



**Better Buildings Residential Network
Peer Exchange Call Series:
*Making the Grade: Innovative Approaches to
Improving Quality***

August 3, 2017

Call Slides and Discussion Summary

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Polls
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers
 - **Ely Jacobsohn**, Program Manager, Home Performance with Energy Star, U.S. Department of Energy (DOE)
 - **Rebecca Filbey**, Residential Energy Efficiency Program Manager & **Rob Busby**, Home Performance with ENERGY STAR (HPwES) Program Manager, Consumers Energy
 - **Jason Elton**, Quality Systems Manager, Enhabit
- Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- Solution Center guided tours

Commitment:

- Members only need to provide *one number*: their organization's number of residential energy upgrades per year.

Upcoming calls:

- August 10: [Doing More with Less: Low Cost Program Strategies](#)
- August 17: [Back to School: Engaging Students in Energy Efficiency at Home and in the Classroom](#)
- August 24: [Making the Leap to the Multifamily Market](#)
- September 14: [Keeping Up with the Jones': Key Strategies for Behavior Change](#)

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call:
<https://energy.gov/eere/better-buildings-residential-network/peer-exchange-call-summaries-0>

For more information or to join, for no cost, email

bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join

Best Practices: U.S. Department of Energy

Ely Jacobsohn, Program Manager, Home Performance with Energy Star

Quality Assurance

Past, Present and Future



Topics Addressed

- **Where we have come from**
- **Where are we now**
- **Where are we going**

The Past

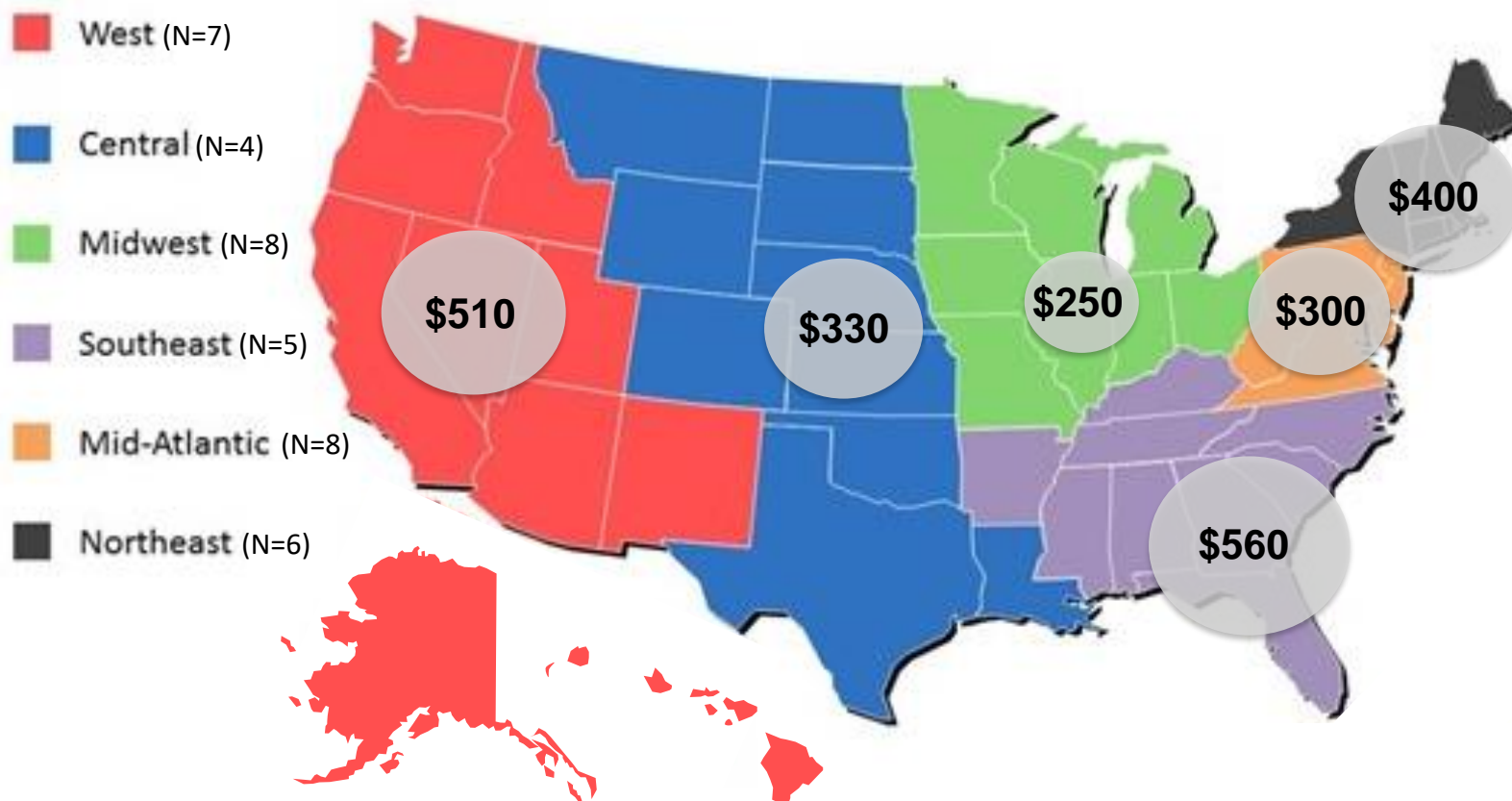
- Quality = Inspection
 - Costly and often not quantified
 - Root cause often ignored
 - Tendency to use inspectors as “owners” for quality
 - Potential for lengthy periods between installations and inspections and subsequent corrections



The Present

- **HPwES offers two approaches for QA**
 - Inspection with feedback
 - Quality Management Systems
- **Goals**
 - Address root causes creating quality issues – feedback loop
 - Reduce legal and financial risk
 - Maintain or improve business reputation
- **Results**
 - Mixed due to many issues
 - Annual report summary follows
 - Innovative approaches exist

