowest fan speed;
  - (B) 60 percent at 32°F/0°C when operating at the highest fan speed; and
  - (C) 60 percent at -13°F/-25°C when operating at the lowest fan speed, if rated at this condition.

**(13) Heat Recovery Ventilators must:**

- (a) Be tested, rated and certified through the Home Ventilating Institute (HVI) Division of the Air Movement and Control Association (AMCA) International, Inc., and listed in the HVI directory;
- (b) Have a maximum EUI of 1.5 watts/cfm at the lowest fan speed for which performance data is published in the HVI directory; and
- (c) Have a minimum Sensible Recovery Efficiency (SRE) of:
  - (A) 65 percent at 32°F/0°C when operating at the lowest fan speed;
  - (B) 60 percent at 32°F/0°C when operating at the highest fan speed; and
  - (C) 60 percent at -13°F/-25°C when operating at the lowest fan speed, if rated at this condition.

**(14) Very High Efficiency Air Conditioning Systems must:**

- (a) Be a central, split-system designed and installed to operate in conjunction with the air handling unit or furnace of a home's heating system;
- (b) Be tested and rated in accordance with the DOE test procedure for residential air-conditioning systems in effect at the time these rules are adopted, and certified by, and listed in the directory of the Air Conditioning Heating and Refrigeration Institute (AHRI) in effect at the time these rules are adopted;
- (c) Consist of a matched outdoor unit and indoor unit (air handler and coil or furnace and coil), as tested, rated and listed in the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI);
- (d) Have a minimum EER rating at DOE standard test condition "A" conditions of 13.0; and
- (e) Be installed in accordance with the protocols specified in section 330-070-0073(9)(a) through 330-070-0073(9)(g) of these rules.

**(15) Very High Efficiency Air Source Heat Pump Systems** must:

- (a) Be tested and rated in accordance with the USDOE Appendix M test procedure for residential air-conditioning systems in effect at the time these rules are adopted, and be certified by, and be listed in the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) that is in effect at the time these rules are adopted;
- (b) Consist of a matched outdoor unit and indoor unit (air handler and coil or furnace and coil), as tested, rated and listed in the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI);
- (c) Have a minimum DOE Region IV HSPF rating of 9.0 or greater;
- (d) Have a minimum EER rating at DOE's standard test condition "A" of at least 12.0; and
- (e) Be installed in accordance with the protocols specified in section 330-070-0073(9)(a) through 330-070-0073(9)(g) of these rules.

**(16) Very High Efficiency Warm Air Furnace Systems** must:

- (a) Be tested and rated in accordance with the USDOE Appendix N test procedure for furnaces in effect at the time these rules are adopted, and be certified by and listed in the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) in effect at the time these rules are adopted;
- (b) Have a minimum AFUE rating:
  - (A) of 0.90 (90 percent) for installations completed prior to January 1, 2009;
  - (B) of 0.92 (92 percent) for installations completed on or after January 1, 2009 and prior to January 1, 2011;
  - (C) of 0.94 (94 percent) for installations completed on or after January 1, 2011.
- (c) Use ducted outdoor air for combustion; and
- (d) Must be listed in the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) directory of Certified Energy Rating in effect at the time these rules are adopted as an "e" "electrically efficient" furnace. The "e" electrically efficient designation applies to furnaces whose electricity consumption is 2 percent or less of the furnaces total energy use, according to the department's official test procedure, and is determined according to the following formula:  
$$(E_{AE} \times 3.413) / [(E_{AE} \times 3.413) + (E_F \times 1,000)] \leq 2 \text{ percent.}$$

**(17) Very High Efficiency Air Handlers** must:

- (a) Be installed as part of a hydronic space heating system; and

- (b) Be equipped with an electronically commutated, permanent magnet variable speed DC (ECPM) motor.

