



**Better Buildings Residential Network
Workforce Peer Exchange Call Series:
*Quality Control, Standardization of
Upgrades, and Workforce Expectations***

March 27, 2014

Agenda

- Call Logistics and Introductions
- BBRN and Peer Exchange Call Overview
- Featured Speakers – QA/QC Approaches & Lessons Learned
 - **Dan Wildenhaus** – Technical and QC Lead for Seattle’s Community Power Works Program and Senior Building Scientist at CLEAResult
 - **Brian Atchinson** – Associate Project Manager, Quality, Standards and Compliance, New York State Energy Research and Development Authority (NYSERDA)
 - **Jim Harmon** – Technical Trainer and Quality Assurance Coordinator for the Building Performance Center and Community Energy Challenge, Opportunity Council, Whatcom County, Washington
- Discussion of QA/QC Experiences & Lessons, Workforce Expectations, and Standardization of Upgrades
- Future Call Topics Poll

Call Participants

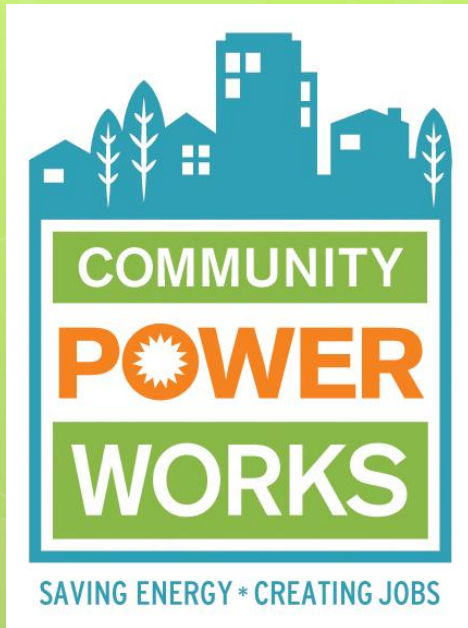
- Austin Energy
- Civic Works, Baltimore, MD
- Craft3 (Clean Energy Works Oregon, Community Power Works)
- Energy Coordinating Agency, Philadelphia, PA (EnergyWorks)
- Elevate Energy, Chicago, IL
- Greater Cincinnati Energy Alliance
- Local Energy Alliance Program of Virginia (Southeast Energy Efficiency Alliance)
- Midwest Energy Efficiency Alliance, Chicago, IL
- Spirit Foundation, Austin, TX
- Vermont Energy Efficiency Corporation (Efficiency Vermont)
- Wisconsin Energy Conservation Corporation

QA/QC Lessons Learned:

