Better Buildings
U.S. DEPARTMENT OF ENERGY

Better Buildings Residential Network Peer Exchange Call Series:

Multifamily (201)

September 15, 2016

Call Slides and Discussion Summary

U.S. DEPARTMENT OF ENERGY

Agenda

- **Agenda Review and Ground Rules**

- **Opening Polls**

- **Brief Residential Network Overview**

- **Contestants:**
  - **Rebecca Schaaf,** Senior Vice President, Energy SAHF *(Network Member)*
  - **Ravi Malhotra,** Founder and President, ICAST USA *(Network Member)*
  - **Dan Teague,** Business Development, WegoWise

- **Discussion:**
  - *What is the biggest obstacle you would face in embracing (or expanding) data benchmarking in your program?*
  - *What is the biggest obstacle to getting multifamily property owners on board with energy efficiency upgrades?*
  - *What challenges would you face in implementing EZ-Retrofit or a similar energy audit tool?*
  - *What have YOU tried that has worked well, or has not worked, in getting multifamily property owners to try energy efficiency upgrades?*

- **Closing Poll and Upcoming Call Schedule**

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, *or go to* energy.gov/eere/bbrn *and click Join*

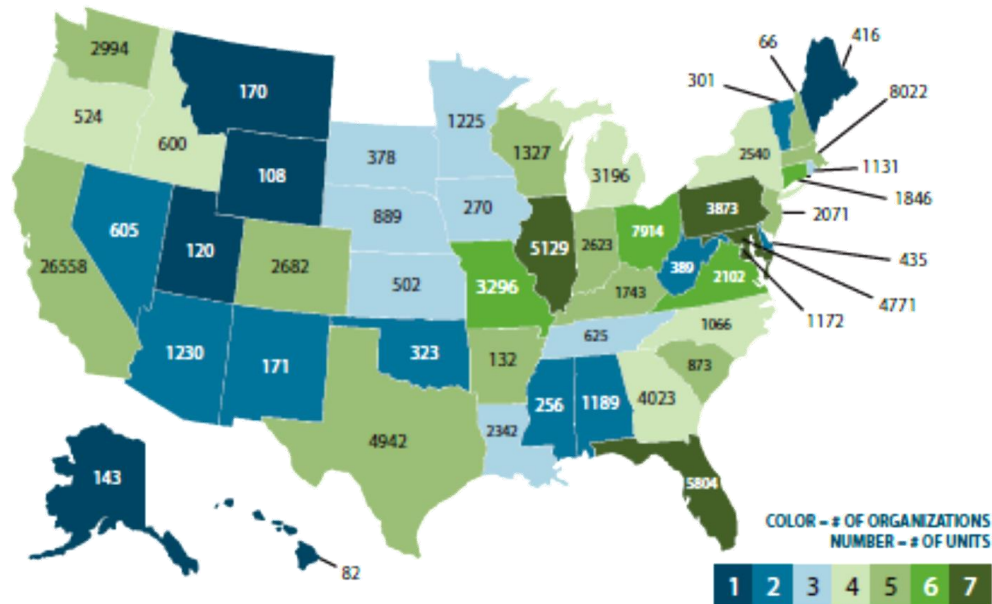Stewards of Affordable Housing for the Future

EZ Retrofit

A No-Cost Energy and Water Audit Tool for the Multifamily Sector

Stewards of Affordable Housing for the Future

A collaborative of 11 exemplary multi-state non-profits

Provides more than 115,000 units of affordable housing

- BRIDGE Housing
- The Evangelical Lutheran Good Samaritan Society
- Homes for America
- Mercy Housing
- National Church Residences
- National Housing Trust/Enterprise
- The NHP Foundation
- Preservation of Affordable Housing
- Retirement Housing Foundation
- The Community Builders
- Volunteers of America

