## WASHINGTON SQUARE PARK HOUSE A MODEL FOR LOW CARBON DESIGN





## A GLOBAL STAGE OF SOCIAL **ENVIRONMENTAL** AND POLITICAL CHANGE

#### WASHINGTON SQUARE PARK HOUSE a model for low carbon design





#### **SOLAR PV ARRAY** 1,000 SQUARE FEE<sup>-</sup>

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BKSK

GEOSOLAR Energy Use Intensity 39 KBtu/sf per yr

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# 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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occupied space naturally lit



# SOLAR PV ARRAY 41,000 KBtu 340/0 total energy supplied

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# SOLAR PV ARRAY 41,000 KBtu 320/0 total energy supplied



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June 9am



June 11am



June 1pm



June 3pm



Dec 9am



Dec 11am



Dec 1pm





Dec 3pm



Mar 9am



Mar 11am



Mar 1pm





Mar 3pm













CENTER FOR ARCHITECTURE GENERAL THEOLOGICAL SEMINARY QUEENS BOTANICAL GARDEN TIMES SQUARE TKTS BOOTH BROOKLYN CHILDREN'S MUSEUM WEEKSVILLE HERITAGE CENTER STATEN ISLAND MUSEUM BRONX ZOO LION HOUSE CORNELL TECH CAMPUS PS62 EAST 93RD STREET FRONT STREET 23 GRAMERCY PARKSOUTH

> AND 100 OTHER PROJECTS THROUGHOUT NYC

### WASHINGTON SQUARE PARK HOUSE A MODEL FOR LOW CARBON DESIGN

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