2016 Average Field Inspection Cost by Region (N=38)



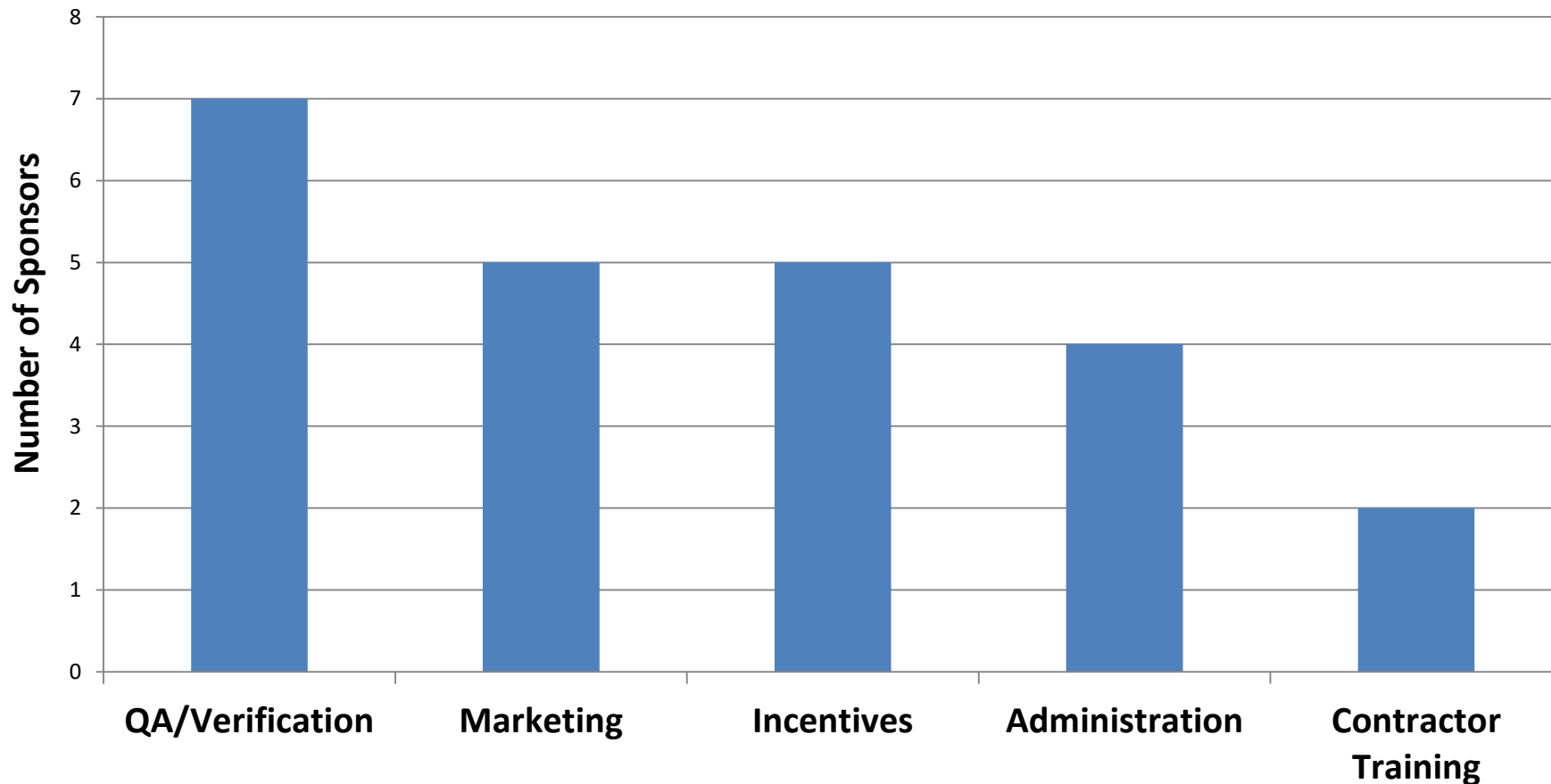
Annual Report Summary Slide on Field Inspection Costs

Assuming 1000 Projects/Year

Region	5% Inspection	10% Inspection	35% Inspection	100% Inspection
National \$400/insp.	\$20,000	\$40,000	\$140,000	\$400,000
High \$600/insp.	\$30,000	\$60,000	\$210,000	\$600,000
Low \$250/insp.	\$12,500	\$25,000	\$87,500	\$250,000

Implementation Challenges: Cost (N=23)

Sponsors Identifying Each Program Element as Their Most Costly



The Future

- **QA monitoring to be more remote from job site**
 - Images instead of inspectors
 - Connected devices and smart meters
- **Data to drive analysis**
 - Big Data and trend analysis
 - More specific and timely contractor feedback
- **M&V 2.0 (Advanced M&V)**
 - Relies on automated data collection and analysis
 - Internal team focused rather than external evaluator
 - Continuous model evolution improves real-time adaptability to uncertain business environment
 - More continuous, granular, and instantaneous information

Resources/References

The Status and Promise of Advanced M&V

[https://www.rmi.org/wp-content/uploads/2017/03/Advanced M and V_Report_March2017_RMI.pdf](https://www.rmi.org/wp-content/uploads/2017/03/Advanced_M_and_V_Report_March2017_RMI.pdf)

Northeast Energy Efficiency Partnerships
EM&V 2.0

<http://www.neep.org/tags/emv-20>

ENERGYSAVVY Case Study: PSEG Long
Island

http://assets.cdnma.com/7083/assets/EnergySavvy_Case_Study_PSEG_LI_M%26V2.0_FINAL.pdf

California methods for calculating site-based,
weather-normalized, metered energy savings

www.caltrack.org



Take a screenshot to save the
links

Presentation Highlights:

U.S. Department of Energy

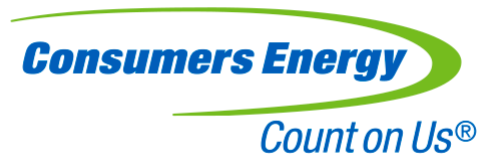
- **Past Quality Assurance (QA) has relied mainly on field inspections.**
 - **Issue:** Inspection often fails to recognize the rework costs and tends to transfer real ownership for correct installations from contractors to inspectors.
- **Current HPwES QA approaches (traditional inspection & Quality Management Systems) have shown mixed results due to regional differences:**
 - **Inspection objectives:** Upgrade evaluations or customer re-engagement.
 - **Rural vs Urban:** Driving distances affect mileage and time. Rural areas tend to cost more.
 - **Extensiveness and volume of inspections:** More volume tends to reduce cost per inspection.
- **The sooner programs catch the energy upgrade errors, the less costly it will be to fix them:** Average field inspection cost is \$400 across the U.S.
- **Moving forward, QA/QC will rely more on big data and trend analysis:**
 - **Evaluation, Measurement and Verification (EM&V) 2.0** will enable more granular data collection and help programs be more adaptable and respond better to market needs.

