June 18, 2015

Call Slides and Discussion Summary
Agenda

- Call Logistics and Introductions
- Residential Network and Peer Exchange Call Overview
- Overview of DOE Staged Upgrades Initiative
  - Steve Dunn, U.S. Department of Energy
- Participant Poll
- Featured Presenters
  - Jennifer Parsons, United Illuminating Company, Southern Connecticut Gas, and Connecticut Natural Gas (Energize Connecticut)
  - Sarah Edwards, Midwest Energy Efficiency Alliance (Iowa HVAC SAVE Program)
- Discussion
  - What are challenges, needs and opportunities to advance staged upgrades in the home upgrade market?
  - Which transaction points offer the best opportunities to market staged upgrades?
  - What approaches can be employed for working with trades, manufacturers, and distributors?
  - What role should DOE play to help develop staged upgrade markets and programs?
- Closing Polls
Call Participants (1 of 2)

- Arlington County, VA
- Association for Energy Affordability
- Association of Polish Electrical Engineers
- Baltimore Gas & Electric, MD
- Boulder County, CO
- Building Performance Institute (BPI)
- Cascadia Consulting Group
- Center for Energy and Environment, MN
- City and County of Denver, CO
- City of Plano, TX
- Consortium for Energy Efficiency (CEE)
- City Utilities of Springfield, MO
- Clean Energy Works, OR
- CLEAResult
- Columbia Water & Light, MO
- Confluence Communications
- Conservation Services Group
- Ecology Action, CA
- Economic Opportunity Studies, Inc.
- Efficiency Nova Scotia
- EfficiencyOne
- Elevate Energy
- Environmental Design / Build
- Eversource
- Florida Solar Energy Center
- Focus on Energy
- Greater Cincinnati Energy Alliance
- Habitat for Humanity
- ICF International
- Island Institute
- JP Consulting, IL
- Leidos Engineering
Call Participants (2 of 2)

- Local Energy Alliance Program (LEAP), VA
- Maine Market Monitor
- Massachusetts Dept. of Energy Resources
- Midwest Energy Efficiency Alliance
- Mitsubishi Electric Cooling and Heating
- North American Insulation Manufacturers Association
- Natural Resources Defense Council (NRDC)
- New Jersey Natural Gas
- New York City Mayor's Office of Sustainability
- New York State Energy Research and Development Authority (NYSERDA)
- Omstout Consulting
- Opportunity Council
- Organizing in the Third Industrial Revolution
- Pearl Home Certification
- Performance Systems Development (PSD)
- Puget Sound Energy
- Purdue University
- Snugg Home
- United Illuminating Co./UIL Holdings Corp.
- Thousand Home Challenge
- TRC Energy Services
- Vermont Energy Investment Corporation (VEIC)
- Yolo County Housing, CA
Call Participant Locations
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

### 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/ebmn](http://betterbuildings.energy.gov/ebmn)

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

#### 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.

**Register for Upcoming DOE Webinar About On-Site 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, need:

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### Home Energy Pros

Home Energy Pros were founded by the developers of Home Energy Savers 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?](#)**
- **[Tell me more comments on classic mystica blog post](#)**
- **[Does Vermiculite work? An audit review](#)**
- **[I would like to begin with a disclaimer that I am an install contractor. One of the reasons I...](#)**

16 minutes ago

- **[T. Alexander posted a blog post](#)**
  
  So many homes have fiberglass insulation that is poorly installed in New Hampshire and elsewhere.

Using testing of existing homes it is typical to see minimal patterns of surface temperatures with... 

30 minutes ago

1 hour ago

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**View All**
Peer Exchange Call Series

- Calls are held the 2nd and 4th Thursday of every month at 12:30 and 3:00 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:
  - June 25, 12:30 ET: Creative Financing Approaches for Residential Energy Efficiency Programs
  - June 25, 3:00 ET: Strengthening the Front Lines: Sales Training and Continuing Education for Contractors
  - July 9, 12:30 ET: Social Media and Messages that Matter: Top Tips and Tools
  - July 9, 3:00 ET: The Dog Days of Summer: Capitalizing on the Pet Market
- Send call topic ideas to peerexchange@rossstrategic.com.
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
  - Templates
  - Lessons learned
  - Best practices
  - Tips
- Continually add content to support residential EE upgrade programs—**member ideas wanted!**

https://bbnp.pnnl.gov/
Overview of DOE Staged Upgrades Initiative
Steve Dunn, U.S. Department of Energy
Staged Upgrades as a Strategy for Residential Energy Efficiency

Steve Dunn
U.S. Department of Energy

Better Buildings
Residential Network
Peer Exchange

June 18, 2015
A new RBI deployment initiative that will:

- Help DOE accelerate residential energy savings from one or more ‘simple to implement’ measures that can be deployed and scaled to a high volume of transactions
- Capture and leverage transactions that are normally happening in the course of homeownership and contractor trades / businesses
- Deliver greater value and superior energy performance for market actors and consumers
- Provide a pathway to completing measures over time, and whole home programs such as Home Performance with ENERGY STAR
Why Staged Upgrades?

