

# Extracting the Non-energy Benefits of Energy Efficiency in Multifamily Affordable Housing

September 29, 2014



**ELEVATE** ENERGY  
Smarter energy use for all



## Our Mission

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We promote smarter energy use for all.



We give people the resources they need to make informed energy choices.



We design and implement efficiency programs that lower costs, and protect the environment.



We ensure the benefits of energy efficiency reach those who need them most.



# Energy Efficient Buildings

## Making energy efficiency upgrades easy and affordable

Program approach guides property owners through the upgrade process

- Energy assessments
- Cost-effective recommendations
- Financing options through lending partners and assistance in obtaining incentives and rebates
- Construction oversight and quality assurance
- Savings monitoring and reporting





# Agenda

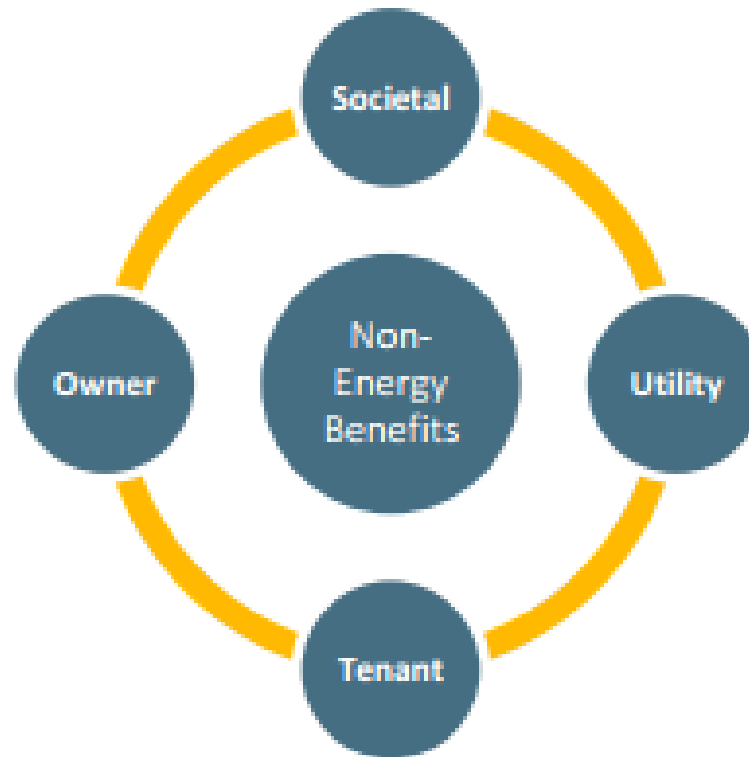
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- What are non-energy benefits(NEBs)?
- Recent NEBs research at Elevate
- Opportunity and challenges with NEBs
  - Policy
  - Program Implementer
  - Building Owner
- Questions



# What are Non-energy benefits?

- Any positive consequence to energy efficiency work beyond saving energy.
- NEBs in multifamily





## The Boulevard Apartments

- Building owner interview
- Tenant survey
- Financial analysis
  
- 70 units across three buildings
- 1930, rehabbed in 1991
- Tenants pay gas and electricity
- Air sealing & roof cavity insulation
- Furnace replacement



# NEBs Research- Partnership with Bickerdike

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## Energy and Environmental Impacts

- 19% decrease in gas usage
- 65.5 metric ton CO<sub>2</sub>e

## Owner Financial Benefits

- 17% reduction in maintenance costs
- 10% reduction in utility costs (\$12,624)



# NEBs Research- Partnership with Bickerdike

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## Tenant Benefits

- Tenants said their unit stayed cool when it is hot outside and stays hot when it is cold inside.
- 89% of tenants said they would ask about energy efficiency if they move to a new building
- Felt more confident and less stress paying rent and utility bills after the upgrades were done





# NEBs Research at Elevate- Financial Benefits

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- Financial analysis of buildings that went through Energy Savers and those that did not
- Net operating income increases post-retrofit

## **Energy Efficiency Savings facilitated Capital Improvements**

- “Two of the buildings that needed new parkways where I have parking, I ripped out all the concrete and put new parking pads. They’re parking for 5 cars, so it’s a big area that I had to do – around \$10,000 at each building. Which let me have the money to do that, just with the increased savings.”