Why EZ Retrofit

ASHRAE Level 1 → ASHRAE Level 2 → ASHRAE Level 3

EZ Retrofit

EZ Retrofit Audit Tool

- ✓ Ten Systems
- ✓ Do-It-Yourself
- ✓ Freely Available
- ✓ Excel-based

Evolution of EZ Retrofit

June 2014
Version 1.0

- EZ and Advance Path
- 10 Building Systems
- Results

June 2015
Version 2.0
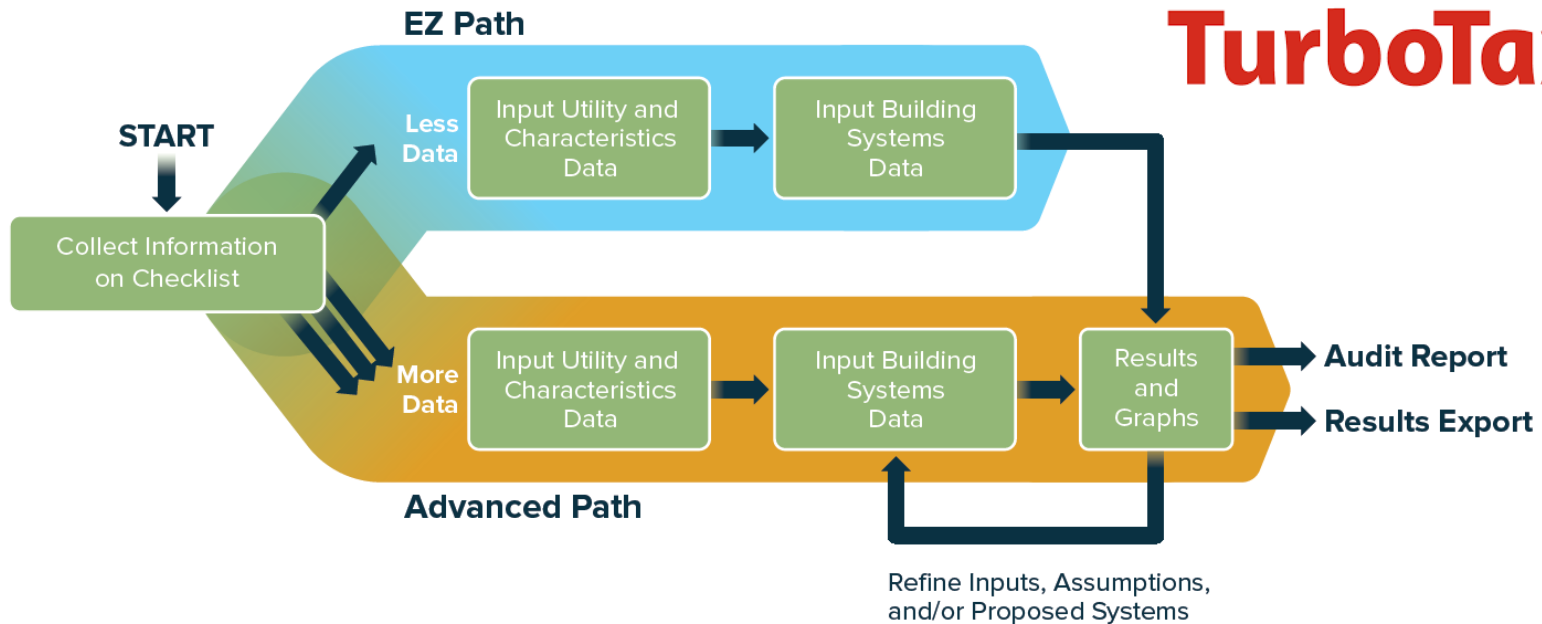
- Additional Systems
- Validation Screen
- Graphical Results

Jan. 2016
Version 3.0

- Path Switching
- Audit Report
- Custom Measure
- Combine Buildings
- Non-Energy Benefits

How EZ Retrofit Works?

EZ Retrofit—Choose Your Path to Savings

intuit TurboTax

EZ Path

START

Collect Information on Checklist

Less Data → Input Utility and Characteristics Data → Input Building Systems Data

More Data → Input Utility and Characteristics Data → Input Building Systems Data → Results and Graphs → Audit Report, Results Export

Advanced Path

Refine Inputs, Assumptions, and/or Proposed Systems

SAHF — STEWARDS OF AFFORDABLE HOUSING FOR THE FUTURE

Collect Information: EZ Checklists

Choose Your Path

Input Screen 1 – General Characteristics

Input Screen 2 – Benchmarking

Owner and Tenant Paid Utilities

- Electricity

- Gas or Oil

- Water

Input Screen for Building Systems

What will you get?

Detailed Results for System Improvements
1. Utility consumption and cost savings
2. Installation cost
3. Payback period
4. Expected useful life

Power to Customize
Flexible ways to review **results** include a range of **criteria:**

- Annual Cost Savings   - Annual Energy Savings
- Annual Water Savings   - Payback
- Total Install Cost   - Number of Measures

Printable Audit Report

EZ Dashboard

$18,559
Annual Cost Savings Potential

Annual Savings Opportunity		
Energy (kBtu)	960,202	27%
Water (kGal)	328	15%

117
Annual CO_2e Reduction Potential

Emission Reductions are Equivalent to	
Cars on the Road	25
Gallons of Gas Being Consumed	13,050
Energy Used by This Many Homes	11

Pre- vs. Post-Retrofit Use Intensity

27% Energy Reduction

15% Water Reduction
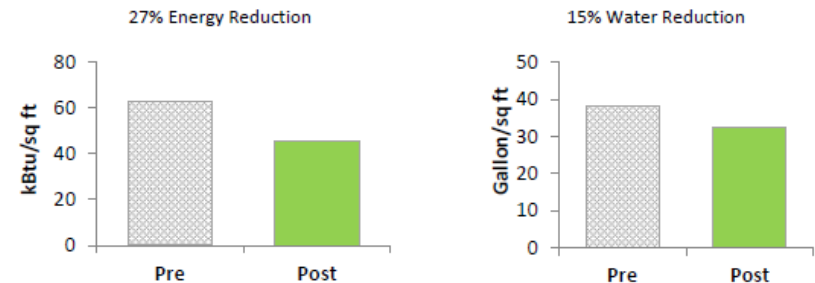
Sunset Park – Case Study

Energy Star Refrigerators

Quantity: 128

Projected Annual Cost Savings: $4,912

Projected Annual kWh Savings: 51,712

LED Lighting (Common Area & Exterior)

Quantity: 586

Projected Annual Cost Savings: $12,905

Projected Annual kWh Savings: 135,837

Energy Efficient Boilers

Quantity: 2

Projected Annual Cost Savings: $9,725

Projected Annual kWh Savings: 7,394

Projected Annual Therms Savings: 19,181

PROJECTED ANNUAL SAVINGS

Energy: 20%   Cost: 22%

EZ Retrofit Resources

Learn more about EZ Retrofit and how efficiency upgrades can enhance tenant comfort and improve your bottom line.

