

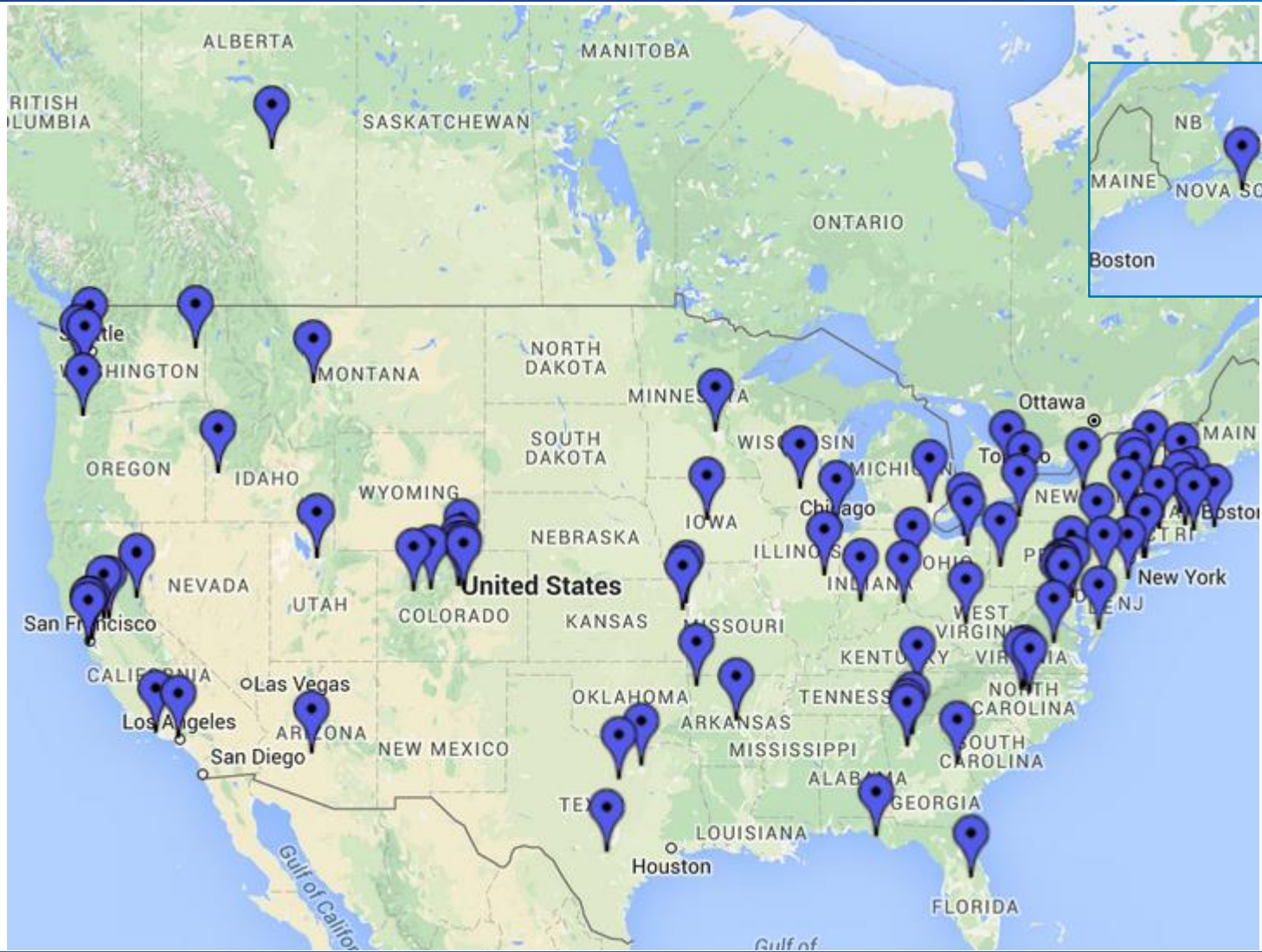


**Better Buildings Residential Network Peer
Exchange Call Series: *The Intersection of
Health and Residential Energy Efficiency (201)***

