



# **Better Buildings Residential Network Peer Exchange Call Series: *Just What the Doctor Ordered: Integrating Health Benefits into Energy Efficiency Programs***

April 27, 2017

*Call Slides and Discussion Summary*

# Agenda

- Agenda Review and Ground Rules
- Opening Polls
- Brief Residential Network Overview and Upcoming Call Schedule
- Featured Speakers
  - **Mary Pat Aardrup**, Environmental Planner, Healthy Homes Program, City of Fort Collins, Colorado (*Network Member*)
  - **Katie Bronson**, Outcome Broker, Green & Healthy Homes Initiative Greater Syracuse, Home Headquarters
- Health and Home Performance Roadmap
  - **Jonathan Cohen**, DOE Better Buildings Residential Network
  - **Ely Jacobsohn**, DOE Home Performance with ENERGY STAR
- Discussion
- Closing Poll

# 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, email [bbresidentialnetwork@ee.doe.gov](mailto:bbresidentialnetwork@ee.doe.gov), or go to [energy.gov/eere/bbrn](http://energy.gov/eere/bbrn) and click Join*

# Peer Exchange Call Series

***We hold one Peer Exchange call the first four Thursdays of each month 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:

- May 4: Multifamily Smart Tech, Health, and Utility Data – A Joint Call with NEWHAB & the DOE Better Buildings Residential Network
- May 11: Are You Ready? Opportunities and Challenges of Home Energy Management Systems
- May 18: Innovation Station: The Latest Advances in Energy Efficiency Technology
- May 25: *No call*
- June 1: *No call*

*Send call topic ideas to [peerexchange@rossstrategic.com](mailto:peerexchange@rossstrategic.com)*

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

# Program Experience: City of Fort Collins, Colorado



## City of Fort Collins Healthy Homes Program

***DOE Peer Exchange Call:  
Integrating Health Benefits into  
Energy Efficiency Programs  
April 2017***

“We are at the greatest environmental risk where we have the most control - our homes.”

# Healthy Homes Strategy

- Provide free in-home assessments to:
  - Help residents reduce biological pollutants, chemical contaminants and safety issues
  - Promote health & wellness
  - Reduce toxic or harmful exposure in homes
  - Increase the number of homes testing for radon
  - Encourage energy efficiency assessments

# Key Recommendations



Keep It  
Clean- 35%



Keep It Well  
Ventilated- 8%



Keep It Well  
Maintained- 8%



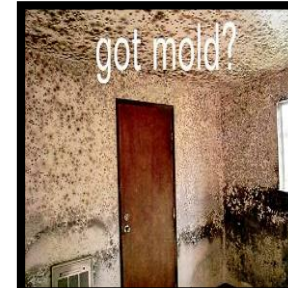
Keep It Contaminant  
Free- 17%



Keep It  
Safe- 15%



Keep It  
Pest Free-5%



Keep It  
Dry- 8%



# Master Home Educators

- Upon Completion of the 20 hour training, Master Home Educators commit 20 additional hours performing assessments.
- 7,000 volunteer hours and over 670 homes assessed since June 2011

***“The Master Home Educators pointed out very useful things that we were unaware could have such a huge impact on indoor air quality.”***



## ➤ Moisture Meter/Temp Humidity Gauge

- Confirms water presence
- Triggers need for leak identification

## ➤ Infrared Camera

- Shows poor insulation
- Need for air sealing
- Need for energy efficiency assessment

## ➤ Carbon Monoxide Detector

- Combustion Safety
- Identify back drafts or other safety leaks



# Special Emphasis

While all residents of Fort Collins are eligible for a **Healthy Homes** assessment, our programs are targeted to:

- Homes who have children with asthma
- The elderly population
- The underserved community

## **HomeWise** – Employee Sustainability Benefit Program

Combines environmental (Healthy Homes) and energy programs (Efficiency Works) for optimal health and comfort. Encourages extension of employee sustainability to their homes.

