Better Buildings Residential Network Peer Exchange Call Series: *Home Energy Assessments – The Good, the Bad, and the Ugly! (301)*

August 13, 2015

Call Slides and Discussion Summary

Agenda

- Call Logistics
- Opening Polls
- Residential Network and Peer Exchange Call Overview
- Featured Speakers
  - Marshall Runkel, Clean Energy Works *(Network Member)*
  - Anna Markowski, Elevate Energy *(Network Member)*
- Discussion
  - What have we learned about what works well (and doesn't)?
  - How important is standardization across a program territory?
  - How can programs and contractors work effectively together to implement effective practices?
- Closing Poll

Call Participant Locations

Better Buildings U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF ENERGY

Call Participants
Residential Network Members

- Build It Green
- CalCERTS
- City of Bellevue (WA)
- City of Holland (MI)
- City of Winter Park (FL)
- Clean Energy Works
- Connecticut Green Bank
- Duke Carbon Offsets Initiative
- Earth Advantage Institute
- Efficiency Nova Scotia
- Efficiency Vermont
- Elevate Energy
- Energy Efficiency Specialists, LLC
- Focus on Energy (WI)
- Greater Cincinnati Energy Alliance (GCEA)
- green|spaces
- Local Energy Alliance Program (LEAP)
- Metropolitan Washington Council of Government
- Midwest Energy Efficiency Alliance (MEEA)
- Monroe County (IN) Energy Challenge
- Pure Eco
- PUSH Buffalo
- Research Into Action (RIA)
- South Burlington Energy Prize
- Vermont Energy Investment Corporation (VEIC)

Call Participants
Non-members

- 1Source Energy
- Alabama Department of Economic and Community Affairs (ADECA)
- Applied Performance
- Brooklyn Green Home Solutions
- City of Fort Collins (CO)
- CLEAResult
- ComEd
- Environmental Design / Build
- Eric Kjelshus Energy
- Holy Cross Energy
- JEA (Jacksonville Electric Authority)
- MPower Oregon
- NYC Dept. of Housing Preservation and Development
- OptiMiser
- Philadelphia Gas Works
- PUSH Green
- Sacramento Municipal Utility District (SMUD)
- Sonoma Clean Power
- U.S. Department of Housing and Urban Development (HUD)

Opening Poll

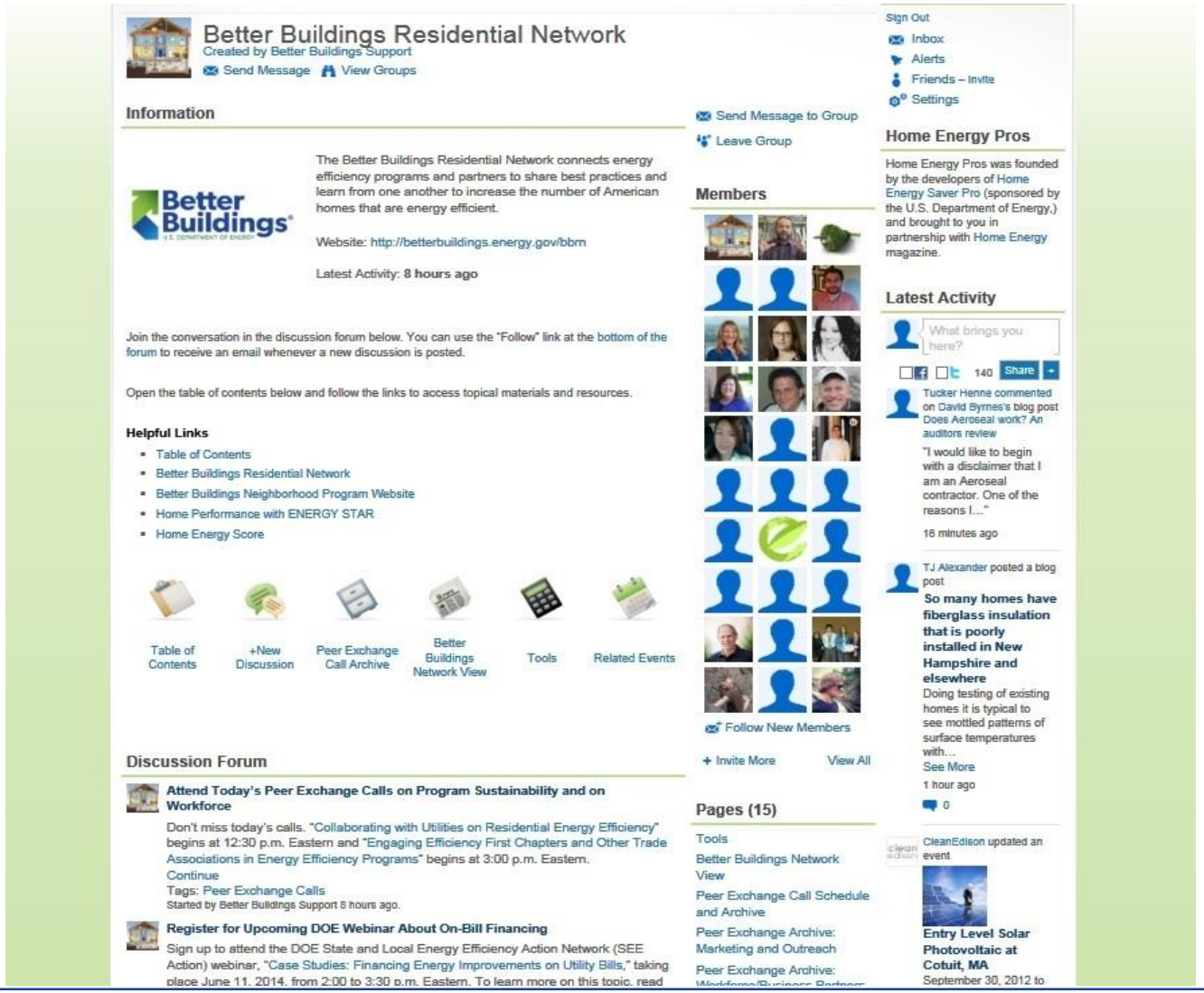
- Which of the following best describes your organization's experience with the call topic?
  - Very experienced/familiar – ***45%***
  - Some experience/familiarity – ***32%***
  - Limited experience/familiarity – ***13%***
  - No experience/familiarity – ***5%***
  - Not applicable – ***5%***

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.