**Best Practices: Consumers Energy
Rebecca Filbey, Residential Energy
Efficiency Program Manager &
Rob Busby, Home Performance with
ENERGY STAR (HPwES) Program Manager**

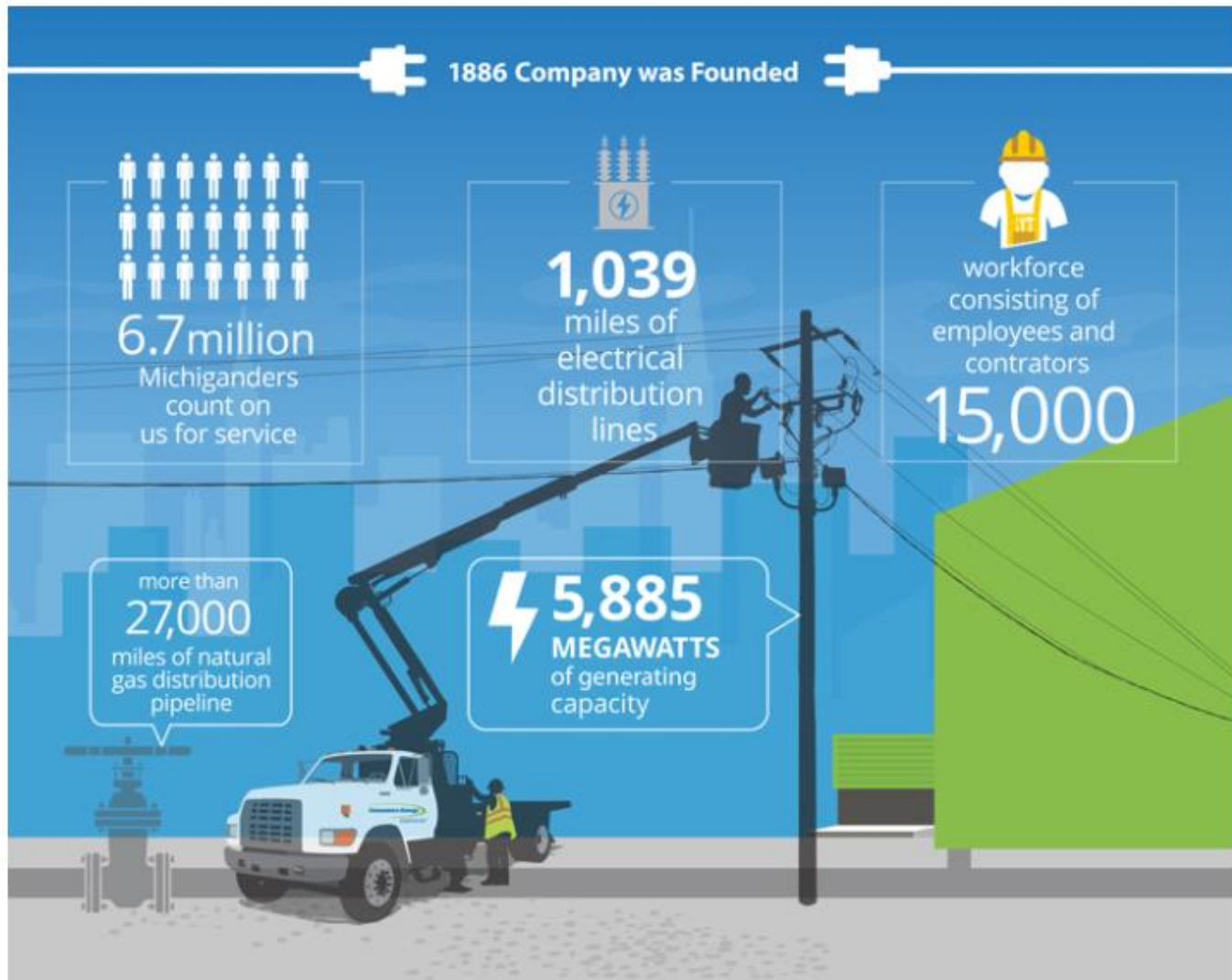
Using Feedback to Improve Trade Ally Engagement

Rebecca Filbey (Consumers Energy) / Rob Busby (ICF)

Aug. 3, 2017



About Consumers Energy



About Consumers Energy HPwES

- Launched current portfolio of residential energy efficiency programs in 2009
- Home Performance with ENERGY STAR® sponsor since 2010
- 900 – 1,300 jobs completed annually
- 35 – 50 Trade Allies

Goals

- Improve quality of work delivered by Trade Allies
- Increase contractor participation
- Develop better working relationship with Trade Allies
- Build a robust Contractor Value Plan

Engaging our Trade Allies in our metrics

- Energy Savings Achieved (KWH, MCF)
- Rebates Provided to Customers
- Customer Satisfaction

Contractor Participation Reports

- Monthly distribution by email
- High-level summary of activity, detailed monthly charts
- Account Managers can generate at any time for current period



Sample Report – Summary Section

HOME PERFORMANCE WITH ENERGY STAR® CONTRACTOR PARTICIPATION REPORT



Prepared for:
The Insulation Man, Inc.



Account Manager: Rob Riley
Phone: 517-883-1210
Email: Rob.Riley@icfi.com

Report generated on: 07/27/2017

LAST 13 MONTHS SUMMARY

(06/01/2016 - 06/30/2017)

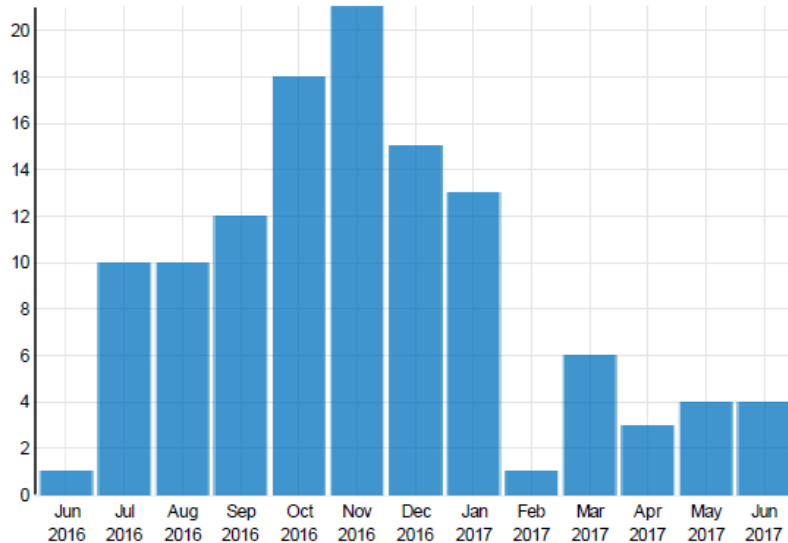
Applications Received:	55	Incentives Paid to Customers:	\$35,750
Average Flaw Rate:	12.73%	Customer Satisfaction Score:	9.1 out of 10
Total kWh Savings:	0.00	Program Benchmark:	8.6
Total MCF Savings:	1,042.62		

Here is your monthly Scorecard! We value your participation, and as such we are providing insight into your program performance. We encourage you to work with your Account Manager for ways to increase success in the program, such as how to decrease your Flaw Rate. Thank you for participating.