- Lessons Learned: Healthy Homes assessment prior to energy efficiency assessments enhance residents' knowledge of what to look for when participating in an energy assessment:
  - Poor Insulation
  - Air Sealing
  - Contaminants
  - Combustion Safety
  - HVAC/Air filter concerns & maintenance

# Presentation Highlights: City of Fort Collins

- **Use existing programs to increase reach:** Fort Collins made connections with other city programs, such as HomeWise and Efficiency Works, to access more customers.
- **Make your program relevant to potential partners:** Fort Collins engaged the medical community early on and provided education on the health benefits of an environmental intervention.
- **Avoid information overload:** Fort Collins narrowed recommendations to focus on a few, key items to avoid giving homeowners too much information to digest.
- **Reliance on volunteers can add program reach, but it isn't without cost:** Volunteer Master Home Educators were a vital component of the program, but recruitment, training, recognition, and scheduling required a significant amount of staff time.

# **Program Experience: Green & Healthy Homes Initiative Greater Syracuse**



# GHHI Greater Syracuse

a Healthy Homes Program at

## Home HeadQuarters

**Improves the health, safety and energy efficiency of a home for low and moderate income residents in the City of Syracuse.**



## A national movement

- Formerly known as the Coalition to End Childhood Lead Poisoning
- Break the link between unhealthy housing and unhealthy families
- 27 sites nationally

## A local initiative

- 2013 Stakeholder meeting held by CNY Community Foundation
- 2015 NYS Attorney General awarded HHQ \$1 million
- 2016 Start of production
- Home HeadQuarters – Project Administrator

## GHHI Greater Syracuse Partners

### FUNDERS



Where the Smart Money Gives.



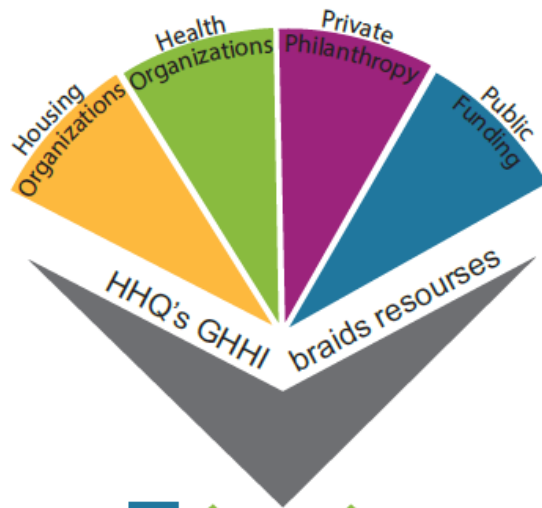
### HOUSING & HEALTH PARTNERS





# What makes a green and healthy home?

## Approach



Homeowners get holistic  
home improvements

## Process

- Housing Partners refer applicants
- Comprehensive assessment
  - Energy audit
  - Health educator
  - Housing inspection
- Identify scope of work
- Housing improvements
  - Health
  - Safety
  - Energy efficiencies
- Post analysis
  - Housing review
  - Health educator follow up
  - Energy audit follow up
- Evaluation

# What makes a green and healthy home?

## THE 8 ELEMENTS OF A GREEN & HEALTHY HOME



Green & Healthy Homes Initiative®  
Greater Syracuse



### DRY

- prevent rain water from entering your home by making sure drainage around the outside is flowing away from the house
- prevent water from entering your home by repairing roof leaks before they get too big
- clean spills and floods immediately
- check the plumbing in your home for leaks

### CLEAN

- empty trash regularly
- keep hair and animal fur to a minimum
- use wet-cleaning instead of dry dusting
- reduce clutter



### SAFE

- always wipe spills away quickly
- secure loose rugs and keep children's play areas free from hard or sharp surfaces
- store and properly label food
- secure loose rugs and keep kid's play area free from hard or sharp surfaces
- install smoke and carbon monoxide detectors
- keep poisons & chemicals out of reach for children

### WELL VENTILATED

- try to keep air moving in your home with fans or by opening windows
- ventilate bathrooms and kitchens



### PEST-FREE

- if needed, use traps and baits in closed containers
- seal cracks and openings throughout the home so pests cannot enter your home
- store food in pest-resistant containers



### CONTAMINANT-FREE

- keep floors and window areas clean using a wet cleaning approach
- have your home tested for radon, a naturally occurring dangerous gas that enters homes through soil, crawlspaces and foundation cracks
- reduce lead-related hazards in homes built before 1978 by having deteriorated paint removed or made safe