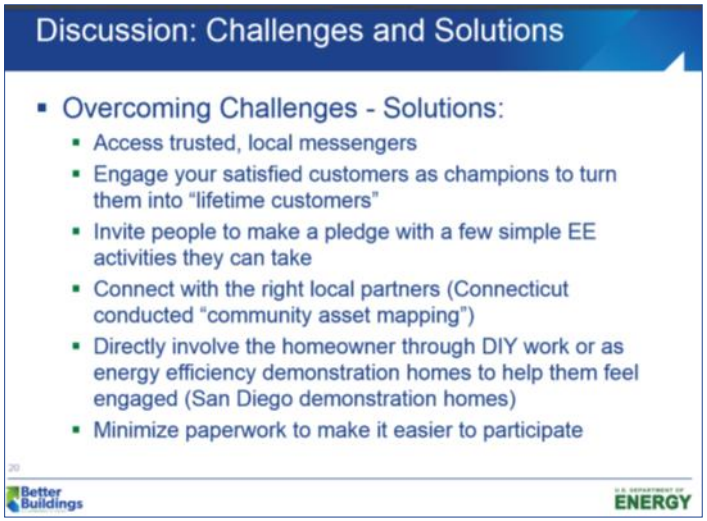
Better Buildings Residential Network Group on Home Energy Pros Website

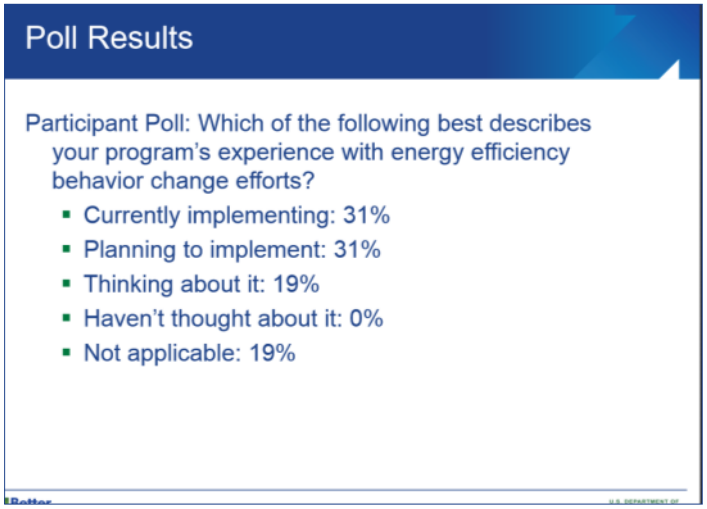


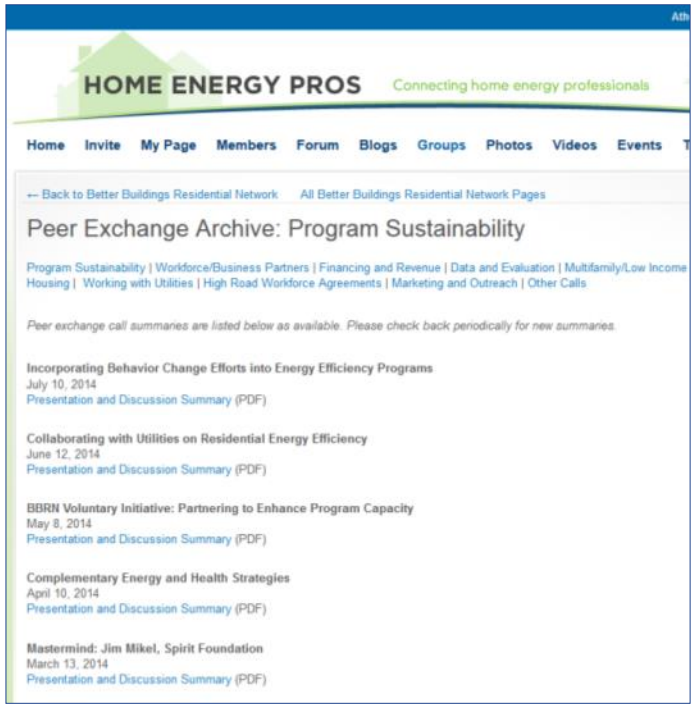
Peer Exchange Call Series

- Calls are held the 2nd and 4th Thursday of every month at 12:30 and 3:00 ET (but this is changing in October!)
- 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:
  - **Sept 10, 12:30 ET**: Mastermind: *Program TBD*
  - **Sept 10, 3:00 ET**: The Other 15%: Expanding Energy Efficiency to Rural Populations
  - **Sept 24, 12:30 ET**: Audience Segmentation and Analysis Strategies for Targeted Marketing
  - **Sept 24, 3:00 ET**: Incorporating Energy Efficiency into Multi-family, Affordable Housing Rehabilitation Projects
- Send call topic ideas to peerexchange@rossstrategic.com.

Peer Exchange Call Summaries







How do you eat an elephant? One bite at a time. A slight shift in perspective goes a long way.

Understanding how EE can solve a financial, public relation, or customer service problem for the utility is the right place to start.

Residential Program Solution Center – We Want Your Input!

Web portal of residential EE upgrade program resources, & lessons learned to plan better, avoid reinventing the wheel.

- BB Neighborhood Program, Home Performance with ENERGY STAR Sponsors+
- Provides:
  - Step-by-step guidance
  - Examples
  - Tools and Templates
  - Quick Links and Shortcuts
  - Lessons learned
  - Proven Practices posts
  - Tips
- Continually add content to support residential EE upgrade programs—**member ideas wanted!**

https://bbnp.pnnl.gov/

Opening Poll #2

- Beginning in October, we will hold one Peer Exchange call every Thursday, rather than our current schedule.
- Which of the following times usually works best with your schedule for a 90 minute call? If you have other ideas for times or comments about the schedule switch, please write them in the questions box on your dashboard.
  - 1:00 pm ET / 10:00 am PT – ***34%***
  - Any of these times – ***34%***
  - 3:00 pm ET / 12:00 pm PT – ***22%***
  - 2:00 pm ET / 11:00 am PT – ***10%***
  - None of these times/ other (please explain)

Update: Peer Exchange calls will be held Thursdays at 1:00pm ET.