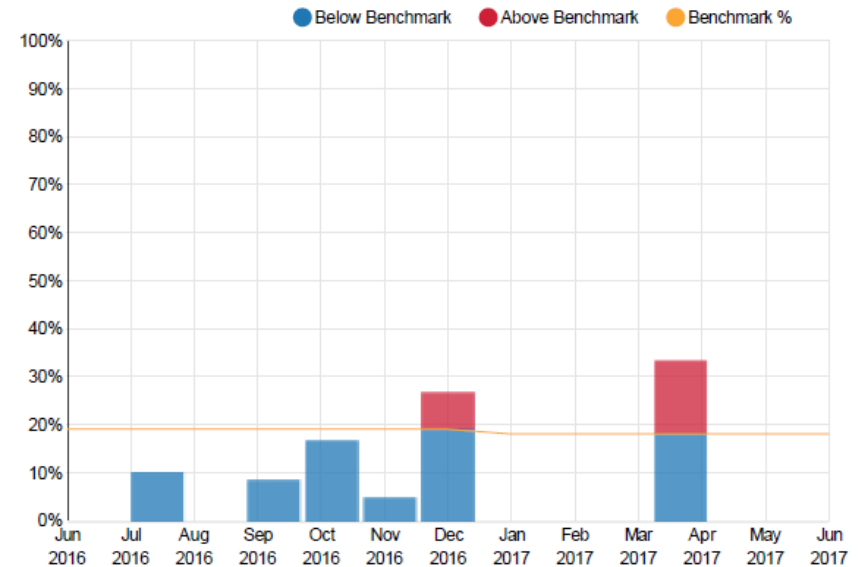
- Rolling 13 months of data (allow for seasonality)
- Stats at a glance

Sample Report – Participation Section

APPLICATIONS RECEIVED



APPLICATION FLAW RATE



- See past participation trends – use to forecast
- Application quality vs. program benchmark
- Tie periods of high flaw rate to specific events?


Driving to improve quality

- Sharing verbatim comments from customer satisfaction surveys
 - Targeted feedback – kudos *and* room for improvement
- Providing access to online learning center
 - Sales, technical, program administrative info
- Breaking down barriers to participation
 - Helping source energy auditor staff
 - Offering equipment rental to new/expanding Trade Allies

Sample - Online Learning Center

[Admin Dashboard](#) [My Courses](#)

Welcome to the Energy Efficiency Learning Center



The Learning Center offers a growing selection of trainings and resources to enhance your participation in utility energy efficiency programs. After registering you will be able to browse courses, add them to your course list and undertake trainings on your own schedule. Goals of The Learning Center include:

- Training in the latest home performance standards
- Facilitating submission to accrediting agencies (EPF)
- Providing self-paced training opportunities to better fit your schedule
- Marketing support and outreach materials

The Learning Center is an ICF International initiative. New content will be added frequently as needed by participating utilities and programs.

Last updated about 1 month ago

Total Number of Courses

6
Enrolled Courses

4
Completed Courses

Recent Activity

You launched the course A Consumers Energy Learning Center 101
7 days ago

You launched the course A Consumers Energy Learning Center 101
7 days ago

You launched the course A Consumers Energy Learning Center 101
7 days ago

You launched the course A Consumers Energy Learning Center 101
7 days ago

A Consumers Energy Learning Center 101

This quick 5 minute overview will give you a tour of the Learning Center, show you how to enroll and take courses, and how to get help if you need it.

My Progress 67%

Status	Content	Last Entered	Enrolled	
In Progress	3 Modules	30 Sep 2016	09 Aug 2016	Resume

Your Marketing Plan

This course discusses the creation of and use of a marketing plan to guide overall marketing activities. It covers the marketing plan in the context of annual operating plan, including goals and budg...


[Read More](#)

My Progress 0%

Status	Content	Last Entered	Enrolled	
In Progress	13 Modules	23 May 2016	12 May 2016	Resume

Lead Generation

When is your target?



Building foundation for Contractor Value Plan

- Once we have data, we can compare contractors to each other
- Once we can compare contractors to each other, we can start to identify top performers
- Once we identify top performers, we can customize our special offerings
 - limited availability promotions, co-op advertising opportunities, leads...

What's Next

- Incorporate Trade Ally Feedback
- Formal launch: Contractor Ranking System
- Improved Contractor Participation Reports
 - Up/down arrows for at-a-glance summary
 - Quarterly data presentment and email distribution
 - Includes ranking as well as position within rank

Presentation Highlights: Consumers Energy

- **Feedback loop from consumer to contractor helps identify opportunities for improvement.**
 - Customer satisfaction surveys allow Consumers Energy to share direct customer feedback with contractors and identify trends in their progress.
- **Analyzing contractors' performance allows Consumers Energy to identify the top performers and incentivize them accordingly.**
 - In developing their Contractor Participation Report, Consumers Energy found that contractors are not reticent in receiving benchmarking data, as it gives them a starting point to address barriers.
- **Breaking barriers to participation:**
 - Free online training allows Consumers Energy to work with their contractors' network that is based on multiple locations.
 - Equipment loans help contractors with limited resources.
- **Consumers Energy is currently working on a system ranking contractors in silver-gold tiers:**
 - This will help inform consumers, but also contractors' account managers in addressing any gaps.

Best Practices: Enhabit

Jason Elton, Quality Systems Manager

Enhabit Quality Systems

Jason Elton

Quality Systems Manager



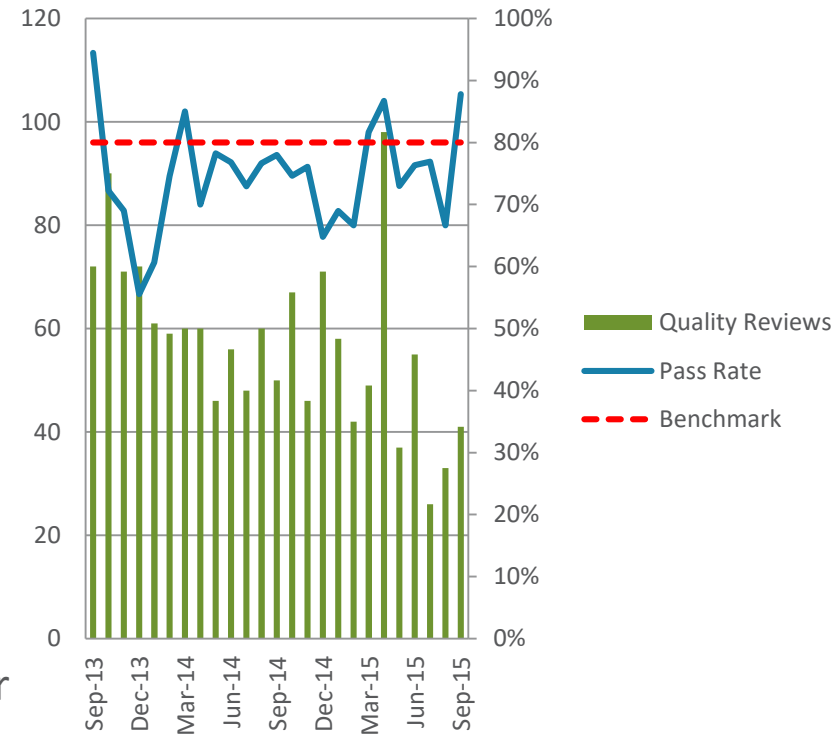
Enhabit Quality Systems

- Why update our QA approach?
- What is a Remote Quality Review?
- What systems are used?
- How to track progress?
- What are the results?
- What are some important considerations?