**(18) Very High Efficiency Hot Water Boiler Systems must:**

- (a) Be tested and rated in accordance with the USDOE Appendix N test procedure for furnaces in effect at the time these rules are adopted, and be certified by and listed in the directory of the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) in effect at the time these rules are adopted;

- (b) Have a minimum AFUE rating:

- (A) of 0.88 (88 percent) for installations completed prior to January 1, 2009;

- (B) of 0.92 (92 percent) and must include an outdoor temperature reset control for installations completed on or after January 1, 2009.

**(19) Very High Efficiency Air Conditioning, Air Source Heat Pump or Furnace systems** may receive a supplemental tax credit amount, determined by the department, based on additional energy savings if the duct system to which it is attached is tested and certified in accordance with the protocols specified in Section 330-070-0073(9)(a) through 330-070-0073(9)(g). This amount is in addition to the tax credit amount for the Very High Efficiency Air Conditioning, Air Source Heat Pump or Furnace system itself, and in addition to the tax credit amount provided for the duct testing and certification itself. In order to earn the supplemental tax credit amount, the air conditioning and/or heating system must be installed, the duct system must be tested and certified, and the applications for all tax credit amounts associated with the system must be received, as a single package, by the department by April 1<sup>st</sup> of the tax year following the tax year for which the credits are being claimed.

**(20) Very High Efficiency Ductless Air Source Heat Pump Systems must:**

- (a) Include an inverter-driven variable speed compressor;
- (b) Be listed in the Air Conditioning, Heating and Refrigeration Institute (AHRI) Directory of Certified Products.
- (c) Deliver at least 50 percent of its ARI-certified rated capacity at 17°F outside temperature;
- (d) Include no integrated electric resistance backup heat;
- (e) Be sized and installed per manufacturer specifications; and
- (f) Be installed by a technician trained by the equipment manufacturer within the last five years.

**(21) Very Efficient Biomass Combustion Devices must be:**

- (a) Less than one quarter of a million British thermal units (Btu) per hour heat output, and
  - (b) Installed in an Oregon residential dwelling; and
  - (c) Installed with a dedicated outside combustion air intake; and
  - (d) Listed in the United States Department Environmental Protection Agency *List of EPA Certified Wood Stoves* or other third-party certified list approved by the Director with emissions of 4.5 grams of smoke per hour or less if it is designated in that list as a non-catalytic wood stove; or
  - (e) Listed in the *List of EPA Certified Wood Stoves* or other third-party certified list approved by the Director with emissions of 2.5 grams of smoke per hour or less if it is designated in that list as a catalytic wood or pellet stove; or
  - (f) Have a certificate of performance for the specific manufacturer and model of wood burning device from a currently US EPA certified woodstove testing laboratory. The certificate must show emissions of 4.5 grams of smoke per hour or less if it is designated as a non-catalytic wood stove or emissions of 2.5 grams of smoke per hour or less if it is designated as a catalytic wood or pellet stove.
- (22) Any other standards adopted by the department for energy-efficient appliances and alternative fuel devices, their components, and/or systems as determined by the Director.

[ED. NOTE: Appendices referenced are available from the agency.]

### **330-070-0085**

#### **Fuel Cell Systems**

To be eligible for a tax credit under these rules, fuel cell systems must have a minimum rated stack capacity of 0.5 kW and a maximum rated system capacity of 10 kW.

### **330-070-0089**

#### **Wind AEDs**

(1) To qualify for a tax credit:

- (a) A wind AED system manufacturer must provide monthly data of average energy produced (kWh) and average wind speed for one consecutive year for each model of system to demonstrate reliable operation of that model of equipment at a site with average annual wind speeds of at least 12 mph; **OR** The wind AED system model must be listed on the official list of Qualified Wind Generators published by the California Energy Commission or the New York State Energy Research and Development Authority (NYSERDA).