- ✓ EZ Retrofit Tool
- ✓ The User Guide
- ✓ Data Collection Checklist
- ✓ Case Studies
- ✓ FAQs
- ✓ Videos
- ✓ Other Information

Visit **www.sahfnet.org/ezretrofit.html**

What challenges would you face in implementing EZ-Retrofit or a similar energy audit tool?

Discussion Highlights: Stewards of Affordable Housing for the Future

- **Goldilocks Effect:** Simple, quick audits often don't supply enough actionable information; detailed analysis audits are often too complex for homeowners.

- **The Right Fit:** EZ Retrofit limits the analysis to ten systems and cuts out measures, such as windows and attic insulation, that have longer payback periods to provide a clear path forward.

- **The Right Audience:** Users of the EZ Retrofit software fell into three primary categories:

  1. **Previously Audited:** Users turned to EZ Retrofit after they had conducted an audit to find information on additional upgrades.

  2. **Cash Flow Concerns:** Users saw benchmarking as an opportunity to cut down on their energy cost and stabilize their finances by reducing their use.

  3. **Old Equipment:** Users with old and inefficient equipment utilized the technology to determine what upgrades to undertake when the inevitable end of life came for their old equipment.

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iCast USA

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ENERGY

Green Rehabilitation for Multifamily Properties

Ravi Malhotra
President, ICAST (International Center for Appropriate & Sustainable Technology)

Multifamily (MF) Housing

- ❖ **~25% of residential market**
  - ▪ **Subsidized Affordable – HUD, LIHTC, USDA-RD**
  - ▪ **Naturally Affordable / Market Rate**

- ❖ **MF is an underserved and untapped market**
  - ▪ **Commercial Property but Residential Use**
  - ▪ **Complex Ownership / Management Structure**
  - ▪ **Split-Incentive hurdle – LPs, Agencies, Tenants**
  - ▪ **Utility Rebate programs driven by Meter/Utility Account Holders**
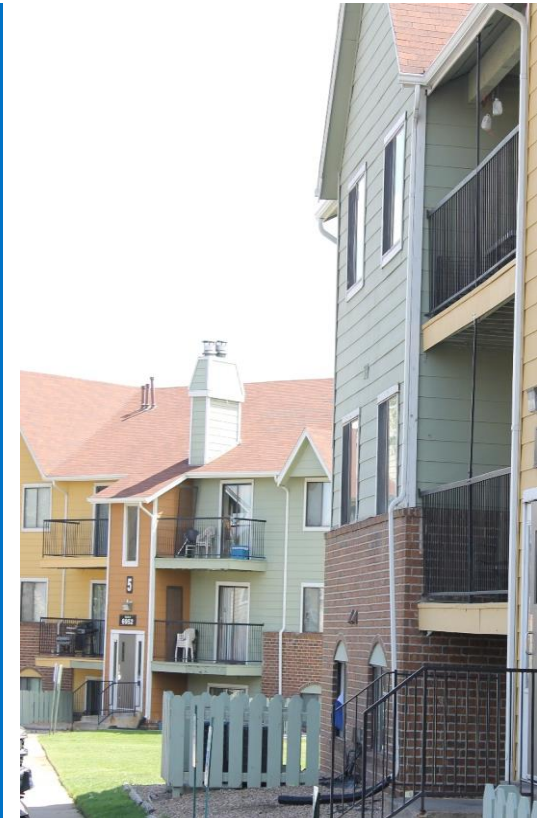
Why aren't MF owners signing up?

- ❖ **Time Constraint**
  - ▪ Complex Process
  - ▪ Not High Priority
- ❖ **Knowledge**
  - ▪ Regulatory
  - ▪ Optimal Solutions
  - ▪ Pace of Technology Change
- ❖ **Financing**
  - ▪ Over ROI threshold
  - ▪ Lack of Reserves
  - ▪ Split Incentive
  - ▪ Myth – Green is Expensive