### ENERGY EFFICIENT

- caulk windows and door frames to ensure that they are airtight
- change the filter on your furnace regularly
- install a programmable thermostat or turn your heat down (and air conditioning up) when you are not at home
- seal your heating and cooling ducts
- use reduced amounts of energy, water & resource consumption

### WELL MAINTAINED

- inspect, clean & repair your home routinely
- take care of minor repairs & problems before they become large



# Energy Efficiency and Weatherization (EEW) & Its Impact on Environmental Health

## Insulation

- Reduce heat seepage and mitigating exposure to the cold

## Ventilation

- Decrease contaminants which may include bacteria, molds, mildew, viruses, pollen & animal dander

## Leaks & Foundation

- Reduce respiratory illness such as asthma

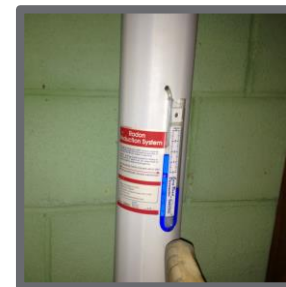
## Faulty electrical wiring

- Reduce fire hazards

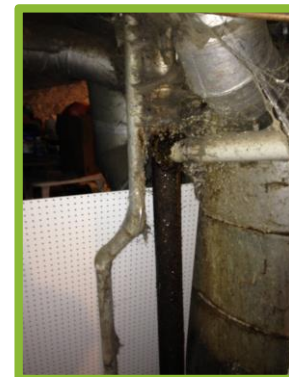
## Window & door replacement

- Reduce lead hazards
- Improve air quality and ventilation

## Radon



## Asbestos



## Asthma



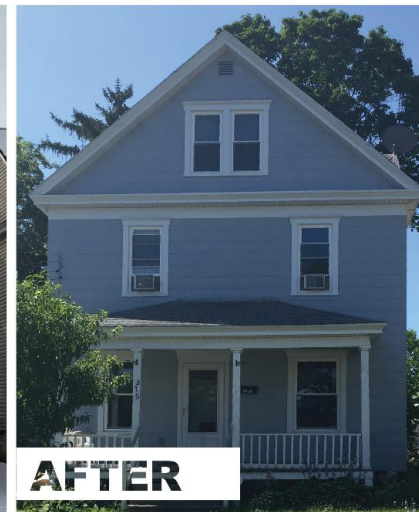
# Household Profile

## Before GHHI Greater Syracuse & Partners

- Owned by a single-mother with 2 children
- Furnace not working & little insulation
- Asbestos around the furnace
- Electrical hazards
- Peeling paint, inoperable windows
- Collapsing back porch and front steps

## After GHHI Greater Syracuse & Partners

- Asbestos removed
- A new furnace & water heater
- Insulation
- Electrical Improvements
- Remediation of lead paint & new windows
- New front steps & rear porch
- CO detectors fire alarms installed.



Partners: Home HeadQuarters, GHHI Greater Syracuse, PEACE, Inc., Onondaga County Health Department, and Onondaga County Community Development Division's Lead Hazard Reduction Program

# Presentation Highlights: GHHI Greater Syracuse

- **Harness local issues to make your program relevant:** After a [study](#) found that Syracuse had the highest lead in the nation, GHHI brought homeowners to the program for lead removal and capitalized on that interaction to address the home as a system.
- **Work with local and state governments to make whole home upgrades financially feasible for homeowners:** GHHI worked to demonstrate the health impacts of home upgrades to the Attorney General's office and this worked helped create the Central New York Healthier, Safer, Greener Homes Initiative, which is used to fund the program.
- Clearly message the benefits of home performance upgrades and provide evidence: [The GHHI Greater Syracuse 2016 Annual Report](#) lends the program credibility and demonstrates that the services yield benefits for indoor air quality and health outcomes.



