

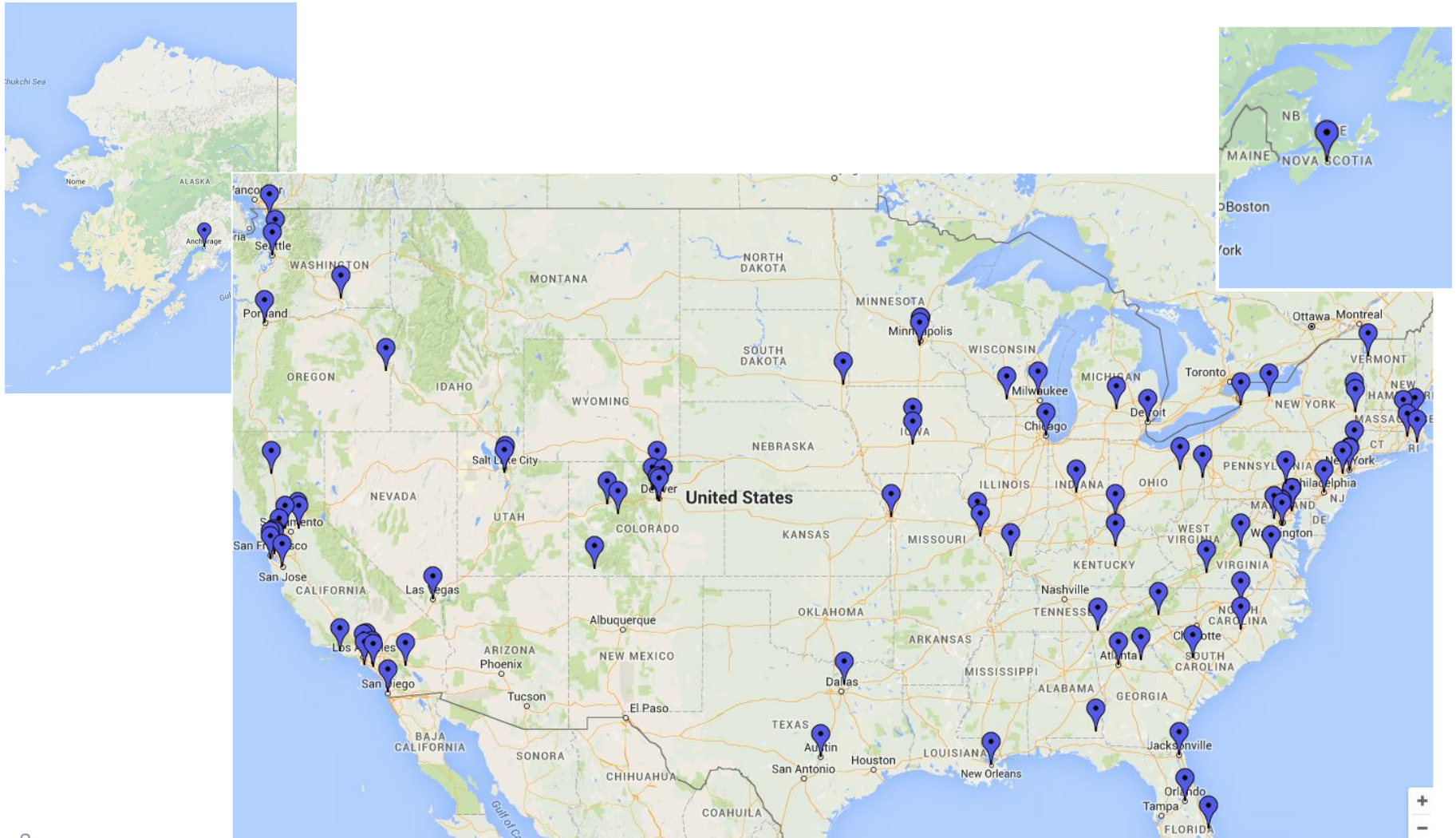


**Better Buildings Residential Network Peer  
Exchange Call Series: *Addressing Barriers  
to Upgrade Projects at Affordable  
Multifamily Properties (201)***