Successful EE Programs

1. Free to MFAH owner
   - ✓ Grant Funded – WAP, State, Foundation, etc.
   - ✓ Utility - Direct Install Programs

2. General Contractors
   - ✓ **At time of major rehab**
     - Driver - Green certification
     - Oversees entire gut rehab
     - Refi of property
   - ✓ **New construction**
     - Driver - Green certification
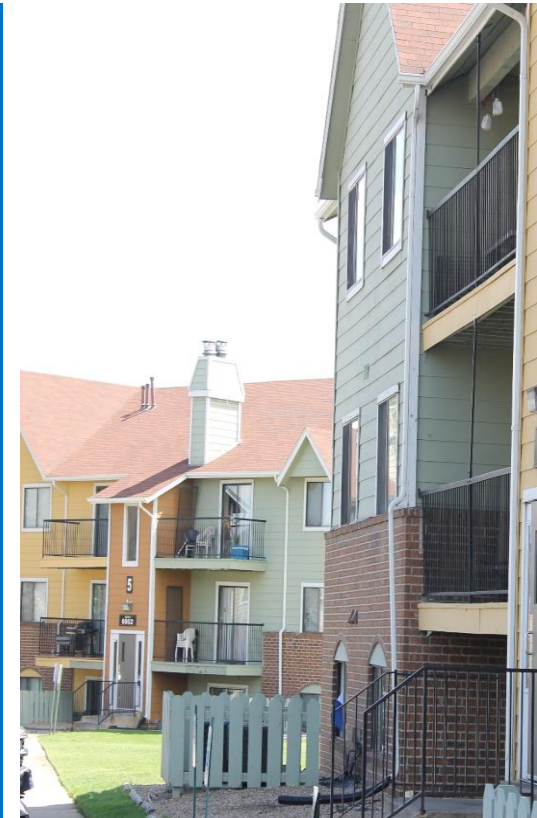
Successful EE Programs

3. DIY
4. One-Stop-Shop
   - ✓ **Make it hassle-free**
     - Oversees entire green rehab
   - ✓ **Provide relevant information**
     - Cost effective ECMs
   - ✓ **Access to financing options**
     - Rebates, Incentives, Grants
     - Debt or Off-Balance Sheet (EPC, PACE, PFS)

DIY Process

Decide to Explore Green Rehab Options

Locate Contractors & Schedule Energy Audit

Compile options into a plan that best fits your needs

Finalize Scope of Work and Budget

Develop detailed Specifications for bids

Find the Money: Long term debt? Equity? Utility Rebates? Grants?

Send bids to contractors – HVAC, lighting, insulation, windows, etc.

Select various contractors for SOW

Inspect contractors to ensure quality, schedule & budget

Close-Out: Pay Invoices, complete reports, Rebate paperwork, etc.

Track Results to make sure green rehab met expectations

Fix Issues if Project did not Pan Out

ICAST
community powered results.

One-Stop-Shop Model

- ✓ Portfolio & Property Assessments
- ✓ Design and Development
- ✓ Access to Financing
- ✓ Green Retrofit:
    1. Energy Efficiency and DSM
    2. Renewable Energy
    3. Water Conservation
    4. Health and Safety
- ✓ O&M Training
- ✓ Tenant Engagement

Lessons Learned

Service Providers Perspective:

1. Financial viability of Green Retrofit is important

    ▪ But take a holistic approach

2. Leverage utility rebates, grants and incentives

    ▪ But owner "buy-in" is essential for sustainability

3. Offer a comprehensive, hassle-free, and cost-effective program

    ▪ Keep it simple & make it easy for the owner/manager
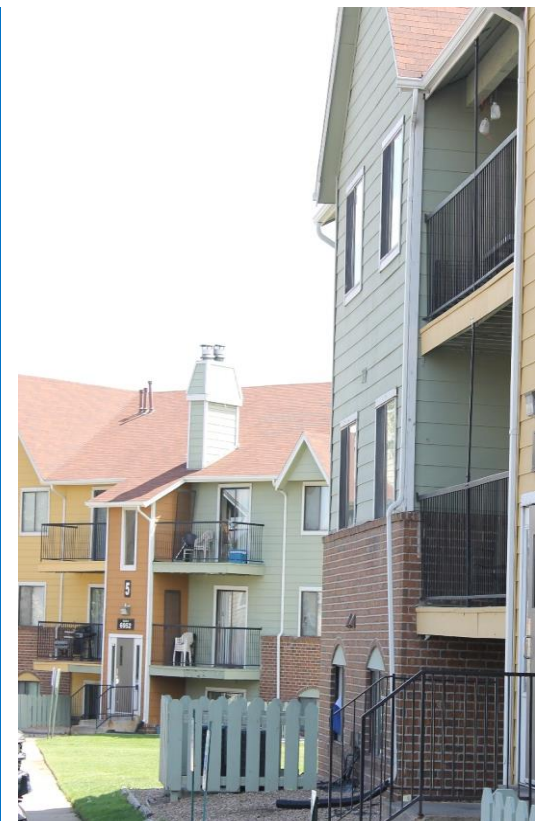
By the Numbers

