

Greener Homes

New Hampshire Housing Finance Authority



Greener Homes Program

- ◉ Energy improvements and related emission reductions
- ◉ Affordable rental housing inventory
 - 548 projects – 19,016 units
- ◉ Emphasis on older “at risk” properties
- ◉ Leveraging preservation deals



Extended Affordability

- All participating properties commit to a minimum of 20 years of continued affordability restrictions



Greener Homes

○ Project Selection Criteria

- Impact on operating budget (\$ savings)
- Cost effectiveness of improvements (payback period)
- Energy savings (kilowatt hours, gallons of fuel)
- Participation in a comprehensive project rehabilitation



Eligible Projects

- ◉ Older rent restricted affordable housing
- ◉ Family, elderly, veterans, special needs, transitional housing, shelters
- ◉ Non profit or for profit ownership
- ◉ Demonstrable need for energy improvements



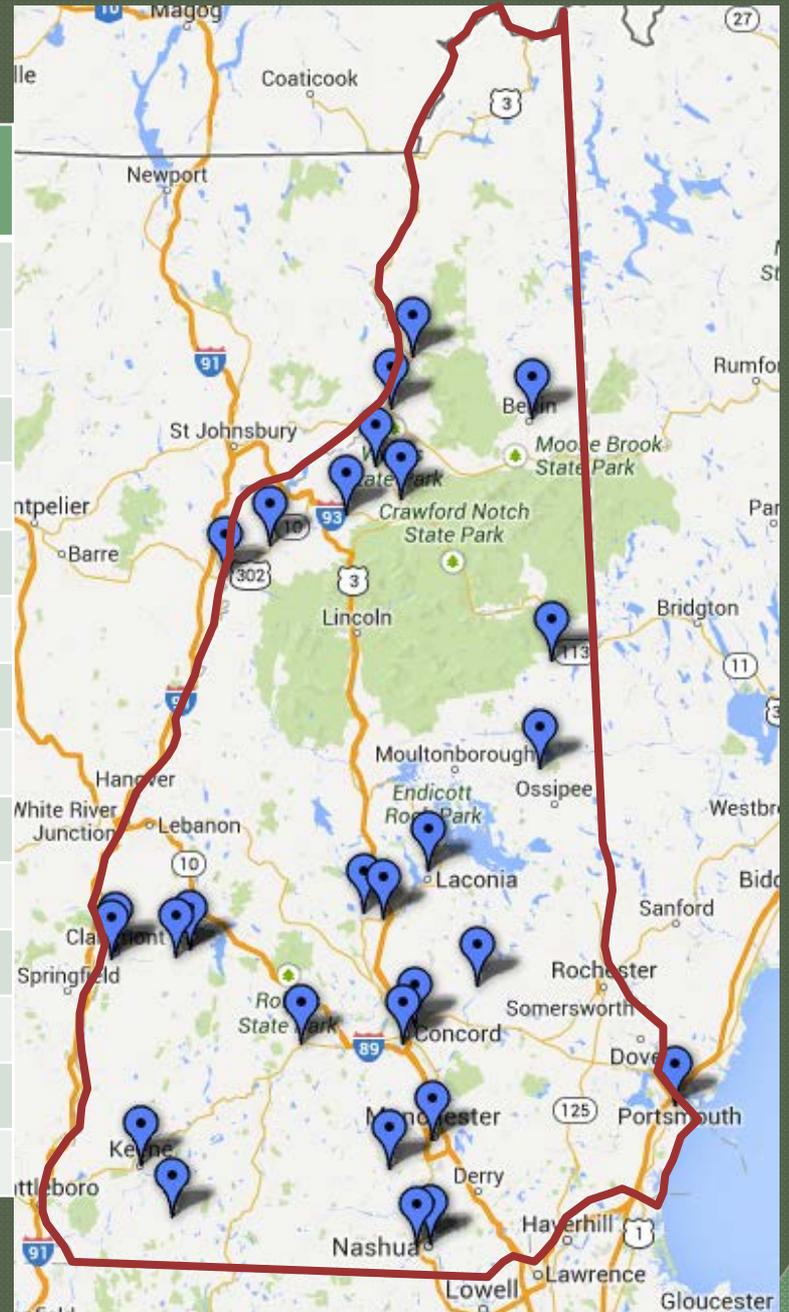
Greener Homes

Proposed	Actual
\$3 million HOME	\$3 million HOME
\$2 million RGGI	\$2 million RGGI
\$3 million WAP	\$115,000 WAP
	\$500K Utility Rebates
	\$350K in Better Buildings
Total Program Funds: \$8 million	\$5,965,000
Projects: 20	28
Units: 785	950

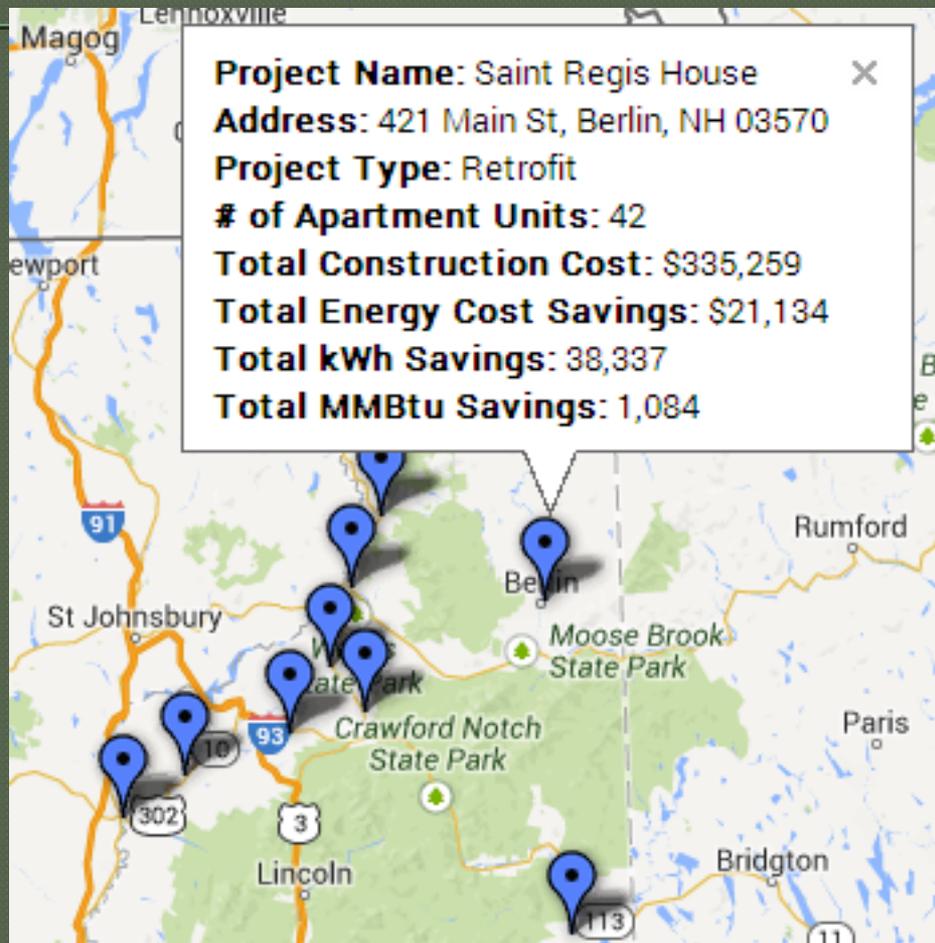


Retrofit Projects

	Project Name		Project Name
1	Eastern Ave Apartments	15	Mill Knoll Village
2	Women In Transition	16	Melcher Court
3	McKee Inn	17	Rolling Green
4	Opera Block	18	Xavier House
5	Lisbon Inn	19	Rush Square Apartments
6	Pine Manor	20	Highland House Apartments
7	Spencer Square	21	Franklin Falls
8	Saint Regis House	22	Hope Ave
9	Wamesit Place	23	Troy Senior Housing
10	Sugar River Mills	24	Beaver Mill
11	Lakeport Village	25	Newport Village Apartments
12	Cedar House	26	Newport House Apartments
13	Pond View	27	Berlin Housing Authority
14	Mountain View	28	Coliseum Apartments



