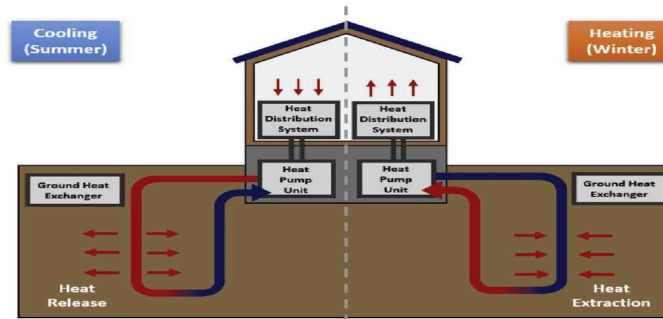




Ground Source Heat Pump Installation



Impact of Switching to Heat Pump Systems

- Heat pumps use energy to move heat versus burning fossil fuel to release heat
- Heat pumps are more efficient than oil or gas furnaces
- Heat pumps can heat and cool your home with renewable energy if that is your utility energy source
- Heat pump installation supports goals of the Clean Energy Transition Plan of West Pikeland Township (but their installation is completely voluntary)

Heat Pumps versus Fossil Fuel Systems

Heat Pump Heating and Cooling

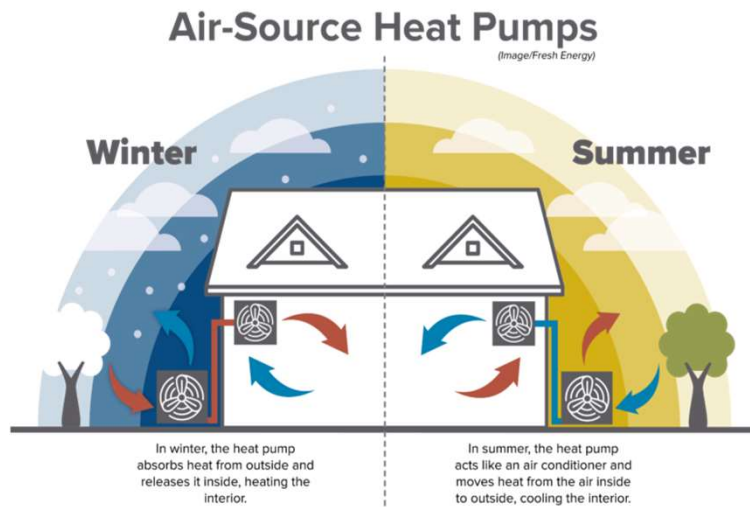
- Use of renewable energy for heating and cooling enabled
- Electrification of the community enabled
- Able to work with PV solar for off the grid heating and cooling

Fossil Fuel Heating plus Air Conditioning

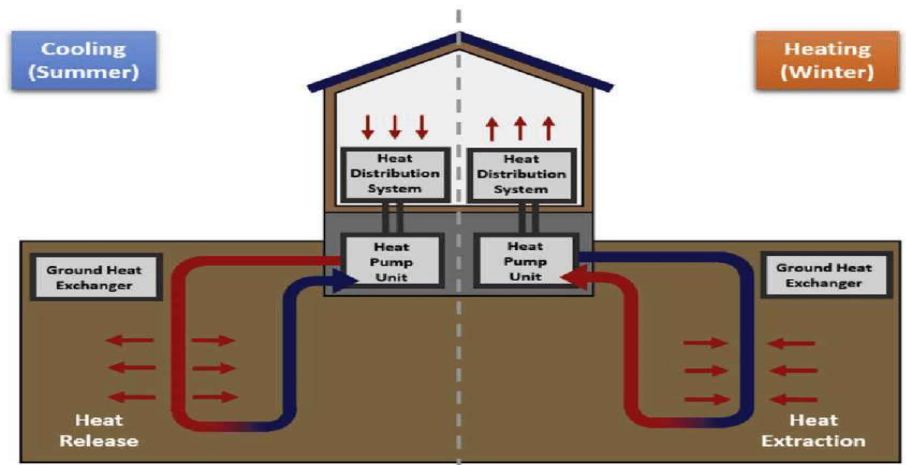
- Not enabled
- Not enabled
- Can work with PV solar for air conditioning only

Types of Heat Pump Systems

Air Source Heat Pump (ASHP)