Historical QA Process

2009 through mid 2015

- 100% Onsite Quality Reviews
- 2.5 hours and \$200 per onsite QR (higher in rural areas)
- Highest percentage of Advisor time on QR
- Average Pass Rate 70 - 75%
- Contractors attend onsite QR with Advisor
- Contractors waiting to identify issues
- Results tracked in Excel spreadsheets and later in online project management system.



Remote Quality Review

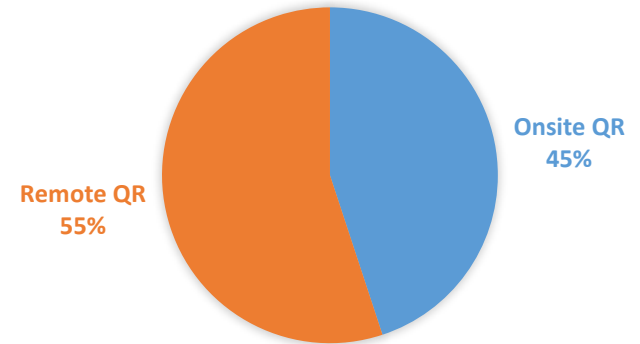
- BPI-certified Home Advisor reviews data uploaded by contractor
- Review final documentation (Invoices, permits, etc.)
- Review contractor upgrade photos
- Contact client to discuss issues or concerns
- Talk with client about project experience and whether they would recommend contractor or Enhabit to others



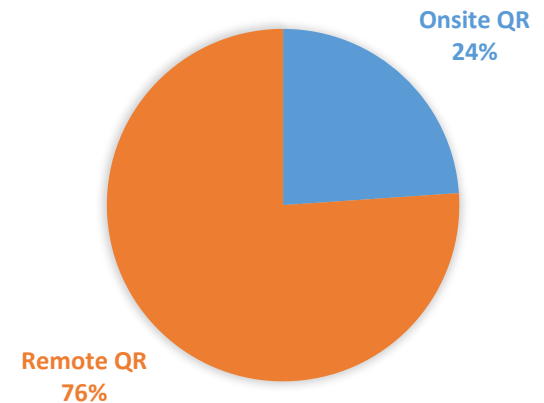
Quality Review Changes

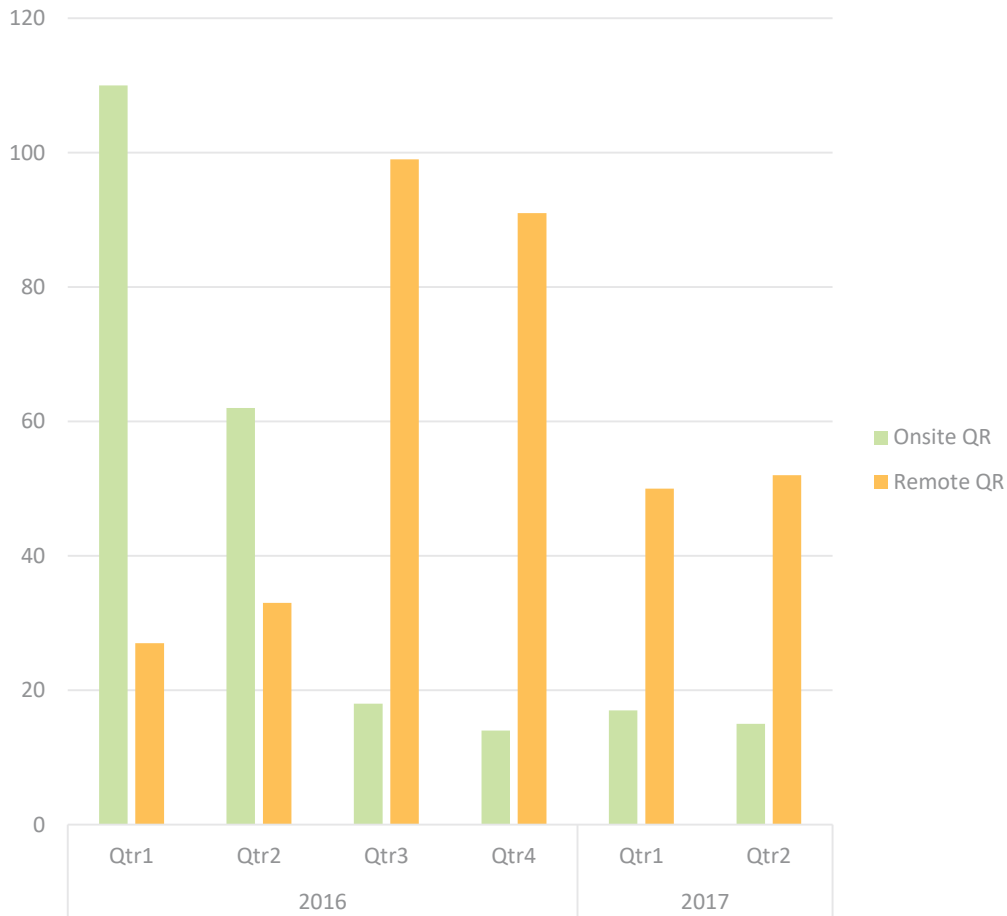
- 2015: Introduced small % of Remote QR as trial, Contractors no longer required to attend appointment with Advisor.
- Update Quality Systems
- 2016: Decrease Onsite QR to 45% (Reduced staffing, reduced funding)
- 2017: Decrease Onsite QR to 25%.