# **Integrating Health into Home Performance: How Do We Get There?**

## **Roadmap Discussion**

# What Do We Really Know About the Health Benefits of Energy Upgrades?

- **Jonathan Cohen**, DOE Better Buildings Residential Network
- **Ely Jacobsohn**, DOE Home Performance with ENERGY STAR



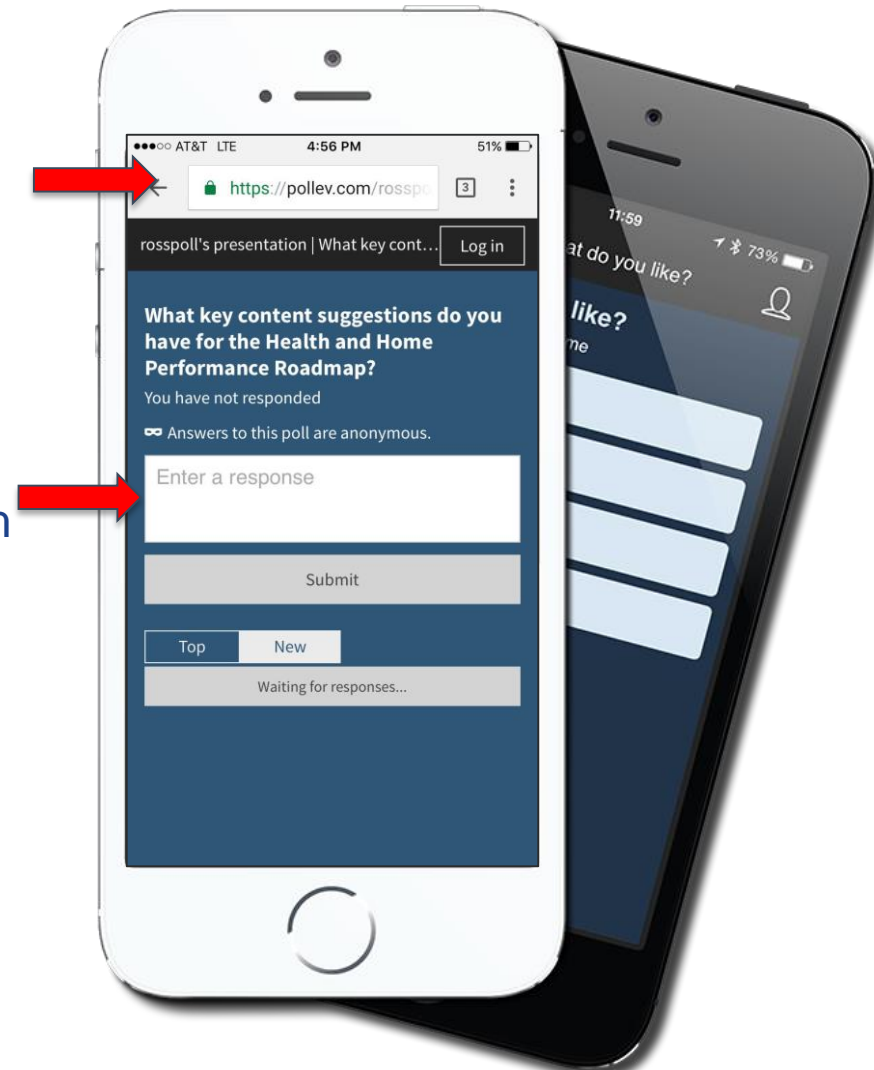
# Help us develop the Roadmap!

Respond at:  
**PollEv.com/RossPoll**

(on your phone or computer)

Tell us what key content  
suggestions you have for the Health  
and Home Performance Roadmap

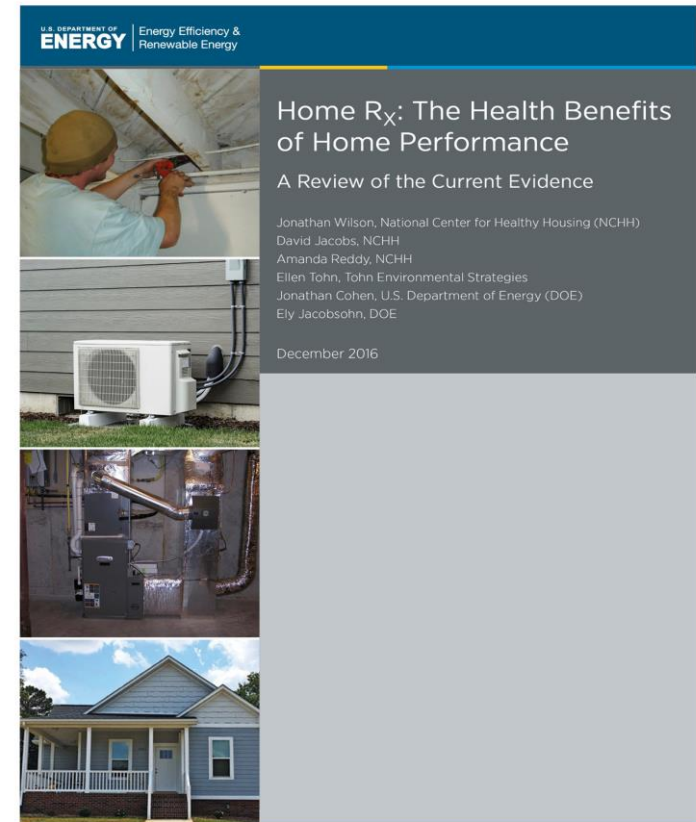
Vote   to highlight  
other's suggestions





