

# Multifamily Housing Energy Savings Opportunities

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# Who's here?



# Single Family / Multifamily

- simple systems
- one family/resident
- basic ownership structure
- complex/varying systems
  - Distribution
  - Setup
- stack effect
- many residents
- complex/varying ownership
  - single owner – yay!
  - condo
  - affordable housing – yikes!


# Market-Rate vs. Affordable


## Affordable/Market Rate Buildings in Cold Climates

[Custom Reports](#) » Affordable/Market Rate Buildings in Cold Climates

Total energy use in Btu per square foot

 Add Benchmark

 Raw Data

 Bookmark

 Download

◆ Name

▼ Full-Year Sum

Detailed Data per Month (Deselect All)

Click for detailed data

Click a square to show or hide an item on the graph

Click & drag to zoom in

 Low Income, 4+ Un...

 54.6K

 Market Rate, 4+ U...

 28.9K

400

300

200

100

0

Jan '11

Jul '11

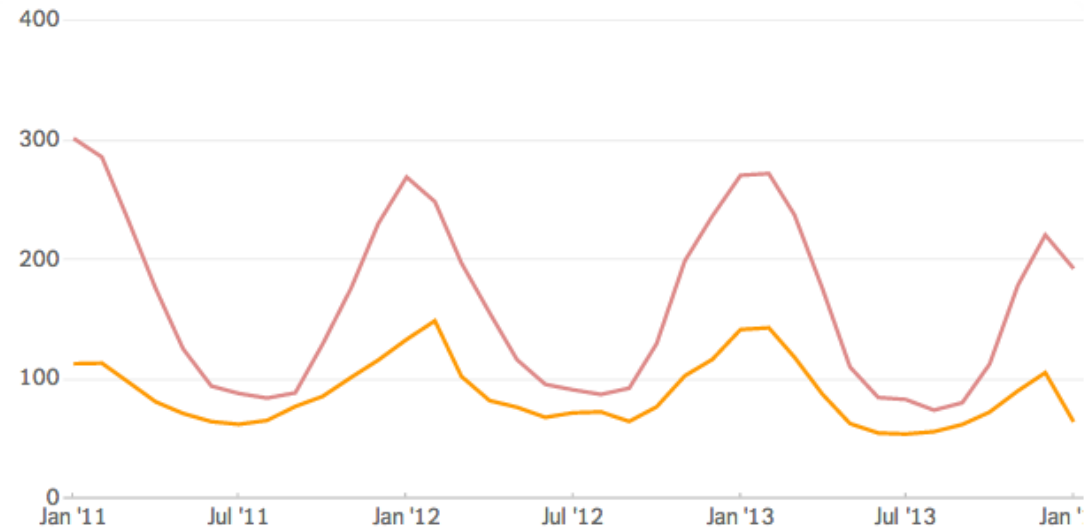
Jan '12

Jul '12

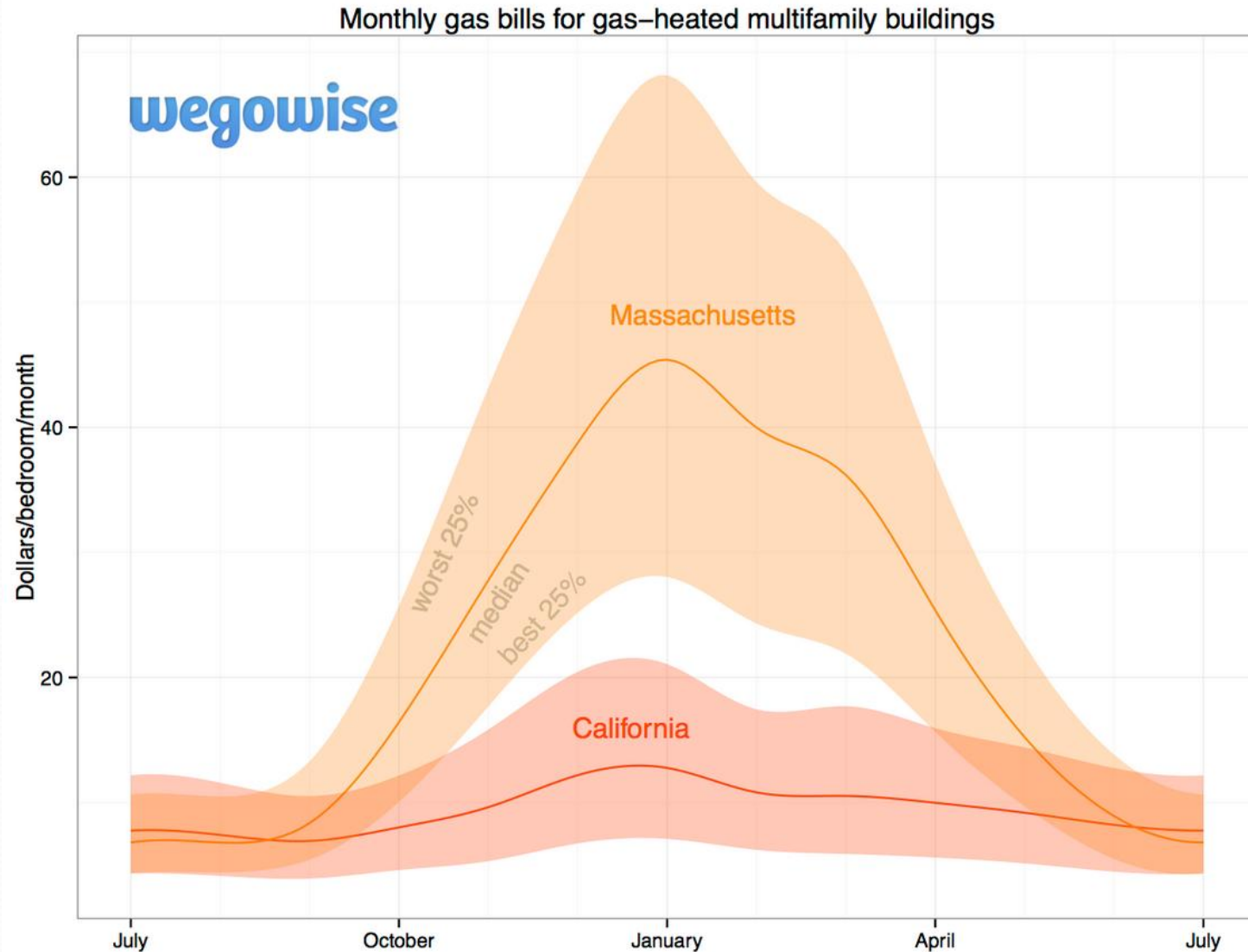
Jan '13

Jul '13

Jan '14



# Huge Opportunities for Savings



# Affordable Ownership/Finance

- LIHTC – Low-Income Housing Tax Credit
  - Investor captures credit through partnership with “owner”
  - GP = 0.01% (“owner” responsible for good management)
  - ILP = 99.9% (puts in all the money)
- Lenders: State Housing Finance Agencies, Banks