Program Experience:
Marshall Runkel, Director of Contractor Services and Policy
Clean Energy Works

U.S. DEPARTMENT OF ENERGY

Marshall Runkel
Director of Contractor Service and Policy

clean energy works

100 Point Performance Check

- *Collateral*
- *Workbook*
- *EPS*

clean energy works

Collateral

clean energy works

100 POINT PERFORMANCE CHECK

Your Clean Energy Works contractor collected more than 100 custom data points on your home's performance. Upgrades below are not listed in order of priority. Consult with your contractor to decide which improvements to prioritize when getting started with Clean Energy Works.

Questions? Contact your contractor or a CEW Home Performance Advisor at 503-764-9770 or advisor@cewo.org.

HOMEOWNER GOALS

- ☐ Improve Comfort
- ☐ Save Energy
- ☐ Save Money
- ☐ Access Financing
- ☐ Reduce Carbon Emissions
- ☐ Increase Home Value
- ☐ Health & Safety
- ☐ Other _____

BUILDING ENVELOPE

Protecting your home from harsh weather elements. The cost of a drafty, 'leaky' house can add up. Reduce drafts and conditioned indoor air loss by sealing leaks in your home's exterior. Attic, wall and floor insulation keeps your home warm in winter and cool in summer!

- ☐ Air leak sealing
- ☐ Attic insulation
- ☐ Wall insulation
- ☐ Under floor insulation
- ☐ New windows
- ☐ Other _____

MECHANICAL SYSTEMS

Ensure lifetime efficiency for all heating and cooling equipment. Optimizing or replacing heating, cooling and ventilation systems makes your home more comfortable, healthier and less expensive to operate.

- ☐ Heat pump
- ☐ Furnace
- ☐ Thermostat
- ☐ Seal/insulate ducts
- ☐ Heat pump water heater
- ☐ Hot water heater
- ☐ Other _____

INSTANT ENERGY SAVINGS

Simple improvements, instant savings. Lighting and water use account for a significant portion of a home's utility bills. Switching to ENERGY STAR® qualified CFLs or LEDs is easy and affordable.

- ☐ High performance faucets
- ☐ High performance shower heads
- ☐ LEDs
- ☐ CFLs
- ☐ Other _____

INDOOR AIR QUALITY

Protect your family. Radon, moisture, VOCs and particulates lead to unhealthy indoor air that causes a host of respiratory problems. Radon is the second highest cause of lung cancer after smoking, causing an estimated 21,000 deaths per year in the United States.

- ☐ Radon check/ remediation
- ☐ Moisture remediation
- ☐ Bathroom fan
- ☐ Kitchen fan
- ☐ CO detector
- ☐ Other _____

SEISMIC PROTECTION

Reduce your losses. Homes may be vulnerable to structural failure if not bolted to their foundations, especially if built before 1974. Severe ground-shaking during an earthquake may cause a home to shift off its foundation or collapse entirely.

- ☐ Seismic retrofit
- ☐ Gas shutoff valve
- ☐ Other _____

SOLAR

Make your own energy. Combined with energy-efficient improvements, solar PV and solar hot water heating increases independence and resilience, and is cost effective with applied tax credits, utility and Energy Trust of Oregon incentives and Clean Energy Works' financing.

- ☐ Solar system design
- ☐ Solar PV
- ☐ Solar site assessment
- ☐ Solar hot water
- ☐ Other _____

APPLIANCES

Save money and energy. New ENERGY STAR® energy-efficient models cost half as much to run as those built before 1993. Recycle your old refrigerator or freezer through Energy Trust of Oregon for $20 or $40 cash back, with free pickup!

- ☐ Energy Star appliances
- ☐ Refrigerator recycling
- ☐ Other _____

Identifies homeowner goals and existing characteristics of home. Contractors co-brand.

clean energy works

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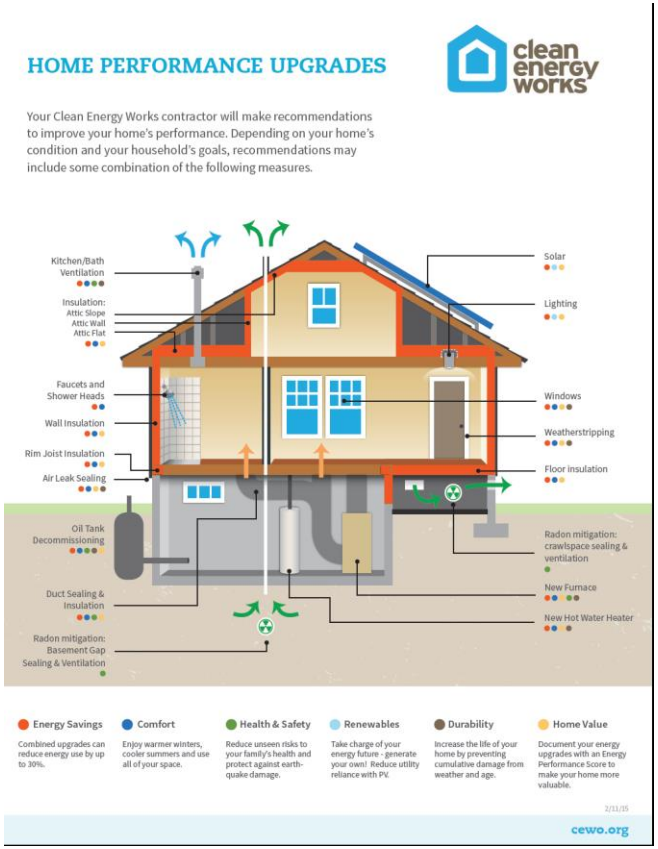
clean energy works