# DOE Roadmap for Integrating Health into Home Performance

Element	What We Have	What We Need
Goals and Objectives		
Value to Stakeholders		
Workforce Development		
Marketing and Demand		
Success Measures		
Research		
Demonstrations		
Standards/Protocols		
Resources		
Funding Development/Access		



# DOE Roadmap for Integrating Health into Home Performance

Element	What We Have	What We Need
Goals and Objectives	?	Goals/objectives by stakeholder group, i.e. programs, contractors, homeowners, medical community
Value to Stakeholders	HPC: Standard Practice Manual for Cost Effectiveness ( <i>coming soon</i> )	?
Workforce Development	BPI Healthy Home Evaluator	What credentials are needed for credibility from medical community and insurance groups?
Marketing and Demand	HUD: Everyone Deserves a Safe & Healthy Home	Language to manage liability risk

# DOE Roadmap for Integrating Health into Home Performance

Element	What We Have	What We Need
Success Measures	?	?
Research	<ul style="list-style-type: none"><li>• DOE Literature Review: Home Rx: The Health Benefits of Home Performance</li><li>• E4theFuture White Paper: Occupant Health Benefits of Residential Energy Efficiency</li><li>• WAP Evaluation</li></ul>	?
Demonstrations	<ul style="list-style-type: none"><li>• Children's Mercy Hospital Kansas City</li><li>• Allegheny County Dept. of Health</li></ul>	?

# DOE Roadmap for Integrating Health into Home Performance

Element	What We Have	What We Need
Standards/Protocols	Examples from: <ul style="list-style-type: none"><li>• Mold/moisture in homes</li><li>• Formaldehyde in manufactured housing</li></ul>	?
Resources	?	?
Funding Development/Access	?	?

# Roadmap Discussion: Response Summary

## (1 of 4)

### ***What We Need:***

#### ***Funding:***

- Guidelines on how to access insurance/health dollars to pay for upgrades (22 Votes)

#### ***Measurements:***

- Metrics that show where homes stand before and after home performance work (This would also help in targeting which homes are likely to be significantly improved, and set expectations) (10 Votes)
- Comfort assessment and metrics to prevent over/under heating (7 Votes)
- Include the impact of lighting, including (a) adequate lighting and (b) circadian-tuned lighting (5 Votes)
- Metrics for occupants' health that can be assessed during an energy efficiency assessment (3 Votes)

# Roadmap Discussion: Response Summary

## (2 of 4)

### ***What We Need:***

#### ***Marketing:***

- Best practices for communicating with the health sector (insurers, hospitals, etc.) to help them recognize and value efficiency work in reducing health costs (16 Votes)
- Engaging utility program administrators and the level of involvement to expect (9 Votes)

#### ***Credentials:***

- Identification of credentials that are needed for credibility from the medical community and insurance groups (11 Votes)

# Roadmap Discussion: Response Summary

## (3 of 4)

### ***What We Need:***

#### ***Research:***

- Examples of engaging the medical industry into home performance (16 Votes)
- Evidence of health improvements related to space with air conditioning vs without air conditioning (12 Votes)
- A control/treatment study standard design so we can all aggregate our disparate pilots to have a more robust dataset (12 Votes)
- Identification of critical paths and integration/overlap (4 Votes)

#### ***Cost:***

- Build a market-driven process (6 Votes)
- Data that can demonstrate to insurance actuaries that a given intervention is likely to be cost-effective? (3 Votes)
- Demonstration of the Return on Investment (2 Votes)