- Subsidy: local, state, fed agencies from various funds
- Cash flow distributed via waterfall

# Where's the Money?

- Operations
  - Income (Rent)
  - Expenses (Ins., Prop Mgmt Fee, maint., taxes, utilities, reserves, etc.)
  - Income – Expenses = Net Operating Income (NOI)
- Debt Service
  - NOI pays debt service (plus replacement reserve deposits)
  - Hard debt payments/NOI = Debt Service Coverage Ratio (hopefully > 1)
- Cash Flow is money remaining after debt service – WATERFALL!
  - Deferred Developer Fee
  - City, state subsidy funds (sometimes multiple)
  - Incentive/asset management fees
  - ILP Share
  - GP Share (this is our owner!)



# Mass. Green Retrofit Initiative

- HUD Energy Innovation Fund
    - 1 of 12 nationally
  - Help owners understand energy use in buildings
  - Prioritize efforts
  - Building Sci. partner: New Ecology, Inc.
  - Help owners find funding
    - Mainly mid-lifecycle!
  - Implement retrofit
  - Follow-up measurement & verification
- **17,00 units benchmarked**
  - **5,000+ units retrofitted**





# What Kinds of Buildings?

small to large, wood and masonry, scattered site and centrally located – each building is unique



# What Kinds of Buildings?

urban, town, rural – lots of settings





# What Kinds of Buildings?

Mostly master-metered heat, water, and DHW. Mostly individual meters for electricity in units.