Dan Wildenhaus

**QC and Technical Lead for Seattle's Community
Power Works Program**

Senior Building Scientist at CLEAResult

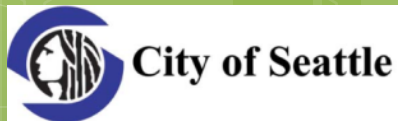


Community Power Works Quality Assurance

Better Buildings Residential
Network
March, 2014

Dan Wildenhaus
QC and Technical Lead at
CPW

Sr Building Scientist at
CLEAResult



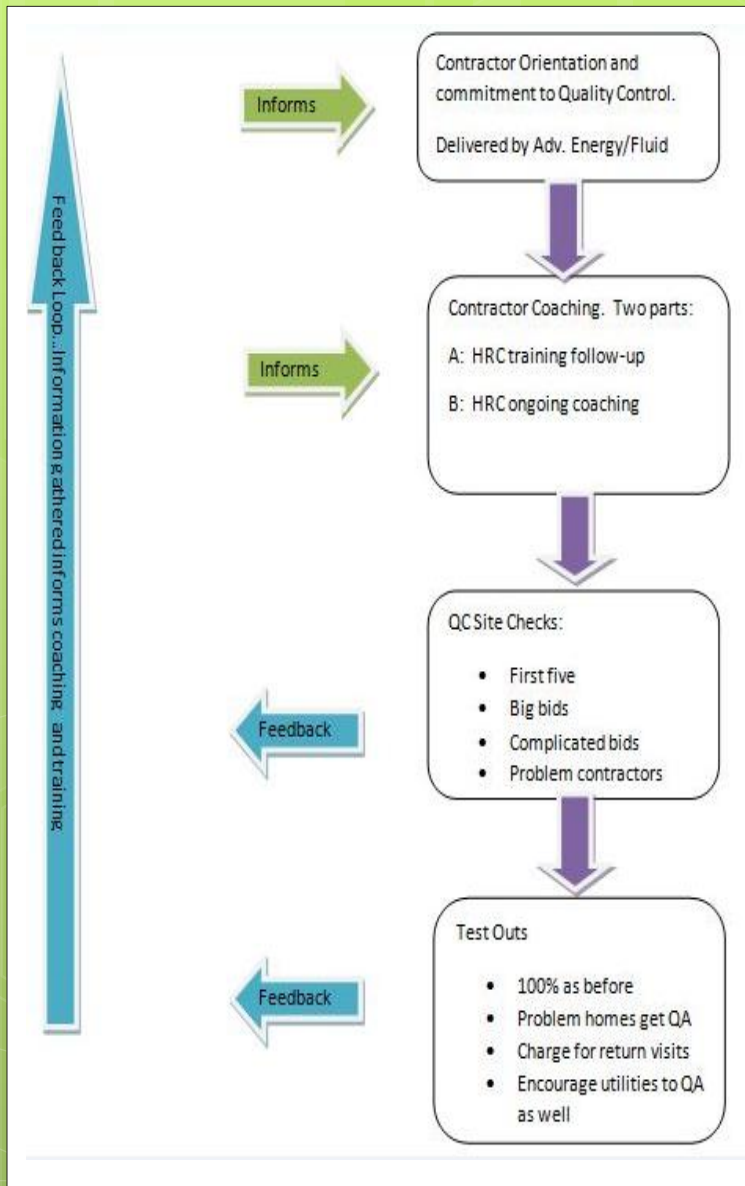
CPW 1.0 Program Design

- Goal 2,000 single family retrofits
- Minimum of 15% savings (modeled) per home
- **100% third party test out**

QA Design

- What and Why
 - What is in a Test Out?
 - Simple check of installed measures
 - Blower door test
 - IR Scan
 - Simple worst case test
 - How does a QA visit differ?
 - More detailed inspection
 - Minimum of three per contractor per year
 - More if history with contractor dictates
 - Bid Review and Invoice Review included
 - Pass, Pass with Corrections, Fail





Beauty of pilot programs...

Introduced the Quality Control Plan in Q4 of 2012

- What really happened...
- Contractors resisted QC
- Other items become priorities for QA team



Air Sealing and Ventilation Standards – 2013
Updated to match RTF Weatherization and Ventilation Requirements



DUCTLESS
HEATING & COOLING SYSTEMS
For Your Home

Smart Water Heat
Your Heat Pump Water Heater Resource



- Move to Quality Oversight



- Energy Coach Approach



CPW 2.0

Moving to alternative funding from the DOE

- Utility funding
- City funding
- State funding
- Contractor "Pay to Play"
- Lender "Pay to Play"
- Mild increase of consumer contribution (for audits)

QA/QC Lessons Learned:

Brian Atchinson

**Associate Project Manager, Quality, Standards and
Compliance**

**New York State Energy Research and Development
Authority (NYSERDA)**

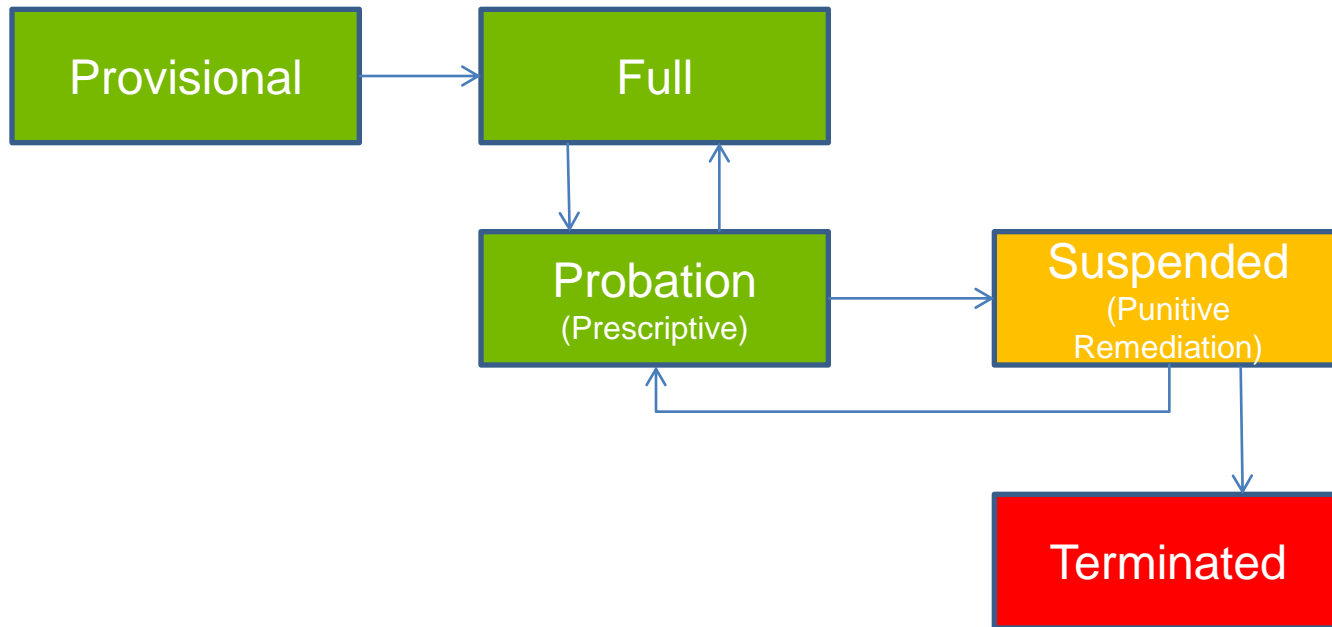
NYSERDA – Residential Quality, Standards & Compliance (RES - QSC)

Brian Atchinson
March 27, 2014

RES QSC Goals

- Implement a transparent, objective and consistent Project QA Report /Contractor Scoring System based on building science standards and Program requirements
- Ensure quality field inspection system
 - Based on building science standards (BPI and Program Materials & Installation Guidelines)
 - Cost effective, resource efficient and clear reports
 - Capability to direct contractor corrective action
- ID root causes of known problems and implement systemic solutions to improve project performance
- Responsive to homeowners and contractors