March 10, 2016

*Call Slides and Discussion Summary*

# Call Attendee Locations



# Call Participants – Network Members

- Alabama Energy Doctors
- Alaska Housing Finance Corporation
- American Council for an Energy-Efficient Economy (ACEEE)
- Austin Energy
- BlueGreen Alliance Foundation
- Bridging The Gap
- CalCERTS, Inc.
- Center for Sustainable Energy
- City of Aspen Utilities and Environmental Initiatives
- City of Kansas City, Missouri
- City of Plano
- CLEAResult
- District of Columbia Sustainable Energy Utility
- Duke Carbon Offsets Initiative
- EcoWorks
- Elevate Energy
- Energize New York
- Energy Efficiency Specialists
- Fujitsu General America Inc.
- Greater Cincinnati Energy Alliance
- green|spaces
- GRID Alternatives
- International Center for Appropriate and Sustainable Technology (ICAST)
- Johnson Environmental
- Metropolitan Washington Council of Governments (MWCOCG)
- Michigan Saves
- National Grid (Rhode Island)
- National Housing Trust/Enterprise
- PUSH Buffalo
- Research Into Action, Inc.
- Solar and Energy Loan Fund (SELF)
- Southface
- Stewards of Affordable Housing for the Future
- Vermont Energy Investment Corporation (VEIC)
- Wisconsin Energy Conservation Corporation (WECC)
- Yolo County Housing

# Call Participants – Non-Members (1 of 3)

- Affordable Community Energy
- AppleBlossom Energy Inc.
- Architectural Nexus
- Association for Energy Affordability
- Blue Star Studio Inc.
- Bonneville Power Administration
- Brand Cool
- Brendle Group
- Building Envelope Materials
- Building Performance Institute
- Bright Power
- California Public Utilities Commission
- CBJ Energy
- Center for Sustainable Building Research
- City of Atlanta
- City of Bloomington
- City of Chicago
- City of Minneapolis
- City of Orlando
- Clark County, Nevada
- Community Housing Partners
- Danville Development
- Dominion Due Diligence Group
- Ecology Action
- EDGE
- EfficiencyOne
- Emerald Cities Seattle
- Energy Outfitter
- Energy Outreach Colorado
- Energy Programs Consortium
- Energy Tech
- Energylink

# Call Participants – Non-Members (2 of 3)

- EnergySmart
- ENSYSS - Energy and Environmental Systems Solutions Enterprise Community Partners
- Environmental Design / Build
- Environmental Protection Agency
- Four Elements
- Franklin Energy
- Fruitfull Energy
- Glumac
- Green & Healthy Homes Initiative
- Green Coast Enterprises
- Groundswell
- Group14 Engineering
- Hill Group LP
- Holy Cross Energy
- Housing Authority of the City of San Buenaventura
- ICF
- Institute for Market Transformation
- Iowa Economic Development Authority
- Iowa State University
- Jacksonville Electric Authority (JEA)
- Johnson Air Heating and Air Cooling
- Katerra
- La Plata Electric Association
- LINC Housing
- Local Initiatives Support Corporation
- Mercy Housing
- Minnesota Housing Finance Agency
- MPower Oregon

# Call Participants – Non-Members (3 of 3)

- National Housing Trust
- National Park Service
- Natural Resources Defense Council
- Network for Energy, Water and Health in Affordable Buildings
- Nextant
- NYC Housing Preservation & Development
- NYC Mayor's Office of Sustainability
- Okaloosa Gas District
- Opportunity Council
- Pacific Northwest National Laboratory
- Patel Builders, Inc.
- Pennsylvania Public Utility Commission
- Plant Vogtle
- PUSH Green
- Smith Enterprises
- Snohomish County PUD
- Southeast Energy Efficiency Alliance (SEEA)
- Southwest Energy Efficiency Project
- Stanford University
- Stone Energy Associates
- Tenderloin Neighborhood Development Corporation
- The Durst Organization
- The Energy Coalition
- TRC Solutions
- U.S. Department of Housing and Urban Development
- UpGrade Athens County
- Volunteers of America
- WSP Canada
- XLR8SUN

# Agenda

- Agenda Review and Ground Rules
- Opening Polls
- Brief Residential Network Overview
- Featured Speakers
  - **Caitlin Rood**, National Environmental Sustainability Director, Mercy Housing
  - **Jackie Dadakis**, Managing Partner, GCE Services, Green Coast Enterprises
  - **Mark Pando**, Energy Engineer, Bright Power
- Discussion
  - What have you found to be the main challenges or barriers to energy upgrades at affordable/low-income multifamily properties?
    - What strategies or approaches have you used to address those barriers?
  - What approaches work well for getting buy-in for energy upgrades at affordable MF housing properties from diverse stakeholders?
    - How do you address split incentives?
  - What are best practices for getting financing for multifamily upgrade projects?
  - Other questions or issues related to affordable multifamily upgrade projects?
- Closing Poll and Upcoming Call Schedule