# Prioritize Efforts

Total energy use in Btu per square foot

 Add Benchmark
  Raw Data
  Bookmarked
  Download

◆ Name









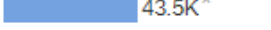

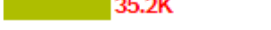

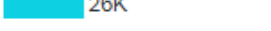

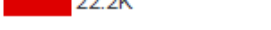












▼ Full-Year Sum

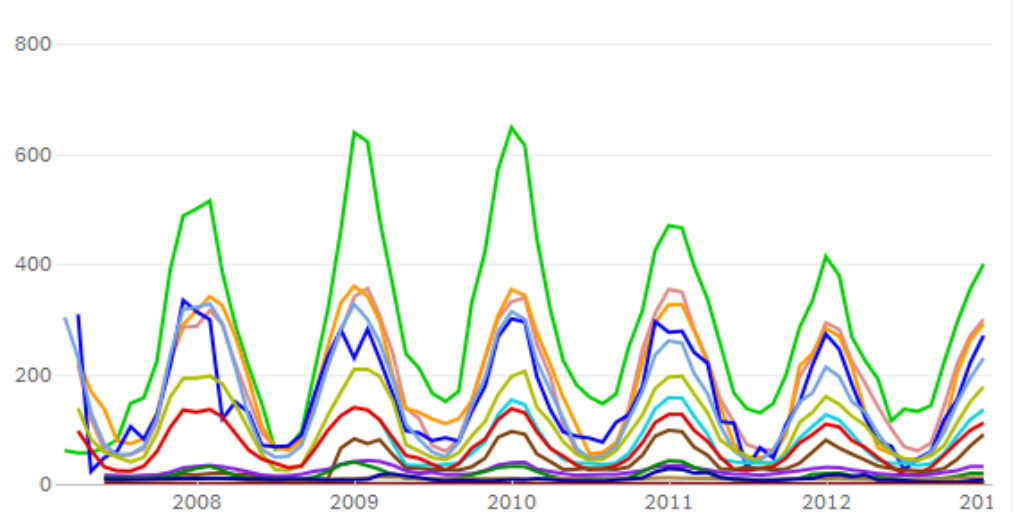
Detailed Data per Month (Deselect All)

Click for detailed data

Click a square to show or hide an item on the graph

Click & drag to zoom in

• <a href="#">George Close Buil...</a>	 86.9K	
• <a href="#">Scouting Way</a>	 62.7K*	
• <a href="#">Hovey Avenue Apar...</a>	 52.6K*	
• <a href="#">Squirrel Brand</a>	 48.1K*	
• <a href="#">Linwood Court</a>	 43.5K*	
• <a href="#">Putnam Place</a>	 35.2K	
• <a href="#">Churchill Court</a>	 26K*	
• <a href="#">St Patrick's Place</a>	 22.2K*	
• <a href="#">72 Elm</a>	 16.1K*	
• <a href="#">Norfolk St</a>	 8.21K*	
• <a href="#">Trembridge Apartm...</a>	 4.72K*	
• <a href="#">54 Berkshire St</a>	 3.3K*	
• <a href="#">Cardinal Mederios</a>	 2.84K*	
• <a href="#">206-210 Otis St A...</a>	139*	



# Post-Retrofit Detail

Effect of Boiler and Make Up Air Unit Installed (September 22, 2011)

[Back to list of all upgrades](#)

Total energy use in Btu per square foot

Raw Data    Bookmark    Download

▼ Date Range

◆ Full-Year Sum

Detailed Data per Month (Deselect All)