Current annual utility cost	$100,000
25% utility savings due to Green Rehab	$25,000
Reductions in O&M costs from green rehab	$9,000
Increase in profits due to higher occupancy & lower turnover due to green rehab	$6,000
Total Savings/Year i.e. Increase in NOI	**$40,000**
Cost of Capital	5% ⬅
Increase in value of property	**$800,000**
Lifetime of Green Rehab (in years)	15 ⬅
Total Savings from Green Rehab	**$600,000**
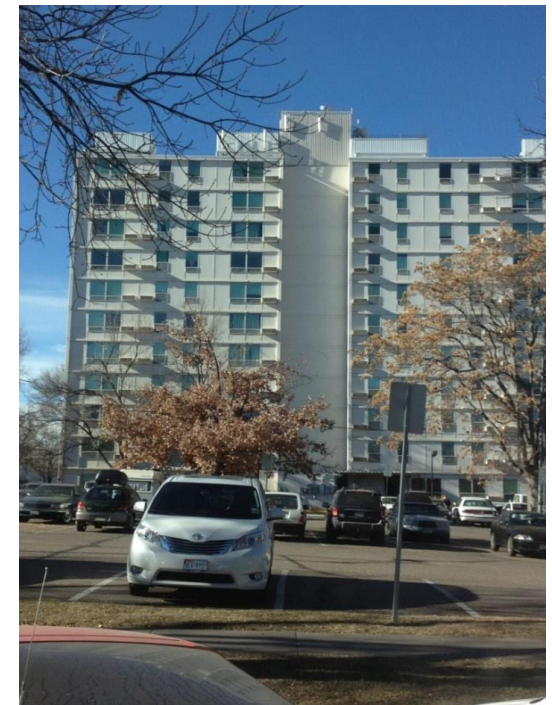
Thank you

www.icastusa.org/resourceguide.aspx

Ravi Malhotra
President, ICAST
www.icastusa.org

What is the biggest obstacle to getting multifamily property owners on board with energy efficiency upgrades?

Discussion Highlights: iCast

- **Market Barriers:** Barriers such as split incentive, lack of knowledge and resources, and small project size often delay or stop property managers from undertaking upgrades.

- **Solutions:** iCast evaluated the practices of successful retrofit programs, such as weatherization and contactor practices, that drive retrofits to develop solutions:

  - **Provide tenant and staff education:** Property owners may believe that green rehab is too expensive. Education is the first step to overcoming that myth.

  - **Incorporate green into design:** Model programs after general contractors, which include upgrades as standards in their rehab process.

  - **Make the business case:** The lifespan of a rehab project lasts far beyond one year. Show owners that the savings are extensive and multiyear as well.

WegoWise

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Achieving Efficiency in Multifamily Buildings through Benchmarking Data

Dan Teague

VP Business Development

WegoWise

September 15, 2016

wegowise

Today's Agenda

How to effectively use benchmarking data to:

- Identify opportunities for improvement

- Measure the success of building upgrades

- Increase NOI and utility savings

- *Plus*, best practices on energy data access and use in multifamily buildings

wegowise

Why use benchmarking data?

Benchmarking energy and water usage provides the foundation for improving the efficiency of your buildings.
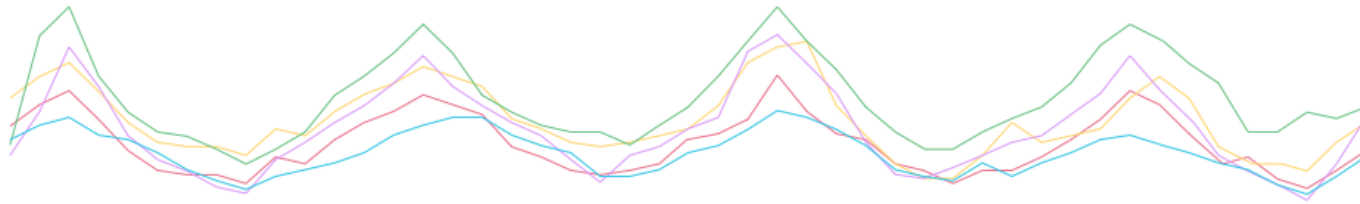
Benchmarking with data allows owners and managers to track and analyze building utility performance within a portfolio and against similar peers.

wegowise

Identify opportunities for improvements

National CORE consolidated utility data to analyze water use across 6 properties, allowing them to identify opportunities to make improvements.

Opportunity: One property performed poorly when benchmarked alongside its peers.

Improvement: This property's water use was remedied through landscape watering modifications.

Result?

19%
Water
usage
reduction

wegowise
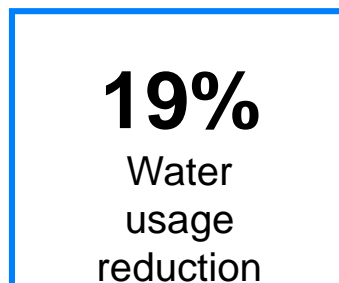
Measure the success of building upgrades

Homeowner's Rehab, used benchmarking data to measure and verify the success of building upgrades.

Upgrade: Replaced inefficient boilers with new condensing units and compared the post-upgrade energy use to benchmarks.

Result? When one building did not perform as expected, engineers found that it was not condensing properly and modified gas pressure, improving building performance.

wegowise

Measure the success of building upgrades

Through benchmarks, HRI easily identified outliers in its portfolio, targeted those buildings for retrofits and measured the savings.