# Opportunity and Challenges in Policy

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- Anne McKibbin, Policy Director, Elevate Energy



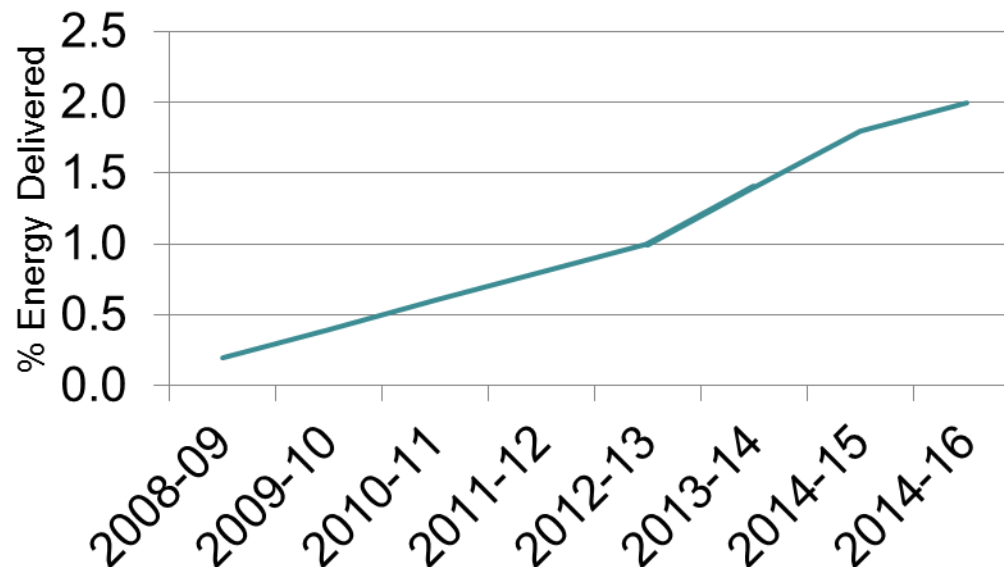
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- State EEPS Policies (ACEEE, 2014)

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# What is an Energy Efficiency Portfolio Standard?

- Requires utilities to run energy efficiency programs
- Sets a small charge on your utility bill to pay for it
- Sets targets for savings
- Cost effectiveness tests ensure utility programs are a good value for customers





# Why do we Care About NEBs?

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- All the cost effectiveness tests are unbalanced
- Costs are easy to quantify. Benefits often are not.
  - Policymakers often leave non-energy benefits out because they are harder to justify
- Result:
  - Cost effectiveness tests that are biased towards costs
  - Less energy efficiency investment than is optimal
  - Less flexibility in how energy efficiency funding is spent
  - Energy efficiency investments go to the wrong measures and programs



# Incorporating NEBs into Cost Effectiveness Tests

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- Add them into the equation
  - Need studies to justify this, which can be expensive
- NEBs Adders
  - Add a semi-arbitrary amount and true-up as studies become available
  - Can add extra for low income programs



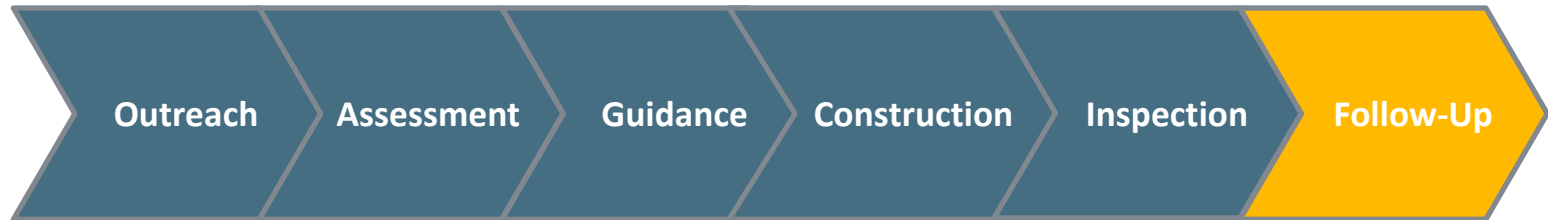
# Opportunity and Challenges in Programs