March 3, 2016

Call Slides and Discussion Summary

Call Attendee Locations



Call Attendees: Network Members

- ACEEE
- Advanced Energy
- BlueGreen Alliance
- Bridging The Gap
- Build It Green
- Building Performance Institute
- City of Cleveland
- City of Fort Collins
- City of Kansas City
- City of Plano
- Civic Works
- CLEAResult
- Clinton Climate Initiative
- District of Columbia Sustainable Energy Utility
- Duke Carbon Offsets Initiative
- Efficiency Nova Scotia
- Elevate Energy
- Greater Cincinnati Energy Alliance
- GTECH Strategies
- Home Performance Guild of Oregon
- Honeywell
- Horizon Residential Energy Services NH, LLC
- Housing Authority of the City of San Buenaventura
- Institute for Market Transformation
- International Center for Appropriate and Sustainable Technology (ICAST)
- Midwest Energy Efficiency Alliance
- NeighborWorks of Western Vermont
- NYSERDA
- Southface
- Stewards of Affordable Housing for Future (SAHF)
- United Way of Long Island
- Wisconsin Energy Conservation Corporation

Call Attendees: Non-Members (Slide 1 of 3)

- AE Building Systems
- Association for Energy Affordability
- Association of Polish Electrical Engineers
- Canadian Home Builders' Association (CHBA)
- CEC
- CenterPoint Energy
- City of Akron
- City of Bloomington
- City of Minneapolis
- City of Orlando
- County of Erie
- COWS
- Dominion Due Diligence Group
- ecobeco
- EDGE
- EDU
- eeEnergy & Environmental Consulting
- Emerson
- Energy Commission
- Energy Coordinating Agency
- Energy Design Group Enterprises, LLC.
- Energy Smart Colorado
- EnergySmart
- Environmental Design / Build
- Fortisg.com
- Green & Healthy Homes Initiative
- Green Button Alliance
- Greenspring Building Systems Inc.

Call Attendees: Non-Members (Slide 2 of 3)

- Habitat X
- Healthy Building Research and Reducing Outdoor Contaminants in Indoor Spaces Initiative
- Holy Cross Energy
- Home Office Training & Technology
- Home Performance Coalition
- iAQ Systems
- Idaho Division of Building Safety
- ILLUME Advising, LLC
- Indoor Climate Research and Training
- KBD Technic
- Kin Energy
- Leight Engineering
- Liberty Homes Custom Builders
- Local Government Commission
- Margiotta Architecture & Planning, LLC
- MPower Oregon
- Multnomah County Office of Sustainability
- National Association of Realtors
- New World Eco Center
- Newland Communities
- Nexant
- NIST
- Northeast Natural Homes, Inc.
- Oakland Livingston Human Service Agency

Call Attendees: Non-Members (Slide 3 of 3)

- Optimal Energy, Inc.
- PG&E
- Plant Vogtle
- Redhorse Corp
- RMI
- Ryan Taylor Architects LLC
- SEEC LLC
- Shelton Group
- Smith & Boucher Engineers
- SPEER
- Sustainable Real Estate Consulting Services
- The Brendle Group
- ThermalStar Training Center
- Therma-Stor, LLC
- Utah Governor's Office of Energy Development
- Washington State Department of Commerce
- Wendy Smith Consulting, LLC
- West Virginia Housing Development Fund
- Worcester County Government
- WSP Canada
- XLR8SUN
- Youthful Horizons

Agenda

- Agenda Review and Ground Rules
- Opening Polls
- Brief Residential Network Overview
- Featured Speakers
 - Ruth Ann Norton, President and CEO, Green & Healthy Homes Initiative
 - Ian Brown, GTECH Strategies (***Network Member***)
- Discussion Questions
 - How can combining energy and health-related services create opportunities for new customers? For program revenues?
 - Who are key partners? How can they be effectively engaged? What are effective marketing strategies?
 - What specific services, products, or collaboration strategies have been most successful?
 - Are there challenges with this approach? What can be done to overcome them?
- Upcoming Events and Closing Poll

Opening Poll #1

- Which of the following best describes your organization's experience with demonstration projects?
 - Some experience/familiarity – **49%**
 - Very experienced/familiar – **20%**
 - Limited experience/familiarity – **20%**
 - No experience/familiarity – **6%**
 - Not applicable – **3%**

Opening Poll #2

- What are you and your organization doing concerning health and energy efficiency?
 - Currently working on it – **42%**
 - Thinking about how to work on it – **31%**
 - Actively planning to work on it – **17%**
 - Have already worked on it – **4%**
 - Other or N/A – **6%**