# Opening Poll #1

- Which choice best represents your organization's role?
  - Energy efficiency program administration and support – **45%**
  - Energy auditor, contractor, or service provider – **27%**
  - Research, education, or advocacy organization – **13%**
  - Multifamily housing owner, manager, or developer – **8%**
  - Other (please explain) – **7%**



# Opening Poll #2

- Which of the following best describes your organization's experience with energy upgrades at affordable multifamily properties?
  - Very experienced/familiar – **35%**
  - Some experience/familiarity – **29%**
  - Limited experience/familiarity – **29%**
  - No experience/familiarity – **8%**
  - Not applicable – **0%**

# Better Buildings Residential Network

**Better Buildings Residential Network:** Connects energy efficiency programs and partners to share best practices and learn from one another to increase the number of homes that are energy efficient.

**Membership:** Open to organizations committed to accelerating the pace of home energy upgrades.

## **Benefits:**

- Peer Exchange Calls 4x/month
- Tools, templates, & resources
- Recognition in media, materials
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Residential Program Solution Center guided tours

**Commitment:** Provide DOE with annual number of residential upgrades, and information about associated benefits.

*For more information or to join, email [bbresidentialnetwork@ee.doe.gov](mailto:bbresidentialnetwork@ee.doe.gov)*

Lessons Learned:  
Caitlin Rood  
National Environmental Sustainability Director  
Mercy Housing



# Better Buildings Network Peer Exchange Call Barriers to Implementation

Mercy Housing

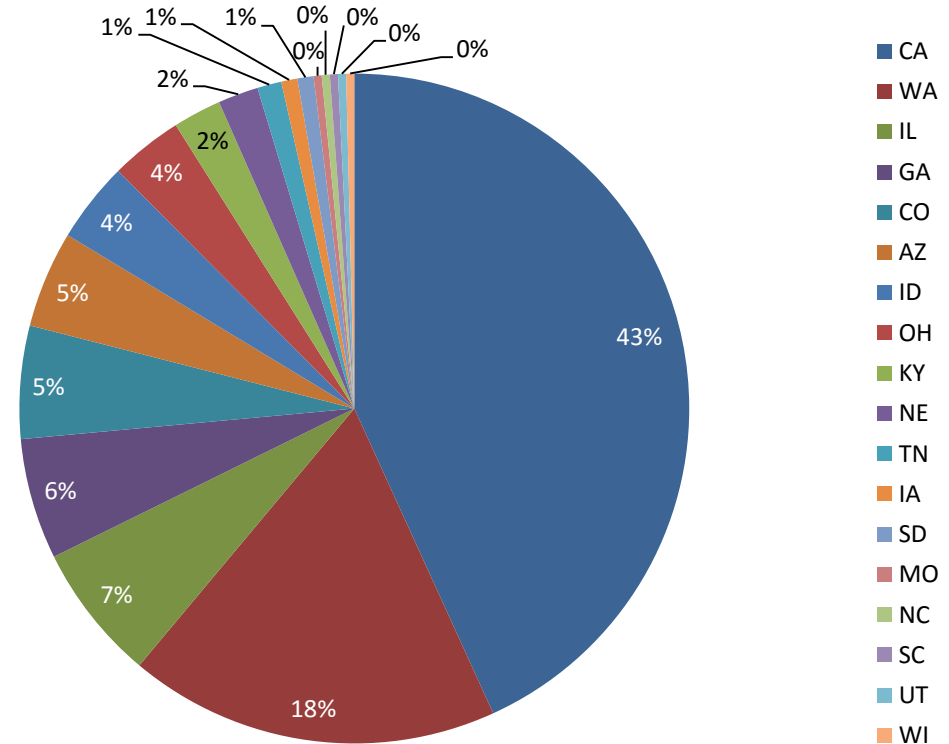




# Mercy Housing Overview

- Affordable housing nonprofit
- ~280 owned properties
- ~18,000 units
- ~16.5M sf (owned)
- Mostly LIHTC, Section 202, Section 8, USDA RD
- Green Hope External Env. Commitments
  - BBC
  - Enterprise Call to Action
  - Renew300