Click a square to show or hide an item on the graph

Click & drag to zoom in

Sep 11 - Aug 12



Sep 10 - Aug 11



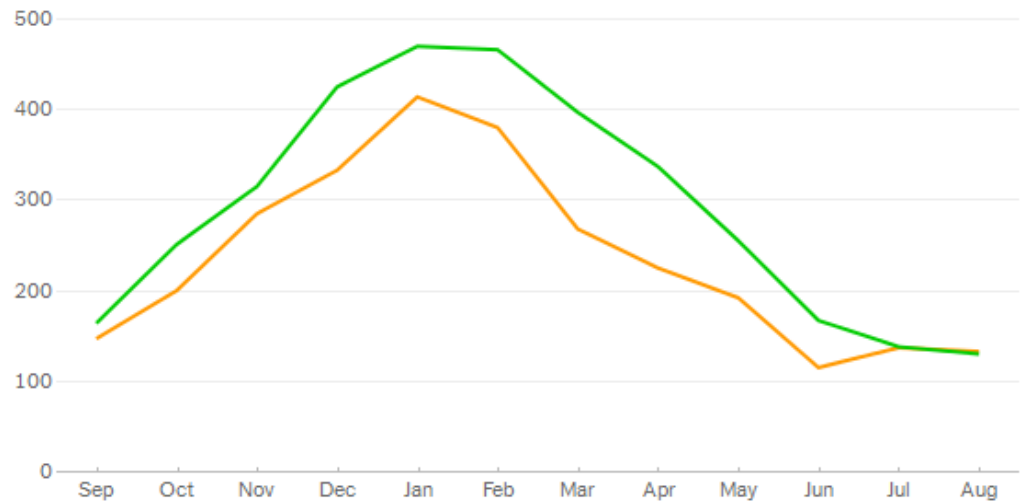
**Before:** 8 aging atmospheric boilers and deficient make up air unit