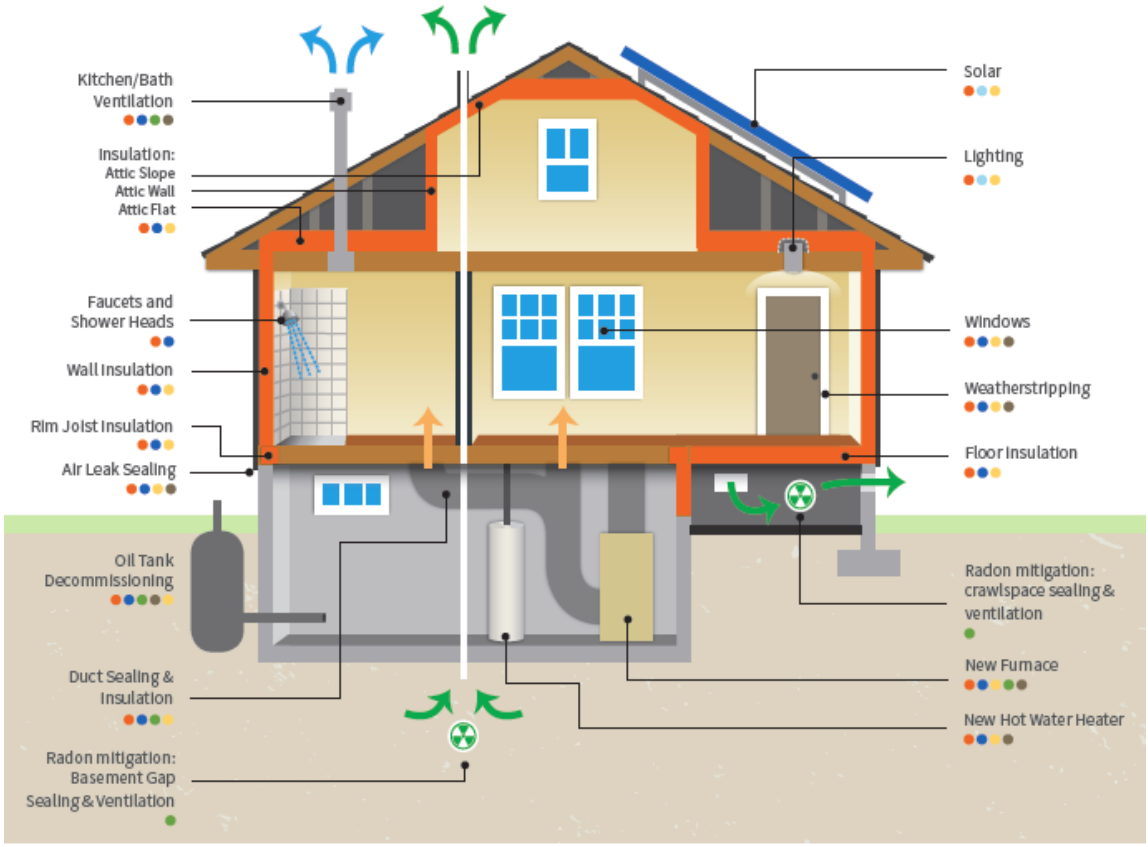
Collateral



House diagram provides a “sketch pad” for contractors to discuss potential upgrades. Categorizes benefits of upgrades into Energy Savings, Comfort, Health & Safety, Renewables, Durability and Value

HOME PERFORMANCE UPGRADES

Your Clean Energy Works contractor will make recommendations to improve your home's performance. Depending on your home's condition and your household's goals, recommendations may include some combination of the following measures.



Energy Savings
Combined upgrades can reduce energy use by up to 30%.

Comfort
Enjoy warmer winters, cooler summers and use all of your space.

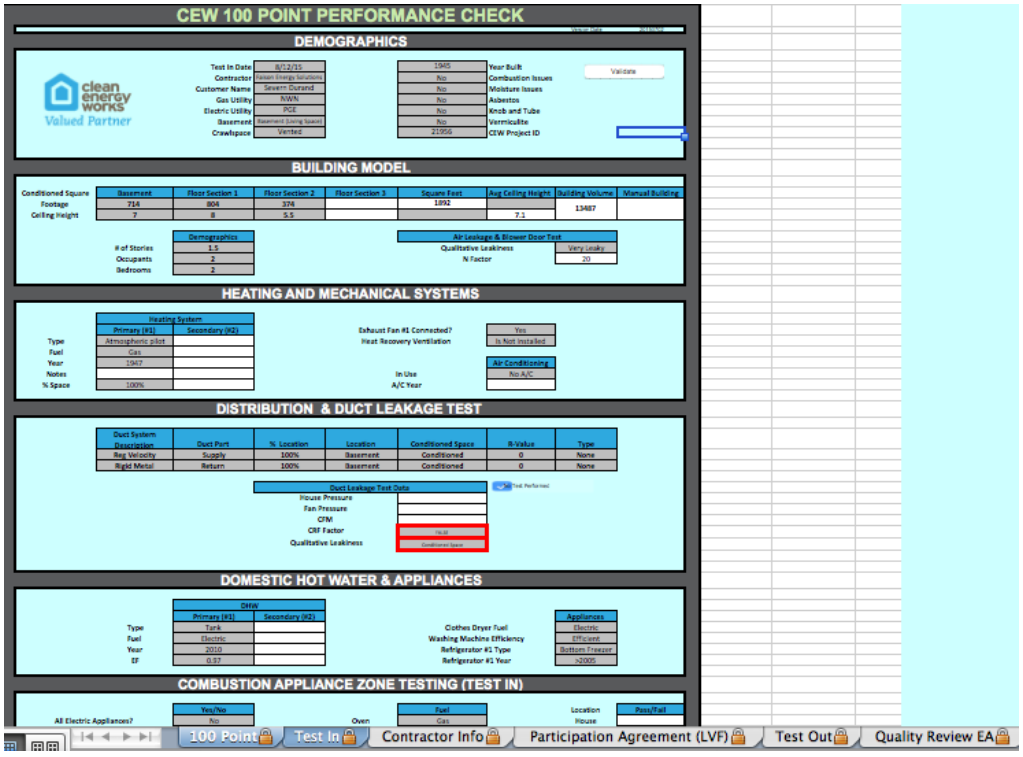
Health & Safety
Reduce unseen risks to your family's health and protect against earthquake damage.