- (b) A wind AED system application must include the nominal rated electric capacity, the power curve and energy production data as a function of the average annual wind speed.
  - (c) A wind system must have a minimum five-year manufacturer's warranty.
- (2) The department reserves the right to deny eligibility for any wind AED for any reason including, but not limited to: poor generator performance, concerns about wind generation system design or quality of data presented; lack of manufacturing support for maintenance, warranties, etc., insufficient experience with generator, etc.
- (3) Systems must be designed and located to reduce the potential for hazards and unpleasant living conditions. Systems must be designed and located taking into account:
- (a) The proximity of the system to buildings, power lines, antennae or other similar hazards;
  - (b) The effect of high winds on the system and on any building connected to the system by guy wires;
  - (c) Whether the system blocks fire lanes, obstructs dwelling access, or otherwise increases fire danger;
  - (d) Whether the operation of the system significantly increases background noise; and
  - (e) Whether connecting the system to other buildings by guy wires creates vibration and tension in other buildings.
- (4) Materials used will assure that the wind AED has adequate:
- (a) Strength;
  - (b) Resistance to wind, lightning, ice, moisture, corrosion and fire;
  - (c) Durability; and
  - (d) Low maintenance cost.
- (5) The wind AED must withstand all natural forces it may be expected to experience.
- (6) No part of a wind AED project must put toxic substances into the environment in amounts that will cause disease or harmful physical effects to humans, animals or plants.
- (7) Wind AED parts must be serviceable without the need to trespass.
- (8) **Maximum Design Wind Speed:** All parts of a Wind AED project must withstand the highest wind speed expected at its location. All parts must withstand this wind without damage. To meet this requirement, wind AEDs may be shut down during highest expected winds.

- (9) **Manual Shutdown:** All wind AEDs must have a manual way to stop the rotor from turning. This method must work safely during high winds and routine service.
- (10) **Overspeed Control:** Rotor overspeeds shall be prevented by the wind AED's design.
- (11) **Tower safety:** All parts of a wind AED project shall meet accepted engineering standards. Tower design must include consideration of:
- (a) Gravity load; and
  - (b) Peak thrust on the rotor, nacelle, tail and tower over the full wind speed operating range.
- (12) **Electric:** All wind AED electrical parts must adhere to all standards and codes in force at the time they are installed.
- (13) **Lightning:** Wind AEDs must withstand lightning strikes.
- (14) The Director may waive part or all of section (1) of this rule if production of the wind AED model stopped prior to 1990, or it is an owner-built system or a mechanical wind AED.
- (15) The first-year energy yield of wind AEDs must be at least 350 kWh.
- (a) The first-year energy yield must be estimated using the measured or estimated wind resource data and the wind AED's power curve or energy production data.
    - (A) The provided wind data must cover at least a one-year period.
    - (B) Wind data may be used from:
      - (i) Three nearby wind monitoring stations;
      - (ii) The wind AED site itself;
      - (iii) In the event of less than one year's measurements at the wind AED site, the application shall include the months of on-site measurements and one year's worth of data from two nearby locations; or
      - (iv) A nationally recognized firm that provides estimated wind resource data based on advanced national wind mapping technology.
  - (b) The department will use data supplied by the applicant to verify the first-year energy yield.

**330-070-0091**

**Eligible Costs for a Wind AED**

(1) The costs listed in subsections (2)(a) through (m) of this rule do not include all eligible costs. Other costs will qualify if directly associated with the acquisition and installation of the AED. Only total working systems will qualify for a tax credit. All systems must comply with OAR 330-70-0021 and 330-070-0040.

(2) Eligible costs include:

- (a) The cost of wind turbine generators;
- (b) The cost of DC/AC converters, inverters and synchronous inverters;
- (c) The cost of wind and system instruments and controls when part of a total wind AED;
- (d) The cost of energy storage (batteries or other methods);
- (e) The cost of tower, foundation and guys;
- (f) Fees paid for design and building;
- (g) Fee to install;
- (h) The cost of electric meters, switches and electrical safety equipment;
- (i) The cost of electric transformers and lines and supports;
- (j) The cost of safety equipment;
- (k) Up to \$500 of wind permitting cost;
- (l) The cost of windmills; and
- (m) The cost of pumps, linkage, pump heads, and vacuum chambers.

### **330-070-0097**

#### **Electricity Producing AEDs**

Generating AEDs linked with an electric utility must be installed in accordance with local utility interconnect guidelines and be UL listed and installed per the state electrical code.