QA – Contractor Status Progression



QA Inspection Selection Criteria

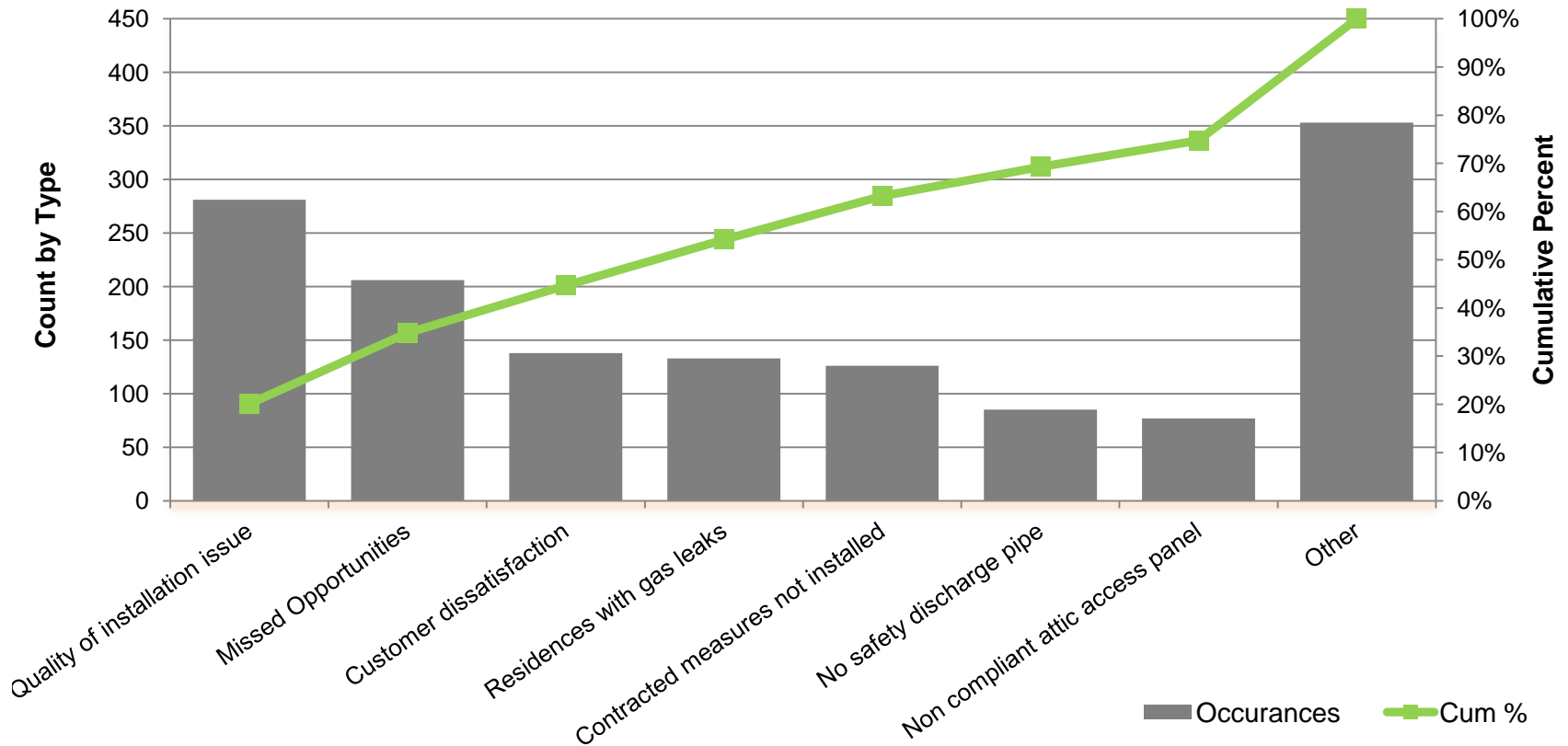
- Provisional 1 - First three completed projects
- Provisional 2 - 15% completed projects
- Full installers - 15% of completed projects
- Probationary - >50% of completed projects
- Suspended - Inspection rates as directed by NYSERDA on a case by case basis (usually 100%)

NYSERDA HPwES Scoring System

- Score projects on a P3 to F3 scale
 - P3: Met all Program Requirements
 - P2: Work scope not comprehensive or required Program assistance
 - P1: One installed measure needed modification, customer dissatisfaction, building performance problems left unaddressed
 - F1: One measure not installed, minor health and safety violation
 - F2: No evidence of health and safety testing, measure installed that does not meet Program requirements,
 - F3: Major health and safety violation, more than one uninstalled measure

2013 HPwES Pareto Analysis


Home Performance with ENERGY STAR® Program NonConformance by Type - 2013




HPwES Corrective Action Report

Antis- Allens Family Heat DOC.PDF - Adobe Acrobat Pro

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**HOME PERFORMANCE WITH ENERGY STAR®
QUALITY ASSURANCE INSPECTION
DECLARATION OF COMPLETION**


Inspection Date: 1/17/13 **Project ID:** P00000795602


Contractor Name: _____
Phone No: _____
Fax No: _____
Email Address: _____

Customer Name: _____
Customer Address: _____
Customer Phone No: _____

Based on a QA post-completion inspection, the following corrective actions have been made in order to comply with Program standards. For more information on DOCs and the Quality Assurance Process, please refer to the Contractor Resource Manual.

Health & Safety:
Repair gas leak identified in basement. QA Inspector identified and marked with orange tape a leak at a union fitting in the boiler supply line, approximately 12' from the installed boiler toward the front of the house.