Renewables
Take charge of your energy future - generate your own! Reduce utility reliance with PV.

Durability
Increase the life of your home by preventing cumulative damage from weather and age.

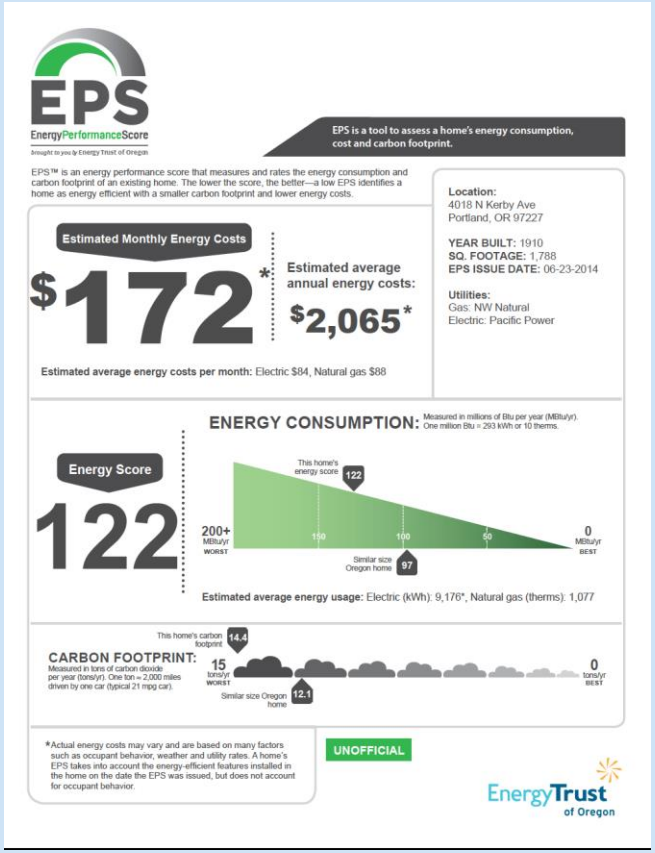
Home Value
Document your energy upgrades with an Energy Performance Score to make your home more valuable.

Workbook



Collect home data in an Excel workbook that is linked to bidding, lending and QC processes. Workbook is HPXML compliant that makes it possible to aggregate data and transfer to others.

EPS



Workbook data transfers to another entity that creates an EPS for every homeowner.

EPS

EPS
EnergyPerformanceScore
Brought to you by Energy Trust of Oregon

EPS is a tool to assess a home's energy consumption, cost and carbon footprint.

+ Energy-efficient features that contribute to this home's score:

Attic Insulation: None	Wall Insulation: None	Floor Insulation: None
Envelope Tightness: 8762 cfm50	Windows: Single Pane	Lighting: 35% Efficient
Space Heating: Furnace - Efficient	Water Heating: Tank Standard	

What was considered in developing this score?
A home's EPS is based on the energy-efficient features listed above, as well as the home's size and specific design. Improvements, additions and updates made to the home after the issue date of this score sheet may change the energy score, carbon footprint and estimated energy costs for this home. EPS does not factor in occupant behavior, and as a result, your actual energy costs may vary.

USEFUL TERMINOLOGY

Energy-efficient features
R-Value: Rates the efficiency of insulation; a higher R-Value signals improved performance of ceiling, wall and floor insulation.

U-Value: Indicates the rate of heat loss in windows; a lower U-Value demonstrates the effectiveness of a window, resulting in a more comfortable home.

CFM50: Measures air leakage in Cubic Feet per Minute at 50 Pascals; this measurement is taken during a blower door test. The higher the measurement number, the more likely there is a high rate of air leakage occurring in your home.

EF: Energy Factor for water heaters or appliances; the higher the EF, the more energy efficient the model.

Energy score
EPS is displayed in millions of Btu per year.

A Btu or British Thermal Unit is a measurement of the heat content of fuel. One Btu ~ the energy produced by a single wooden match.

Carbon footprint
A home's energy consumption affects carbon emissions and impacts the environment. The carbon calculation for EPS is based on emissions from the utility-specific electricity generation method and natural gas consumption of the home at the time of this report.

Similar size Oregon home
Energy: The energy consumption of an average Oregon home of similar square footage, heating type and geographical region.

Carbon: The carbon footprint of an average Oregon home of similar square footage, heating type, geographical region and utility mix.

Brought to you by Energy Trust of Oregon
Energy Trust developed EPS to educate about energy efficiency and provide a tool to help inform energy-efficiency improvement decisions.

For more information about EPS, contact Energy Trust at **1.866.368.7878** or visit **www.energytrust.org/eps**.

EnergyTrust of Oregon

Energy Trust of Oregon 421 SW Oak St, Suite 300, Portland, Oregon 97204 1.866.368.7878 503.546.6862 *fax* **energytrust.org**

Energy Trust of Oregon is an independent nonprofit organization dedicated to helping utility customers benefit from saving energy and tapping renewable resources. Our services, cash incentives and energy solutions have helped participating customers of Portland General Electric, Pacific Power, NW Natural and Cascade Natural Gas save on energy costs. Our work helps keep energy costs as low as possible, creates jobs and builds a sustainable energy future. 11/12

Provides a preliminary "unofficial" to all and final "official" asset rating to homeowners that make upgrades through CEW.

clean energy works

Program Experience: Clean Energy Works

- When Clean Energy Works began, each participating homeowner received a full Home Performance with ENERGY STAR audit.
  - Clean Energy Works saw the need for reduced pre-sales costs and increased conversion rates. The 100 Point Performance Check was developed out of that need.
- The 100 Point Performance Check can be branded with a contractor logo. Some contractors may still choose to provide a longer report as well.
- The program has a “grow as you go” data strategy:
  - The first visit, the contractor collects a snapshot of data.
  - If the customer decides to go forward with more assessment, another visit has expanded evaluations (e.g., blower door test).
  - Contractors currently collect data in Excel, but future forms will be online and fillable on a tablet.