Staged upgrades can help homeowners:

• Get greater energy savings from work they are already planning

• Identify complementary measures to save money and achieve additional benefits (comfort, health, cost savings)

• Get on a path to whole home upgrades over time to achieve greater energy savings
Vision: Tap into the transactional moments of homeownership

- **Buy House**
- **Maintenance and Repairs** (e.g., windows, siding, basements)
- **Equipment Replacement** (e.g., HVAC, water heater, appliances)
- **Family addition: remodeling**
- **Tune up/repair equipment**
- **Sell/Buy/Refinance House**
Staged Upgrade Initiative: Opportunity to Leverage High-Volume Markets

Annual home renovations and repairs:
- **14.2 million** projects
- **$131 billion** market

Reactive Replacement
- HVAC - $15 billion
- Roofs - $19 billion
- Appliances - $4 billion
- Siding - $4 billion

Proactive Performance
- Windows/Doors - $10 billion
- Insulation - $1.5 billion
- Home Performance - $0.5 billion

**Opportunity:** If ONLY 5% of these transactions were 5% more energy efficient, it would result in savings of over 1.4 TBtu and $30 million annually

Source: Harvard University Joint Center for Housing Studies, 2013.
SUI Framework (proposed)

DOE Framework
- Develop guidance, tools and resources to support multi-measure approaches
- Engage consumers via programs, trades and other market actors
- Test delivery channels and approaches, develop trade-specific resources and business models

Pathway for continuous improvement

Single measure improvement (5-10% savings)

Systems of measures (10-20% savings)

Whole house comprehensive improvement (>20% savings)

Influencing the Stages along the Path
- Provide technical support for installation improvements (e.g., field guides, technical data on measures and climate-specific savings opportunities)
- Develop and test tools, resources and delivery channels to provide recommendations to consumers (e.g., Home Energy Score, 3rd party software tools, contractors, utilities, energy raters, inspectors etc.)
- Analyze and develop measure packages, business models and program design strategies
Initial Focus: Leveraging the HVAC Transaction

- $15 billion market
- Seasonal services
- Repair and upgrade work
- Remodeling work

How can we impact these transactions to improve efficiency?
What’s next

Messaging Tools and Guidance

- **Staged Pathways**
  - Step/process guidance for contractors and programs on recommended sequence, combinations of measures, IAQ, health/safety factors, etc.
  - Messaging toolkit to address trigger events, consumer messaging, technology options

- **Measure Focus: HVAC**
  - Getting to “better” for quality installation practices
  - Develop and test staged upgrade business models for HVAC with value-added opportunities

Upcoming Milestones

- **Engage and solicit input from Program Administrators and Market Actors**
  - Spring – early Summer

- **Field Tests with interested partners (Concept Pilot)**
  - Summer – Fall

- **Evaluation/Assessment to inform expansion plan**
  - Winter
For More Information

Questions?

Steve Dunn, Project Manager
DOE Building Technologies Office

Caroline Hazard, SRA International
The staged upgrade approach is meant to be flexible:

- Programs could coordinate with utilities to develop or adapt incentives to support certain energy efficiency measures.
- Another option could be negotiating bulk purchases.

Bundling measures together as a portfolio approach could help meeting utility cost effectiveness tests, as some individual measures may be less cost effective than others.

DOE plans to develop tools and resources to help programs incorporate staged upgrade approaches into their existing work.

- Later, this could be integrated into other DOE programs, such as Home Performance with ENERGY STAR.
Research Reports and Studies on Staged Upgrade Approaches to Residential Upgrades


  www.homeperformance.org/policy-research/resources/reports


  http://energy.gov/eere/buildings/articles/building-america-technology-market-roadmaps-request-information

Participant Poll

Which of the following best describes your organization’s experience with staged upgrades?

- Very experienced/familiar: 28%
- Some experience/familiarity: 29%
- Limited experience/familiarity: 19%
- No experience/familiarity: 14%
- Not applicable: 10%
Program Perspective:
Jennifer Parsons
United Illuminating Company, Southern Connecticut Gas, and Connecticut Natural Gas (Energize Connecticut)
Energize CT Upstream Program

Jennifer Parsons - UI, SCG, and CNG
Energize Connecticut

▪ Energize Connecticut is the state’s branding initiative to help consumers save money and use clean, affordable energy.