Mercy Housing Properties By State





# What Stops Us



Before we even get to the dog park of energy and water efficiency fun, the MF industry has a short leash



# Financial Constraints

- Split incentives
  - Owner v HUD
  - Owner v Tenant
  - Developer v Manager
- Payback periods
- LOC and loan adversity or inability
- Non fungible savings
- Pencil at each property







# Other Constraints

- Getting the baseline
- Gaining internal buy in
- Diverse portfolio
  - Age of property, efficiency of property, residents
- Big goals
  - Can't just do the low hanging fruit





# Overcoming the Barriers

- Approaches
  - Dedicated sustainability FTE(s)
  - Small wins to start
  - Whole building retrofits
  - One stop shop
  - Regulations
- Funding
  - Pay from savings
  - Rebates
  - Local programs
  - Grants
  - UA adjustment





# Questions?

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Caitlin Rood

National Environmental Sustainability Director

<https://www.mercyhousing.org/>

# Presentation and Q&A Highlights: Mercy Housing

- **Provide specific and tailored attention** to engage residents in energy efficiency.
  - Oftentimes, lack of information is not the reason why people are not implementing energy efficiency; behavioral change is difficult and requires a lot of attention over time.
- **Dedicate internal staff** to focus on sustainability and energy efficiency issues, if possible.
  - There are many different decision-making branches related to sustainability: development, construction, management, etc.
  - Having full-time staff will help tackle the task of identifying and implementing energy efficient projects.
- **Go beyond low hanging fruit**; try bundling large energy efficiency projects with upgrades that have rapid payback to make whole building retrofits feasible.

Lessons Learned:  
Jackie Dadakis  
Managing Partner, GCE Services  
Green Coast Enterprises



# Better Buildings Program Peer Call

<http://www.greencoastenterprises.com/>



# Markets Served





- Engage owners during a planned renovation



**Home Innovation**  
NGBS GREEN VERIFIER™



# Utility Program Structure

- Structure incentives to works as part of a larger renovation
  - Coordinate with Housing Authorities, Building Permit offices to build the pipeline.
  - Provide incentives that work within the green certifications.
  - Reach beyond direct install measures.

- Allow the property owners to benefit from their investment
  - Energy Models
  - Verified Usage
  - Standard Process to achieve a waiver

## canal year over year ✎ ✕ « Custom Reports

View Report

### Total energy use in Btu per square foot

Graph  Table



▼ Date Range	≡ Full-Year Sum	☑
Oct 14 - Sep 15	Less than 1 year of data	☑
Oct 13 - Sep 14	<span style="display: inline-block; width: 20px; height: 10px; background-color: orange;"></span> 94K	☑
Oct 12 - Sep 13	<span style="display: inline-block; width: 20px; height: 10px; background-color: green;"></span> 128K	☑

#### Detailed data per month

Click & drag to zoom in



# Presentation and Q&A Highlights: Coast Enterprises

- **Engage owners at critical junctures**, such as during the capital planning processes, renovations, and acquisitions to incorporate energy efficiency into the planning process.
- **Product availability is key:** Work with contractors and vendors to ensure that energy efficient equipment is available when people need to make emergency purchases.
- **Use the data:** Owners are often surprised to find out how much of their tenant's energy bill they are actually paying. Understanding the data can help encourage owners to make energy efficient investments.

Lessons Learned:  
Mark Pando  
Energy Engineer  
Bright Power

# Addressing Barriers to Successful Retrofits in (Affordable) Multifamily Properties

Mark Pando

Energy Engineer

Bright Power, Inc.

