



**Better Buildings Residential Network Peer
Exchange Call Series:
*Gold Medal Approaches for Obtaining and
Using Energy Efficiency Data***

August 11, 2016

Call Slides and Discussion Summary

Agenda

- Agenda Review and Ground Rules
- Opening Poll
- Brief Residential Network Overview
- Featured Speakers
 - **Jeremy Roberts**, General Manager, [Green Button Alliance](#)
 - **Monica Curtis**, Vice President- Energy Operations, [Wisconsin Energy Conservation Corporation \(WECC\)](#) *(Network Member)*
 - **Keith Burrows**, Founder, [Resynergy Systems](#)
- Discussion
 - What experiences does your organization have with obtaining and using energy efficiency data to evaluate and/or enhance your programs?
 - What role should measured energy savings play in the evaluation and implementation of energy efficiency programs?
 - What actions can programs and/or contractors take to leverage energy efficiency data?
 - What challenges have programs encountered to obtaining data? What strategies are available to overcome these challenges?
 - Other questions/issues related to obtaining and using energy efficiency data?
- 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

Best Practices: Green Button Alliance

Green Button Alliance



Introduction & Overview

Gold Medal Approaches for Obtaining and Using
Energy Efficiency Data (101)



Green Button Alliance

- **Vision Statement**

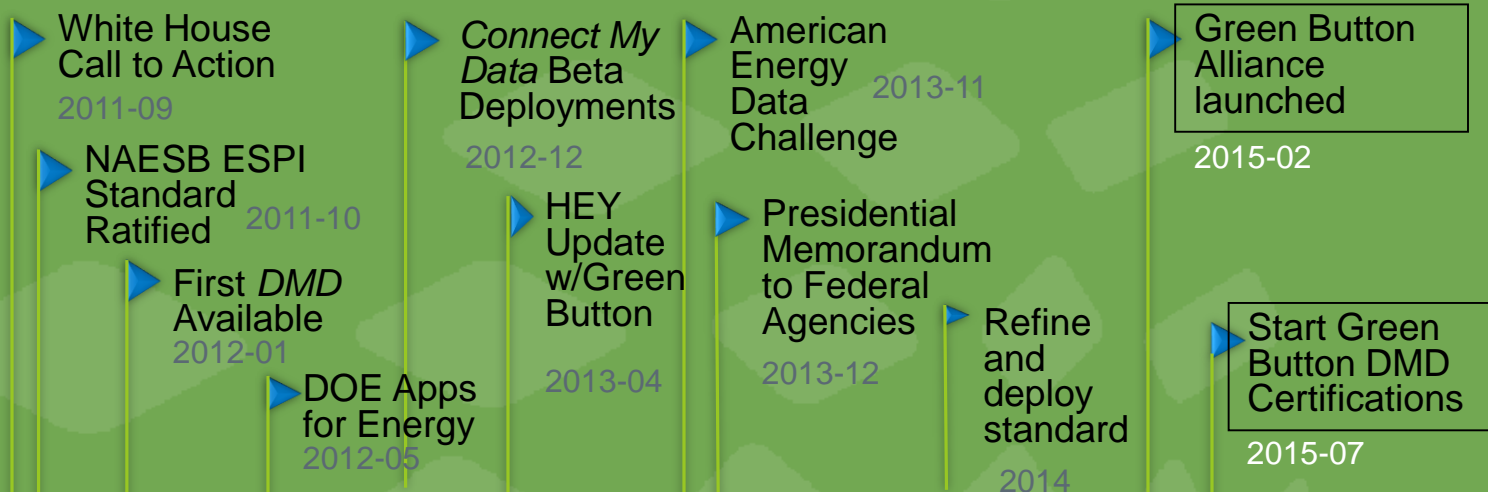
The global adoption of the Green Button standard to empower consumers with access to their energy-usage data

- **Mission Statement**

Become the single, definitive go-to-place for all things related to the Green Button ecosystem – from development to certification to marketing and education



Timeline of Activities



* Represents Customer Accounts with Access to Green Button Data – Primarily DMD; Actual Customer download numbers are not available



Green Button Alliance

Board of Directors



Green Button Alliance

- **Goals**

- Promote the **innovative use** of energy information
- Deliver **quality control and data consistency** through the development and certification of Green Button solutions
- Shape the future of **energy management and resource conservation**
- Foster **collaboration and innovation** across the global energy ecosystem

Objectives

Protect **consumer privacy**

Complement other industry standards

Real business **use cases**, standard drivers

Expand implementation to **include other resources**



Green Button Alliance

- **Near-Term Goals**

- Certification process operational for CMD
- Enhancements to NAESB standard
- Further industry adoption
- Grow and retain new members through increased leadership



Green Button Standards



Download My Data

A customer downloads their Green Button Data.



Connect My Data

A consumer can authorize a third-party service provider to receive direct access to their Green Button Data.



