

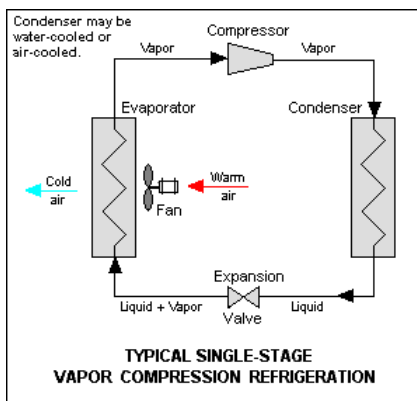
What is going on in the field next door to City Hall?

The Air Conditioning systems for the Library and City Hall are being replaced with high efficient Geothermal Heat Pump Systems. The “Ground Loop” for the geothermal heat pump system is being installed in the field.

What is a Geothermal Heat Pump System?

A Geothermal Heat Pump System is very similar to a common Air-Cooled Heat Pump System (aka – Central Air Conditioner). The difference is in the Condenser Coil.

Air Conditioning & Heat Pump Systems:



Air conditioning systems remove heat from the conditioned space using four major components: evaporator coil, compressor, condenser coil, and expansion valve. Refrigerant such as R-22 or R-410A circulate through these components to transfer the heat from the evaporator coil to the condenser coil. A heat pump is an air conditioning system with a reversing valve to reverse the cycle from cooling to heating.

The refrigerant is cooled at the condenser coil where the heat is released to the surrounding environment.

Air-Cooled Heat Pump Systems:

A standard air conditioning system in a home or commercial building houses the evaporator coil and fan in the air handling unit located in the conditioned space and the compressor, expansion valve, condenser coil and condenser fan in the condenser mounted outside. The refrigerant runs through the condenser coil and is cooled by the outside air at 95°F, and the heat from the conditioned space is expelled into the air.

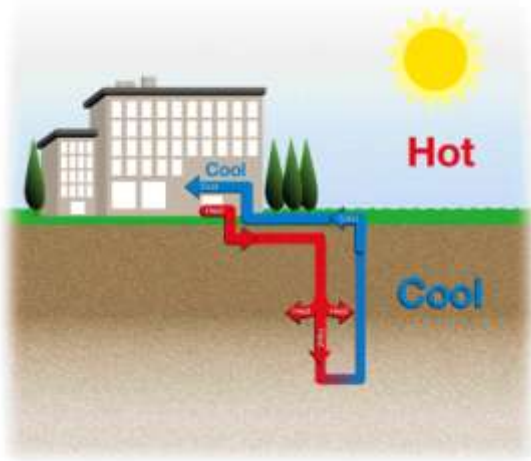


Geothermal (Ground-Source) Heat Pump Systems:

A geothermal heat pump uses a water coil to extract heat from the refrigerant coil. This water is circulated through plastic (HDPE) loops in the ground to dissipate the heat from the conditioned space to the ground.

Where air-cooled condensers are cooled with 95°F air, the ground loop condenser is cooled with 68°F soil.

What are the benefits of Geothermal Heat Pump Systems?



There are several benefits to this type of system. Due to the lower ambient temperatures, this system is much more efficient than a standard air-cooled heat pump system, so the energy used to condition these buildings will be decreased by as much as 50%. Due to the beach environment, condensers are corroded by salt air and have a much shorter system life. A geothermal heat pump system is located in the conditioned space so there is minimal salt air intrusion. The life expectancy of the heat pump is 15+ years. The life expectancy of the ground loop is 50+ years.

Are refrigerant or other chemicals being introduced to the ground and what effect does this have on the ground temperatures?

Nothing is being introduced or extracted from the ground other than heat. The closed loop circulates water through plastic (HDPE) piping. The refrigerant in the system is completely contained inside the air conditioning unit in the conditioned space.

The ground loop has been sized to minimize the ground temperature increase over a 20 year period. It is no more detrimental to the ground than releasing this heat to the atmosphere.

When the project is complete, what will we be left with?

The short answer is exactly what you had before. All of the geothermal heat pump piping is buried 4-6 feet below the surface, along with all the other utilities that serve the building. A detailed underground layout has been provided to the property owner for future reference. With no maintenance for the piping over its life, there is no reason to dig the piping up. When the project is complete, the field will be leveled, grass will grow back and the field will be open to the public.



We understand your concern for this open space and hope we've answered your questions. Please feel free to contact us with any questions. David Gray 904-687-1936, Brad Sherman 912-658-7533.

[An excellent article giving further detail on geothermal systems can be found at http://en.wikipedia.org/wiki/Geothermal_heat_pump.]