Worst Buildings
Inefficient & Expensive

Targeted for retrofit

Less efficient

Less expensive

More expensive

Before retrofit

After retrofit

wegowise
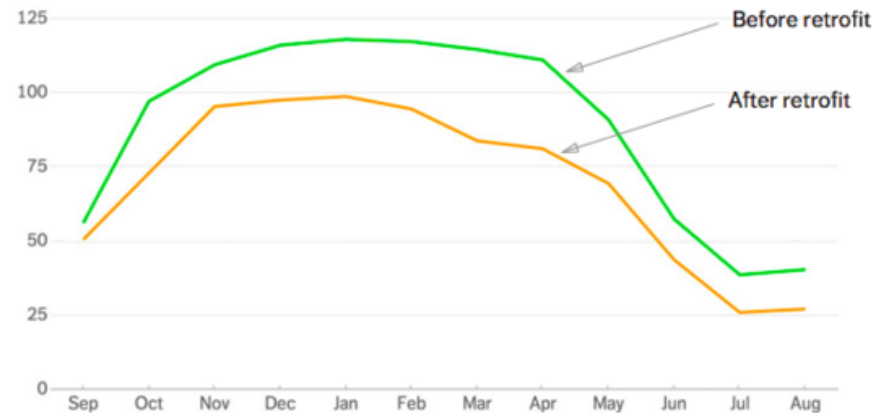
Increase NOI and utility savings

New Holland Residences increased net operating income (NOI) and utility savings by benchmarking buildings within their own portfolio, identifying outliers, and making improvements.

Improvement: Repaired window gaps, replaced water fixtures, and installed energy management systems across all buildings.

Result?

15%
Reduction in
utility costs

40%
Reduction in
water use

wegowise
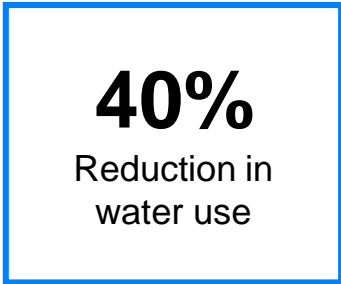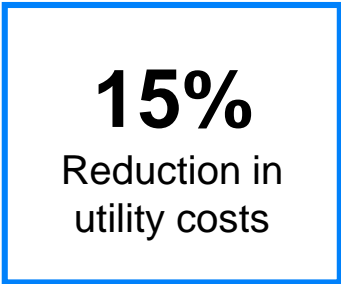
Best practices in energy data and use in multifamily

- Set energy efficiency goals

- Select a point person to focus on energy data management and determine how and when to share data across the organization

- Collect comprehensive utility information when setting up benchmarks to get the most out of your data

- Explore options for energy efficiency financial incentives, like Green Banks Fannie Mae, Freddie Mac, or HUD

- Explore integrating benchmarking data to site staff incentives

wegowise

Thank you!

What is the biggest obstacle you would face in embracing (or expanding) data benchmarking in your program?

Discussion Highlights: WegoWise

As benchmarking becomes standard practice, managers and owners are struggling with how to obtain, interact with, and share data. What does benchmarking do?

- **Baseline:** Benchmarking is the foundation for improving properties. You cannot manage what you cannot measure.

- **Feedback:** Benchmarking gives managers and owners the ability to evaluate current and past performance.

- **Opportunity:** Benchmarking can help owners and managers identify opportunities for upgrades and savings.

- **Comparison:** As more buildings benchmark, aggregate data can help compare how a building performs relative to others.

- **Lasting Savings:** Benchmarking can demonstrate savings after an upgrade, but it can also identify when equipment is not performing as it should five, ten years down the line as well.

What residential energy efficiency topics would you like to see discussed at the May 2017 Better Buildings Summit?

Related Resources in the Residential Program Solution Center

Explore resources related to multifamily home upgrades:

- Explore the [Program Design & Customer Experience – Make Design Decisions](#) handbook to make sure your program is tailored to your specific market.

- Leverage practical policies and programs to improve building energy efficiency for more affordable and livable communities with [The 2020 Leadership Agenda for Existing Commercial and Multifamily Buildings](#).

- Check out the Multifamily Financing [Quick Link](#) for numerous resources on this topic.

- See the opportunities and resources available to capture energy savings within the southeast region's housing market: [The Southeast Multifamily Market Assessment](#).

> - While you're there, see the latest [Proven Practices](#) post on [Contractor Financing Education](#).
> - We regularly add new resources to the Solution Center. [Member ideas are wanted](#)!

https://rpsc.energy.gov

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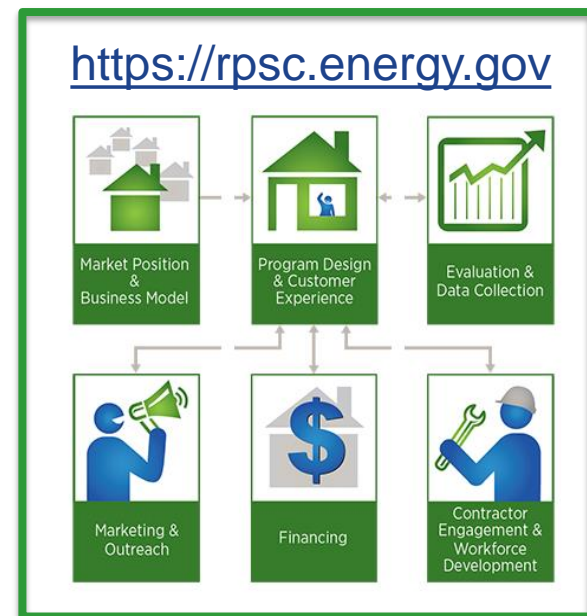
Golden Buzzer Discussion!