“Download My Data (DMD)”

- ...allows an individual or company to download their energy usage data (electric, gas, water, *etc.*) to a file that can be opened by software and applications of their choosing.
- Data Custodian **Green Button Certified Download My Data®** testing is available today.



“Connect My Data (CMD)”

- ...allows an individual or company to authorize a different company (known as a '*Third Party*') to gather their data directly from their Data Custodian without requiring the sharing of login credentials with that Third Party.
- Data Custodian **Green Button Certified Connect My Data® (CMD)** and
- Third Party **Green Button Certified Connect My Data® (CMD)** certifications are coming soon (goal: 2017Q1).



Green Button Alliance

- **Event Participation Examples**

- SGIP Annual Meetings
- Grid Modernization Forums
- DistribuTECH events
- Smart Energy Summits
- CS Week events
- Better Buildings Residential Network
Peer Exchange Calls



Green Button Alliance

Membership options

Benefits	Sponsor	Participating	Observing	Affiliate
Participation in all programs, committees, and initiatives sponsored by Green Button Alliance.	X	X	X	X
A listing on the Green Button website.	X	X	X	X
Use of the Green Button Alliance member logo for marketing and promotional activities.	X	X	X	X
Participation in marketing and advertising, seminars, publishing, technology expositions, e-mail newsletters, and other promotional activities.	X	X	X	X
Access to the Member-only website and discussion forums.	X	X	X	
Access to technical support, training, and tools that facilitate more effective design and implementation of Green Button products and systems.	10 hours	2 hours		
Enhanced listing on Green Button Alliance website for certified products.	X	X		
Enhanced listing on Green Button Alliance website for company.	X			
A vote on policy, strategic, and technical issues related to the Green Button Alliance.	X			
Position on Board of Directors.	X			



<http://greenbuttonalliance.org/join>

Green Button Alliance: Best Practices

- Before 2011, the only way for individuals to access data on energy use was their bill. With the first downloadable files available in 2012, Green Button helps people access their energy use data electronically.
- The Green Button Alliance was created to **standardize the data** and to **work with industry to engage residents** in their energy data.
 - Utilities create their own platform that allows customers to access their energy use data.
 - Many third party organizations have formed to help make it easier for individuals to interact with this data in meaningful ways.

**Program Experience:
Wisconsin Energy
Conservation Corporation
(WECC)**

Engaging with a Thermostat

Using Seasonal and Connectivity-Based
Differences in Residential Thermostat Use
to Maximize Savings

Monica Curtis

Peer Exchange Call on Energy Efficiency Data

August 11, 2016

Wi-Fi Thermostat Pilot Project

**DON'T MISS OUT
GET YOUR FREE*
PROGRAMMABLE THERMOSTAT!**
FREE INSTALLATION INCLUDED

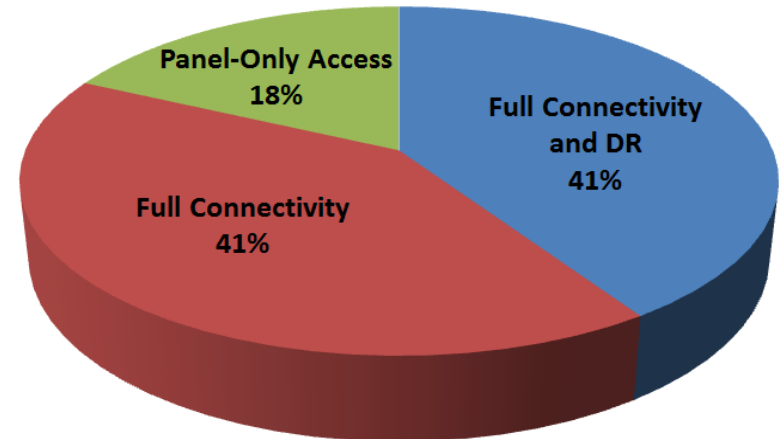
Visit michigan-energy.org
or call **877.296.4319**.