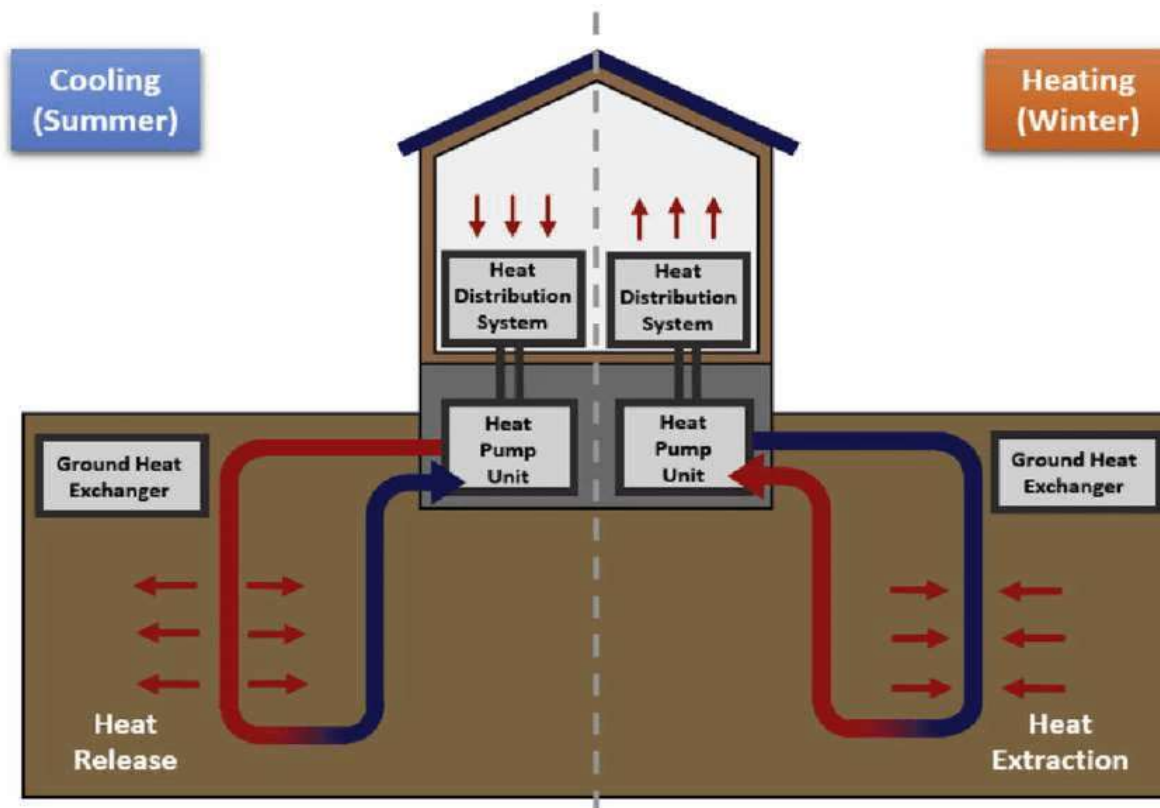
Ground Source Heat Pump (GSHP)



GSHP versus ASHP

- Ground source heat pumps are more expensive to buy and install than air source heat pumps
- Ground source heat pumps are more efficient than high efficiency air source heat pumps (approximately EER of 18)
- Air source heat pumps should be of the high efficiency class to be economical to operate (approximately EER of 12)

Ground Source Heat Pump Systems



Heat Pump Installation Cost

Ground Source Heat Pump (5 Ton)

Wells (2)	\$14,000
System	\$19,000
Federal tax credit	<u>\$ 9,900</u>
Net Cost	\$23,100

Air Source Heat Pump (5 Ton)

System	\$13,000
Federal tax credit	<u>\$ 2,000</u>
Net Cost	\$ 11,000

These costs represent one data point. Competitive installation bids are suggested.

Check with your tax professional for applicability of federal tax credits

Economics of GSHP vs. ASHP

Ground Source Heat Pump (5 ton)

- Energy saving per year for this residence over former fossil fuel based outdated system:
 - Oil bill eliminated \$1500
 - Reduced electrical \$ 500
 - Reduced maintenance \$ 150
 - Total \$ 2150
- Higher efficiency than ASHP- however a payback has not been calculated for this residence
- Longer life (totally inside, in ground installation)

Air Source Heat Pump (High Efficiency)

- Energy saving has not been calculated but has similar components to GSHP
- Lowest first cost
- Subject to the wear and tear of outside installation

GSHP Installation Considerations

- Accomplish low cost/no cost energy improvements in your house before major investments in HVAC systems
- GSHP systems are suitable for installation in new or existing homes with forced air systems.
- In existing homes the GSHP system simply replaces the gas or oil furnace and outside condensing unit
- Normally the electrical circuit used to power your air conditioning system is adequate for powering the more efficient GSHP system
- There are several local GSHP HVAC contractors from which you can get competitive bids

Timing and Schedule for GSHP Installations

- Since your HVAC system will be out of commission during the installation plan for a week in the spring or the fall
- Most HVAC contractors will want you to get the wells drilled by a separate contractor retained by you. This work can be done anytime prior to the HVAC contractor's work
- This is the time to remove your oil tank. Line up your oil delivery firm to pump out the oil and remove the tank.
- Allow this amount of time to complete the work:
 - Wells-1 week
 - HVAC install and tank removal-1 week

Please Consider.....

- A heat pump installation when your fossil fuel system wears out
- This supports the reduction of fossil fuel emissions in the community
- This enables you to heat and cool your home with renewable energy if that is your utility energy source
- This supports West Pikeland Township's Clean Energy Transition Plan

