



Better Buildings Residential Network Multifamily & Low-Income Housing Peer Exchange Call Series: *Cost-Effective Modeling and Savings Projections for Multifamily Projects*

June 26, 2014

Call Slides and Discussion Summary

Agenda

- Welcome
- Call Logistics and Introductions
- Residential Network and Peer Exchange Call Overview
- Featured Speakers:
 - Brian Kennedy, Austin Energy
 - Steve O'Malley, Vermont Energy Investment Corporation
- Discussion:
 - What experience has your organization had with modeling, projecting savings, and cost-effectiveness screening for multifamily buildings?
 - What strategies have worked well for EE programs using energy modeling?
 - What has not worked well? What strategies can programs use to overcome challenges with modeling?
 - What ideas or tips do you have to make programs more effective by using energy modeling and projections?
 - Other questions/issues related to modeling and savings projections?
- Poll: Future Call Topics

Participating Programs and Organizations

- American Council for an Energy-Efficient Economy
- Austin Energy
- City of Farmington Hills, MI
- City of Greensboro, NC
- City and County of San Francisco, CA
- Community Office for Resource Efficiency (Aspen, CO)
- Davis Energy Group
- Efficiency Nova Scotia
- Elevate Energy (Energy Impact Illinois)
- International Center for Appropriate and Sustainable Technology
- Midwest Energy Efficiency Alliance (Illinois Home Performance)
- PECl Inc. (Portland, OR)
- Snohomish County Public Utility District (Everett, WA)
- StopWaste (Oakland, CA)
- Vermont Energy Investment Corporation (Efficiency Vermont, DC Sustainable Energy Utility)

Better Buildings Residential Network

- **Better Buildings Residential Network**: Connects energy efficiency programs and partners to share best practices to increase the number of American homes that are energy efficient.
 - Membership: Open to organizations committed to accelerating the pace of existing residential upgrades. Commit to providing DOE with annual number of residential upgrades, and information about benefits associated with them.
 - Benefits:
 - Peer Exchange Calls
 - Tools, templates, & resources
 - Newsletter updates on trends
 - Recognition: Media, materials
 - Optional benchmarking
 - Residential Solution Center

For more information & to join, email bbresidentialnetwork@ee.doe.gov.

- **Better Buildings Residential Network Group on Home Energy Pros**

Join to access:

- Peer exchange call summaries and calendar
- Discussion threads with energy efficiency programs and partners
- Resources and documents for energy efficiency programs and partners

<http://homeenergypros.lbl.gov/group/better-buildings-residential-network>

Better Buildings Residential Network Group on Home Energy Pros Website



Better Buildings Residential Network

Created by Better Buildings Support

[Send Message](#) [View Groups](#)

Information



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

Website: <http://betterbuildings.energy.gov/bbm>

Latest Activity: 8 hours ago

Join the conversation in the discussion forum below. You can use the "Follow" link at the bottom of the forum to receive an email whenever a new discussion is posted.

Open the table of contents below and follow the links to access topical materials and resources.

Helpful Links

- Table of Contents
- Better Buildings Residential Network
- Better Buildings Neighborhood Program Website
- Home Performance with ENERGY STAR
- Home Energy Score



Table of Contents



+New Discussion



Peer Exchange Call Archive



Better Buildings Network View



Tools



Related Events

Discussion Forum



Attend Today's Peer Exchange Calls on Program Sustainability and on Workforce

Don't miss today's calls. "Collaborating with Utilities on Residential Energy Efficiency" begins at 12:30 p.m. Eastern and "Engaging Efficiency First Chapters and Other Trade Associations in Energy Efficiency Programs" begins at 3:00 p.m. Eastern.

[Continue](#)

Tags: Peer Exchange Calls

Started by Better Buildings Support 8 hours ago.



Register for Upcoming DOE Webinar About On-Bill Financing

Sign up to attend the DOE State and Local Energy Efficiency Action Network (SEE Action) webinar, "Case Studies: Financing Energy Improvements on Utility Bills," taking place June 11, 2014, from 2:00 to 3:30 p.m. Eastern. To learn more on this topic, read

[Send Message to Group](#)

[Leave Group](#)

Members



[Follow New Members](#)

[+ Invite More](#)

[View All](#)

Pages (15)

- Tools
- Better Buildings Network View
- Peer Exchange Call Schedule and Archive
- Peer Exchange Archive: Marketing and Outreach
- Peer Exchange Archive: Workforce Business Partners

[Sign Out](#)

- [Inbox](#)
- [Alerts](#)
- [Friends - Invite](#)
- [Settings](#)

Home Energy Pros

Home Energy Pros was founded by the developers of Home Energy Saver Pro (sponsored by the U.S. Department of Energy,) and brought to you in partnership with Home Energy magazine.