* Depending upon your HVAC system compatibility

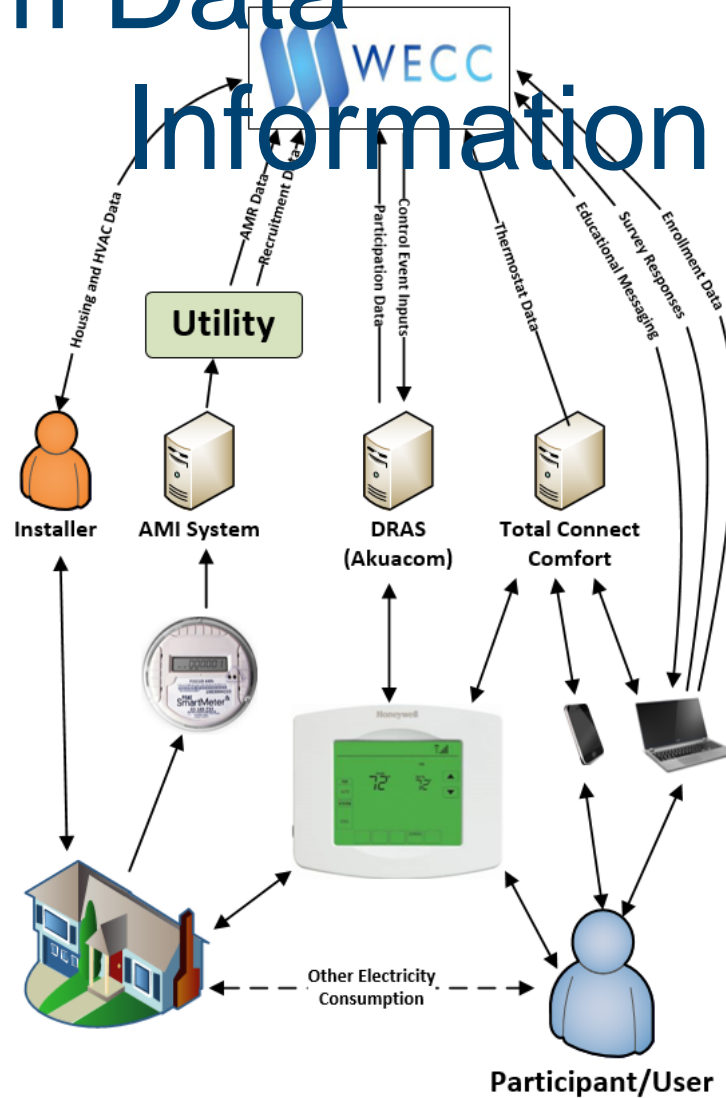
 



Level Assignments



From Data to Information



Participant-Centered Analysis

Participant

Attributes

Recruitment Data

Meter #

Utility

Rate Code

Address

Enrollment Data

Fuel Source

Wi-Fi?

Central Air?

Email

Installation Data

Install Date

System Details

Serial #

Survey Data

Demographics

User Experience

Response to Tips

Fixed Interval

AMR Data

Time →

kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh	kWh
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Timestamped