# Roadmap Discussion: Response Summary

## (4 of 4)

### ***What We Need:***

#### ***Materials:***

- Tenant and homeowner education materials on healthy building and how to maintain a weatherized, tighter, more energy efficiency home to stay safe (8 Votes)
- Standardized forms to help communication between participants (3 Votes)

#### ***Other:***

- Clear set of goals, then measure outcomes and determine how accurately goals match delivered results. Inject accountability, reward accuracy, build confidence in marketplace, build predictive strengths and be able to rank contractors on ability to deliver on promise (7 Votes)



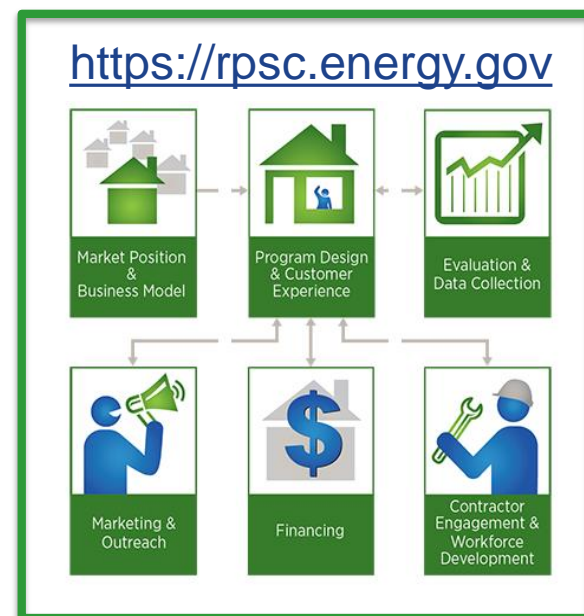
# Engagement in DOE Efforts

*To get involved in the roadmap process,  
please email [homehealth@csra.com](mailto:homehealth@csra.com)*

# Related Resources in the Residential Program Solution Center

## Explore resources related to integrating health benefits into energy efficiency programs:

- Read this DOE [report](#) providing a review of studies evaluating the effects of residential EE upgrades on indoor environmental quality and occupant health.
- Learn how innovative programs combine energy efficiency and health-focused co-benefits of home upgrades in this E4TheFuture [white paper](#).
- Explore the results of this Massachusetts [study](#) on low-income single-family health and safety related non-energy impacts.



- Check out the latest [Proven Practices](#) post on [Keeping the Program Simple](#).
- The Solution Center is continually updated to support residential energy efficiency programs—[member ideas are wanted](#)!

# 2017 Better Buildings Summit is one month away!



Be sure to [register today](#) for the 2017 [Better Buildings Summit!](#)



Spread the word:

[#BBSummit17](#) registration is right around the corner. Get ready to learn about expert [#EnergyEfficiency](#) enhancements <http://bit.ly/2iZCMsB>

# GET SOCIAL WITH US



Stay engaged and connected with the Better Buildings Residential Network and our partners from the residential and multifamily sectors!

**Follow us to plug into the latest Better Buildings news and updates!**

**Share with us** your top stories on how your organization is accelerating energy savings through efficiency upgrades, strategies, and investment!



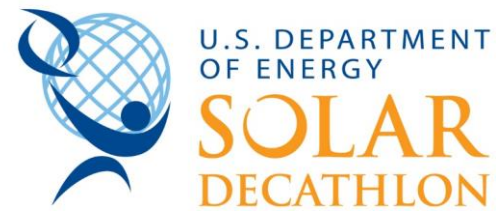
**[Better Buildings Twitter](#) with [#BBResNet](#)**



**[Better Buildings LinkedIn](#)**

**We can't wait to hear from you!**

# U.S. Department of Energy Solar Decathlon



## Oct 5-15, 2017 DENVER

- 13 Collegiate teams compete in 10 contests
  - New for 2017: Innovation and Water
- Winning team best blends technology, market potential, design excellence with smart energy solar production and maximum energy and water efficiency.
- Large free public event – showcases best of clean energy technology
- Denver location: new, mixed use smart community on transit line near Denver International Airport
- Sponsorship Opportunities
- Info: [www.SolarDecathlon.Gov](http://www.SolarDecathlon.Gov)