Program Experience: Clean Energy Works

- As part of the program, homeowners receive an Energy Performance Score (EPS).
  - The EPS is “unofficial” after the first assessment; an official EPS is given when the homeowner moves forward with the process.
  - The EPS gives estimated monthly energy costs, estimated energy use, a carbon use score, and how that information compares to similar homes.
  - The data to develop the EPS information is based on estimated energy use based on characteristics of the home, rather than on actual consumption information.

Lessons Learned:
Anna Markowski, Community Projects Manager
Elevate Energy

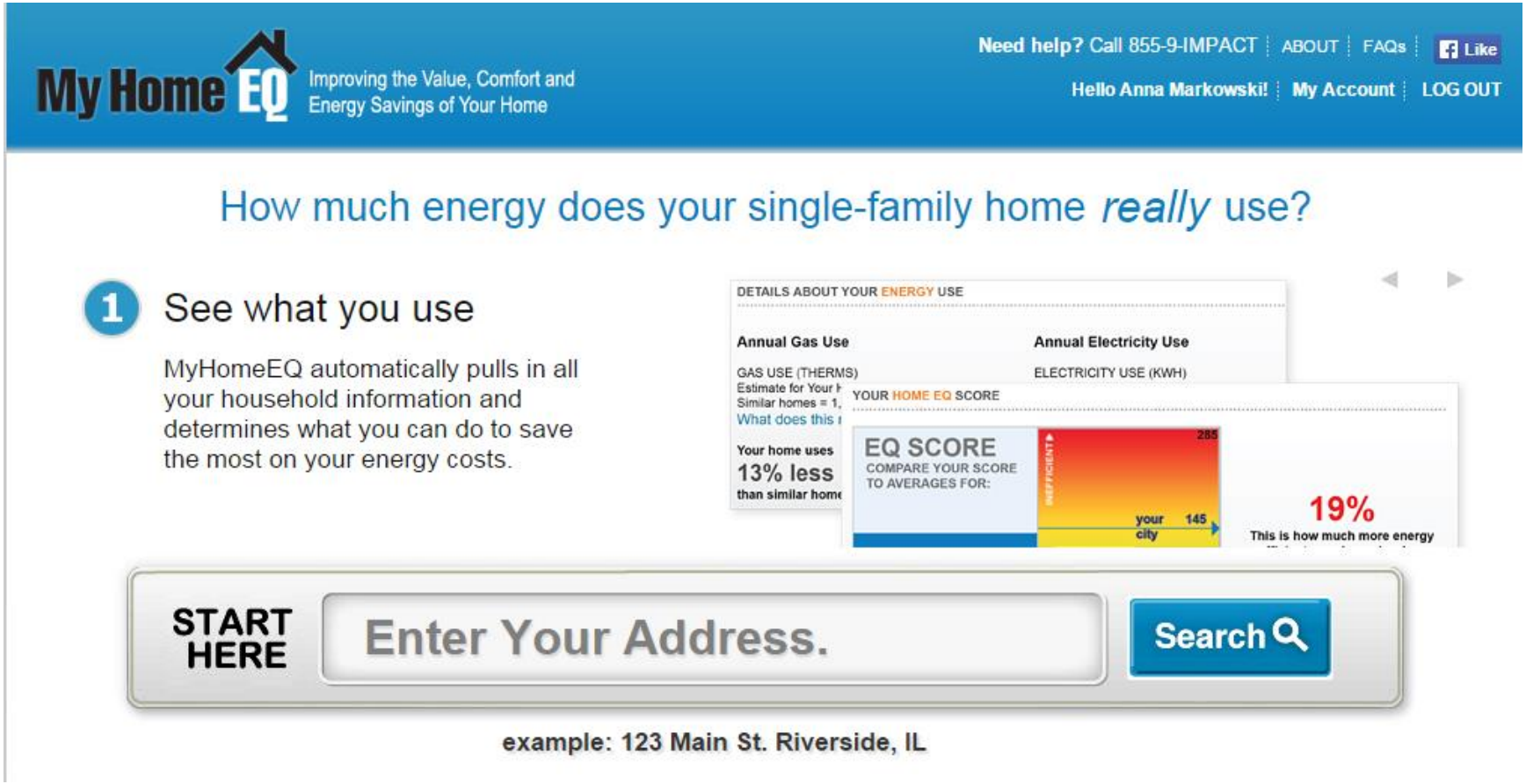
U.S. DEPARTMENT OF ENERGY

Elevate Energy

MyHomeEQ for Contractors

ELEVATE ENERGY
Smarter energy use for all

Our Tool - MyHomeEQ



Report Generated

Blower Door Test Results

A blower door test measures how much air moves in and out of your home, in "cubic feet per minute", or CFM. Too much air movement in/out of a home is the most common cause of high energy costs, drafts and air quality issues.

Before CFM	4200
After CFM (estimate)	2100
CFM reduction	50%
Building Volume (CuFt)	32400
Rating	Good

Primary areas for improvement

Combustion Safety Test Results

We tested your appliances to ensure they're venting correctly.

Combustion Appliances	Safety Test
Heating System Furnace	Pass/Safe
Domestic hot water heater	Pass/Safe
Other	

Basic Option: Recommended Improvement Package

This option is meant to include the most cost-effective energy saving improvements for your home while also making the project eligible for available rebates and **IHP Silver Certification**.

For details on suggested improvements see any additional documents provided by your contractor, or contact them with any questions.

Improvement	Estimated Cost
Air Seal and Insulate Your Attic	$ 3000
TOTAL	$3000.00