- Data and benchmarking provide huge opportunities for upgrades, but there are still challenges to adoption in multifamily programs:

  - **Metering Structure:** Multifamily homes may have individual or shared meters. **Ask your utility for aggregated data to overcome this hurdle.**

  - **Technology Life Cycle:** Multifamily housing, particularly affordable housing, may be hesitant to invest when technology just keeps getting better. Technology always advances, but the **products on the market now are innovative and groundbreaking in their own right.**

  - **Projections:** Lack of monitoring and evaluation data leads to a lack of confidence in projected savings. **Approaches like EZ Retrofit and Wegowise's benchmarking aim to collect more data over time to make predictions more standard and accurate.**

Addenda: Attendee Information and Poll Results

Call Attendee Locations
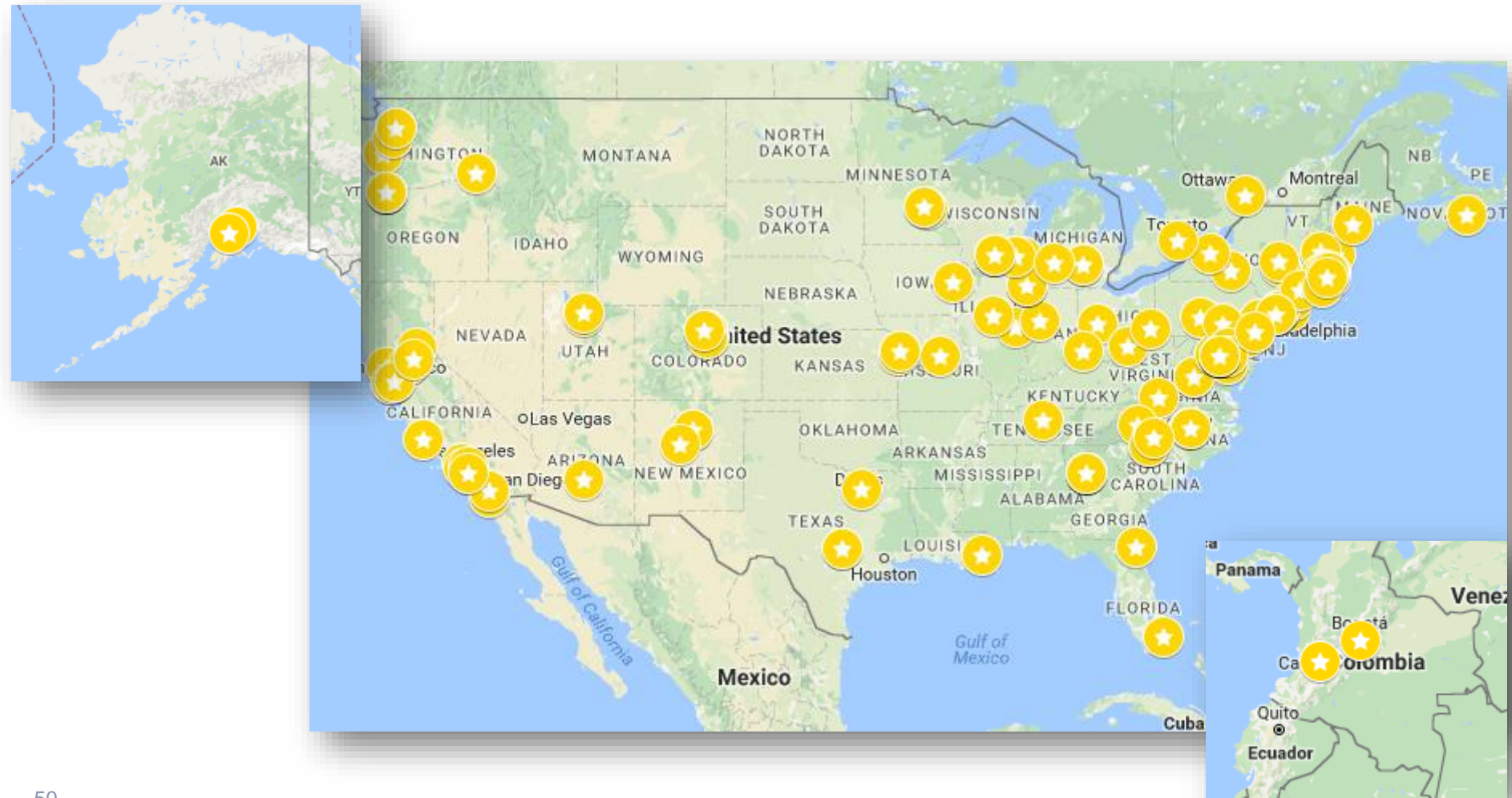
- Advanced Energy
- AE Building Systems
- Alaska Housing Finance Corporation
- All Elements Mechanical
- American Council for an Energy-Efficient Economy (ACEEE)
- AppleBlossom Energy Inc.
- BlueGreen Alliance Foundation
- Boulder County
- Bridging The Gap
- Build It Green
- California Energy Commission
- California Housing Partnership Corporation
- City of Cambridge
- City of Charlottesville
- City of Chula Vista Conservation Section
- City of Columbia
- City of Plano
- Clean Efficient Energy Company, LLC
- CLEAResult
- Efficiency Nova Scotia
- Elevate Energy
- Focus on Energy
- Greater Cincinnati Energy Alliance
- Horizon Residential Energy Services NH, LLC
- Institute for Market Transformation (IMT)
- Metropolitan Energy Center