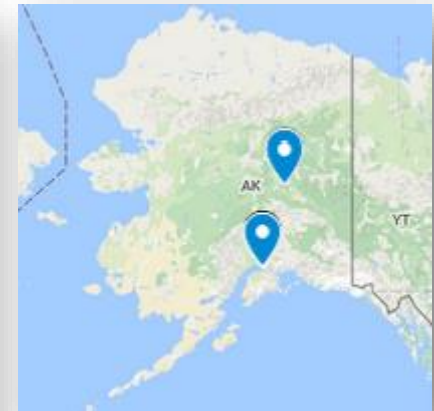


Solar Decathlon 2015 Teams in Irvine, Calif.  
Credit: Thomas Kelsey/U.S. Department of Energy Solar Decathlon

# Addenda: Attendee Information and Poll Results



# Call Attendee Locations



# Call Attendees: Network Members (1 of 2)

- Alaska Housing Finance Corporation
- American Council for an Energy-Efficient Economy (ACEEE)
- Arlington County Government
- Boulder County
- Bridging The Gap
- Build It Green
- Center for Energy and Environment (CEE)
- Center for Sustainable Energy
- City of Fort Collins
- City of Plano
- CLEAResult
- Delaware Sustainable Energy Utility
- District of Columbia Sustainable Energy Utility (DC SEU)
- EcoWorks
- Efficiency Nova Scotia
- Efficiency Vermont
- Elevate Energy
- Energy Efficiency Specialists
- FMC Facility Management Consultores



# Call Attendees: Network Members (2 of 2)

- Home Performance Guild of Oregon
- National Association of State Energy Officials (NASEO)
- NeighborWorks of Western Vermont
- Optimal Energy, Inc.
- PUSH Buffalo
- Research Into Action, Inc.
- ResiSpeak
- Stewards of Affordable Housing for the Future
- The Insulation Man, LLC
- Vermont Energy Investment Corporation (VEIC)
- Wisconsin Energy Conservation Corporation (WECC)

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

- AHP Homeownership Center
- Ajo
- Alaska Department of Health and Social Services
- Alliance to Save Energy
- Brand Cool
- Capstone Community Action
- Center for Sustainable Building Research
- CenterPoint Energy
- Clallam County PUD
- Cold Climate Housing Research Center
- E4TheFuture
- Earth Advantage
- Ecobeco
- Emerson
- EnergyWize
- EnergyWorks
- Environmental Design / Build
- Eversource Energy
- GoodCents
- Greater Minnesota Housing Fund
- Green & Healthy Homes Initiative Greater Syracuse
- Healthy Building Research
- Home Head Quarters, Inc.
- Home Ventilating Institute
- ICF

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

- Institut de recherche d'Hydro-Québec
- Local Initiatives Support Corporation (LISC)
- Michigan Environmental Council
- MN Pollution Control Agency
- Montana Department of Public Health & Human Services
- National Association of Home Builders
- New Ecology. Inc
- New Hampshire Electric Cooperative
- Oregon Dept. of Energy
- Philips Lighting
- Redhorse Corporation
- Salcido Solutions LLC
- Smith & Boucher Engineers
- Solar Habitats, LLC
- Stone Energy Associates
- Sullivan County Office of Sustainable Energy
- Sustainable South Bronx
- Tempo, Inc.
- U.S. Energy Information Administration
- University of Minnesota
- US Department of Housing and Urban Development

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

- U.S. Environmental Protection Agency
- Volunteers of America
- Washington State University Energy Program

# Opening Poll #1

- Which of the following best describes your organization's experience with integrating health and energy efficiency services?
  - Some experience/familiarity – **44%**
  - Limited experience/familiarity – **32%**
  - No experience/familiarity – **12%**
  - Very experienced/familiar – **12%**
  - Not Applicable – **0%**

# Opening Poll #2

- Which sector best represents your organization?
  - Nonprofit organization – **38%**
  - Consultant or program implementer – **29%**
  - State or local government – **15%**
  - Other (please explain) – **12%**
  - Utility – **6%**

# Closing Poll

- After today's call, what will you do?
  - Seek out additional information on one or more of the ideas – **79%**
  - Consider implementing one or more of the ideas discussed – **18%**
  - Make no changes to your current approach – **3%**
  - Other (please explain) - **0%**