2016



2017






Quality Review Changes

80% Onsite QR in Q1 of 2016

25% Onsite QR in Q2 of 2017

Quality Systems

- Enhabit uses a proprietary system (Threshold)
- Ability for contractors and advisors to enter and review project data
- Test In, Bidding and Test Out Data
- Documents and Upgrade Photos
- Integrated QR Form
- Sales force reporting

Threshold
Project Info
Documents
Test In 
Bidding
Test Out
QR
Salesforce
Save Data
Complete Testin Audit

Threshold
Navigation
Project ID/Name
Load Project
Projects
Admin
Hello jason!
Log off

Project Info
Documents
Test In
Bidding
Test Out
QR
Salesforce
Save Data
Complete Testout Audit
- HPwES

Air Sealing

BLOWER DOOR TEST PERFORMED

N FACTOR
20

BAS
1,944

MVL
109

70% OF BAS
1,360.56

ACH50
10.02

HOUSE BASELINE PRESSURE
-1.7

HOUSE PRESSURE
-50

RING
Open

FAN PRESSURE
48

CFM - ESTIMATE (3351)
3126

ESTIMATED REDUCTION
700

ASHRAE 62.2
Calculate

TESTIN CFM
3830

CFM REDUCTION
704

Heating and Mechanical Systems - TESTOUT
Notes
Photos

PRIMARY HEATING SYSTEM
TYPE
Condensing
FUEL
Gas
DISTRIBUTION SYSTEM
Main
NOTES

YEAR
2010

% LOAD
100

FLUE
Sealed

AFUE (0-100)
90

Add HVAC System

Mechanical Ventilation

EXHAUST FAN #1
LOCATION
Bathroom 1
CONNECTED
Yes
TESTED CFM
80
HAS OPERABLE WINDOW

Add Exhaust Fan

Add HRV

CONTINUOUS MECHANICAL VENTILATION
Installed

Final Test Out Data

- Contractor enters project data
- Final data reviewed by Advisor
- Data also used for utility incentive processing
- Data can be used to create Energy Scores (EPS)
- Contractors upload photos

[Back To Project 100836](#)

Documents

Upload

File Name	Description		
Project Documents			
100 Point Performance Check Enhabit.100836.pdf	100 Point Performance Check	Download	Delete
example bid.pdf	Signed Bid	Download	Delete
Enhabit_LVF.100836.pdf	Other	Download	Delete
Enhabit Invoice.100836.pdf	Signed Invoice	Download	Delete
PortlandMaps_ 2017-190424-000-00-RS.pdf	Permit Documentation	Download	Delete
20793 Windows Docs.pdf	Other Supporting Document	Download	Delete
Wright, M PTCS.pdf	PTCS Documentation	Download	Delete
Popp-Solar inspection approval.pdf	Utility Solar Verification	Download	Delete

Project Documents

- Contractor uploads Project documentation
- Bids, Invoices, equipment info, permits, etc.

Enhabit Upgrade Photos

- Photos of upgrades are required on every project.
- Uploaded by contractors to Threshold
- Photo checklist provided to contractors
- Contractors typically take good photos of work and check over installs prior to final submittal
- Advisors occasionally need to request additional photos or information

Attic Insulation - TESTOUT

Notes Photos 4

+ Upload Photos...

Files



img_20170213_093609.jpg

Download



img_20170213_093827.jpg

Download



img_20170213_093013.jpg

Download



img_20170213_093550.jpg

Download



Threshold

Project ID/Name

Load Project

Projects

Admin

Hello jason!

Log off

Project Info

Documents

Test In

Bidding

Test Out

QR

Salesforce

Save Data

Project ID

100836

Customer

Test EnhabitTest

Contractor

Neil Kelly

QR Type

Remote

Espanol

QR HPA

Jason Elton

QR Date

8/31/2016

Complete

QR Result

Minor Issue

Test In Date : 08/01/2017 14:59:00

Test Out Date : 2017-07-07

Notes:

Example Notes

Show Photos

Building Envelope

Air Sealing

Reference

Attic

Reference

Floor Insulation

Reference

Rim Joist

Reference

Verified

Action

Correction Needed

Insulation Cavity Filled and R 15

QR Form

- Used by Advisors on every project
- Indicate QR Type and Result
- Advisor fills out check lists
- Notes Fields
- Upload photos when Onsite QR
- Identify needed corrections
- Results available to Contractors