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: <http://energy.gov/eere/better-buildings-residential-network/join>

Program Experience: Green & Healthy Homes Initiative (GHHI)

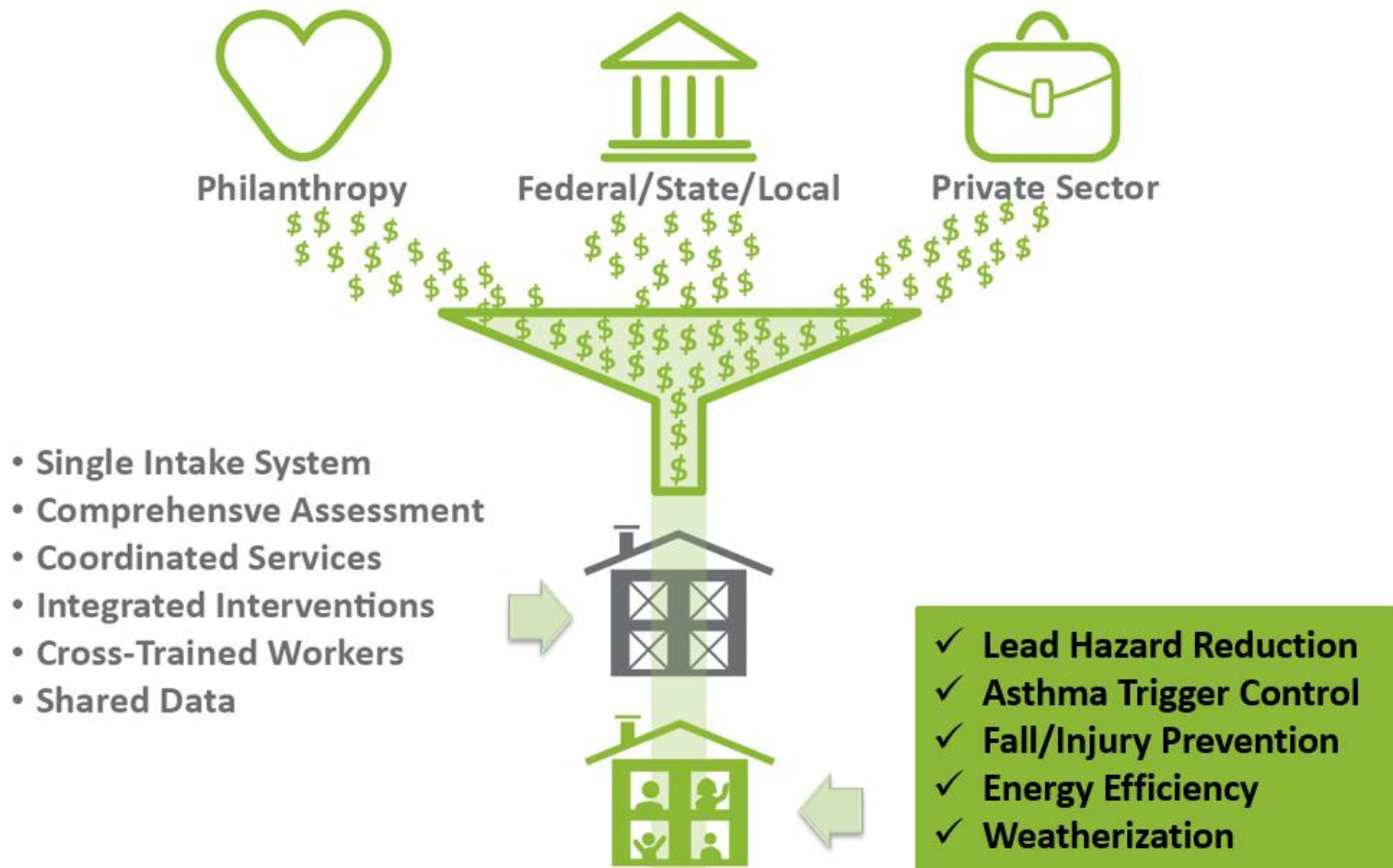
US Department of Energy Better Buildings Residential Network Peer Exchange Webinar