Time →

Cooling Setpoint

Heating Setpoint

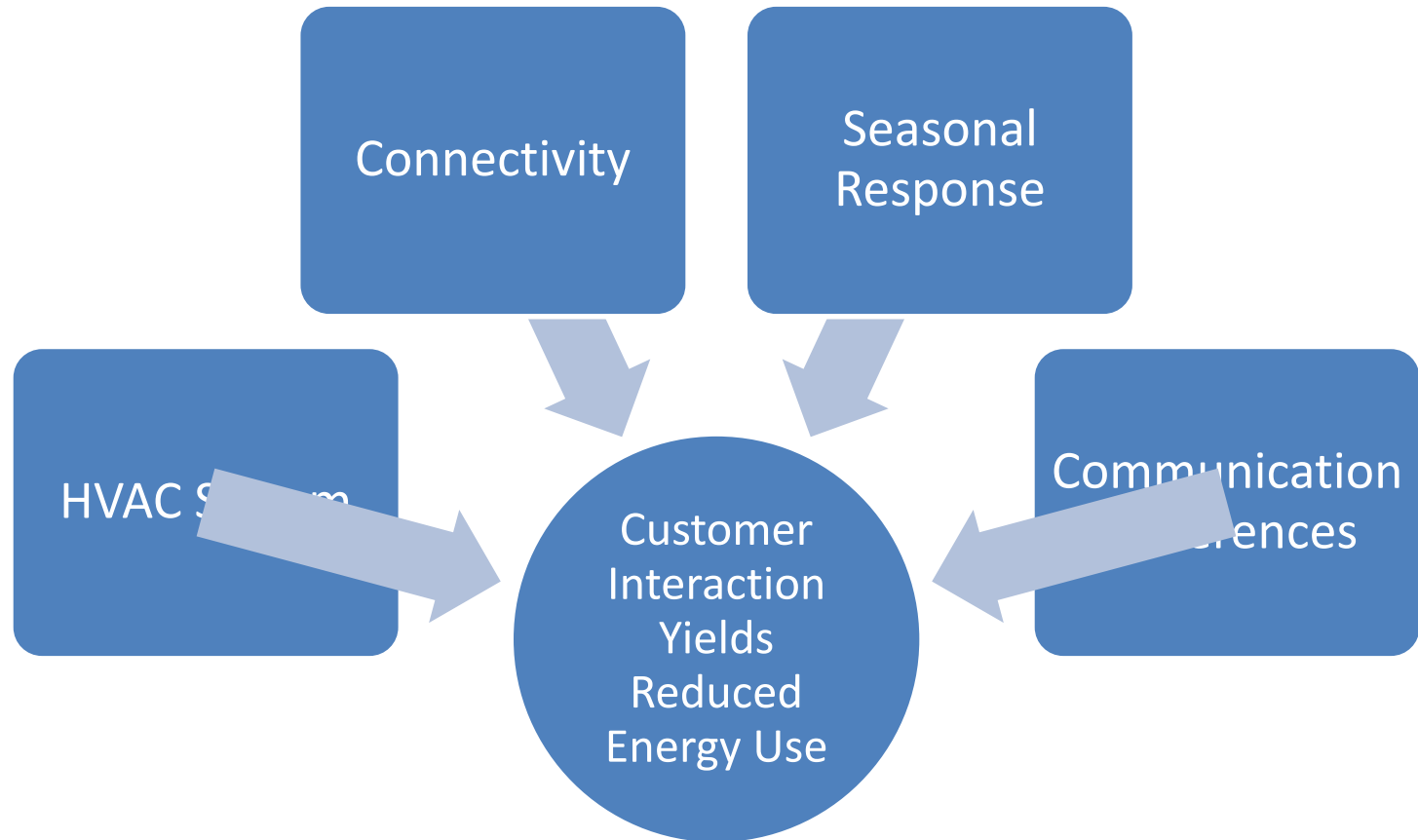
Interactions

Fan Status

Program Status

...

Data-Driven Energy Savings



For More Information

weccusa.org/pilotsresearchplanning

WECC Smart Thermostat Pilot: Program Experience

- **Make data work for you:** Smaller utilities often do not have the luxury of robust data sets to learn from their customers.
 - WECC used a Wi-Fi-enabled smart thermostat pilot program to give small, rural utilities in Michigan the opportunity to learn how costumers use energy.
- **Data is a powerful comparison tool:** Most people don't know if their consumption is high or low. Collecting and sharing energy use information lets residents know how much energy they use relative to their neighbors.
- **Look beyond energy use:** WECC's pilot program found that smart thermostats save energy and also collected data beyond energy savings on how customers interacted with their thermostats (e.g., how often people changed or disabled the settings). The insights gained informed future marketing and education strategies outside of the pilot.

Lessons Learned: Resynergy Systems

Keith Burrows, LEED-AP



RESYNERGY SYSTEMS

www.resynergysystems.com

Better Buildings Network Residential Peer Exchange

August 11th, 2016

Why Operational?

- Most homeowners don't understand how their energy consumption compares to others, or if that consumption is good or bad
- Plenty of attention given to structural efficiency and asset assessments (e.g. Home Energy Score, HERS Index)
- Measure what matters: actual building performance is key



OPEN Ratings

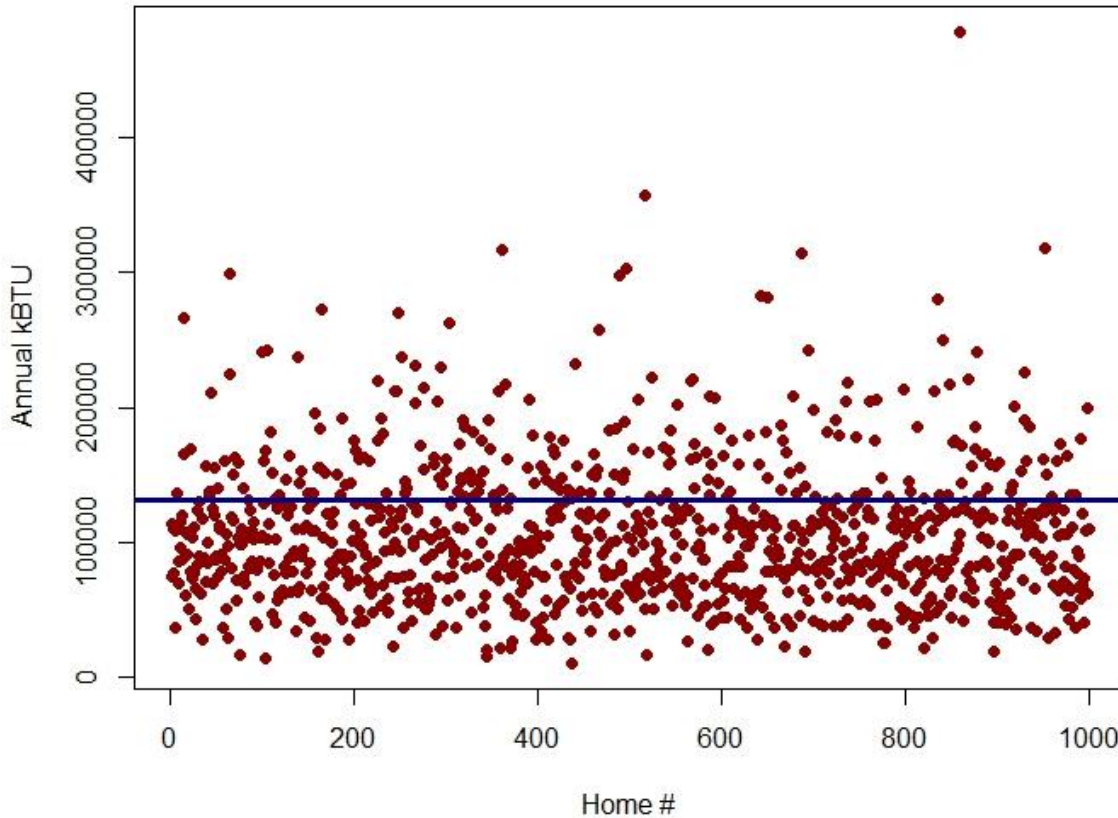
- Benchmark 12 months of actual home consumption data against statistical model projections
- Scoring scale between 0 – 100
- Normalized for home size, occupants and climate
- Model inputs include:
 - **Start date**
 - **Building type**
 - **Conditioned building area**
 - **Occupants**
 - **Effective year constructed**
 - **Home location**

