

GROUND SOURCE HEAT

Overview: Geothermal exchange utilizes a heat pump to capture the stable temperature of the earth to preheat and pre-cool a building's comfort systems. This is different than geothermal energy, which is not available in New York City.

Benefits: • Highly efficient • Highly cost-effective and durable relative to other heating and cooling systems • Can reduce heating & cooling costs 25-75% compared to conventional systems • Low maintenance • Little or zero emissions • Quiet operation

Challenges and Opportunities: • Not practical for all sites • High initial costs (drilling & exploration) • Open systems present risks due to unknown geological conditions • Federal tax credits incentives exist to offset installation costs (Expires 12/31/16) • Special financing is available from Energy Star® and other organizations

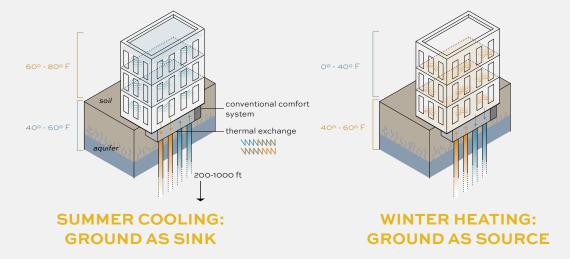
Process: A geothermal exchange system consists of a heat pump, a heat exchange component, and a delivery system.

The heat exhange component uses two thermally conductive materials - a source and a sink - to transfer energy, heat, and cooling between the two materials.

Water-to-water systems use water to carry heating or cooling through the building. Examples include: radiant underfloor heating, baseboard radiators, and conventional cast iron radiators. Water-to-water systems are preferred for pool heating or domestic hot water pre-heating.

Water-to-air systems use forced air to carry heating or cooling through a building. They are often used to replace forced air furnaces and central air conditioning systems. Variable designs allow for split systems, high-velocity systems, and ductless systems.

\$30,000 - \$50,000 per pump



Case Studies:

Washingston Square Park House: New York, NY: 3,100 sq. ft. www.bkskarch.com/work/washington-square-park-house

Historic Front Street: New York, NY: 150,000 sq. ft. www.cookfox.com/project.php?id=Historic-Front-Street

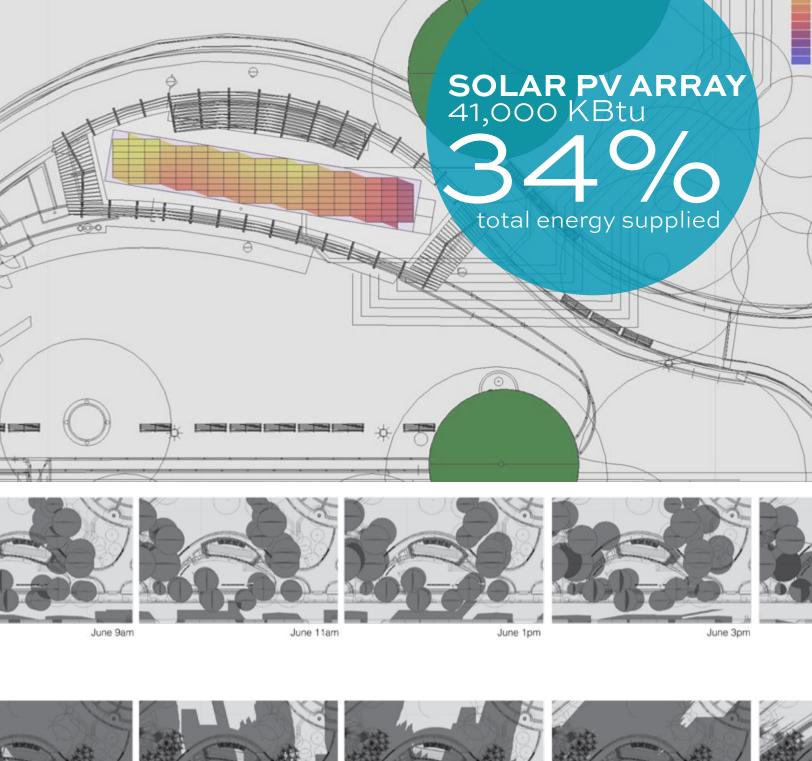
Additional Resources:

NYC Geothermal Heat Pump Manual

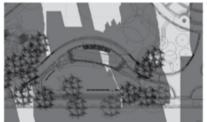
http://home2.nyc.gov/html/ddc/downloads/pdf/geotherm.pdf

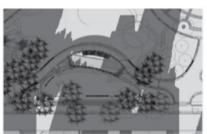












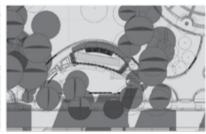


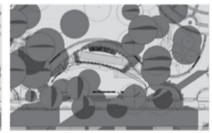


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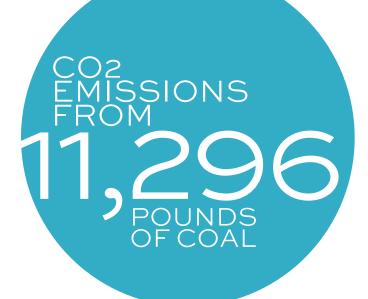




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