The Intersection of Energy Efficiency and Health

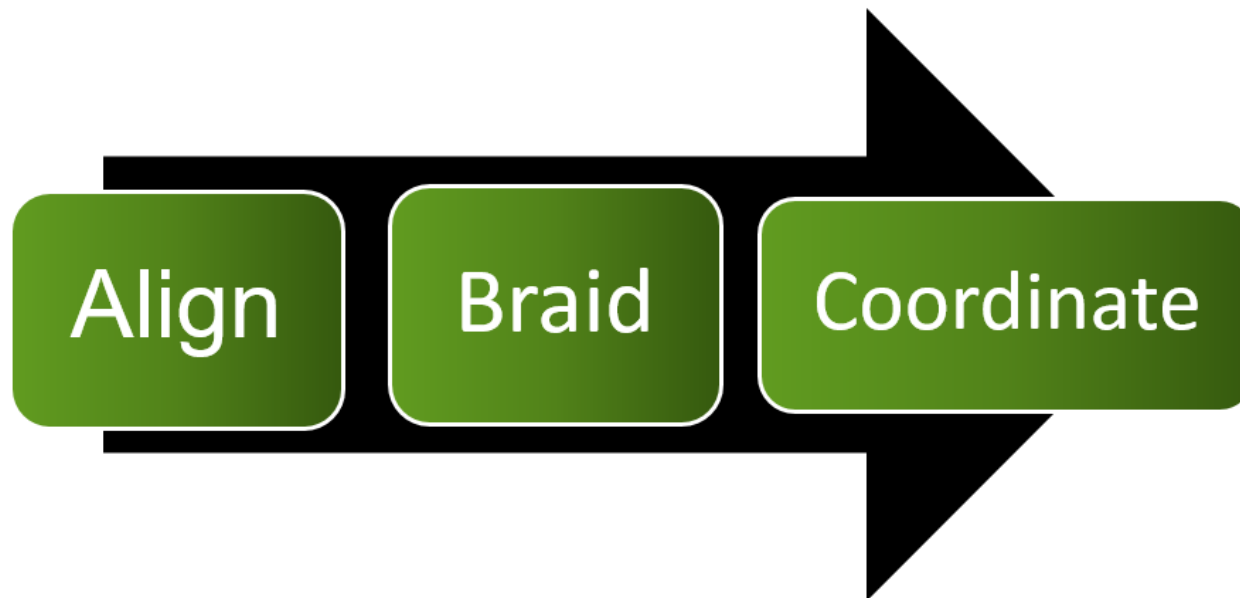
March 3, 2016

**Ruth Ann Norton
President & CEO**

The GHHI “No Wrong Door” Model



How Does It Work?



GHHI Model - Assessment and Education Team

Environmental Health Educator

- **Conduct resident education**
- Coordinate pre and post client health surveys
- Develop recommended action plans for the residents
- Coordinate follow-up client services

Environmental Assessment Technician-Energy Auditor

- **Conduct pre-intervention environmental assessment**
- **Conduct energy audit**
- Develop comprehensive scopes of work for the property
- Conduct post intervention assessment and audit

Comprehensive Assessment and Integrated Interventions

Leveraging of funding; Inspectors and contractors are cross trained to be able to address energy loss and environmental health hazards

- Lead Hazard Remediation
- Healthy Homes
- Energy Efficiency
- Weatherization
- Rehabilitation



Healthy Homes Interventions



- Integrated pest management: gel baits, boric acid, glue traps, reducing entry points, cleaning/behavioral change (clutter)
- Mold remediation
- Venting kitchen, bathroom and dryer; filter replacements
- Removal or steam cleaning of carpets
- Installation of mattress and pillow covers
- Air filtering system installed in child's bedroom
- Air conditioners and dehumidifiers
- Provision of a HEPA-vacuum and indoor allergen reduction cleaning kit
- Other Healthy Homes Interventions with leverage funding (radon, asbestos)

Client Impact - Veal Family – 612 N. Curley Street

- Allergens (mold, mice, VOCs, poor IAQ)
- Significant lead hazards in the home
- Poorly weatherized but deferred by WAP Program initially
- Malfunctioning furnace – Heating with kitchen stove
- 2 children w/asthma – Hospitalizations/missed school days



Interventions: Weatherization (City WAP); New furnace (Constellation Energy); Lead Hazard Control (GHHI HUD); Moisture Control/Mold (GHHI HUD, Foundations); Healthy Homes (GHHI HUD/CDBG); Client Pre-Post Education (GHHI, Johns Hopkins)