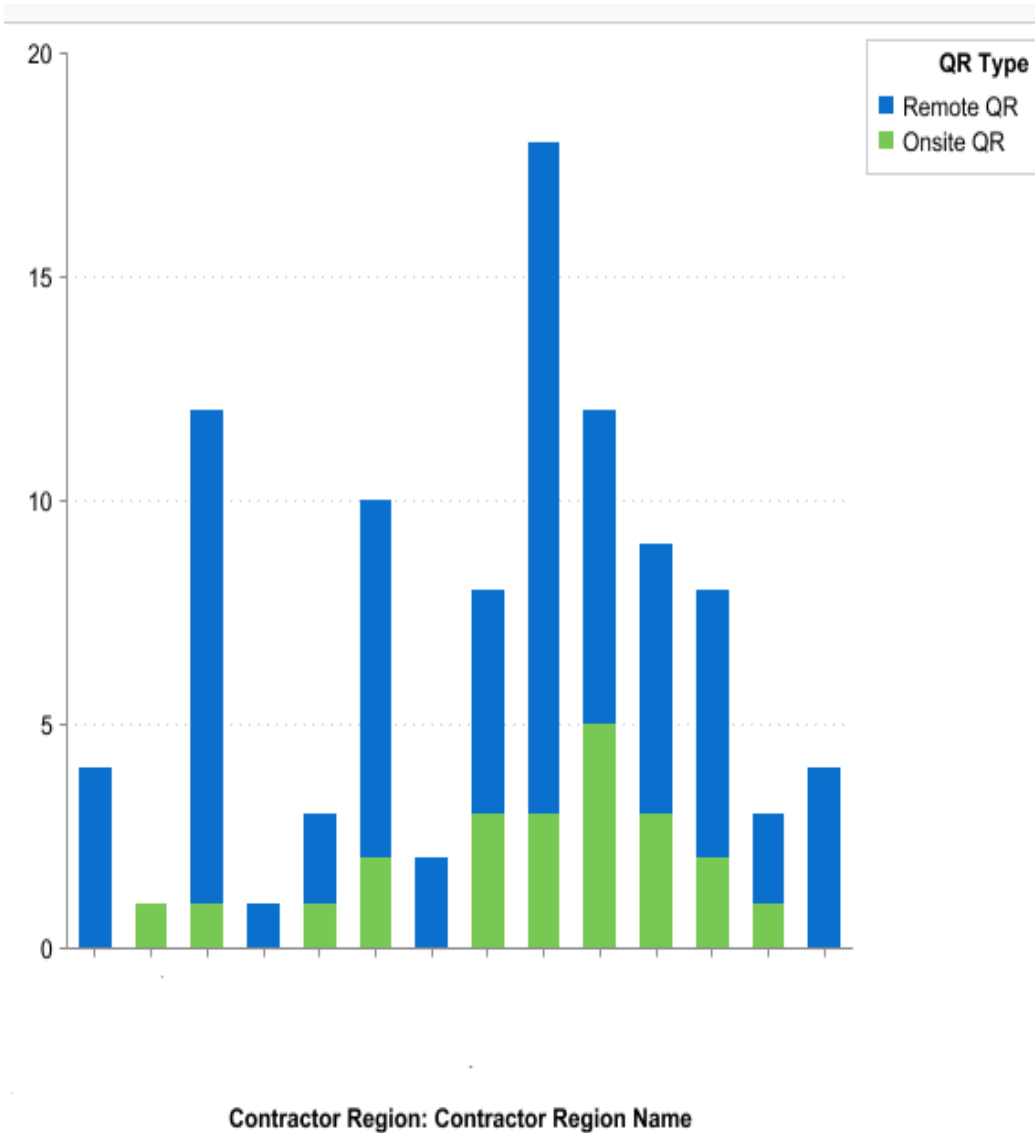
Building Envelope

Air Sealing		Reference
Verified	Action	Correction Needed
<input checked="" type="checkbox"/>	Approved Air Leakage Reduction which meets utility and/or Enhabit rebate requirements.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Address all accessible air sealing opportunities: attic, garage, crawlspace, exterior walls, basement walls.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CO Monitor Installed on every floor with bedroom.	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Required Mechanical ventilation meets current ASHRAE Standards per BPI or local Utility.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Mechanical ventilation provides proper daily airflow (as confirmed by fan flow test equipment)	<input type="checkbox"/>
<input checked="" type="checkbox"/>	No major moisture issue present	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Mechanical ventilation recommended by contractor when applicable.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Blower door testing performed by BPI, PATS, REAP, or PTCS technician.	<input type="checkbox"/>

Attic		Reference
Verified	Action	Correction Needed
<input type="checkbox"/>	Determine if storage or human contact areas are present. IN 1.9	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Install baffles at eave vents, heat-producing fixtures, flues and chimneys. AT 1.3 and AT 1.5	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Dams shall be installed at interior accesses and where insulation is at different levels to keep loose fill from falling out of attic.	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Interior ceiling accesses shall be insulated to a minimum of R-30 and knee wall access doors shall be insulated to a minimum of R-15. Interior accesses shall have permanent weatherstripping. AT 1.10 and AT 2.6	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Verify all exhaust fans are vented completely to the exterior with no gaps. AT 1.6–1.8	<input type="checkbox"/>
<input type="checkbox"/>	Washington customers shall insulate all exhaust fan ducts in unconditioned spaces to a minimum of R-4	<input type="checkbox"/>
<input type="checkbox"/>	Insulate water lines in attic space. AT 1.9	<input type="checkbox"/>
<input type="checkbox"/>	Insulate and weatherstrip access panel or pull-down stairs. AT 1.10–1.12	<input type="checkbox"/>
<input type="checkbox"/>	Insulate vertical walls, including skylights to R15 and cover with air barrier. Install blocking in floor under knee wall. AT 2.6	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Verify R-Value and condition of installation of insulation. Appendix B	<input type="checkbox"/>
<input type="checkbox"/>	All vapor barriers shall face the living area. AT 2.0	<input type="checkbox"/>
<input type="checkbox"/>	Vertical walls separating attics from indoors shall be insulated. AT 1.13 and AT 2.6	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Air penetrations between attic and conditioned space have been sealed	<input type="checkbox"/>

QR Form Checklist

- **Conforms to Utility specs and program standards**
- **QR form made available to contractors**
- **Identifies specific corrections**
- **Results logged in Salesforce record**



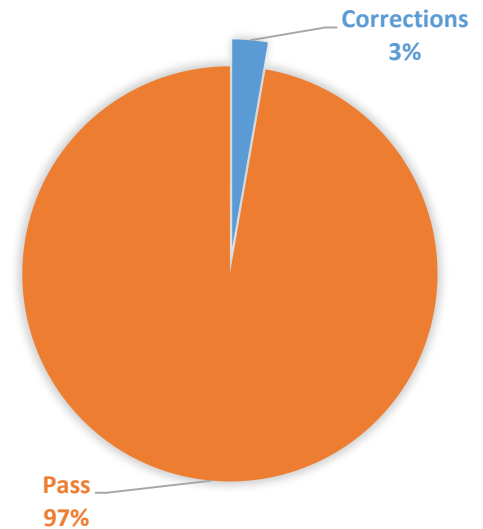
Quality Assurance Reporting

- Critical data entered in Threshold is recorded in Salesforce Database
- Data can be queried and used to create customized up to date reports
- Ability to review reports weekly, monthly, quarter, and year
- Results by contractor, region, product, etc.

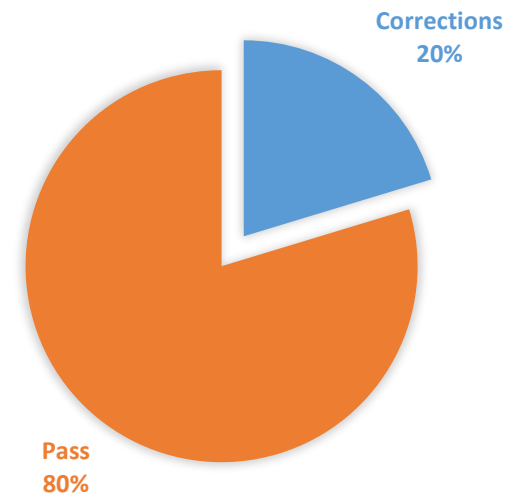
Year 1 QR Results

- QR results post system change (Q3 2016 – Q2 2017)
- 94% Pass Rate Overall
- 80% Pass Rate Onsite QR
- 97% Pass Rate Remote QR