<http://www.brightpower.com/>



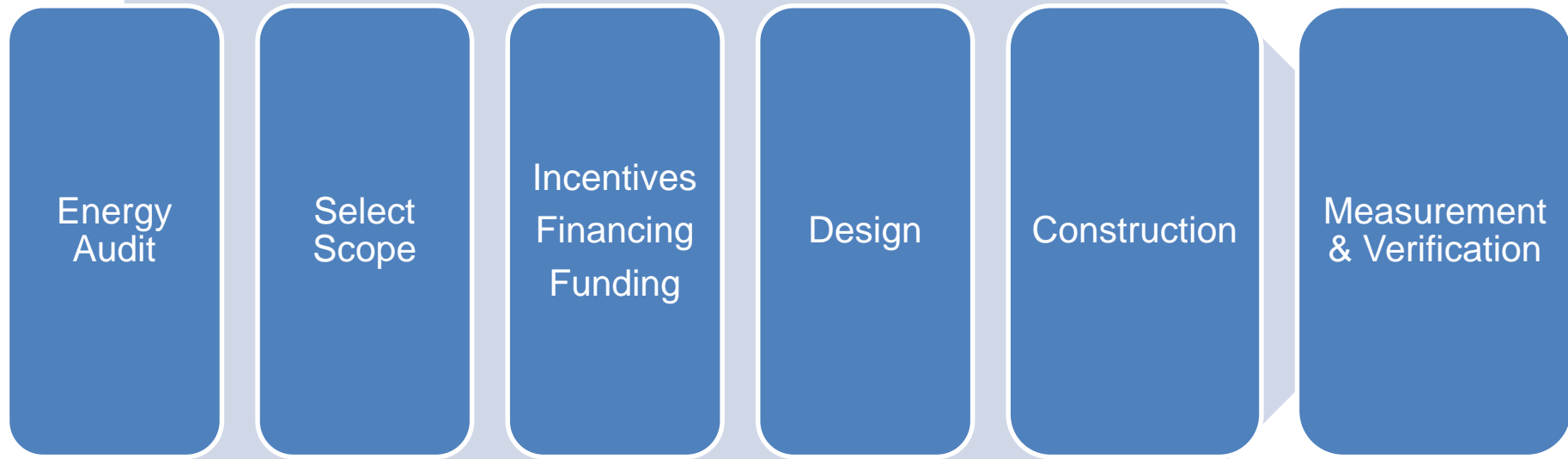


# Retrofits: Complex Ecosystem

- Retrofits are a multi-step process
- Multiple parties with overlapping but different incentives
  - Property Owner / Developer / Operator
  - Rebate Programs / Utilities
  - Contractors
  - Funding / Financing Groups & Complex Financing Arrangements
- Technical expertise required at every step to make informed decisions



# The Retrofit Process



Savings Prediction

Multiple Chances for Changes & Mistakes

Savings Realized ?



# Handoffs: Where it Goes Wrong

- Continuity between steps is crucial to achieving a project's goals
- Handoffs between stakeholders are key
- Project goals/metrics must be clearly defined
- All players must be aware of and held accountable to those goals/metrics



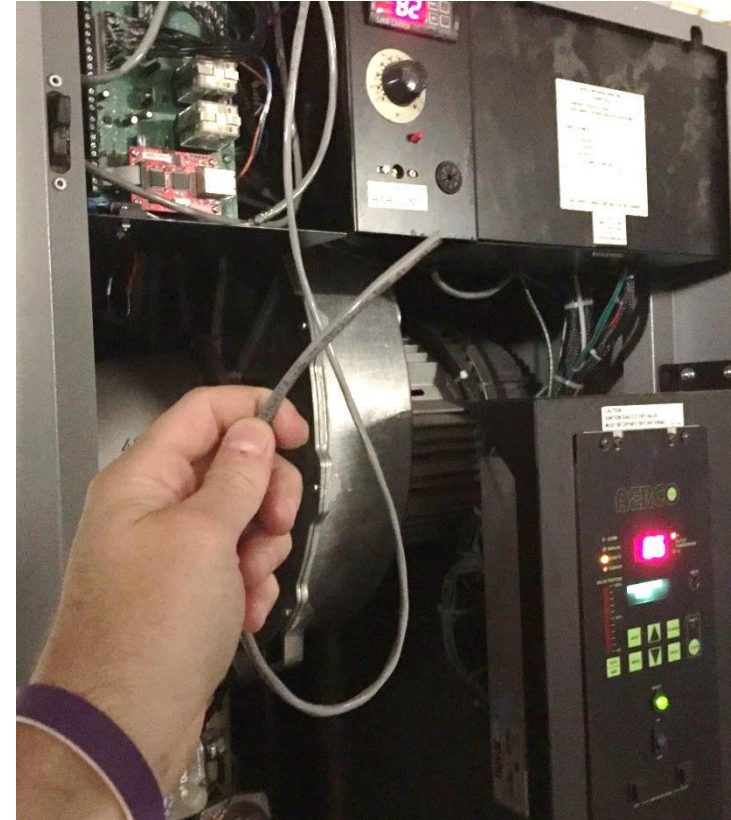
# Example: Missed Showerheads

- Gut-rehab refinance
- Low-Flow faucet aerators in all apartments
  - 0.5 GPM in Bathrooms
  - 1.5 GPM in Kitchens
- Showerheads were not low-flow – 2.5 GPM installed
  - ~7,500 therms of Gas savings missed
  - ~1,100 kGal of water savings missed
  - ~\$20,000 in savings left on table