Intervention Cost: \$18,780 **Integrated Approach Savings:** \$2,958

Results:

- ✓ No repeat hospitalizations or missed school days due to asthma episodes
- ✓ Lower energy and maintenance costs
- ✓ Youngest child's school performance has improved from being a "C" student to an "A" student post intervention

Site Impact: Building the Business Case

GHHI Baltimore: Improving Health, Economic and Social Outcomes Through Integrated Housing, Energy and Health Interventions

- **66%** reduction in asthma-related client hospitalizations
- **28%** reduction in asthma-related client ED visits
- **50%** increase in participants never having to visit the doctor's office due to asthma episodes
- **62%** increase in asthma-related perfect school attendance
- **88%** increase in participants reporting never having to miss a day of work due to their child's asthma episodes

GHHI Philadelphia's asthma impact:

- **70%** fewer asthma-related client hospitalizations
- **76%** fewer asthma-related client ED visits
- **62%** fewer asthma-related client doctor's office visits

GHHI Cleveland's asthma impact:

- **58%** reduction in asthma-related client hospitalizations
- **63%** reduction in asthma-related client ED visits

National Impact - Outcomes

5,600+ GHHI units completed in Phase One.

- Integration of weatherization/energy efficiency with healthy homes, lead hazard reduction and rehabilitation funding
- \$404 average annual reduction of energy costs
- Up to 20-25% decrease in costs to government programs
- 1,100+ persons trained for the Green & Healthy Homes Workforce with a \$4K - \$8K increase in wages

The Future

- 60 GHHI program sites and linkage with local WAP, LIHEAP and Utility Programs
- BPI Healthy Homes Evaluator Micro-credential pilot release in April 2016
- Innovative funding streams for Healthy Homes and cross sector collaborations with weatherization/energy efficiency programs
- 11 Social Impact Bonds/Asthma Pay for Success Projects
- Capturing the impact of green & healthy homes on educational outcomes and family stability
- GHHI research on non-energy benefits of weatherization



Examples of Innovative Intersections: Medicaid/Medicare Funding Opportunities For Asthma and Aging in Place Programs

- GHHI is working with State Medicaid Offices to obtain approval for asthma in-home resident education and asthma trigger reduction housing interventions that are coupled with local weatherization programs in the homes of asthma diagnosed children
- Using the lessons learned from the GHHI national site work and the Asthma Pay For Success feasibility work to develop Aging in Place Service Delivery Models that integrate Medicaid/Medicare preventive health intervention (asthma, household injury) funding with weatherization programs

Ruth Ann Norton

President & CEO

Twitter: [@RuthAnnNorton](#), [@GHeathyHomes](#)

www.facebook.com/GHHInational

www.ghhi.org

Presentation Highlights: GGHI

- Integrating the 5-7 different programs it took to **look at a house holistically** into a single intake point cut the transaction time from 23 days to one day.
- Including a **workforce training** aspect increased base wages by \$4-8K per year for the workforce.
- Data collection vs. privacy concerns can be a challenge, but GGHI relies on a **comprehensive assessment tool** (adapted by other states) and homeowner reporting.
- In one area, GGHI saw results of a **62% turnaround from students chronically missing school** due to asthma to 100% attendance.