Greener Homes Live Map

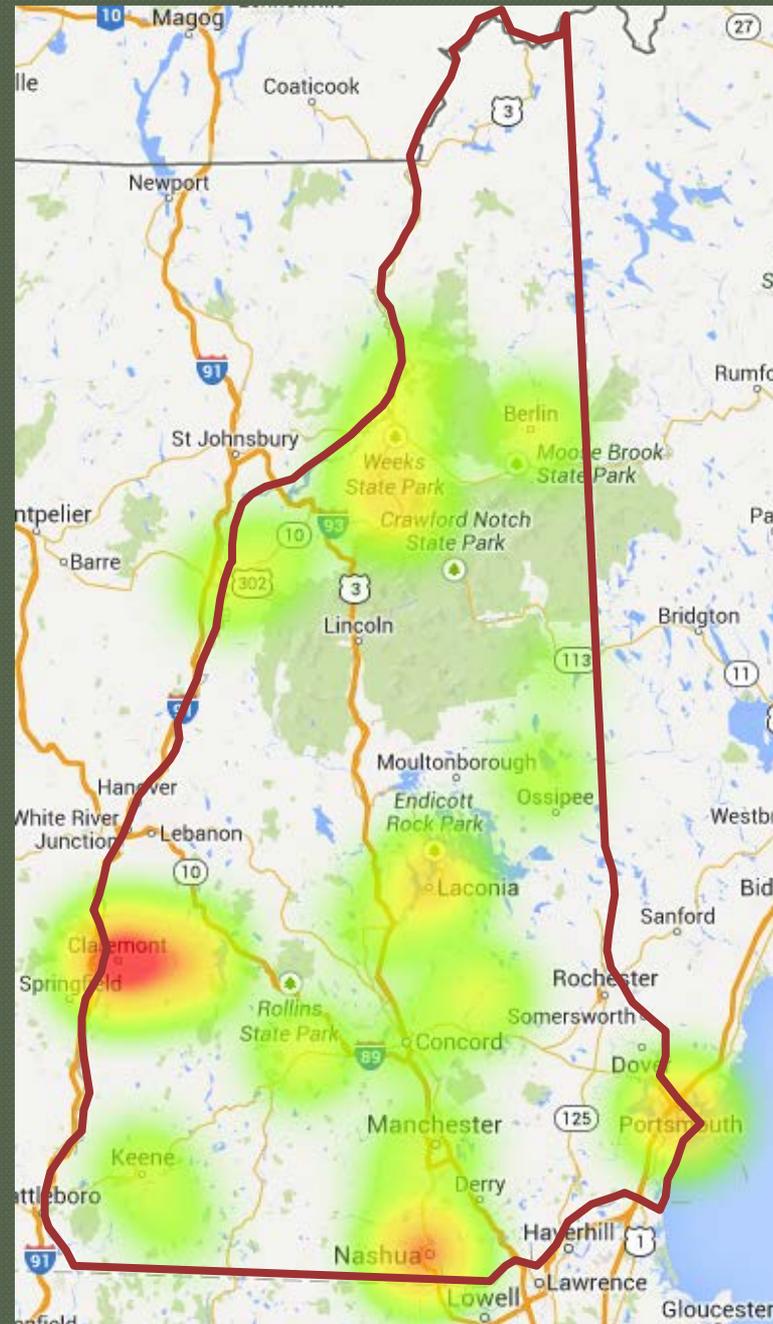


Click [here](#) to view the live interactive map.