# Example: DHW Boiler Replacement

- 230-unit building in Washington, DC
- Breakdown between design & construction phases
- Boilers installed without an outdoor temperature sensor
- Sensor later installed but not connected
- Boilers could not operate using proposed (more efficient) control strategy



# Some Solutions

- Commissioning – engage a 3<sup>rd</sup>-party commissioning agent early in the process (pre-construction)
- Streamline Vendors – engage with one expert to handle all aspects from audit through construction
- M&V – make sure there is a plan in place to quantify post-retrofit performance
  - Incentive Programs – utilize performance payments/bonuses to reward measured savings rather than predicted/modeled savings



# Presentation and Q&A Highlights: Bright Power

- **Set goals** to ensure that the intent of the project is understood from design through implementation.
- **Handoffs are critical:** Upgrades are a complex ecosystem, but the goal is for everyone's objectives to overlap if not completely align.
  - If (for example) 5% of energy savings potential is lost at each transition in the upgrade process, not much is left at the end.
  - Ensure that each player is aware of the goals to prevent this potential loss of savings.
- **Measurement and verification** go beyond predictions and models to demonstrate that promised savings are happening and can reveal if there has been a breakdown at handoffs.
- **Use experts to ensure accuracy** when tracking energy use to distinguish energy savings from market, occupancy, and weather changes.

# Related Resources in the Residential Program Solution Center

Explore resources related to energy efficiency upgrades at multifamily properties:

- Maryland Department of Housing and Community Development's [Multi-Family Energy Audit Guide](#).
- [Case study](#) on Efficiency Maine's seven unit apartment upgrade.
- [Marketing & Outreach – Make Design Decisions handbook](#) discusses how to articulate your value proposition for customers.



While you're there, see the latest [Proven Practices](#) post on [Energy Advisors](#).

The Solution Center is continually updated to support residential energy efficiency programs—  
**[member ideas are wanted!](#)**



# Residential Program Solution Center Navigational Example

**Better Buildings Residential Program Solution Center**

**Quick Links**

Browse key issues that many residential program case studies, presentations, tools and resources. **Market Segmentation** Market segmentation divides target market information, teams of researchers, and research to reach them effectively. **Media Attention** Media can be an effective way of reaching each type has a different purpose. **Messaging** Messages that resonate with key communications materials need to reach potential customers. **Multifamily Financing** Financing needs in the multifamily ownership structures are often multifaceted. Furnaces or boilers, common area heating, and other building systems.

**Quick Links Results**

[\\$20 Billion Bonanza: Best Practice Utility Energy Efficiency Programs and Their Benefits for the Southwest](#)  
**Author:** Southwest Energy Efficiency Project  
**Publication Date:** 2012  
*This report explores the best practices that utilities should undertake in the development and implementation of energy efficiency programs. The report calculates the impact that investing in energy efficiency will have on jobs, household income, and state and regional economies, along with the other public health benefits such as reducing pollution.*

[20-Unit Windham Apartment Building Gains Energy Savings and Comfort](#) (2 MB)  
**Author:** Efficiency Maine  
**Publication Date:** 2013  
*This case study highlights a 20-unit apartment building that gained energy savings and comfort through Efficiency Maine.*

[2013 Annual Report of the Efficiency Maine Trust](#)  
**Author:** Efficiency Maine  
**Publication Date:** 2013  
*Year in review annual report which includes program data and success stories.*

[A Seven Unit Apartment Building in Bangor is more Energy Efficient and more Comfortable](#) (427 KB)  
**Author:** Efficiency Maine  
**Publication Date:** 2013  
*This case study highlights the first project completed under Efficiency Maine's Multifamily Efficiency Program.*

**CURRENT SEARCH**

**Search found 134 items**  
(-) Multifamily Financing

**FILTER BY CONTENT TYPE:**

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- [Program Presentations & Reports \(21\)](#)
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**Marketing & Outreach** **Financing** **Contractor Engagement & Workforce Development** **Energy Efficiency Collaboratives: Driving Ratepayer-Funded Efficiency Investments** **Working Group**

# Discussion Questions

- What have you found to be the main challenges or barriers to energy upgrades at affordable/low-income multifamily properties?
  - What strategies or approaches have you used to address those barriers?
- What approaches work well for getting buy-in for energy upgrades at affordable MF housing properties from diverse stakeholders?
  - How do you address split incentives?
- What are best practices for getting financing for multifamily upgrade projects?
- Other questions or issues related to affordable multifamily upgrade projects?