Lessons Learned: GTECH Strategies

+ Healthy Homes Incentive Program

3.3.2016



+ Metrics to Date

Program Started in 2014

Homes Completed: 56

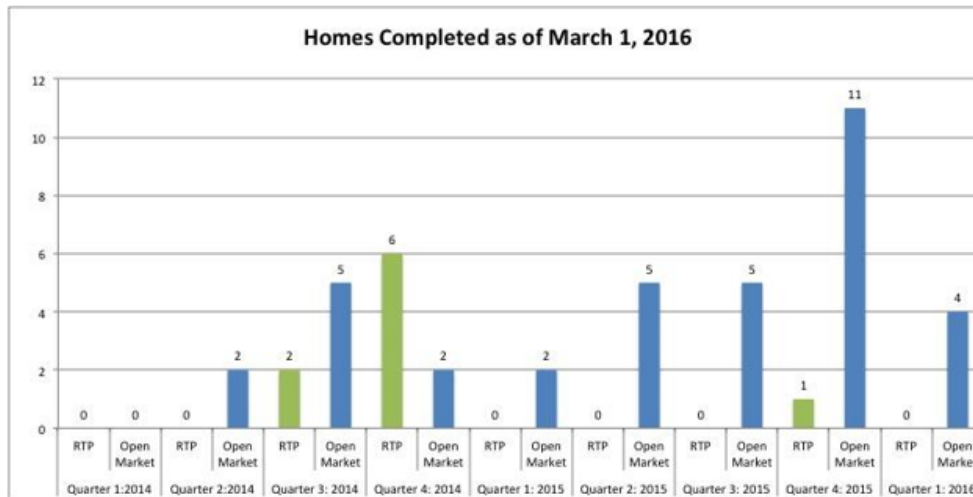
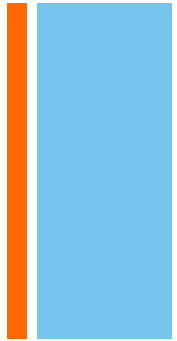
- Open Market-36
- RTP-20
- 2014- 17 Homes
- 2015-35 Homes
- 2016-4 Homes

2016 Outlook

Open Market Homes: 22 homes are working through the process

Low Income Homes: Partnership with Conservation Consultants Inc: 20 Homes expected

Active waiting list of 17 participants

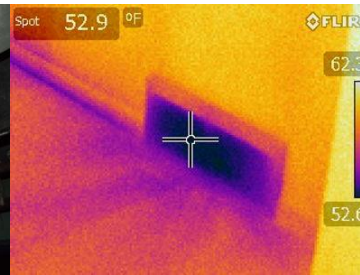


■ Open Market
 ■ Rebuilding Together Pittsburgh

+ Metrics to Date


- 56 Homes Completed
- **\$646,180** in contract work has been leveraged from the program to date
- The average amount spent per household is **\$11,538**

- Homeowners saved on average 32% of energy used or \$950 a year in energy costs
 - 8.3 years to payback upgrades to house
- On average homes prior to participation emitted 16.64 tons of CO₂ annually and after going through the program emitted 12.47 tons of CO₂. That is an average savings of 4.18 tons of CO₂ annually
- To date 217 tons of CO₂ will be saved



Equivalency of reducing 217 tons of CO2 annually is the carbon sequestered from:

178 ⁱ



acres of U.S. forests in one year

Source: <http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

+



+ Next Steps

- The HHIP program has been successful to date and homeowners have been satisfied with energy efficiency gains and/or overall home health improvements. We plan to close out the program by the end of 2016.
- GTECH is rethinking how energy efficiency can be packaged into community health outcomes
 - We are also looking into the implications of land use decisions and actions and how they can impact community health measures and outcomes.
 - Link Environmental Justice issues such as air or water pollution to community health indicators as well as create neighborhood driven groups to assist with implementing new programs.



GTECH Strategies
6587 Hamilton Ave, #1W
Pittsburgh, PA 15228
Ian Brown: Project Manager
www.gtechstrategies.org

Presentation Highlights: GTECH Strategies

- The **goal of the program is to reach 100 homes**, split into two categories – the open market and homes that are prioritized due to healthy home issues.
- **GTECH keeps administrative costs low** with 90% of investment per unit in actual investment in the home.
- **Challenges and lessons learned:**
 - Leveraging contracts with **volunteer labor** requires some juggling to establish a standard quality of work.
 - Confusion over **complicated paperwork** stymied some contractors. Hosting “**lunch and learn**” sessions helped resolve that issue.
 - The pilot project **did not collect enough data to extrapolate** to a wider market; however, the program is working with the University of Pittsburgh to complete a home health impact assessment on homeowners’ health and well-being.

Health and Home Performance Initiative

The DOE Health and Home Performance Initiative works to demonstrate the health benefits of residential energy efficiency through three approaches:

1. Review of literature
2. Stakeholder engagement
3. Develop roadmap



Discussion Highlights: Best Practices

(Slide 1 of 2)

- **Data, data, data:** Collect it early and often.
- **Energy efficiency and health/safety must be integrated concerns;** otherwise you degrade the investment. A poorly weatherized house is more likely to exacerbate health issues.
- **Comparing energy savings** in low-income vs. general market homes doesn't always work (e.g., repairing a large hole in the roof saves a ton of energy).
- **Side-by-side audits** for energy and indoor air quality, pre- and post-upgrade, along with resident health surveys generate important data (e.g. Clinton Climate Initiative Home Energy Affordability Loan program).