Latest Activity

[What brings you here?](#)

[Share](#) 140

Tucker Henne commented on David Byrne's blog post Does Aereoseal work? An auditors review

"I would like to begin with a disclaimer that I am an Aereoseal contractor. One of the reasons I..."

16 minutes ago

TJ Alexander posted a blog post

So many homes have fiberglass insulation that is poorly installed in New Hampshire and elsewhere

Doing testing of existing homes it is typical to see mottled patterns of surface temperatures with...

See More

1 hour ago

CleanEdison updated an event



Entry Level Solar Photovoltaic at Cotuit, MA

September 30, 2012 to

Peer Exchange Call Series

- There are currently 6 Peer Exchange call series:
 - Data & Evaluation
 - Financing & Revenue
 - Marketing & Outreach
 - Multifamily/ Low-Income Housing
 - Program Sustainability
 - Workforce/ Business Partners
- Calls are held the 2nd and 4th Thursday of every month at 12:30 and 3:00 ET
- Upcoming calls:
 - July 10: Program Sustainability - Incorporating Behavior Change Efforts into Energy Efficiency Programs
 - *July 10: No second call due to summer vacations*
 - July 24: Data & Evaluation - Cost-Effective, Customer-Focused and Contractor-Focused Data Tracking Systems
 - July 24: Financing - Effective Loan Program Design and Integration with Contractors
- Send call topic ideas or requests to be added to additional call series distribution lists to peerexchange@rossstrategic.com

**Energy Raters and Modeling Lessons
Learned:
Brian Kennedy, Austin Energy**



Energy Modeling in the MF Sector

Brian Kennedy, Austin Energy, June 26, 2014





Background



AE existing MF program since late 80s



Awarded \$10 M ARRA grant in 2010



Energy Returns
SF & MF
performance-based programs





MF Program Design

- Representative 10% sample test-in and test-out
- RESNET-certified raters
- REM/Rate or Design to estimate % savings
- Performance rebates
- Comprehensive packages of upgrades
- Mandatory low-flow devices, partner w/ AWU
- BB grant team perform QA/QC on raters and contractors




- Program was very successful
 - ~1,600 units upgraded in 1 year
- Success brought strain on resources
- Upfront solicitation of stakeholder input
- Coordination issues
- Need to clearly define modeling parameters
- QA of REM files

ENERGY REDUCTION PLAN

Save money, improve comfort, and conserve resources.

Villa del Rey



ESTIMATED ANNUAL ENERGY SAVINGS*:

\$ 1,541 or 18.1 % or 20,000 kWh

Date of Consultation: 5/30/13

Property Contact:

Consultant Contact:

*All projections and estimates of energy and utility bills savings are average estimates only, based on energy modeling software results and should not be considered guarantees of actual savings.

INSIDE

- Overview
- Current Property Conditions
- Property Issues (Health & Safety)
- Summary of Recommended Improvements
- Benefits
- Program Incentives and Financing
- Next Steps



Conclusion

- Lessons learned used to inform program changes
- Packages of upgrades appealing
- Do not have full time resources to process modeling files
- Developed fillable .pdf with point system for contractors
- On-going utility bill tracking for comparison to modeling predictions

Austin Energy
811 Barton Springs
Austin, TX 78704 USA
Phone: 512-974-7827
www.austinenergy.com Fax: 512-482-5455

Total Project Cost % Rebate 0% ecom Status Date:

Multifamily Evaluation Form Initial Final

Measures

Contact Information
Federal Tax ID:
Property Manager Name:
Property Manager Phone:
Austin Energy Rep:
Contractor:

Address Information
Check Payable To:
Mailing Address:
Property Name:
Property Address:
Property ID:

Total Conditioned sqft: Number of Apts: Ave Apt Size: Number of Floors: Insulated Attic sqft: EUI:

Hot Water (gal/Apt): Windows (sqft/Apt): Existing Number of HVAC: Existing Tons: Final Tons: Duct Type:

Hot Water: Total Number of Bedrooms: Initial Ave Duct Leakage:

Proposed Measures	Description/Instructions	Quantity	Points/Unit	Points	Tons Replaced
<input checked="" type="checkbox"/>					0
<input checked="" type="checkbox"/>					0
<input checked="" type="checkbox"/>					0

Prevented Emissions Equivalents:

Trees Planted (Trees)	0	Low Flow Conservation Gallons	0	Total Package Rebate	\$0
Forests Planted (Acres)	0	Gal Conserved at Power Plant	0	Package Rebate per Apartment	\$0
Cars Removed (Cars)	0	Total Gal Conserved	0		
Vehicle Miles Avoided (Miles)	0	Water Conservation kWh	0		
Homes Powered (Homes)	0				
Gal Conserved if Chiller on site	0				

Total Points 0



Experiences with Multifamily Modeling & Savings Projections: Austin Energy

- The performance-based modeling approach that Austin Energy used for multifamily properties in 2012-13 was resource intensive
 - It involved modeling estimated energy and water savings, staff QA/QC of REM files, and spot checks on raters and contractors
- With the success of the program and the end of the federal grant, Austin Energy no longer had the resources to continue with the same rebates and staff evaluation approach
- Austin Energy developed a rebate form with a point system for determining potential rebates based on different combinations of upgrade measures
 - Staff used information gained from implementation experience and feedback from contractors, raters, and customers to develop the form and point-based rebate system
 - One lesson was that residents didn't like to be "bothered" multiple times, and there were coordination challenges

**Energy Raters and Modeling Lessons
Learned:
Steve O'Malley, Vermont Energy Investment
Corporation**

Experiences with Multifamily Modeling & Savings Projections: Vermont

- Vermont Energy Investment Corporation (VEIC) uses three approaches for modeling energy savings for multifamily properties:
 - REM/Rate software, which may not be as accurate for larger buildings with large common spaces and parking garages
 - E-Quest (free DOE software)
 - Excel spreadsheet calculations, which consider heat loss, air leakage, and other factors
- Most of the modeling of multifamily properties is done to claim energy savings, rather than to inform customer decisions
- There are three tiers of upgrades that are examined:
 - Lighting upgrades
 - Efficiency Vermont certification, which has incentives for different thresholds of upgrades
 - Home Performance with ENERGY STAR

Discussion Questions

- What experience has your organization had with modeling, projecting savings, and cost-effectiveness screening for multifamily buildings?
- What strategies have worked well for energy efficiency programs using energy modeling?
- What has not worked well? What strategies can programs use to overcome challenges with modeling?
- What ideas or tips do you have to make programs more effective by using energy modeling and projections?
- Other questions/issues related to modeling and savings projections?

Experiences with Multifamily Modeling & Savings Projections: San Francisco Bay Area

- California uses Energy Pro rather than REM/Rate software for modeling, which is time intensive
- San Francisco Bay Area program is working to streamline the software to minimize the on-site work and data inputs to what is really needed
- With this Energy Pro Light model, technical assistance providers can do the modeling and rating in less time. They are 80% correct, with 20% of the input
- It was more important for the program to make the modeling work in the real world than to have perfect estimates
- It doesn't make sense to measure everything: If you're not going to change the dishwasher, why get the serial number?
- For measures that customers will implement to get a rebate, the software allows more detail to be entered

Multifamily Modeling & Savings Projections: Point-Based Systems

- Several programs have used point-based systems for determining rebates for upgrade measures in single-family units, and some are expanding it to multifamily units (Austin, San Francisco)
- When developing point systems, consider the dollar to kilowatt ratio; otherwise the tendency could be for high rebates and low cost effectiveness

Multifamily Modeling & Savings Projections: Lessons and Challenges

- Common challenges include:
 - Comparing actual, post-upgrade savings and modeled savings estimates, considering that the scope for upgrades can change
 - Having sufficient staff time/resources for modeling and QA/QC
- What is cost-effective for the program may be different from what is cost-effective for the property owner
- Clearly communicate to property owners that models are not perfect
- The least number of times you need to disrupt a property (with rater, contractor, etc.), the better
 - Simplify the experience for the customer where possible (San Francisco, Austin)
- Pacific Northwest National Lab (PNNL) is working on a web-based Asset Score tool in which property owners could enter information about a commercial or multifamily building and learn about the energy efficiency savings opportunities, based on the condition of the asset

Future Call Topics Poll

- Which of the following topics are of interest for future multifamily/low-income housing peer exchange calls?
 - Strategies to overcome split incentive energy efficiency issues: 93%
 - Strategies for generating demand from large building upgrades: 43%
 - Working closely with state housing agencies to make energy efficiency upgrades more affordable and accessible: 43%
 - Air quality and safety in multifamily upgrades: 21%

If you would like to share your experiences on a call or have other ideas for a call topic, contact peerexchange@rossstrategic.com.