Signature: _____ Contractor _____ Date _____

I attest that the above listed work has been performed at my home to my satisfaction.

Signature: _____ Customer _____ Date _____



Please fax signed form to Paige Asdoorian at CSG, fax #866-403-0442. Thank you.

Form Revised 1/18/2012

HPwES PINS Report

Herner- Blue Ox Corporation PINS.PDF - Adobe Acrobat Pro




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**HOME PERFORMANCE WITH ENERGY STAR®
QUALITY ASSURANCE INSPECTION**

PROGRAM INFORMATIONAL NOTIFICATION STATEMENT

Inspection Date: 2/7/13 **Project ID:** P00000795998

Contractor Name: 
Phone No: 
Email Address: 


A post-completion QA inspection was conducted at:


Customer Name: 
Customer Address: 
Customer Phone No: 

Contact your CSG regional technical support person to review the following issues outlined below. The items listed may require technical assistance, corrective action and/or informational. The issues listed may be required to comply with industry standards, Program guidelines or technical support.

Missed Opportunities:

To recommend a vapor barrier for the earthen floored basement.



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QA/QC Lessons Learned:

Jim Harmon

**Technical Trainer and Quality Assurance Coordinator
Building Performance Center and Community Energy
Challenge**

Opportunity Council, Whatcom County, Washington

Discussion: QA/QC, Workforce Expectations, and Standardization of Upgrades

- What lessons have you learned from implementing quality assurance/quality control plans with your contractors?
 - What aspects of your QA/QC approach have worked well?
 - What challenges or roadblocks have you run into with QA/QC and how have you tried to address them?
 - How have you had to adapt or tailor your QA/QC efforts over time in response to feedback or changing circumstances?
- How do you get contractor buy-in to QA/QC requirements?
- How do you determine the appropriate sampling rate for field inspections? (Not all programs do 100% field inspections.)
- Other questions/issues related to QA/QC, workforce expectations, and standardization of upgrades?

Lessons Learned: Community Power Works (Seattle, WA)

- Charging contractors if a return site visit is necessary can encourage improved QA
- Homeowners value QA much more highly after an energy upgrade
- Work with contractors, not as a cop, but as a coach – do not address QA in front of homeowners
- Apply elements of the trainings that contractors do with their staff to the overall program
- Contractor scheduling can make it difficult for QA staff to know when to show up
- Reaching out to a local trade association can help with communicating with contractors

Innovative Ideas: Community Power Works (Seattle, WA)

- New approach for summer 2014: Energy coaches
- Independent auditors can become energy coaches to provide energy assessment, homeowner consultation during upgrade, and test-out
- Contractors will be required to pay to participate (“pay to play”), with benefits for contractors who commit to and achieve consistent high quality
- Through this model, QA may become self-funded

Lessons Learned: NYSERDA

- Keep costs down and use resources efficiently by using a tiered system to prioritize QA inspections
- Identify root causes of common problems
- Suspend contractors who choose not to make recommended improvements, and for flagrant QA violations
- Educate contractors when they fail to recommend an upgrade that should be made
- Require that technicians use equipment at the same sensitivity level that QA inspectors use (e.g., for gas leaks)

Lessons Learned: Community Energy Challenge (Washington State)

- Use in-house auditors to improve QA consistency
- Home energy advisors can continuously improve through a feedback loop, including a review of each other's home modeling
- Combine risk assessment with a peer review process: when auditors review a house with red flags (e.g. multiple signs of leaks), a second auditor reviews the assessment
- Require contractors to take in-progress photos to show things that may be obscured later (e.g., with insulation)
- In a small program, it is possible (and advantageous) to inspect 100% of upgrades
- 100% final inspection allows homeowners to feel secure about their investment

Discussion – Other QA/QC Strategies

- Programs can provide other QA checks on contractor work in addition to technical QA inspections, such as requiring in-process checklists and photo documentation
 - Seattle gave geotagged cameras to contractors to ensure photos were taken in the correct locations
- Periodic check-ins with homeowners during the project provide a sense of what their experience was like
- Train administrative staff to recognize issues in bids and proposals and invoices and raise them as appropriate; this approach can help reduce program costs