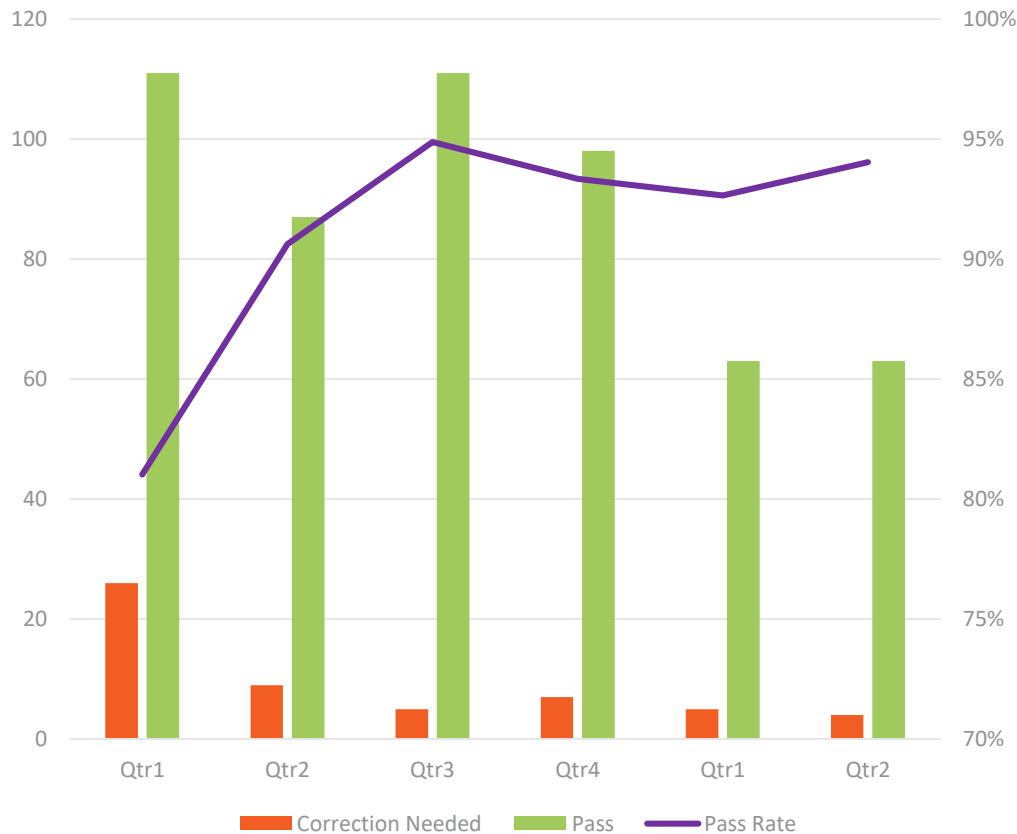
YEAR 1 REMOTE QR



YEAR 1 ONSITE QR



QR Pass Rate



Quality Results

- After quality updates implemented there was an increase in the overall pass rate
- Onsite vs Remote results
- Important to track results by product and contractor
- Work closely with new contractor staff
- Follow up on issues

Considerations

- Important to provide lifeline for homeowners (Phone, email, etc.)
- Develop a case system to track complaints and issues.
- Invest in strong contractor relationships and communication
- Know your project managers and consultants working in homes
- There is risk in missing a correction when not going to every site.
- Provide Training and QA tools for contractors
- Develop good quality reporting systems
- Survey customer satisfaction
- Develop a quality plan and customer experience plan



Presentation Highlights: Enhabit

- **Transitioning from field inspections to remote quality reviews can bring wins all around:** Enhabit's adoption of a web-based tool to perform remote inspections resulted in:
 - **Higher pass rate** of 94% overall
 - **Streamlined work and burden reduction** (e.g. fewer time spend on applications due to prepopulated fields in the web app)
 - **Time savings** for both contractors and Enhabit staff (fewer field inspections, less lag time between identifying and fixing issues)
 - **Better progress tracking** and identification of opportunities for improvement.
- **Pictures are essential in remote reviews to illustrate the work being done:** Enhabit's web app requires contractors to upload detailed pictures of upgrades performed.
- **Tracking complaints and providing feedback back to contractors ensures work flaws are being addressed.**
- **Contractors can make or break a project:** Communication with contractors is key to ensure they are aligned with the program's goals.

Upcoming Seasonal Messaging Opportunities

Now is the time to start planning energy efficiency messaging!



October: **Energy Action Month**

5th
National Energy
Efficiency Day

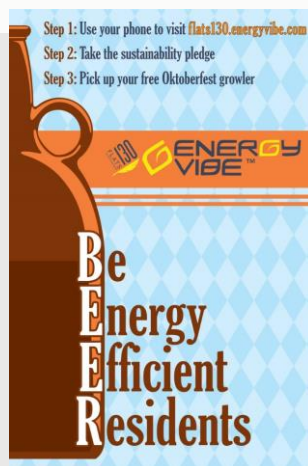
Welcome October By Celebrating National Energy Awareness Month



Alliance to Save Energy
[Article](#)

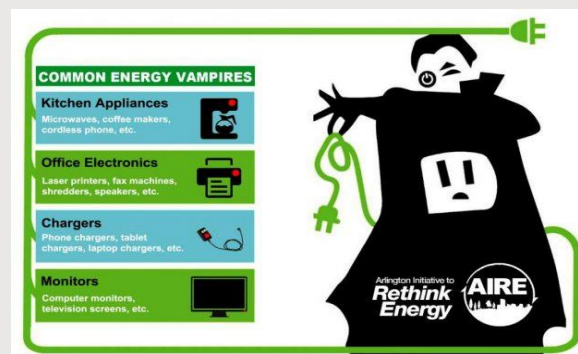


Oktoberfest



Energy Vibe
[Posters](#)

31st
Halloween



Arlington County
[Post](#)

Addenda: Attendee Information and Poll Results

Call Attendee Locations



Call Attendees: Network Members

- Advanced Energy
- AppleBlossom Energy Inc.
- Arlington County Government
- Building Performance Institute (BPI)
- Center for Sustainable Energy
- City of Kansas City
- Civic Works
- CLEAResult
- Earth Advantage Institute
- Energy Smart Home Performance
- Enhabit
- Michigan Saves
- Midwest Energy Efficiency Alliance (MEEA)
- Mountain Association for Community Economic Development
- The Insulation Man, LLC
- TRC Energy Services

Call Attendees: Non-Members (1 of 2)

- ABCD, Inc.
- Alliant Energy
- AmeriCorps
- Association for Energy Affordability
- BC Building Info
- Cadmus Group
- Columbia Water and Light Department (MO)
- Community Action Agency of Butte County, Inc. (CAABCI)
- Consortium for Energy Efficiency (CEE)
- Consumers Energy
- CORE
- County of San Diego
- EnergyWorks
- Eversource
- Florida Department of Agriculture and Consumer Services
- Franklin Energy Services, LLC
- Hawaii Energy
- Holy Cross Energy
- Horizon Residential Energy Services

Call Attendees: Non-Members (2 of 2)

- ICF
- Johnson Controls
- Leidos
- Local Government Commission
- Lockheed Martin Energy
- Louisville Gas & Electric
- Montana Department of Public Health & Human Services
- NANA Regional Corporation, Inc.
- National Fuel Gas
- Navarro
- New York City Mayor's Office of Sustainability
- Open Energy Efficiency
- Oregon Institute of Technology
- Proctor Engineering Group
- Renew Financial
- Rhode Island Housing
- Snohomish County
- Tempo Partners
- The Energy Control Company (ECC)
- XLR8SUN Electric Car

Opening Poll #1

- Which of the following best describes your organization's experience with innovative approaches to improving quality?
 - Some experience/familiarity – **50%**
 - Limited experience/familiarity – **31%**
 - Very experienced/familiar – **15%**
 - No experience/familiarity – **2%**
 - Not applicable – **2%**

Closing Poll

- After today's call, what will you do?
 - Consider implementing one or more of the ideas discussed – **9%**
 - Seek out additional information on one or more of the ideas – **83%**
 - Make no changes to your current approach – **8%**
 - Other (please explain) – **0%**