

The High Performance All Electric Home - Eugene



Ultra high efficiency electric technologies plus renewable energy combine to create the high performance home of the future today.

As the electric grid becomes cleaner and electric appliances more efficient, the all-electric home provides the best solution to increase home performance and comfort while also dramatically reducing carbon emissions in both new construction and existing homes. As building codes demand more energy efficiency from our buildings, electric solutions provide the most economic way to meet those requirements.

For builders and designers, this is an opportunity to get ahead of the curve by embracing the technologies that will become the new standard, and which provide immediate benefits to home buyers today.

For homeowners, converting homes to all electric provides a premium living experience with multiple advantages over gas-powered homes.



Improved Comfort and Performance

Modern electric appliances outperform their gas powered and older electric counterparts and deliver a better living experience. They provide more control and precision and can be adjusted remotely through the internet. They provide evenly distributed heating *and* cooling, and perform effectively in cold climates without the need for gas backup.



Lower Cost

In new construction, all electric solutions mean less costly infrastructure. Cost savings from avoiding gas piping, service installation and monthly service fees will offset the slightly higher initial costs of the electric appliances. Heat Pump space and water heaters are 3-5 times more efficient than gas or electric devices, saving homeowners hundreds of dollars per year in operating costs.



Lower Carbon Emissions

Space heating, cooling and water heating are a home's largest sources of carbon emissions. All Electric Homes do not burn fossil fuels on site for energy, and operate with much higher energy efficiency, dramatically reducing the emissions from heating and cooling. *When electric appliances are powered by renewable energy, their emissions will go to zero.*



Superior Air Quality and Lower Health Risk

Eliminating on site fuel combustion for heating and cooking avoids the dangerous by-products of gas combustion such as CO and NO2 which are linked to [serious health risks](#). The more continuous air movement from heat pumps also enables more air filtration for cleaner indoor air. Burning fossil fuels is one of the primary sources of smog and air pollution, so eliminating this fuel in our homes helps improve indoor and outdoor air quality.



Heat Pump Water Heater – Lowest operating costs/lowest carbon emissions

Heat pump technology captures ambient heat from the surrounding space and transfers the heat to the water in the tank. Because it is 3-5 times more efficient than electric resistance or gas fired solutions, a heat pump water heater will produce fewer carbon emissions and lower energy bills than any other technology. *These emissions will go to zero as the grid continues to get cleaner by state law.*

<u>Water Heater Type</u>	<u>UEF Rating</u>	<u>Equipment Cost</u>	<u>Annual Energy Cost</u>	<u>Average Annual Carbon Emissions</u>
Good Heat Pump Storage	3.75	\$1,200	\$115	0.1 Tons
Electric Tankless	0.98	\$540	\$320	0.2 Tons
Best Electric Storage	0.93	\$520	\$470	0.3 Tons
Gas Tankless	0.90	\$1,135	\$215	1.6 Tons
Best Gas Storage	0.90	\$2,745	\$230	1.7 Tons
Typical Gas Storage	0.70	\$1,040	\$300	2.2 Tons
Cheapest Gas Storage	0.62	\$575	\$335	2.5 Tons
Typical Propane Storage	0.69	\$1,100	\$680	2.3 Tons

Equipment costs are for equipment only and do not include installation – actual costs may vary. Annual Energy costs and carbon emissions are based on Eugene energy sources and costs, DEQ carbon intensity data and energy consumption from Energy Guide Labels for each product. UEF is the efficiency rating.

Heat Pump Space Heating/AC – Lowest operating costs/lowest carbon emissions

An external unit absorbs heat from the outside air and conducts heat to an indoor air handler that pushes warm air through the home. The same heat pump can provide air conditioning in the summer. These systems are effective in even the coldest areas of the U.S. and provide more air filtration and more even heating than gas systems. Ductless heat pumps and cold climate heat pumps produce the most heat for the money and the lowest carbon emissions. *Emissions from heat pumps will go to zero as the grid continues to get cleaner.*

<u>Space Heating and Cooling Type</u>	<u>Cost of 1MMBTU</u>	<u>Annual Energy Cost</u>	<u>Annual Carbon Emissions</u>
Cold Climate Heat Pump	\$12	\$360-610	0.2-0.3 Tons
Ductless Heat Pump	\$13	\$390-660	0.2-0.4 Tons
Variable Speed Heat Pump	\$16	\$470-780	0.3-0.4 Tons
Dual Fuel - Best Gas Furnace with VS Heat Pump	\$15	\$440-730	0.9-1.4 Tons
Best Gas Furnace 95% AFUE	\$15	\$460-770	3.3-5.4 Tons
Typical Older Gas Furnace 80% AFUE	\$24	\$710-1,190	5.0-8.3 Tons
Typical Older Propane Furnace 80% AFUE	\$51	\$1,500-2,600	5.1-8.4 Tons
Electric Baseboard	\$39	\$1,200-2,000	0.7-1.1 Tons
Electric Resistance Furnace	\$56	\$1,700-2,800	1.0-1.6 Tons

Energy costs and carbon emissions are based on Eugene average energy sources and costs, DEQ carbon intensity data for Oregon fuels, and heating loads of 30-50 MMBTU per year for a typical Oregon home.



Induction Cooking – Lowest Carbon Emissions/Best Temperature Control/Safest

Induction ranges and cooktops employ magnetic coils with digital controls beneath an easy to clean glass surface. The coils heat the cookware, but the glass surface itself does not get hot. This creates a safer cooktop with faster heat times, more precise temperature control and more immediate temperature changes for a better cooking experience than either gas or electric resistance stoves. Because there is no fuel combustion, induction stoves produce no CO and NO2 emissions which are unavoidable with gas powered ranges. The pollutants from [gas stoves are linked to higher risk of asthma](#), especially in children. Studies find that peak indoor air pollution from gas burning stoves can reach levels that would be illegal outdoors.

<u>Cooktop Burner Type</u>	<u>Time to Boil 8 qts</u>	<u>% of Energy Delivered</u>	<u>Annual Energy Costs</u>	<u>Annual Carbon Emissions</u>	<u>Air Quality Health Risk</u>
Electric Induction	9.3 min	85%	\$50-100	0.01-0.02 Tons	No
Electric Resistance	17.8 min	70%	\$60-120	0.02-0.03 Tons	No
Natural Gas	18.6 min	30%	\$45-90	0.3-0.7 Tons	Yes

Data from Frontier Energy: Residential Cooktop Performance And Energy Comparison Study, July 2019
 Cost and carbon emissions estimates based on 1-2 hours of cooking per day and Eugene energy sources and costs

Electric Fireplace Insert – Temperature Control and Versatility

An electric fireplace insert is an excellent alternative to gas, provides on-demand space heating and ambiance without the carbon emissions or indoor air quality issues associated with gas. The units require no external venting and run off 110V supply. They come in a variety of configurations and aesthetic options with realistic flames and decorative media options such as stones, glass blocks or logs. They allow temperature control, require no cleaning and are safer because their external surfaces do not get hot.

Electric Clothes Dryer – A Low Carbon Alternative to Gas Dryers

For a modest cost, gas-powered clothes dryers can be replaced with electric or electric heat pump dryers to avoid carbon emissions. Most of the energy for drying clothes is used for heating, so running an electric clothes dryer on low heat or using a heat pump dryer will save energy, lower costs and carbon emissions and protect clothing from the damage from high heat-with only a slightly longer cycle time.

Trusted Suppliers – Strong Warranties and Service

All the major manufacturers of home appliances are committed to modern electric solutions and back these products with warranties that are at least as strong as gas-powered models.