Residential Efficiency Programs

- Targeted Outreach & Marketing
- Motivate Efficiency Investment
- Verification & Monitoring

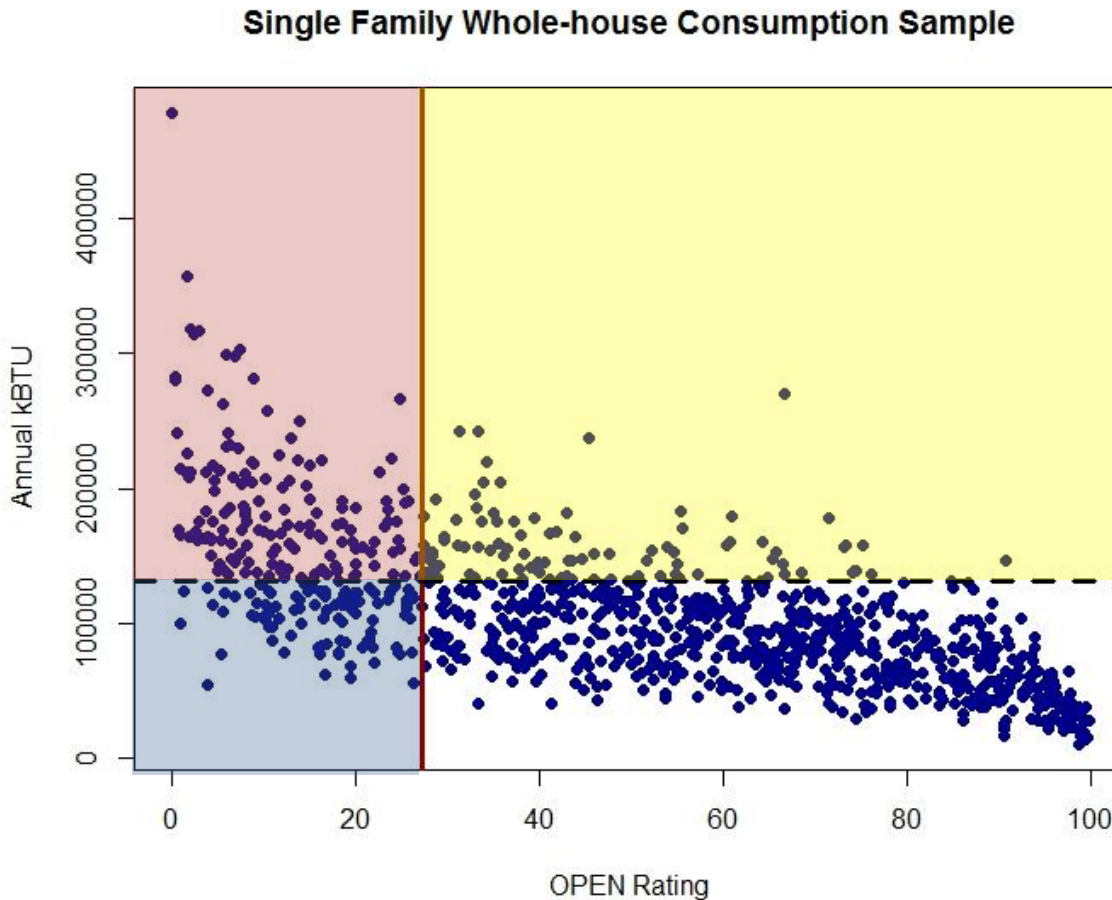
Targeted Outreach & Marketing

Single Family Whole-house Consumption Sample



- Example: annual energy consumption for 1,000 random U.S. homes
- Should we target homes based only on consumption?