# Discussion Highlights

- The [Network for Energy, Water, and Health in Affordable Buildings](#) works to expand healthy, efficient housing for all by leveraging the relationships between individuals, sectors, and policies.
  - Contact [info@newhab.net](mailto:info@newhab.net) to learn more or get engaged.
- [Stewards of Affordable Housing for the Future \(SAHF\)](#) has resources to help multifamily property owners and others conduct energy assessments and upgrades, including:
  - [EZ Retrofit Tool](#)
  - [Resident Engagement Toolkit](#)
  - [Multifamily Energy and Water Management Toolkit](#)

# Closing Poll

- After today's call, what will you do?
  - Seek out additional information on one or more of the ideas – **63%**
  - Consider implementing one or more of the ideas discussed – **17%**
  - Make no changes to your current approach – **17%**
  - Other (please explain) – **3%**

# Peer Exchange Call Series

*We hold one Peer Exchange call every Thursday from 1:00-2:30 pm ET*

Calls cover a range of topics, including financing & revenue, data & evaluation, business partners, multifamily housing, and marketing & outreach for all stages of program development and implementation

## Upcoming calls:

- **March 17:** Rainbows and Leprechauns: Finding Gold in Partnerships (101)
- **March 24:** Home Improvement Catalyst: Sequencing Upgrades and Engaging Homeowners over Time (201)
- **April 14:** Training: How to get Results - What Matters, What Doesn't (201)
- **April 21:** Advances in Integrating Energy Efficiency into the Real Estate Market (301)
- **April 28:** Driving Change in Residential Energy Efficiency: Electric Vehicles (301)

*Send call topic ideas to [peerexchange@rossstrategic.com](mailto:peerexchange@rossstrategic.com)*

*See the Better Buildings Residential Network Program [website](#) to register*

# Join Us @ ACI National Home Performance 2016

## Kick-off with DOE on Monday, April 4

Home Performance with ENERGY STAR Partner Meeting, 8:30 am – 5 pm

Special afternoon breakout sessions:

- Home Energy Score partner meeting
- Home Energy Information Accelerator partner meeting
- Home Improvement Catalyst - Leveraging the home improvement marketplace for energy upgrades

Getting Started with HPXML workshop – *Monday afternoon*

Meet us at many more sessions, April 5-7!



# Meet DOE at ACI Sessions, April 5-7

- April 5:
- Home Upgrade Program Models for Acquiring Savings in Multiple Climate Zones
  - Residential Energy Labels, Why Should You Care & What Do You Do About It?

- April 6:
- Showcasing Home Performance with ENERGY STAR Contractors
  - Transforming the Market with HPXML: Strategies and Lessons Learned
  - What Building America Learned in 4 Years About Retrofits & Staged Upgrades
  - Realizing the Market Value for High Performance Homes: Reports from the Field
  - Health & Home Performance: Unlocking New \$, Marketing, & Project Data Value
  - The Quest for Smarter Performance Measurement
  - Home Energy Data Huddle: Getting together to Build an Information Pipeline
  - The Value Proposition Challenge

- April 7
- Home Performance Financing Update & Options to Help Close More Jobs
  - Your Contractors: A Gateway to Better Programs
  - America's Building Blocks to High Performance Housing

Download full [ACI National Home Performance Conference Agenda](#) for more details

# LET'S ALL MEET IN MAY!

**REGISTER TODAY for the  
BETTER BUILDINGS SUMMIT**  
Washington, DC · May 9-11, 2016

This Summit will bring together Better Buildings partners and stakeholders to exchange best practices and discuss future opportunities for greater energy efficiency in America's homes and buildings.

*There will be time set aside for a specific Residential Network discussion and meet-up! See the draft agenda [here](#).*