Greener Homes Energy Retrofit Projects

Heat Map

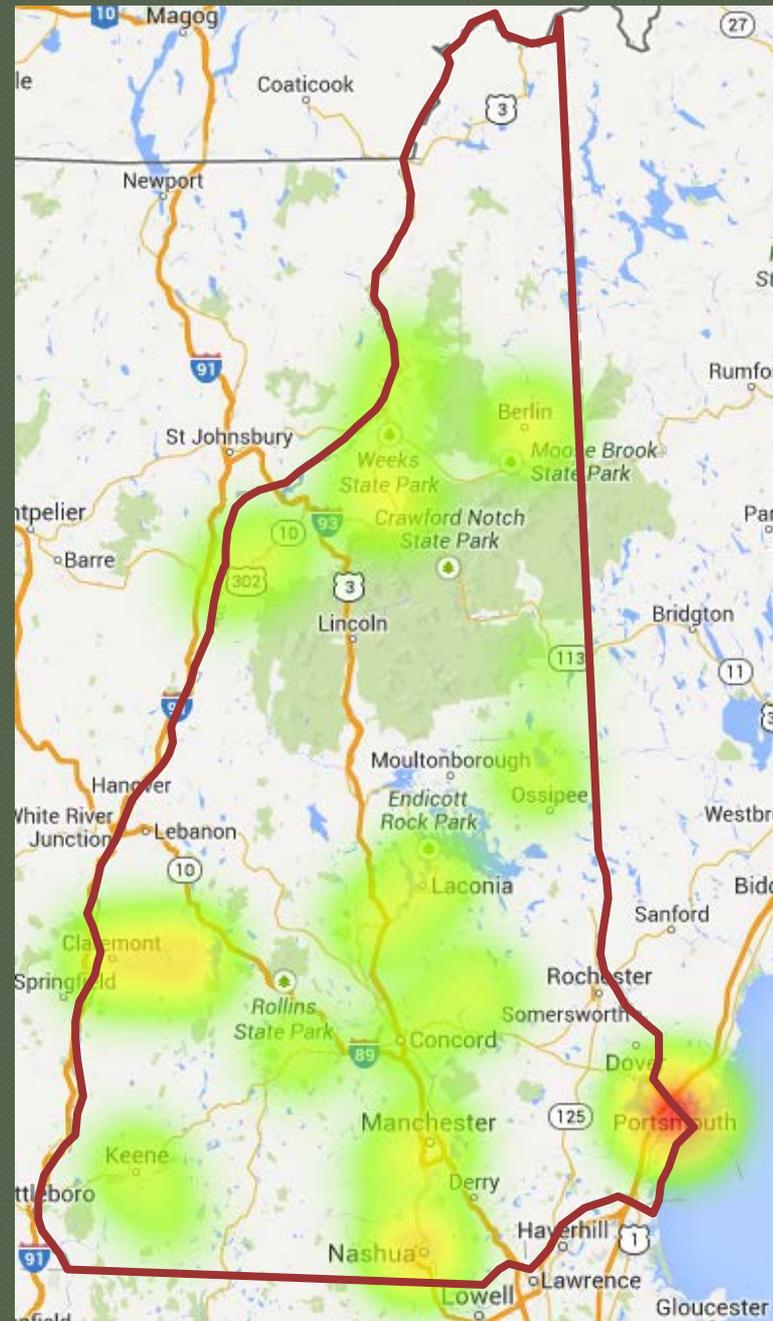
of Apt. Units



Greener Homes Energy Retrofit Projects

Heat Map

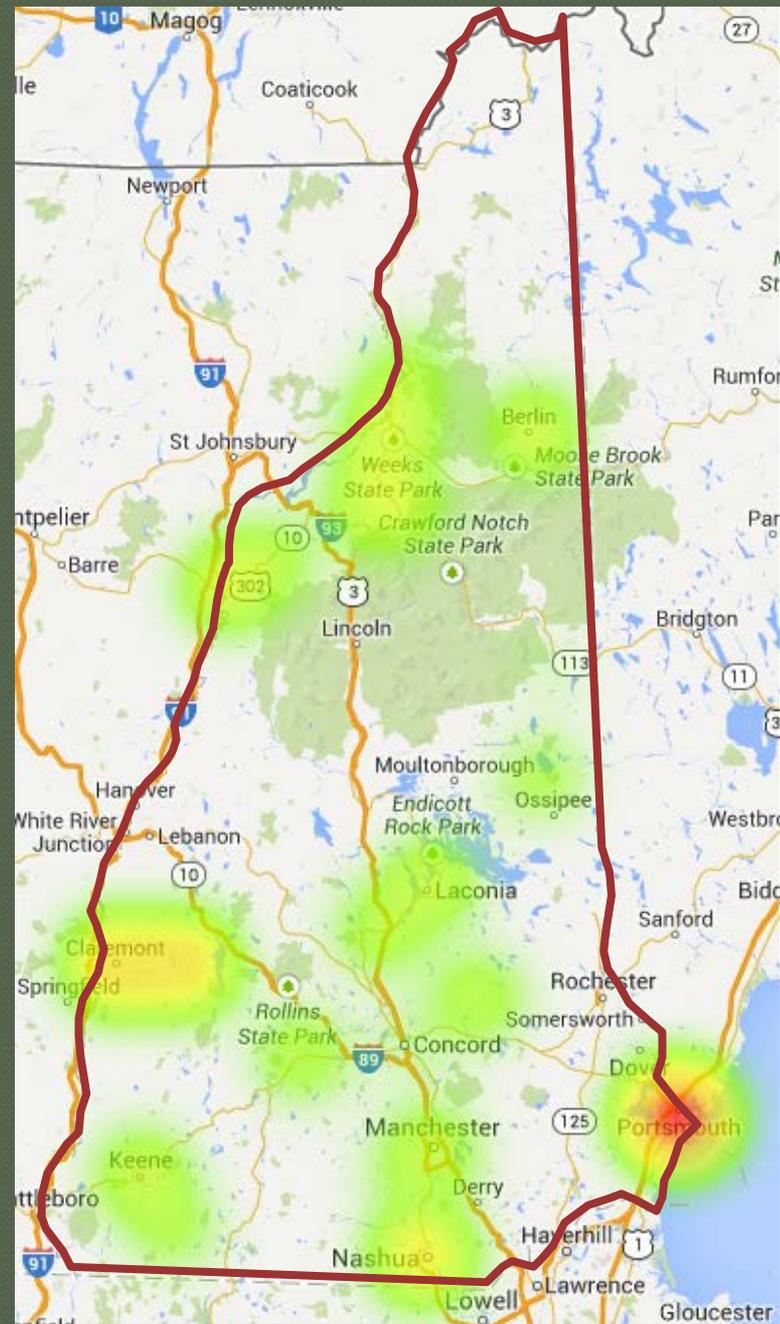
*Total
Construction
Cost*



Greener Homes Energy Retrofit Projects

Heat Map

*Total Energy
Cost Savings*



Greener Homes – Overall Impacts

- Over \$430,000 in annual operating cost reductions to participating projects
- Over 1,000 units subject to extended affordability restrictions
- 1 million kWh saved
- 13,525 MMBTU fossil fuels saved



Greener Homes – Overall Impacts

- 3,953 metric tons of carbon dioxide reductions
- Carbon sequestration equivalent to 3,240 acres of U.S. forest in one year
- Equivalent to taking 823 cars off the road



As Program Implementer TRC

- ◉ Built relationships with Building Owner
- ◉ Developed Greener Homes Partner Network
 - Orientations, Partner Calls, Trainings, QC
 - 7 Partners
- ◉ Established participation process, program documentation, database to track performance, solicit additional funding sources
- ◉ Post Installation Energy Analysis



TREAT Software

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Project Group | Project | Libraries | Tools | Reports | Help | Registration