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- Jason Ransby-Sporn, Multifamily Program Manager, Elevate Energy



# Elevate Makes Energy Efficiency Easy



**Elevate Energy is the building owner's advocate, start to finish.**



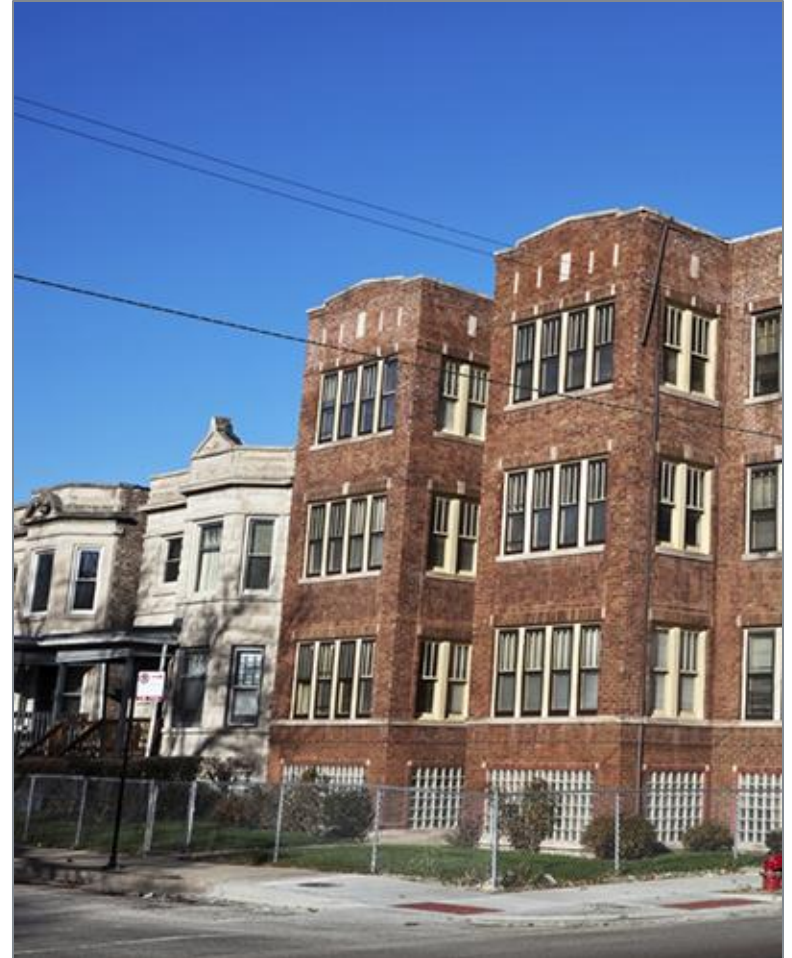




# Energy Efficient Buildings

## Multifamily buildings:

- More than 19,000 units retrofitted
- More than 4 million therms and 11 million kWh saved
- Comprehensive retrofits typically result in 20-40% reduction in gas use



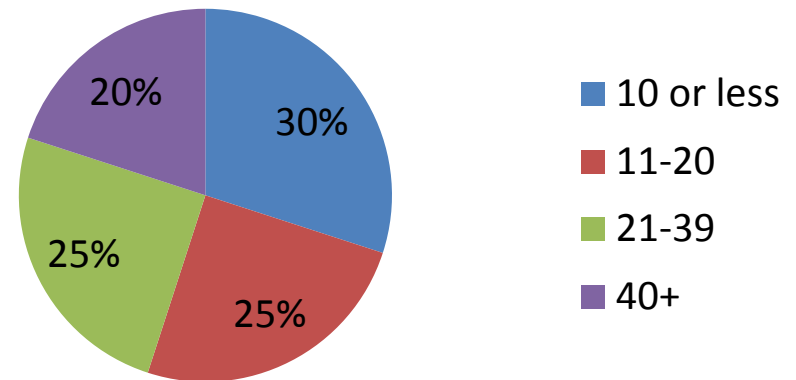


# Typical Chicago Multifamily Building

## Multifamily buildings:

- Flat-roof walk-ups
- Average building size is 24 units
- ~50%- Central steam boiler
- 25%- Central hot water boilers
- 25%- Individual forced air gas