- Mitsubishi Electric Cooling and Heating
- National Grid
- National Housing Trust/Enterprise
- Northeast Energy Efficiency Partnerships (NEEP)
- Performance Systems Development (PSD)
- Southeast Energy Efficiency Alliance (SEEA)
- Stewards of Affordable Housing for the Future
- The Energy Conservatory (TEC)
- Waterbury Local Energy Action Partnership (LEAP)
- WattzOn
- Wisconsin Energy Conservation Corporation (WECC)

- AEG
- AjO
- American Economic Association
- Architectural Nexus
- Association for Energy Affordability
- Atlanta Mayor's Office
- BA Consult
- Bam Superior Solutions
- Blue Ridge EMC
- Bonneville Power Administration
- Boulder County EnergySmart
- Building Envelope Materials
- California Alternative Energy and Advanced Transportation Financing Authority

- California Public Utilities Commission
- Cambridge Community Development
- CHP Energy Solutions
- City of Philadelphia
- Codman Square NDC
- Corcoran Management
- Cornell Cooperative Exension
- County of Sonoma-Energy & Sustainability
- Craft3
- CT Green Bank
- Danville Development
- Emerald Impact
- Energy & Resources Group
- Energy Metering Technology Ltd

- Environmental Design / Build
- Eversource Energy
- Facility Solutions Group
- Facility Strategies Group
- Franklin Energy Services
- FS Energy
- GoodCents
- Greenergy Chicago, Inc.
- Groundswell
- Gunnison County Electric Association
- Holland Board of Public Works
- Home Performance Strategies
- ICAST
- ICF
- Independent Consultant
- LINC Housing

- Livable Buckhead
- MA Dept. of Energy Resources
- Minnesota Pollution Control Agency
- Natural Resources Canada
- Natural Resources Defense Council
- New Buildings Institute
- New Ecology
- New York State Energy Research and Development Authority
- Nexant
- NM State Energy Office
- Off The Grid Renovations
- Ohio Wind Working Group
- PA Public Utilities Commission
- Panasonic Eco Solutions
- People's Self Help Housing

- POCH
- Preservation of Affordable Housing
- Purdue university
- Salcido Solutions
- Seattle City Light
- Snohomish PUD
- SoundView Risk Advisors
- South-central Partnership for Energy Efficiency as a Resource
- Southface Energy Institute
- Southwest Energy Efficiency Project
- Stone Energy Associates
- Sustainable South Bronx
- TerraCel Energy
- The Association for Energy Affordability, Inc

- The Cadmus Group, Inc.
- The Renaissance Collaborative, Inc
- Thermostat Recycling Corporation
- TNDC
- TVA
- UAO
- UIL
- University of Illinois at Urbana-Champaign
- UpGrade Athens County
- US Dept of HUD
- US EPA
- USDA
- V3
- Washington State Department of Commerce

Closing Poll

- After today's call, what will you do?
  - Seek out additional information on one or more of the ideas **– 67%**
  - Consider implementing one or more of the ideas discussed **– 33%**
  - Make no changes to your current approach **– 0%**
  - Other (please explain) **– 0%**

Opening Poll

- Which of the following best describes your organization's experience working with multifamily programs?
    - Very experienced/familiar **– 67%**
    - Some experience/familiarity **– 16%**
    - Limited experience/familiarity **– 11%**
    - No experience/familiarity
    - Not applicable **– 0%**

Wild Card Poll

What challenges would you face in implementing EZ-Retrofit or a similar energy audit tool?

Responses:

- Access to data
- Lack of in-person feedback
- Non-interactive savings between measures
- Determining which units use the most energy
- Industry recognition and use

Wild Card Poll

What is the biggest obstacle to getting multifamily property owners on board with energy efficiency upgrades?

Responses:

- Money
- Low Incentives
- Funding Initial Audits
- Complex Ownership Structure
- Competing Priorities

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Wild Card Poll

What is the biggest obstacle you would face in embracing (or expanding) data benchmarking in your program?

Responses:

- Data Access
- Access to Aggregate Utility Data
- Obtaining Tenant Utility Data
- Disruption to Tenants
- Initial Costs

Peer Exchange Call Series

We hold one Peer Exchange call the first four Thursdays of each month 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

<u>Upcoming calls:</u>

- September 22: Home Improvement Catalyst Quarterly Call (201)
- September 29: Highlights from ACEEE Summer Study Sessions (201)
- October 6: Secret Sauce: Recruiting and Retaining Qualified Contractors (101)
- October 13: Moving Beyond Split-Incentives: Engaging Rental Property Tenants and Owners in Energy Efficiency (301)

Send call topic ideas to peerexchange@rossstrategic.com

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

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Thank you!

America's got Talent

Multifamily

Please send any follow-up questions or future call topic ideas to:
peerexchange@rossstrategic.com

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