General Information

- ✓ **Project Description**
- ✓ Fuels / Rates
- ✓ Weather / Defaults
- Billing Data**
- ✓ General Billing Data
- Metered Spaces
- ✓ Utility Bills
- ✓ Analysis Periods
- Building Model**
- ✓ Spaces
- ✓ Walls / Surfaces
- ✓ Exterior Doors
- ✓ Windows
- ✓ Infiltration
- ✓ Heating / Cooling
- ✓ Thermostats
- ✓ Fans
- ✓ Hot Water
- ✓ Lighting
- ✓ Appliances
- Load Sizing
- Building Inspection**
- ✓ Visual Inspection
- Measurements
- Evaluated Options**
- ✓ Improvements

Building Address

Street Address: Apartment:

City: State: Zip:

General Information

Year Built: House Type: Rented

Contact Person

First Name: Last Name: Phone:

Notes:

Project Description

Customer:

Prepared By:

Date: Day: Month: Year:

Directions:

	Electricity			Natural gas		Fuel 3		More Fuels	
	Heating, kWh /year	Cooling, kWh /year	Base Load, kWh /year	Heating, therms /year	Base Load, therms /year	Heating, Units/year	Base Load, Units/year	Heating Slope Btu/F-day / sq.ft.	Heating Reference Temperature F.
Building Model	0.0	0.0	150,320.0	19,649.7	5,622.1			10.02	64
Billing Data	0.0	0.0	152,365.0	18,662.6	5,927.6			9.47	64
Percent Difference	NA	NA	1 %	5 %	5 %			5.55 %	0%

TREAT Software

Package Wizard

Package Name

Scenario 2

Package Status

Proposed

Date Proposed

Month

2

Day

5

Year

2012

Improvement Name	Cost \$	Annual Savings in Package MMBtu	Annual Savings in Package \$	Payback in Package, years	SIR in Package
Blower Door Assisted Airsealing	11546.00	338.49	3973.92	2.91	5.16
Boiler - DHW Tank	3750.00	105.23	1235.44	3.04	4.94
Refrigerator Replacement	7033.00	9.55	926.81	7.59	1.90
Apartment Incandescent to CFL	2926.00	2.03	543.38	5.38	1.59
Boiler Replacement	59946.00	420.21	4933.25	12.15	1.23
Attic Insulation - Exterior Walls	12000.00	62.65	735.49	16.32	0.92
Rooftop HRV - A - Fan Motor Savings	5000.00	19.18	293.00	17.06	0.81
Common Area Lighting	1086.00	0.05	74.44	14.59	0.59
Rooftop HRV - B - Recovery Saving	103076.00	354.23	4158.64	24.79	0.56
Attic Insulation - Roof Deck	75966.00	23.00	270.02	NA	0.05
Bath Electrical Repairs	2250.00	0.00	0.00	NA	NC
Total for Package	284579.00	1334.63	17144.40	16.60	1.01

Calculate Improvement

Calculate All Improvements in Package

Notes :

Add or Remove Improvements in this Package

 Done

 Cancel



NYSERDA Multifamily Performance Program Benchmarking Tool Ver. 3.0

The NYSERDA Multi-Family Building Energy Use Benchmarking Tool quantifies the projected performance of a user-defined building relative to all HUD 5-plus unit multi-family residential buildings nationwide. A score of 75 denotes performance at the top 25th percentile of 5-plus unit multi-family buildings. A score of 50 denotes performance at the 50th percentile (the mid-point). To use this tool, you will need to calculate your building's annual energy consumption. Provide entries for your building in the "white cells" below. Click on underlined headings for help.

Building(s) Description

Project Name: Cedar House "optional entry"

5-digit Zip Code: 03103 Not Sure?

Mapping Location: Manchester, NH

Entire Building Gross Floor Area (sqft)	Number of Family Units	Percent of Units with Laundry Hookups	Percent of Gross Floor Area Heated	Percent of Gross Floor Area Cooled
30,000	30		93.3	

Weather Description

	Typical	Pre-Retrofit	Post-Retrofit
Annual HDD:	7554	7200	6987
Annual CDD:	328	682	490

IMPORTANT: Annual entries should correspond to the same time period as the pre-/post-retrofit annual consumptions reported below. Pre- or post-retrofit values must be provided to score your building.