Units in our Buildings





# Our Owners and Retrofits

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## Owners

- 40% of owners only have one building
- 35% have between 2-9 buildings
- 25% of the building owners have 10 or more buildings

## Retrofits

- Boiler replacement & Controls
- Furnace replacement
- Air sealing and insulation

# Steam Heated Building with very poor distribution

Some units receive heat long before others, resulting in tenant discomfort, and a high volume of complaints.

Boiler turns on

8 minutes later

30 minutes later





# Opportunity and Challenges in Building Mng.

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- Michael Burton, Asset Management Director, Bickerdike Redevelopment Corporation



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# Bickerdike Redevelopment Corp.



- Membership organization over 650 individual members
- Developed and manage 1,022 affordable units in 125 buildings
- Owns Humboldt Construction Company



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# How Does Sustainability Fit with Community Development

## What is *Green*?



***Sustainability*** - meeting our current needs without compromising the ability of future generations to meet their own needs.

***Source reduction*** - reducing waste and pollution by changing patterns of production and consumption.

***Healthy*** – moving away from products that adversely affect health

## *Green* vs. *Red*



***Sustainability (Future Distribution)***  
**vs**  
***Current Distribution***



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# Bickerdike was Green *before* there was Green

## Majority of Our Affordable Rental Portfolio was Developed in 1980s & 1990s

- Quality Durable Construction
- Early Concern with Energy Efficiency
- Local Hiring/ Contracting
- Infill/Urban Context/ Density



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# Green Retrofits in Bickerdike's Older Buildings

Bickerdike Green Retrofit Log					
Project	Units	High Effic. Furnaces	Roof Insul. and Sealing	Low Flow H2O Fixtures	CFLs
Howard Apts.	49	2010	2013	2009	2009
Boulevard Apts.	70	2011	2011	2011	2011
Nuestro Pueblo	69		2012	2012	2012
Nuestro Hogar	31	2013 (K/K)	2013 (W/L)	2012	2012
La Paz Place	44		2013	2012	
HWUC	87			2012	2012
	350				



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# Case Study--Howard Apartments: Green Retrofits in a Historic Building



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# Case Study--Howard Apartments: Green Retrofits in a Historic Building

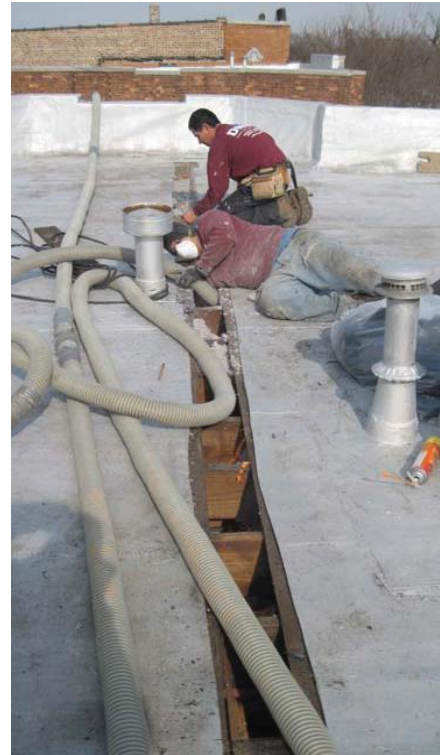
## Green Retrofits

- New 90%+ Efficient Furnaces
- Roof Insulation and Sealing
- CFL Bulbs
- Low Flow Water Fixtures
- Energy Star Appliances



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## Questions? -- Stay in Touch

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