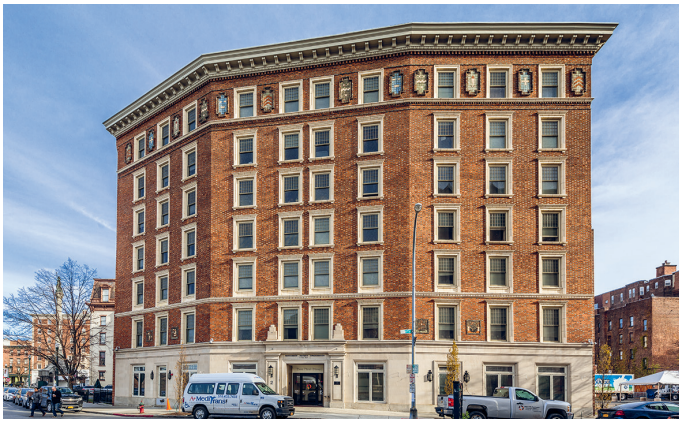
$13,000
IN
ANNUAL SAVINGS

SUSTAINABLE CPC: A STUDY IN SAVINGS

Heat Pumps for a Historic Rehabilitation | Adaptive Reuse



BUILDING PROFILE

Year Constructed	1906
Size	7 Floors, 89 Apartments, 254 Rooms, 80,481 Gross Square Feet
HVAC System	Ground Source Heat Pump
Utilities Provided by Owner	Hot Water, Water & Sewer

In 2013, this historic building underwent a substantial rehabilitation, which included replacement of the electric baseboard heating system with a new, efficient ground source heat pump system, among other major upgrades. This investment saw a significant return as both resident comfort and cash flow greatly improved.

PROJECT PROFILE

Loan Type	Permanent Loan
Loan Offering	$1.65 million

ADDITIONAL LOAN PROCEEDS SUPPORT ENERGY AND WATER EFFICIENCY

Historical Income (NOI)
$191,919

→

Income with Energy Savings (Adjusted NOI)
$205,358

=

Additional Available Loan Proceeds
$267,352

SAVINGS SNAPSHOT

Compared to a conventionally designed building of similar size, the subject property saves 16% on total utility expenses.

Upgrading to low-flow plumbing fixtures helped achieve savings on the water bill while also cutting down on water heating costs.

UTILITY	CONVENTIONAL PROPERTY ANNUAL EXPENSE ($/APARTMENT)	SUBJECT PROPERTY ANNUAL EXPENSE ($/APARTMENT)	EXPENSE DIFFERENCE
Electricity	$638	$544	–15%
Gas	$55	$63	+15%
Water	$237	$172	–27%
Total	**$930**	**$779**	**–16%**

UPGRADE COST AND SAVINGS

The graphic below outlines the cost and potential savings associated with upgrading certain components to new, energy efficient models. Use this graphic to help you estimate the cost savings of installing similar upgrades in your building.

KEY

- Per Building
- Per Apartment

HEAT

STANDARD OPTION
Air-source heat pumps

UPGRADE OPTION
ENERGY STAR, ground source heat pump system

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$213,600	$24,920*

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
8.6	11.7%

HOT WATER

STANDARD OPTION
Non-condensing hot water heater (80% efficiency)

UPGRADE OPTION
ENERGY STAR, condensing hot water heater (91% efficiency)

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$6,230	$890

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
7.0	14.3%

ROOF

STANDARD OPTION
Minimum insulation

UPGRADE OPTION
Exterior wall and roof insulation

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$35,600	$6,230*

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
5.7	17.5%

VENTILATION

STANDARD OPTION
Supply and exhaust ventilation with no heat recovery

UPGRADE OPTION
Heat recovery ventilation

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$15,130	$1,780

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
8.5	11.8%

LAUNDRY

STANDARD OPTION
Standard washers and dryers

UPGRADE OPTION
ENERGY STAR washers and dryers in common area

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$445	$90

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
4.9	20.0%

WINDOWS

STANDARD OPTION
Two-pane windows

UPGRADE OPTION
Low-e, insulated windows

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$330	$50*

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
6.6	15.2%

LIGHTING

STANDARD OPTION
Incandescent and T12 fluorescent bulbs

UPGRADE OPTION
Efficient apartment, common area, and exterior lighting; occupancy sensors on every floor

INCREMENTAL COST OF UPGRADE	ESTIMATED ANNUAL SAVINGS
$220	$50*

SIMPLE PAYBACK (YRS)	RETURN ON INVESTMENT (ROI)
4.4	22.7%

FEATURED UPGRADE
GROUND SOURCE HEAT PUMPS (GSHPS)

Heat pumps are an electric heating and cooling technology that achieves higher heating efficiencies than electric-resistance or fuel-burning methods. Ground source heat pumps (GSHPs), or geothermal heat pumps, achieve even higher efficiencies by using the earth as a stable heat source and sink year-round. When designed and installed properly, ground source systems are highly efficient, quiet, and long lasting. When ground source systems are not feasible, other types of heat pumps (air-source or water-source) can still be installed to achieve high-efficiency electric heating and cooling.

IS THIS UPGRADE RIGHT FOR YOU?
If any of the following apply, then yes!

- ✓ Enough usable land (or a body of water) for installation
- ✓ High heating and cooling demand costs
- ✓ An aging hydronic distribution system
- ✓ Plans to substantially renovate property

*Includes tenant savings. Total savings were allocated between owner and tenant based on the total heated and cooled area.