

Indoor heating and cooling systems that connect to geothermal or Thermal Energy Networks

Planning for a geothermal project or Thermal Energy Network (TEN) includes identifying the heating, ventilation, and air conditioning (HVAC) systems that already exist in buildings. Some indoor systems are easy to connect to a TEN, some will require adjustments, and others will need to be replaced.

Taking steps to be TEN-ready can happen anytime, whether a TEN is a possibility, an actionable idea, or a current project. For example, replacing an aging heating system is an opportunity to choose a new system that accepts low temperature heat and is ready to connect to a TEN.

The lists below show the categories of HVAC systems that will work with geothermal projects and Thermal Energy Networks.

An HVAC expert such as an installer or engineer can explain these terms and give information specific to individual systems or buildings.



Low temperature, water-based systems and low velocity air ductwork systems are easily retrofitted to work for a TEN, including:

- fan coils
- large format flat panel radiators
- underfloor/in-wall/ceiling hydronic radiant systems
- ducted heating and cooling systems (similar to a furnace with air handlers)
- fan assisted radiant panels
- water source variable refrigerant flow (VRF) heat pump systems



Incompatible equipment:

- convectors
- baseboard (electric or hot water)
- one-pipe or two-pipe steam radiators
- induction units
- undersized water-to-air heat exchangers

NOTES:

- Two-pipe steam systems can sometimes be retrofitted to hydronic to connect to a TEN depending on existing building conditions.
- Some VRF systems may be retrofitted to water-source or hybrid systems and may connect to a TEN. Note: As some VRF manufacturers do not allow system retrofits, this work may void a system's warranty.
- For domestic hot water systems that can tie-in to a TEN via a heat pump, ensure cooling or dehumidification systems are capable of sharing waste heat with the domestic hot water system.
- Ventilation improvements should allow energy and heat recovery.