Annual Energy Consumptions and Costs -----

IMPORTANT: Entries should represent 12 continuous months of consumption

	Pre-Retrofit				Post-Retrofit			
	Electricity Units: MMBtu	Natl Gas/Propane Units: Natl gas MMBtu	Fuel Oil Units: MMBtu	District Steam Units: MMBtu	Electricity Units: MMBtu	Natl Gas/Propane Units: Natl gas therms	Fuel Oil Units: MMBtu	District Steam Units: MMBtu
Energy	518	2,323			338	1,303		
Cost (\$)	25,629	27,258			15,518	5,170		
No. of buildings	1	1			1	1		
Calculated unit cost:	49.43 \$/unit	11.74 \$/unit			45.96 \$/unit	3.97 \$/unit		

IMPORTANT: Number of buildings represented by the reported energy use values above should always be equal for all reported fuels.

Results

	Pre-Retrofit		Post-Retrofit	
	Your Building	Average	Your Building	Average
<u>Score Against Peers</u>	19	50	93	50
Building Site Energy Use (MMBtu/year)	2,841	NA	468	NA
Building Source Energy Use (MMBtu/year)	4,164	3,240	1,265	3,225
Site Energy Use Intensity (kBtu/ft ² -year)	94.7	NA	15.6	NA
Source Energy Use Intensity (kBtu/ft ² -year)	138.8	108.0	42.2	107.5
Weather-normalized Percent Source Energy Use Reduction After Retrofit			69%	

Design Assistant

Projected Annual Energy Consumption

Units:	Electricity MMBtu	Natl Gas/Propane Natl gas MMBtu	Fuel Oil MMBtu	District Steam MMBtu
Energy	479	1,027		

Projected Percent Source Energy Reduction	36%
<u>Projected Score Against Peers</u>	70
Projected Building Site Energy Use (MMBtu/year)	1,507
Projected Building Source Energy Use (MMBtu/year)	2,677
Projected Site Energy Use Intensity (kBtu/ft ² -year)	50.2
Projected Source Energy Use Intensity (kBtu/ft ² -year)	89.2