Discussion Highlights: Best Practices

(Slide 2 of 2)

- **Integrating funding sources** can involve overcoming perceived barriers; build networks to braid partners together, and constantly look for new and creative funding paths.
- **Build the data case** by having conversations with utility programs.

Discussion Highlights: Ideas for the Future

- Work with **private health insurance** to cover health interventions directly.
- Coordinate with employers to **provide home health upgrades as an employee benefit** alongside health insurance.
- Estimate costs of **carbon emissions reduced** in order to integrate efforts into climate initiative programs.
- Extreme heat and cold in **low-income homes** is a major source of high energy costs with corresponding health impacts; synthesizing those costs and the benefits of avoiding them (e.g. avoided emergency room visits) is important for **making the case about why the healthcare industry should care** about residential energy efficiency.

Explore planning, implementation, & evaluation strategies in the Residential Program Solution Center

- [Handbooks](#) - explain *why* and *how* to implement specific stages of a residential program.
- [Quick Links](#) - provide easy access to resources on the key issues that many programs face.
- [Proven Practices](#) posts - include lessons learned, examples, and helpful tips from successful programs.
 - See the latest post on [Energy Advisors](#).



www.energy.gov/rpsc

The Solution Center is continually updated to support residential energy efficiency programs—[member ideas are wanted!](#)

Peer Exchange Call Series

We hold one Peer Exchange call every Thursday 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:

- **April 14:** Training: How to get Results - What Matters, What Doesn't (201)
- **April 21:** Advances in Integrating Energy Efficiency into the Real Estate Market (301)
- **April 28:** Driving Change in Residential Energy Efficiency: Electric Vehicles (301)
- **May 5:** Five and Dime: Revisiting Strategies for Lowering the Costs of Delivering Energy Efficiency (101)

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

Send call topic ideas to peerexchange@rossstrategic.com

Join us @ ACI National Home Performance 2016

Kick-off with DOE on Monday, April 4!

Home Performance with ENERGY STAR Partner Meeting, 8:30 am - 5:00 pm
including special breakout sessions:

- Home Energy Score, 1:30 - 2:50 PM
- Home Energy Information Accelerator, 3:00 - 4:20 PM
- Trade-Based Approach – DOE Home Improvement Catalyst, 3:00 - 4:20 PM

Getting Started with HPXML workshop – *Monday afternoon*

Meet us at many more
sessions, April 5-7!

Early registration deadline: March 3.



Meet us at sessions, April 5-7!

- T, 4/5**
- Home Upgrade Program Models for Acquiring Savings in Multiple Climate Zones
 - Residential Energy Labels, Why Should You Care & What Do You Do About It?

- W, 4/6**
- Showcasing Home Performance with ENERGY STAR Contractors
 - Transforming the Market with HPXML: Strategies and Lessons Learned
 - What Building America Learned in 4 Years About Retrofits & Staged Upgrades
 - Realizing the Market Value for High Performance Homes: Reports from the Field
 - Health & Home Performance: Unlocking New Funding, Marketing, & Data Value
 - The Quest for Smarter Performance Measurement
 - The Home Energy Data Huddle: Getting together to Build an Information Pipeline

- R, 4/7**
- Home Performance Financing Update & Options to Help Close More Jobs
 - Insights from the Better Buildings Neighborhood Program Evaluation
 - America's Building Blocks to High Performance Housing

Download the full [ACI National Home Performance Conference Agenda](#) for more details.

LET'S ALL MEET IN MAY!

**REGISTER TODAY for the
BETTER BUILDINGS SUMMIT**
Washington, DC · May 9-11, 2016

This Summit will bring together Better Buildings partners and stakeholders to exchange best practices and discuss future opportunities for greater energy efficiency in America's homes and buildings.

There will be time set aside for a specific Residential Network discussion and meet-up! See the draft agenda [here](#).

Closing Poll

- After today's call, what will you do?
 - Seek out additional information on one or more of the ideas – **69%**
 - Consider implementing one or more of the ideas discussed – **18%**
 - Make no changes to your current approach – **13%**
 - Other (please explain) – **0%**