Targeted Outreach & Marketing



- Targeting outreach by OPEN score provides very different results
- Some high-consumption homes perform efficiently and vice-versa
- Operational ratings can be used to optimally identify and target poor performing homes

Motivate Efficiency Investment

- An operational rating can be shared with the homeowner during a home energy assessment
- Preliminary research suggests that homeowners who receive an operational score may be more likely to invest in energy efficiency



Verification & Monitoring

- Once we have home measurements, operational ratings can be calculated remotely
- Rating a home over time can help identify home performance issues and verify effectiveness of interventions and programs



Experimental Research



Experimental Research

Your OPEN energy efficiency score:

64

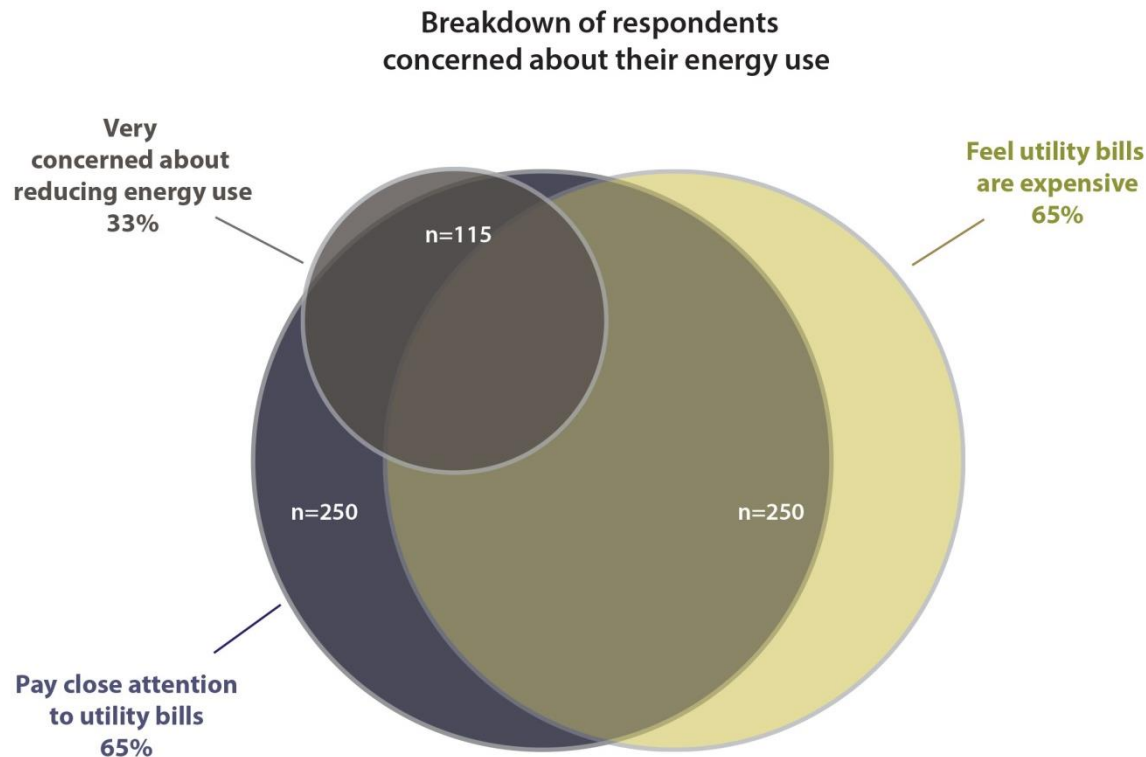
Your home energy efficiency is better than average.

36 out of every 100 homes in the United States are operating more efficiently than yours.



Preliminary Findings

- **65%** of respondents indicated they pay close attention to their utility bills each month
- **83%** of these homeowners also identified as very concerned about reducing energy use and/or felt their utility bills were expensive



Preliminary Findings

- Homeowners who identified as paying close attention to utility bills and received an OPEN score of 64 were **12% more likely** to say they would invest in air-sealing or insulation work
- We saw a positive effect for the overall population, but this was smaller (4%) and not statistically significant
- It is reasonable to assume we would see a similar results from asset rating disclosure (e.g. HERS, HES)

Preliminary Findings

- **82%** of homeowners indicated they were comfortable sharing utility data with an auditor
- **72%** of homeowners indicated they would like to know how their energy use compares to other similar homes
- **90%** of homeowners who received a score said they would take action to improve their rating if they received a score of 25 or less

Thank You

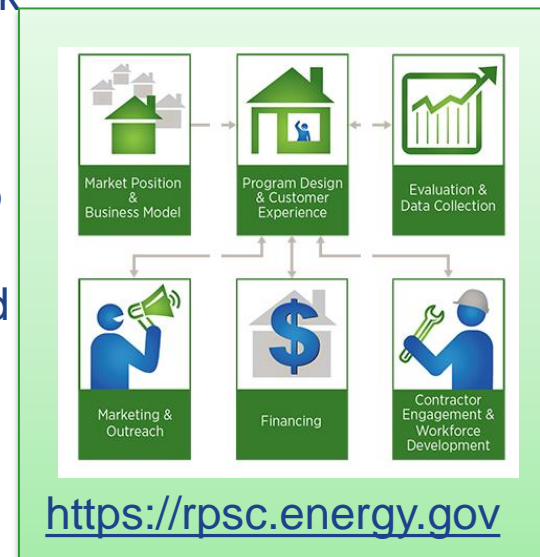
Lessons Learned: Resynergy Systems

- From an energy use perspective, large homes will have a higher consumption rate than smaller homes, but that doesn't mean the larger home is a poor performer. **Scoring homes based on performance rather than energy consumption** can identify which homes actually need energy efficiency interventions, and can help programs target outreach.
- **Data is a powerful motivator:** Preliminary research from Resynergy Systems found that when homeowners receive an operational score for their home during an audit they are more likely to invest in upgrades.
- Verification of baseline data and ongoing monitoring ensure that **upgrades result in the expected savings and performance improvements.**