Additional Detail on Proposed Work

TOTAL Basic Recommended Package Cost with Rebates

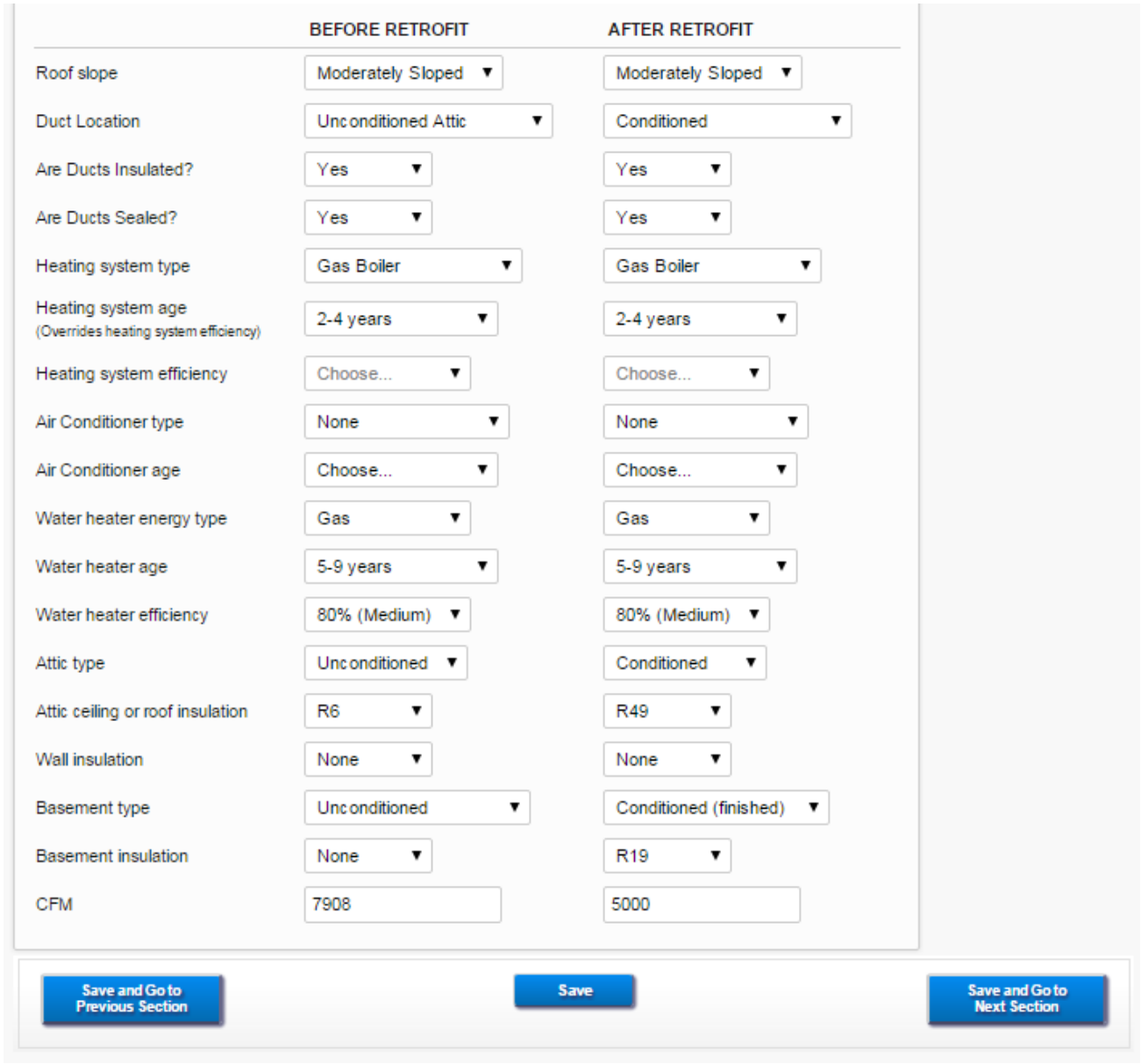
Total project cost before rebates	$	3000
Gas utility rebate (estimate)	$	0.00
Other rebate amount	$	
Total cost to homeowner	$	3000.00

TOTAL recommended basic improvements will, on average, achieve an estimated 15% energy savings

880 kWh 9 % electric
499 therms 21 % gas
Total estimated annual savings $ 587

Estimates calculated using the Deemed Savings method.

