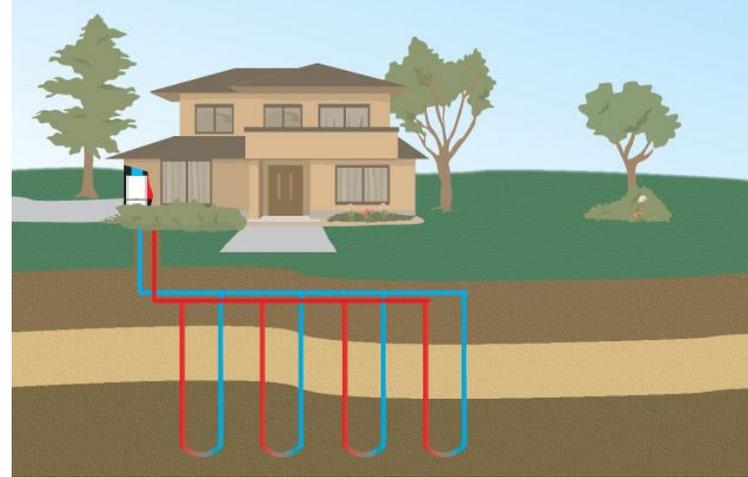


## FACT SHEET

## Ground-Source Heat Pumps (GSHP)

### Why are GSHPs a great option for many homes?

- It is well-proven technology. Just ask your refrigerator if it works!
- For every unit of electricity they use, a GSHP brings 3.5 to 4.5 units of heating energy into your home. This is possible because the electricity powers a refrigeration cycle that captures and transfers more energy from the ground than the energy used to run the GSHP.
- Because of their extra-super energy efficiency, GSHP can be very cost-effective.
- GSHP can replace both furnaces and boilers and can often make use of the pre-existing heat distribution system within the home.
- Six to eight feet below the surface, ground temperature remains at a relatively constant ~50-55 degrees in Upstate NY. This allows GSHP to have a very stable energy efficiency and capacity.
- When replacing a furnace they give efficient, effective air conditioning too for no extra cost. GSHP interfacing with hydronic delivery need to have fan coils installed to allow air conditioning without unwanted condensation.
- They can supply 100% of the heating needed on Tompkins County's coldest winter days.
- Because nothing is burned in the home, heat pumps heat and cool while giving you the cleanest and healthiest air to breath.
- GSHP can be run using renewable electricity, and you are on the way to carbon neutral home heating and cooling!



### Cost & Financing - *The time has never been better!*

- There are now strong incentives at both the state (\$1,500/ton capacity) and federal (30% tax credit) levels. Together, these cover almost half of the cost and even large systems may then be \$20,000 or less. **Act now- these incentives begin phasing out after 2019!**
  - For some system types there are no-money down loan packages available through the installer. Ask them.
  - NYSERDA has unsecured loans for up to \$25,000.
- Pricing, more fact sheets and schedules for HeatSmart community meetings and tours are available at: [www.HeatSmartTompkins.org](http://www.HeatSmartTompkins.org)

### Components: The System

- A ground Loop field is located outside underground, and can either be drilled vertically or trenched horizontally. In either case, a water solution with antifreeze (often food-grade glycol) circulates between the ground and the heat-pump station. This solution picks up heat from the ground and enters the house at it's warmest. The heat pump then transfers heat from the closed loop piping of the loopfield to either an air or radiator based delivery system to the rest of the house. The now cold water leaves the heat pump and goes back out into the loopfield to be warmed back up.
- The heat pump compressor/exchanger is typically located in a basement. It might measure 3' wide by 6' feet tall, similar to a conventional furnace. It interfaces with the loop field at one end and the heat delivery system (forced air ducts at top in the figure to the left) at the other.
- Thermostat/Remote control- can be wall-mounted like conventional systems, it can be programmed by remote control.
- System life approximates 25 years for the indoor compressor and 50-100 years for the underground loop field.

