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

September 29, 2014

ELEVATE ENERGY
Smarter energy use for all

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Our Mission

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.
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

- 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

Energy and Environmental Impacts

- 19% decrease in gas usage
- 65.5 metric ton CO2e

Owner Financial Benefits

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

- 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

- Anne McKibbin, Policy Director, Elevate Energy
What do NEBs have to do with Policy?

- Energy Efficiency Portfolio Standards are the main drivers for energy efficiency in the U.S.
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?

- 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

- 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

- Jason Ransby-Sporn, Multifamily Program Manager, Elevate Energy
Elevate Makes Energy Efficiency Easy

Outreach → Assessment → Guidance → Construction → Inspection → Follow-Up

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
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:

- 30% 10 or less
- 30% 11-20
- 25% 21-39
- 25% 40+
Our Owners and Retrofits

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.

- Michael Burton, Asset Management Director, Bickerdike Redevelopment Corporation
Non-Energy Benefits of Energy Efficiency in Multifamily Affordable Housing

Greening the Heartland, Sept. 29, 2014
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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Greening the Heartland, Sept. 29, 2014
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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*Greening the Heartland*, Sept. 29, 2014
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

Non-Energy Benefits of Energy Efficiency in Multifamily Affordable Housing

*Greening the Heartland*, Sept. 29, 2014
# Green Retrofits in Bickerdike’s Older Buildings

## Bickerdike Green Retrofit Log

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<thead>
<tr>
<th>Project</th>
<th>Units</th>
<th>High Effic.</th>
<th>Roof Insul.</th>
<th>Low Flow</th>
<th>CFLs</th>
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<td>2010</td>
<td>2013</td>
<td>2009</td>
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**Greening the Heartland**, Sept. 29, 2014
Case Study--Howard Apartments: Green Retrofits in a Historic Building

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Greening the Heartland, Sept. 29, 2014
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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