▪ A partnership of the Energy Efficiency Fund, the Connecticut Green Bank, Department of Energy and Environmental Protection (DEEP), and the local electric and gas utilities.
CT Service Territory: Natural Gas

442,000 Residential Gas Customers
CT Service Territory: Electric

1,325,000 Residential Electric Customers
Energize CT Programs/Services

- Home Energy Solutions
- Home Energy Solutions – Income Eligible
- Home Performance with ENERGY STAR®
- Residential New Construction
- Retail Lighting
- HVAC and Water Heating Program
- Energize Connecticut Center – North Haven, CT
Going Further in the Home With

Upstream HVAC and Water Heating Incentives
What is “Upstream”?

- Manufacturer
- Distributor
- Contractor
- End User

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- 3rd Party Fulfillment Vendor
  - Processing program data and reimbursement

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- PA
  - Engaged with Distributors and Manufacturers, provide outreach to Contractors and End Users
# Benefits of Upstream Programs

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>• Opportunity to balance product mix&lt;br&gt;• Push latest technology to market</td>
</tr>
<tr>
<td>Distributor</td>
<td>• Increased profits and market share&lt;br&gt;• Opportunity to transform end market</td>
</tr>
<tr>
<td>Contractor</td>
<td>• Lower first cost&lt;br&gt;• No rebate completion required&lt;br&gt;• Sales and marketing tool to sell jobs</td>
</tr>
<tr>
<td>End-users</td>
<td>• No rebate processing (time and money)&lt;br&gt;• Lower first cost&lt;br&gt;• Energy and lifetime cost savings</td>
</tr>
<tr>
<td>Utility</td>
<td>• Eliminate loss of savings associated with forms&lt;br&gt;• Opportunity to reach larger customer base</td>
</tr>
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Residential Upstream Incentives

Eligible ENERGY STAR® Equipment

- Natural Gas Water Heaters:
  - Tankless 0.82-0.93 EF = $300
  - Tankless 0.94 EF+ = $500
  - Condensing 95% TE = $300
  - Storage 0.67 EF+ = $100
- Heat Pump Water Heaters: $400
- ECM Circulator Pumps = $100
- Natural Gas Boilers = $750
- Natural Gas Furnaces = $600, Oil and Propane = $200
Gas Distributor Enrollment Success

- Program Pilot began October 2013
- Statewide Rollout April 2014

<table>
<thead>
<tr>
<th>Participating Distributors</th>
<th>Participating Branch Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>139</td>
</tr>
</tbody>
</table>

~ 99% distributor participation
Marketing

- Point of Purchase (POP) Signage, Radio, and Billboards
Gas Water Heating: on TV

https://vimeo.com/channels/719455/93668883
Quality Assurance

▪ Rebate vendor verifying against double-dipping (during rebate transition period)
▪ Counter day events with Circuit Rider vendor
▪ Gas territory placemats
▪ Post inspections + telephone surveys
▪ Customer “thank you” postcard:
Gas Water Heater Program Success

939%!
Heat Pump Water Heater Program Success

- 2013 Mail-In: 217 units
- 2014 Upstream: 1391 units
- 2015 Upstream through May 17th: 486 units

Increase: 641%
C&I Proposed Upstream Program

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Minimum Efficiency Requirement</th>
<th>Incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage-Type Domestic WH</td>
<td>Thermal Efficiency of 90% or greater</td>
<td>$5.00 / Input MBH</td>
</tr>
<tr>
<td>On-Demand Domestic WH</td>
<td>Input less than 200,000 BTU/H and Energy Factor must be 0.85 or greater</td>
<td>$4.00 / Input MBH</td>
</tr>
<tr>
<td></td>
<td>Input greater than or equal to 200,000 BTU/H and Thermal Efficiency must be 90% or greater</td>
<td></td>
</tr>
<tr>
<td>Large Domestic HW Boiler</td>
<td>Input greater than 75,000 BTU/H and Thermal Efficiency must be 85% or greater</td>
<td>$2.00 / Input MBH</td>
</tr>
</tbody>
</table>

- Current mail-in form
- Considering tiered structure based on BTU
Other Program Successes

- Strengthened relationship with HVAC community
- Reduction in rebate fulfillment costs
- Reduction in paperwork flow (less trees)
- Significant increase in C&I program participation and other residential programs
Questions?