Related Resources in the Residential Program Solution Center

Resources related to obtaining and using energy efficiency data:

- [Evaluation & Data Collection – Develop Resources](#) handbook provides step-by-step instructions on how to implement systems and tools to support data collection.
- “[Establish data sharing relationships as early as possible](#)” tip discussed the benefits of approaching utilities during the program planning phase, to outline shared goals, needs, and constraints.
- “[Invest in information and communications technology](#)” tip discusses how IT investments ease data collection and processing, automating otherwise time-intensive, manual processes.



- While you're there, see the latest [Proven Practices](#) post on [Tailored Messaging](#).
- The Solution Center is continually updated to support residential energy efficiency programs—[member ideas are wanted!](#)

Discussion Highlights

- As home energy use data becomes more available, third-party organizations are helping customers interact with their usage data.
 - **Target savings opportunities:** Break down data into categories such as plug loads, behavioral, and standby loads to educate customers about where investing in efficiency improvements can maximize energy savings.
 - **Increasing awareness of energy use can change behavior:** Just filling out a survey about energy use can help; Home Energy Analytics saw an average of 12% energy use reduction after customers filled out a survey about their energy behavior.
- **Considerations and limitations of data:**
 - In the multifamily sector, targeted energy use data may not be available individual units are not metered.
 - As data usage becomes available hourly or immediately, people will be able to interact real-time to change behavior.
 - IOUs and rural areas still don't have access to smart meter data and may require other methods for data collection.

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

Upcoming calls:

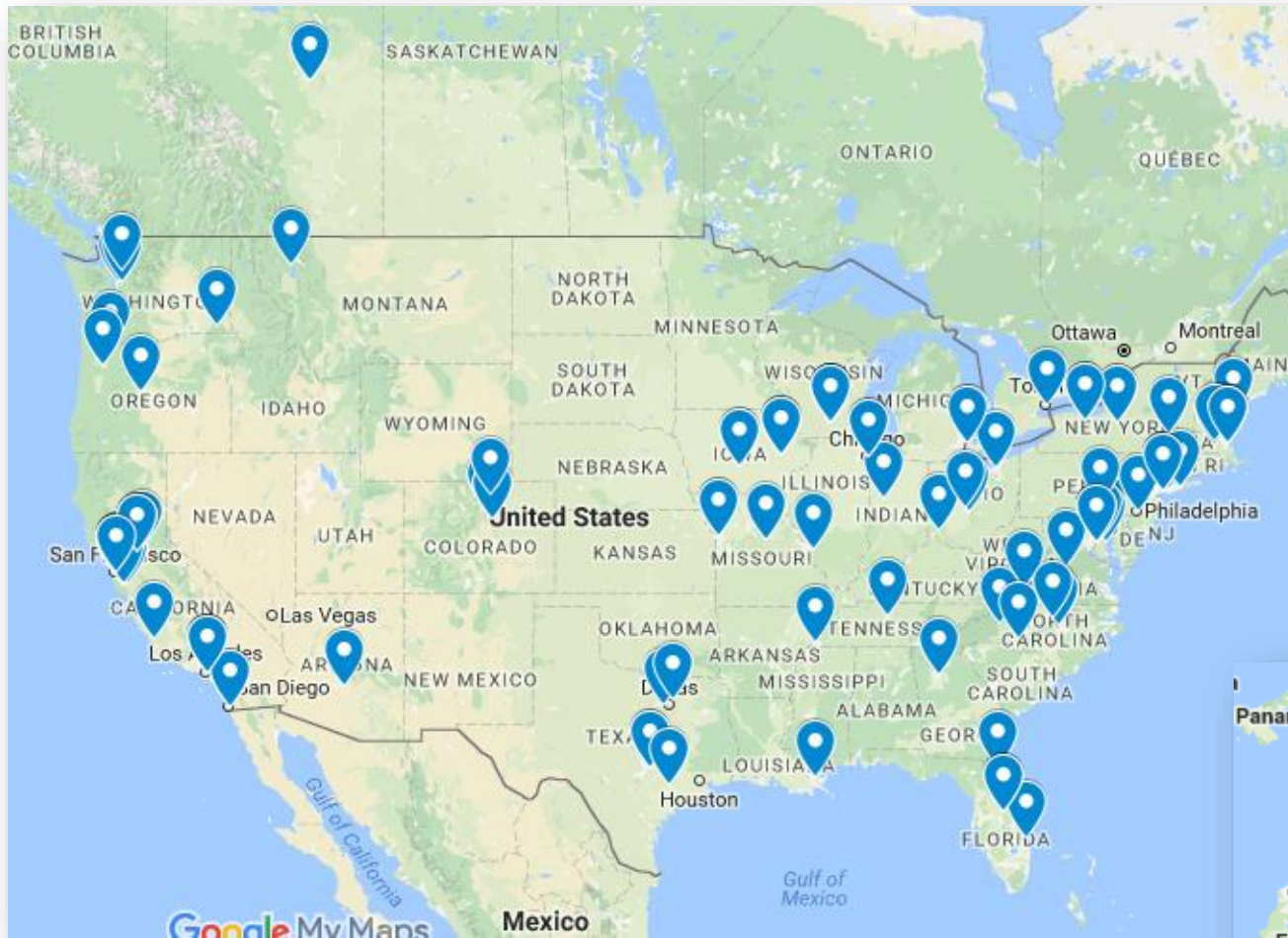
- *Summer break: no calls scheduled for August 25 or September 1*
- September 8: Roadmap for Integrating Health and Home Performance (201)
- September 15: America's Got Multifamily Talent (201)
- September 22: Home Improvement Catalyst Quarterly Call (201)