**After:** 5 new condensing boilers installed (90% efficiency), 3 DHW tanks and 1 new make up air unit installed

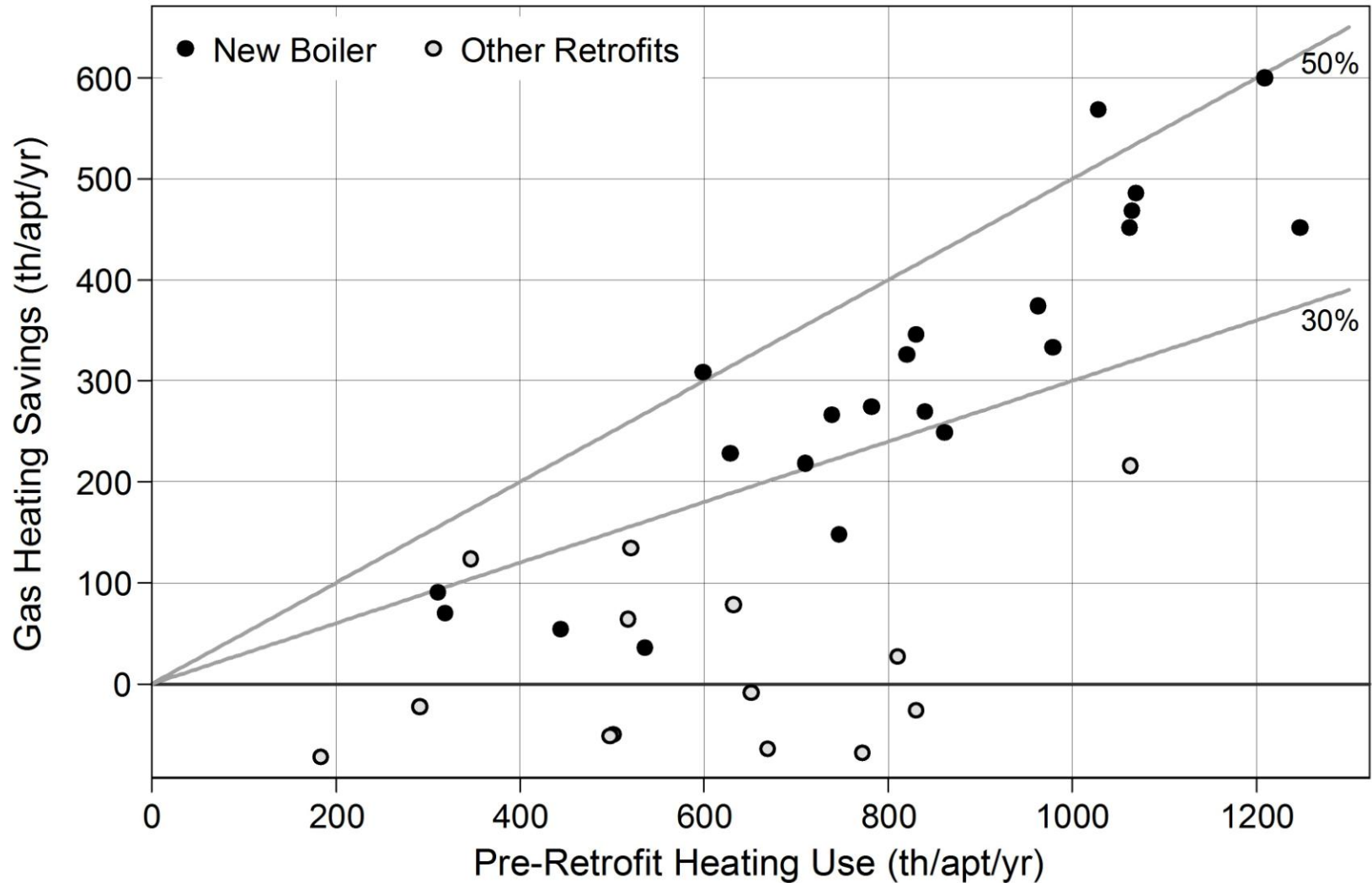
**Cost:** \$209,025.00

**Actual Savings:** 19% (20,406 Btu / sqft)

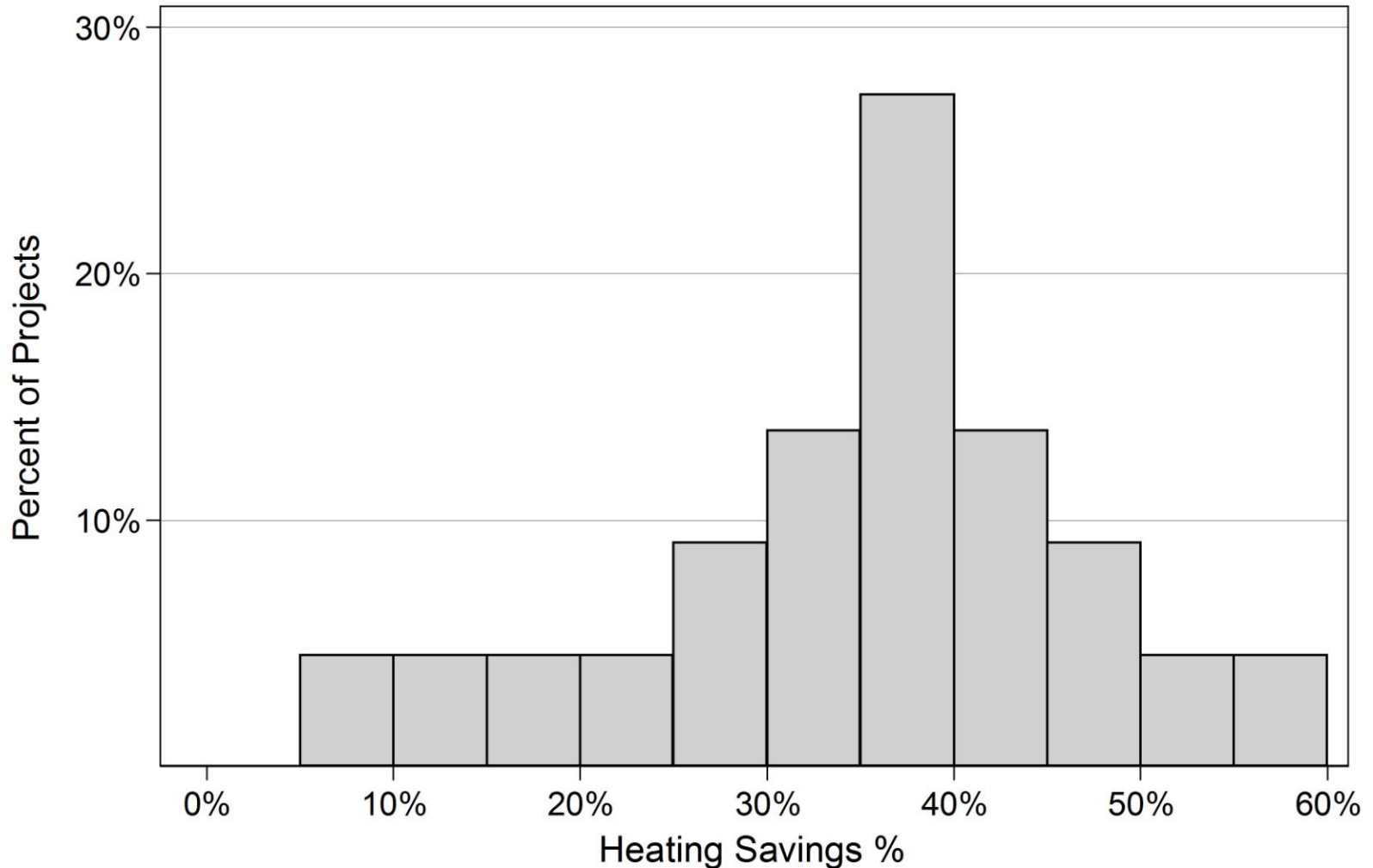
Categories



# Mass. Green Retrofit Initiative



# Gas Savings - Boiler Replacements





# Gas Savings - Boiler Replacements

- This savings consistency is impressive compared to the widely varied results typically found in multifamily energy impact studies and may be attributed to the proper targeting of buildings through benchmarking, building audits that accurately identified high savings opportunities, and follow-up by LISC and New Ecology on retrofit projects and any potential problems.

- Michael Blasnik, Green Retrofit Initiative Evaluator



# Green & Healthy Property Management A Guide for Multifamily Buildings

February 2013



## Green Cleaning

**Goal** Maintain properties cost-effectively using green cleaning products that minimize the use of harmful or toxic chemicals. Ensure property management staff and vendors use green cleaning products.

**Key Actions**

**Property Owner**  
Require staff, Property Manager, vendors and contractors to use green cleaning products that meet third party certification unless such products are not available or cost-effective. Acceptable green certifications include: GreenSeal, U.S. EPA Design for the Environment (DfE), and Eco Logo.