Jenn Parsons – UI, SCG, CNG

Jesus Pernia – Eversource

EnergizeCT.com/gaswaterheating
EnergizeCT.com/hpwh
EnergizeCT.com/highefficiencyheating
Program Perspective:
Sarah Edwards, Iowa HVAC SAVE Program and Midwest Energy Efficiency Alliance
HVAC SAVE: Transforming Iowa’s Residential HVAC Market

DOE Better Buildings Residential Network Peer Exchange
June 18, 2015
Midwest Energy Efficiency Alliance

MEEA is a nonprofit organization bridging the gap between energy efficiency policy development & program implementation.
MEEA’s Role in the Midwest

- Nonprofit serving 13 Midwest states
- 10+ years serving states, energy offices, utilities & communities
- 25 Staff

MEEA:

- Designs & administers energy efficiency programs
- Evaluates & promotes emerging technologies
- Serves as regional/national voice for DOE/EPA & ENERGY STAR
- Coordinates utility program efforts
- Delivers training & education
- Advances energy efficiency policy
- Promotes best practices
What is HVAC SAVE?

- HVAC SAVE (System Adjustment and Verified Efficiency) is a utility program that recognizes that HVAC equipment operating performance does not equate to rated performance, that reasonable losses occur at the installation and in the duct system, and that those losses can be mitigated and incremental savings captured.
HVAC SAVE Elements

• Training and Certification
  ◦ MEEA created certification and partnered with ESI
  ◦ Develops pool of trained and certified HVAC professionals

• Field Performance Testing
  ◦ Move classroom into the field
  ◦ Focus on Quality Installation practices
  ◦ Measure, adjust and verify
  ◦ Online reporting tool (www.hvacsavesoftware.com)
HVAC SAVE Trained Contractors in Iowa
Support for HVAC SAVE

• 2010: HVAC SAVE program started training Iowa contractors
  — MidAmerican Energy, Alliant Energy, and Black Hills Energy include it in their 2014-2018 EE plans
  • Requirement for residential heating/cooling equipment rebates
  • MidAmerican introduced a performance tune-up and duct modification rebate
• January 1st, 2014: HVAC SAVE became a requirement for a furnace, AC, ASHP, GSHP rebate
• Variety of rebates available depending on the utility
  — Separate rebates available for equipment vs ductwork vs maintenance
• Distributors have been promoting HVAC SAVE to their customers in addition to hosting trainings at their facilities
Program Outcomes

• Over 2,200 contractors have been HVAC SAVE certified
• Over 110 trainings have been held in Iowa and Illinois
• In 2014 alone, there were 22,000 jobs run in the HVAC SAVE software
Questions?

• Contact Sarah Edwards, MEEA
• Website: www.hvacsave.com
Discussion Questions

- What are challenges, needs and opportunities to advance staged upgrades in the home upgrade market?
- Which transaction points offer the best opportunities to market staged upgrades?
- What approaches can be employed for working with trades, manufacturers, and distributors?
- What role should DOE play to help develop staged upgrade markets and programs?
Program Experience with Staged Upgrades

- Iowa HVAC SAVE program is focused on ensuring high-quality installations, supported by diagnostics. The additional work takes 30-45 minutes, and this has made it work from the business side.

- Energize CT has seen great success with moving equipment rebates upstream—providing equipment discounts to distributors in return for sharing info on where the equipment is installed.

- Clean Energy Works (CEW) in Oregon has partnered with other contractors to provide other types of upgrades along with energy efficiency, including seismic, radon, and solar.
  - This summer CEW plans to partner with HVAC contractors, training them to conduct a light energy audit, then use that information to do more comprehensive upgrades.

- New Jersey Natural Gas conducts energy audits with Home Energy Scores to motivate customers to take action. Then the program conducts credit evaluations to support loans for upgrades if needed.
Tips for Staged Upgrade Initiatives

- Working with contractors on staged upgrade initiatives is critical – they are the main point of contact with customers.

- One of the greatest challenges facing home performance contractors is generating customer leads. Since HVAC technicians conduct thousands of home visits every day, this could be an important leverage point for engaging homeowners.

- HVAC contractors do not need to be full energy diagnosticians, but they should know simple things to look for that could trigger the need to schedule a visit with an energy advisor.

- Many home upgrade decisions are responsive (i.e., when things are broken), but it can be useful to ask homeowners about their overall goals for improvements (e.g., the value of a healthy, durable home).
Closing Poll

- Which of these staged upgrade (SU) topics for future peer discussion is of most interest to you?
  - Marketing and outreach to homeowners on SU: 31%
  - SU program design options: 29%
  - Measuring SU energy savings: 20%
  - Coordinating trades and supply chains for SU delivery: 20%
  - Other: 0%

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