Send call topic ideas to peerexchange@rossstrategic.com

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

Addenda: Attendee Information and Poll Results

Call Attendee Locations



Call Attendees: Network Members (1 of 2)

- American Council for an Energy-Efficient Economy (ACEEE)
- AppleBlossom Energy Inc.
- Arlington County Government
- Austin Energy
- CalCERTS, Inc.
- California Energy Commission
- Center for Sustainable Energy
- City of Bellevue
- City of Cambridge
- City of Fort Collins
- City of Kansas City
- City of Plano
- CLEAResult
- Cleveland Public Power
- Columbia Water & Light
- Cool Choices
- County of San Luis Obispo
- Energy Efficiency Specialists
- EnerScore Inc.
- Home Energy Analytics, Inc.
- Institute for Market Transformation (IMT)
- Local Energy Alliance Program
- Mitsubishi Electric Cooling and Heating
- National Housing Trust/Enterprise
- New York City Energy Efficiency Corporation (NYCEEC)
- North Slope Borough - Public Works Weatherization Program

Call Attendees: Network Members (2 of 2)

- Northeast Energy Efficiency Partnerships (NEEP)
- Performance Systems Development (PSD)
- Renovate America
- Solar and Energy Loan Fund (SELF)
- Stewards of Affordable Housing for the Future
- U.S. Department of Energy (DOE)
- Wisconsin Energy Conservation Corporation (WECC)

Call Attendees: Non-Members (1 of 2)

- AEG
- AHP Homeownership Center
- Alliant Energy
- Applied Research Associates
- ASC
- BA Consult
- Bam Superior Solutions
- Bank of Montreal
- BKi
- Blue Ridge EMC
- C+C
- CA Energy Commission
- California Alternative Energy and Advanced Transportation Financing Authority (CAEATFA)
- California Public Utilities Commission
- Carbon Lighthouse
- City of Orlando
- Community Housing Partners
- Correlate Inc.
- Edge Energy
- Ekotrope
- EnerGreen Sites
- Energy Resources Group
- Environmental Design / Build
- Environmental Finance Center at UNC
- Essess, Inc.
- Flathead Electric Cooperative
- GoodCents
- Green Button Alliance
- Huntington
- ICF International

Call Attendees: Non-Members (2 of 2)

- Iowa Dept. of Administrative Services
- Lawrence Berkeley National Laboratory
- Leidos
- MA Dept of Energy Resources
- Memphis Light, Gas and Water
- MPower Oregon
- New Ecology
- North Central Texas Council of Governments (NCTCOG)
- Off The Grid Renovations
- OptiMiser
- OR Dept of Energy
- PA Public Utilities Commission
- Patriot Energy Group
- PosiGen Solar
- Purdue university
- Questline, Inc.
- Renew Financial
- Schneider Electric
- SEEL, LLC
- Snohomish PUD
- Southern Energy Management
- Southwest Energy Efficiency Project
- Sustainable Design + Behavior
- SyracuseCoE
- Tennessee Valley Authority
- Therma-Stor LLC
- U.S. EPA Region 8
- Virtuelements

Opening Poll

- Which of the following best describes your organization's experience working with energy efficiency data?
 - Very experienced/familiar – **40%**
 - Some experience/familiarity – **40%**
 - Limited experience/familiarity – **15%**
 - No experience/familiarity – **3%**
 - Not applicable – **2%**



Closing Poll

- After today's call, what will you do?
 - Seek out additional information on one or more of the ideas – **75%**
 - Consider implementing one or more of the ideas discussed – **16%**
 - Make no changes to your current approach – **9%**
 - Other (please explain) – **0%**