Projected vs Actual Savings

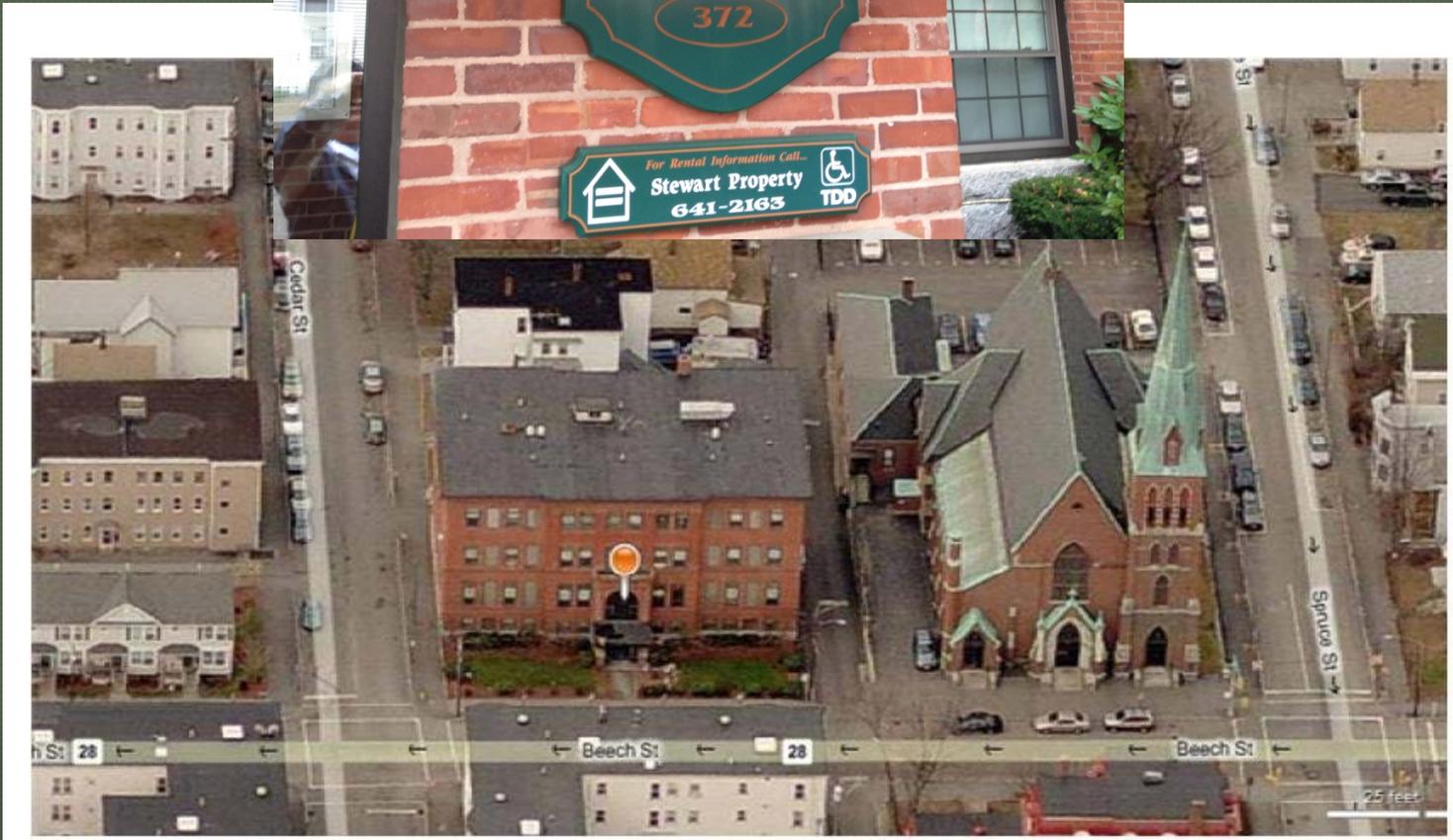
Results	Pre-Retrofit		Post-Retrofit	
	Your Building	Average	Your Building	Average
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Cedar House

- ◉ Originally built as a school in 1900
- ◉ Rehabilitated in 1980's converted to affordable housing
- ◉ 30 senior apartments







Cedar House - Improvements

- ◉ Apartment Lighting
- ◉ Common Area Lighting
- ◉ Refrigerator Replacement
- ◉ Attic Insulation
- ◉ Boiler and Domestic Hot Water
- ◉ Bath Exhaust with Heat Recovery
Ventilation



Projected vs. Actual Savings

	Project Name	Projected Savings	Actual Savings
1	Wamesit	21%	34%
2	Women in Transition	37%	52%
3	Spencer Square	15%	60%
4	Sugar River Mill	52%	38%
5	Lakeport Village	19%	49%
6	Cedar House	36%	69%
7	Opera Block	39%	35%
8	Lisbon Inn	33%	33%
9	McKee Inn	36%	29%
10	Pine Manor	37%	16%
11	Highland	37%	8%
12	Rush	22%	27%
13	Xavier	39%	68%
14	Rolling Green	17%	18%
15	Melcher Court	21%	28%
16	Eastern Ave	28%	19%
Average Savings		31%	36%



Greener Homes Program

- Helped 36 Projects – 1254 Apartments
 - Retrofit served 28 Projects - 1081 Apartments
 - Innovations served 2 Project - 48 Apartments
 - Energy Reduction Plan were developed for 6 Properties – 125 Apartments



Greener Homes Program

- Retrofit installed measures in 1081 apartments
- Annual saving of \$432,000 for all projects
- \$400 per apartment/year