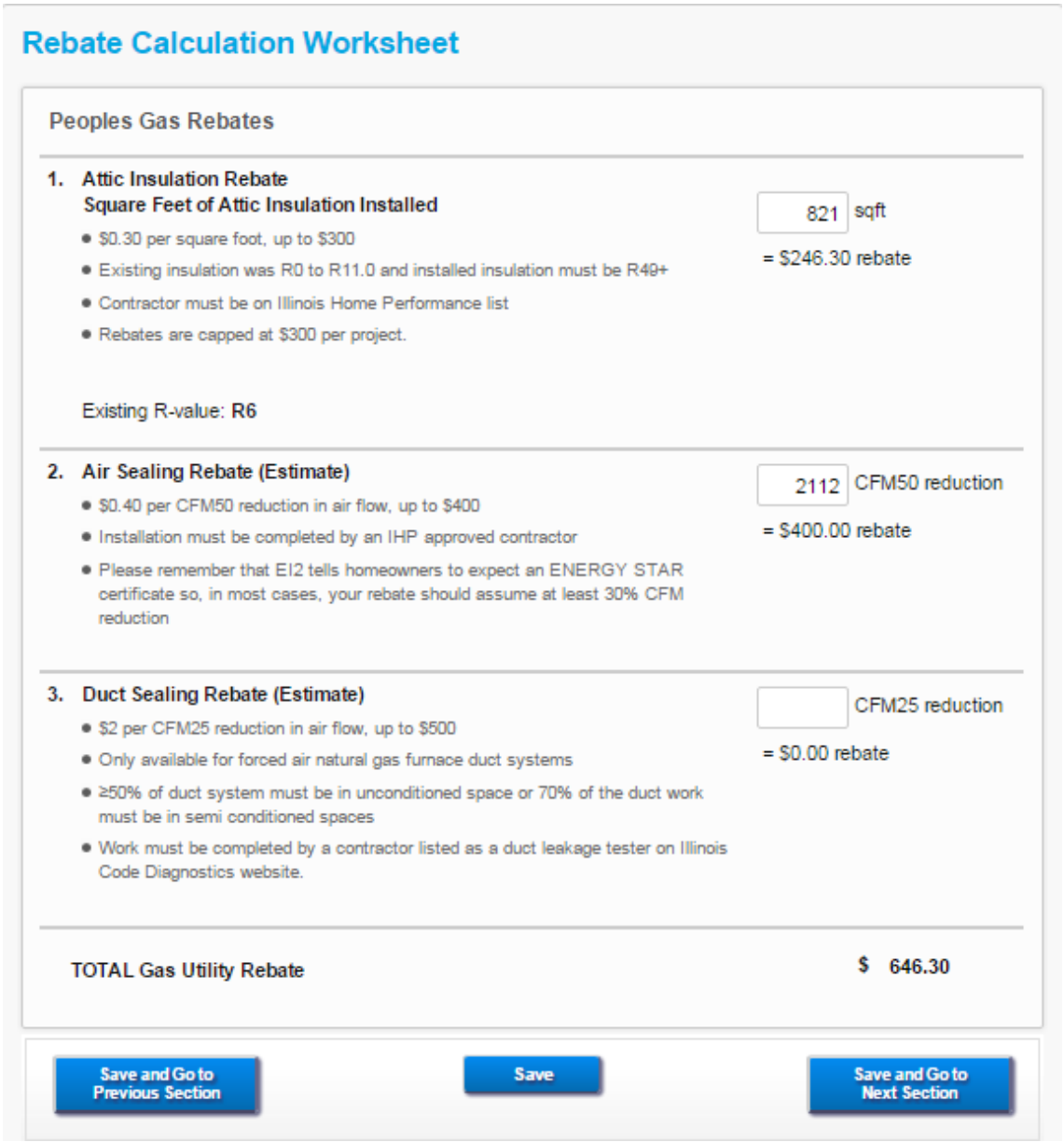
Sample of Information Added



	BEFORE RETROFIT	AFTER RETROFIT
Roof slope	Moderately Sloped	Moderately Sloped
Duct Location	Unconditioned Attic	Conditioned
Are Ducts Insulated?	Yes	Yes
Are Ducts Sealed?	Yes	Yes
Heating system type	Gas Boiler	Gas Boiler
Heating system age (Overrides heating system efficiency)	2-4 years	2-4 years
Heating system efficiency	Choose...	Choose...
Air Conditioner type	None	None
Air Conditioner age	Choose...	Choose...
Water heater energy type	Gas	Gas
Water heater age	5-9 years	5-9 years
Water heater efficiency	80% (Medium)	80% (Medium)
Attic type	Unconditioned	Conditioned
Attic ceiling or roof insulation	R6	R49
Wall insulation	None	None
Basement type	Unconditioned	Conditioned (finished)
Basement insulation	None	R19
CFM	7908	5000

Save and Go to Previous Section | Save | Save and Go to Next Section

Self Calculating Rebate Section



Rebate Calculation Worksheet

Peoples Gas Rebates

1. Attic Insulation Rebate

Square Feet of Attic Insulation Installed

- $0.30 per square foot, up to $300
- Existing insulation was R0 to R11.0 and installed insulation must be R49+
- Contractor must be on Illinois Home Performance list
- Rebates are capped at $300 per project.

821 sqft

= $246.30 rebate

Existing R-value: **R6**

2. Air Sealing Rebate (Estimate)

- $0.40 per CFM50 reduction in air flow, up to $400
- Installation must be completed by an IHP approved contractor
- Please remember that EI2 tells homeowners to expect an ENERGY STAR certificate so, in most cases, your rebate should assume at least 30% CFM reduction

2112 CFM50 reduction

= $400.00 rebate

3. Duct Sealing Rebate (Estimate)

- $2 per CFM25 reduction in air flow, up to $500
- Only available for forced air natural gas furnace duct systems
- ≥50% of duct system must be in unconditioned space or 70% of the duct work must be in semi conditioned spaces
- Work must be completed by a contractor listed as a duct leakage tester on Illinois Code Diagnostics website.

CFM25 reduction

= $0.00 rebate

TOTAL Gas Utility Rebate **$ 646.30**

Save and Go to Previous Section | Save | Save and Go to Next Section

Questions? -- Stay in Touch

Anna Markowski
Community Projects Manager

Kimberly Loewen
Manager of Construction Services

ElevateEnergy.org

@elevate_energy

Facebook/elevateenergy

Lessons Learned: Elevate Energy

- Elevate Energy developed MyHomeEQ partially based on customer feedback about assessment reports.
  - Some customers received reports that were too short and could be about “any home.”
  - Other customers received assessment reports that were too long; too much information overwhelmed them.
- Elevate Energy does not require the contractors with which it works to use MyHomeEQ, but it is highly encouraged.
  - In some areas, contractors were excited to have a tool; in other areas, contractors still prefer to use their own forms.
  - In future versions, contractors can brand the tool with their logos.
- Customers receive a report with customized rebate information and steps needed to reduce their energy use by at least 15%.

Discussion Questions

- What have we learned about what works well (and doesn't)?
- How important is standardization across a program territory?
- How can programs and contractors work effectively together to implement effective practices?

Discussion: Best Practices – Customer Engagement

- Keep the cost of the initial assessment low to bring customers in.
  - Assessments can cost $400-$700 per home, but that can be difficult for homeowners to justify without other incentives.
  - Elevate Energy charges $99 for the assessment; Clean Energy Works does not charge for the assessment.
- Clearly communicate the program and results to customers.
  - Make assessment reports concise and easy to understand.
  - Communicate the value of your home performance advisors.
  - Communicating some aspects of energy savings can be difficult, such as energy differences across two widely different seasons. For example, a mild winter was immediately followed by the “Polar Vortex” in the Midwest. Customers who made efficiency upgrades in between may have seen higher energy costs in the second year, and this can be sometimes difficult to explain.
  - Focus on what upgrades the customer wants to do—in addition to what the assessment suggests the homeowner should do.

Discussion: Best Practices – Contractor Engagement

- Keeping costs for the customers low requires coordination with the contractors.
  - When incentives are lower, customers are less likely to pay for a high cost assessment.
  - Contractors may cover some of the assessment fee if programs feed them leads.
  - Communicating possible energy/money savings can strengthen conversion rates, even when incentives are low.
- Work with contractors on assessment tools and standardized reports
  - What works best for them? What kind of format do they want to enter in data? (e.g., Excel, paper, tablet)
  - Can you customize the form for different contractor logos?

Closing Poll

- After today's call, what will you do?
  - Seek out additional information on one or more of the ideas – ***50%***
  - Consider implementing one or more of the ideas discussed – ***33%***
  - Make no changes to your current approach ***– 28%***
  - Other (please explain) – ***0%***

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