**Property Manager**

1. **Require all vendors (cleaning, other rehab contractors) to use green certified cleaning products** unless the product is not available. If vendors cannot identify an available cost-effective cleaning product that is GreenSeal or Eco Logo Certified, or DfE approved for a particular use, the vendor shall evaluate if that specific product is needed. If the product is critical the vendor shall provide the Property Manager a written request to justify the use of a non-third party certified cleaning product and obtain written authorization. Such authorization is not required during emergency cleaning activities.

2. **Encourage the use of:** dilution control systems (to reduce packaging waste and supplies), Microfiber wipes and mops, HEPA filtration vacuums, Green Seal certified or Forest Stewardship Council (FSC) certified paper products

**Tracking** Annually review Green Cleaning progress.

**Resources**

Design for the Environment (DfE) – [www.epa.gov/dfe](http://www.epa.gov/dfe)  
 EcoLogo – [www.ecologo.org/en/](http://www.ecologo.org/en/)  
 GreenSeal – [www.greenseal.org](http://www.greenseal.org)  
 New York State Green Cleaning Program – [www.greencleaning.ny.gov](http://www.greencleaning.ny.gov)

# Oak Terrace – Smoke Free Pilot

- **84%** say smoke bothers them
- **16%** allow smoking in some places of their house; **84%** do not
- **97%** of households support a smoke-free housing policy





# Catch Residents “green-handed”



# Up Next



- Jon Braman – Bright Power
- Heather Nolan – Steven Winter Associates

