

## Energy Tax Credits Fact Sheet - Furnaces, Boilers and Air Conditioners

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Many home energy efficiency investments are eligible for a state tax credit. The state of Montana credit is 25 percent, up to \$500 per taxpayer. Look for other Fact Sheets in this series that focus on investments in conservation and renewable energy. Now we turn our attention to the utility room: home furnaces and boilers and air conditioning units. Many products are eligible. Some utilities and electric co-ops offer rebates on these appliances that can make the decision even easier. For more information on utility rebates go to [www.dsireusa.org](http://www.dsireusa.org)

Most homes in Montana are heated with natural gas. The federal Department of Energy (DOE) recognizes several classes of home heating units. In general, they can be divided into those that heat water or other fluids — boilers. Home heating units that heat and distribute air are classified as furnaces. A third class embraces air-source heat pumps that provide space heating and in some instances cooling as well.

The state tax credit is available for investments in furnaces and boilers fueled by natural gas, but also those fired by propane or fuel oil.

Energy Star is usually reliable guide for natural gas and propane furnaces to capture the Montana state credit. However, for boilers and oil furnaces, carefully review the manufacturer's efficiency AFUE label.

### Furnaces

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The Montana credit for a furnace is 25 percent of the investment, inclusive of installation costs, up to \$500 per taxpayer. The furnace must be a central system; portable heaters or space heaters are ineligible. The unit may be installed in a second home or other building. Efficiency rating must be at least 95 percent for natural gas or propane and at least 90 percent for those burning fuel oil. Use state form ENRG-C to claim the credit.

### Boilers

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The Montana credit for a boiler is 25 percent of the investment, inclusive of installation costs, up to \$500 per taxpayer. To claim the credit, a boiler must have an AFUE efficiency of 90 percent or higher. The unit may be installed in a second home or other building. Use state form ENRG-C to claim the credit.

Homeowners who have purchased an eligible boiler or furnace should keep documentation of the AFUE efficiency information on file, even though there's no requirement to submit a copy to claim the credit. Use form ENRG-C to claim the credit.

### Air-Source Heating and Air Conditioning

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Be careful not to confuse air-source heat pumps with ground-source heat pumps. Ground-source systems warrant a separate state credit and a separate advisory has been prepared. Consumers investigating ground-source systems should research those areas.

Air conditioning system provides cooling, while an air source heat pump provides both heating and cooling. Both use a compressor, coils, and fan and refrigerant lines

to transfer heat to and from outdoors to indoors. Most heat pumps and air conditioning systems are split systems with a separate outdoor and indoor coil and fan. Integrated or packaged systems have both coils and fans in the same assembly and are common in motel rooms and commercial applications. To obtain the credit a split air conditioning system must be a central system (window units are not eligible) and have an EER of at least 13 and a SEER of at least 16. Packaged systems need an EER of at least 12 and SEER of at least 14.

Note that for new systems or for new homes, the cost of distribution systems, (ductwork, and registers) is not eligible. Use state form ENRG-C to claim the credit.

An air source heat pump can be ducted or ductless. A ducted system uses ductwork similar to a forced air furnace heating system. A ductless system often referred to as a "mini split" utilizes copper lines to transfer the refrigerant from the outdoor unit to the interior head(s). To obtain the credit for an air source heat pump (split system) it must have an EER of at least 12.5, a HSPF of at least 8.5 and an SEER of at least 15. A package system must have an EER of at least 12.5, HSPF of at least 8 and a SEER of at least 14.

The Montana credit for both an air source heat pump and air conditioning system is 25% of the qualified investment, including material and labor cost up to \$500 credit per taxpayer. The credit must be claimed in the year of the investment and installation.

### **AFUE, SEER, EER, and HSPF**

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AFUE is the ratio of annual heat output of the furnace or boiler compared to the total annual fossil fuel energy consumed by a furnace or boiler. An AFUE of 90% means that 90% of the energy in the fuel becomes heat for the home and the other 10% escapes up the chimney and elsewhere. AFUE doesn't include the heat losses of the duct system or piping, which can be as much as 35% of the energy for output of the furnace when ducts are located in the attic, garage, or other partially conditioned or unconditioned space. <sup>1</sup>

Seasonal Energy Efficiency Ratio (SEER) is most commonly used to measure the efficiency of a central air conditioner. The higher the SEER, the more efficient the system. SEER measures how efficiently a cooling system will operate over an entire season. In technical terms, SEER is a measure of the total cooling of a central air conditioner or heat pump (in Btu) during the normal cooling season as compared to the total electric energy input (in watt-hours) consumed during the same period. This measure of efficiency is specific to the temperate climate in the middle of the U.S. <sup>2</sup>

Energy Efficiency Ratio (EER) is a measure of how efficiently a cooling system will operate when the outdoor temperature is at a specific level (95 degrees F). The higher the EER, the more efficient the system. In technical terms, EER is the steady-state rate of

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<sup>1</sup> "Furnaces and Boilers." Department of Energy, [energy.gov/energysaver/furnaces-and-boilers](http://energy.gov/energysaver/furnaces-and-boilers).

<sup>2</sup> "What Is SEER? EER? HSPF?" ENERGY STAR, [energystar.zendesk.com/hc/en-us/articles/212111387-What-is-SEER-EER-HSPF-](http://energystar.zendesk.com/hc/en-us/articles/212111387-What-is-SEER-EER-HSPF-).

heat energy removal (i.e. cooling capacity) by the product measured in Btu per hour divided by the steady-state rate of energy input to the product measured in watts. This ratio is expressed in Btu per hour/watt.<sup>2</sup>

Both SEER and EER are included in the ENERGY STAR specification because each rating indicates the energy efficiency of the product under different conditions. The SEER rating more accurately reflects overall system efficiency on a seasonal basis and EER reflects the system's energy efficiency at peak day operations. Both ratings are important when choosing a product.<sup>2</sup>

Heat Seasonal Performance Factor (HSPF) is the most commonly used measure of a heat pumps heating efficiency. The higher the HSPF, the more efficient the heat pumps. In technical term, HSPF represents the total heating output of a heat pump (including supplementary electric heat) during the normal heating season (in Btu) as compared to the total electricity consumed (in watt-hours) during the same period.<sup>2</sup>

## Resources

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The Montana Department of Revenue offers a website for state and federal energy tax credits at: <http://revenue.mt.gov/>

The site offers links for additional information about state and federal conservation tax credits. You can also access the Montana tax form ENRG-B, which is used for alternative energy projects such as ground-source heating systems. The form ENRG-C is used for energy conservation work. The forms include questions and answers on the back.