Air-source heat pumps (ASHPs) operate like air conditioners, transferring heat from inside to outside a your home in summer, and in winter the heat pump reverses and transfers heat from outside air to inside the home. ASHPs can use ducts, like most home central air conditioning systems, and there are also “ductless mini-split” and “mini-duct” systems (the latter being a hybrid of ductless and ducted systems). Heat pump technology has improved significantly over the past five years or so, and can now perform well year-round, even in the coldest climate zones. For existing homes, heat pumps can provide several important benefits, including:

- Reduced annual heating costs
- Reduced air emissions
- Improved comfort
- Improved safety and reduced risks

Obtaining these benefits depends on choosing the right applications. Air emissions, comfort, and safety will be improved in nearly every retrofit application, but the costs only pencil out today in some situations — at least until costs fall further and rebates and incentives pick up more of the difference.
THE BEST COLORADO HEAT PUMP APPLICATIONS

Here are the most cost-effective applications for air-source heat pumps in existing homes, focusing mainly on the front range, eastern plains, and western slope areas of Colorado (climate zones 4 and 5). For more details, see loveelectric.org/heating-cooling.

HOMES WITH ELECTRIC HEATING

- Install a ductless, mini-split heat pump system
- Reduce your heating costs by up to 60%
- Also adds cooling for summer months

If your home currently has electric resistance heating (e.g., baseboard electric heating), a practical, cost-saving solution is to install a ductless heat pump system to provide some or most of the home’s heating needs. The heat pump will reduce annual heating costs by up to 60%. Ductless heat pumps also make a lot of sense for new additions, rather than installing new electric baseboard heating, or installing ducts for heating or cooling. In addition, the heat pump will also provide efficient cooling to the existing rooms or the new addition.

HOMES HEATED WITH A PROPANE FURNACE

- When you need to replace your furnace, choose a heat pump instead
- Reduce your annual heating costs by 35% or more
- With utility rebates, payback period will be less than five years

If your home is currently heated with propane, you can reduce your heating costs by 35% or more by replacing the furnace with a heat pump when the furnace needs to be replaced, or by adding a heat pump to displace most of the heating from your existing furnace. The heat pump will cost more initially than a propane furnace, but can make sense with utility rebates, especially if your home also has (or needs) air conditioning to maintain comfort in the summer.

HOMES WITH CENTRAL AC & GAS HEATING

- When you need to replace your central air conditioning (AC) system, install a heat pump instead
- Offsets some or most of your natural gas consumption, reducing your carbon footprint
- If you need to replace your central AC system and gas furnace, install a heat pump and new gas furnace
- With rebates will cost about the same, and reduces natural gas consumption and emissions

If your home is currently heated with natural gas, the economics of choosing a heat pump are more challenging. However, it can make sense to replace your central AC system with a heat pump when you need to replace your existing AC system or when installing a new one. For a 3-ton AC system, we estimate that the incremental cost of installing a heat pump rather than replacing the central AC is $1500-$2500. In that range, utility incentives can offset most or all of the incremental cost. For example, Tri-State incentives of $450/ton will amount to $1350 for a 3-ton heat pump system.

ADD COOLING TO YOUR HOME

- Add a ductless heat pump to serve one or two zones
- Improves summer comfort and reduces natural gas consumption and emissions

If your home is heated by natural gas and does not currently have central AC, you can improve your comfort in the summer months by adding a mini-split heat pump to serve one or two zones (such as the living room and one or two bedrooms). You can also operate the heat pump in the winter months (down to a temperature such as 30 degrees F) to help reduce the carbon footprint of your heating system.

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Please also check out the Love Electric website to find rebates and installation tips and resources.

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