Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - **Mithra Moezzi**, Independent Consultant
  - **Nate Adams**, Energy Smart Home Performance
  - **Pamela Brookstein**, Elevate Energy
- Open 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.
Opening Poll

Which best describes your organization’s familiarity or experience with myth busting and its connection to residential energy efficiency?

- Very experienced/familiar
- Some experience/familiarity
- Limited experience/familiarity
- No experience/familiarity
- Not applicable
Opening Poll Results

Which best describes your organization’s familiarity or experience with myth busting and its connection to residential energy efficiency?

- Very experienced/familiar – 18%
- Some experience/familiarity – 37%
- Limited experience/familiarity – 27%
- No experience/familiarity – 18%
- Not applicable – 0%
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:
• May 10: Making the Grid Smart: Moving Toward Two-Way Communication in the Digital Age

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, or go to energy.gov/eere/bbrn & click Join
RESIDENTIAL EFFICIENCY
MISCONCEPTIONS
FROM US & FROM THEM

US DOE Better Buildings Residential Network’s Peer Exchange Call
12 April 2018
Speaker: Mithra Moezzi • Ghoulem Research • California
**Rundown**

Popular definition of *myth*: what (some) people think is fundamentally true, but isn’t

- Told by people in homes
- Told about people in homes

Why this happens: knowing, thinking, & the complications of truth

Why this matters: anthropological + statistical perspectives
DISHWASHERS USE MORE ENERGY THAN HAND-WASHING

Dishwashing is so easy in Hotpoint’s “Swing-Door” portable - a 10-year-old can do it blindfolded!
“FACT” SUMMARY ON DISHWASHERS

- In US, hand-washing dishes might use 3.5x the energy and 3.5x the water of a standard dishwasher, according to some studies (Snow 2018).

- Nearly half (46%) of US households don’t use the dishwasher they have (20% of the 68% with dishwashers) or don’t have one (32%) [EIA 2017].

- There are reasons to not use a dishwasher that have nothing to do with the aim of saving energy.

- And various ways to use the dishwasher inefficiently (e.g. pre-washing, fractional loads, and to hand-wash efficiently [Richter 2010]).
PORTABLE HEATERS COST LESS TO USE THAN CENTRAL OR WALL GAS FURNACE
KEEP FANS ON WHILE AWAY
NEW EFFICIENT WINDOWS ARE ONE OF THE BEST ENERGY EFFICIENCY INVESTMENTS
<table>
<thead>
<tr>
<th>Misconception</th>
<th>Illustrates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dishwashers use more energy than hand-washing</td>
<td>Virtues of labor, the costs of machines</td>
</tr>
<tr>
<td>Portable heating costs less than central (NG) heating</td>
<td>Size &amp; area comparisons</td>
</tr>
<tr>
<td>Windows are a top energy efficiency investment</td>
<td>Sensation, marketing, and appealing non-energy qualities</td>
</tr>
<tr>
<td>Leave the heat or cooling on low while away to avoid extra costs from big temperature differences</td>
<td>Mental models of heating, cooling</td>
</tr>
<tr>
<td>Turn AC on “super” to cool fast (W. Kempton)</td>
<td>Mental models of heat and coolth; pleasure/power</td>
</tr>
<tr>
<td>Keep fans on while away to save energy later</td>
<td>Quiet differences between space temperature &amp; sensation+thermoregulation</td>
</tr>
<tr>
<td>Turning something off and back on again uses more energy than leaving it on</td>
<td>Mental models of start-up costs</td>
</tr>
<tr>
<td>Turning off lights is the best way to save energy</td>
<td>Historic changes in lighting efficiency and the number of type of energy-using devices in the home</td>
</tr>
<tr>
<td>Keep the refrigerator as full as possible to save energy</td>
<td>Mental models of refrigeration; big fridges</td>
</tr>
</tbody>
</table>
Programs & Policy

What we say, what we assume, how we think
“WE HAVE TO SAY SOMETHING”

The Dilemma of the Energy Advice Writer

Technologies may not work as predicted

Great diversity across households

Little measurement

Nobody’s a specialist
WE DON’T TEST THEORIES: “CLEAN YOUR REFRIGERATOR COILS” (AN OLD ONE)
WE FALL INTO SHORTHAND: “PROGRAMMABLE THERMOSTATS SAVE ENERGY” (AUTOMATICALLY)

No, it’s the settings that matter.
WE FORGET ABOUT PAIN V. GAIN: TURNING OFF & SHUTTING DOWN ELECTRONICS
WE UNDERESTIMATE PEOPLE
WE OVER RELY ON AVERAGES AND “TYPICALS” (+ MISTAKE AGGREGATE FOR THE INDIVIDUAL)
✓ Technology is the solution
✓ Corollary: Energy-efficiency saves energy absolutely
✓ Corollary: Getting people to buy energy efficient products is key
✓ Energy efficiency costs more
✓ One technology fits most
✓ If technologies don’t save energy, people are using them wrong
✓ Behavioral conservation doesn’t persist
✓ If people understood global warming, they would save more energy
✓ Solar is energy-efficient
DILEMMAS AND PROGRESS

Why is it so hard?
How can it be done better?
DILEMMAS

Households, their practices, & their stuff are extremely diverse

Little fieldwork on what happens in homes

Energy is a minor part of home life, while home life has tremendous effects on home energy use

High faith in technology “as is”

Work requires us to act, despite uncertainty + “For every Ph.D. there is an equal and opposite Ph.D.”

Need for countability & success for a very tough problem and in a politicized arena
How to better wrangle diversity/differences across households, circumstances, practices?

How to better learn what people think and do with respect to energy in their homes? What are the details of usage and how and why do they change?  
Can we learn this from people who work in the field?

Can to know the energy questions, issues that are really faced, and can we better answer these? What kind of answers can we give besides “buy this big thing”?

Would more and better measurement help?

Can we find better ways to illustrate vs. instruction via “tips”?

Can we integrate more skepticism into the claims, assumptions, and arguments implicit in our daily work?
I WELCOME YOUR REACTIONS, IDEAS, QUESTIONS, AND EXAMPLES OF MYTHS/STORIES ON HOME ENERGY USE


Open and close your control panel.

Raise your hand to enter the discussion.

Please use the questions box to submit questions, comments, or alert us of technical difficulties.

If you have called in on a phone today, double check that you’ve selected telephone as your audio option.
• We’re compelled as an industry to implement solutions despite great uncertainty
  • Reliance on averages and “typicals” mistakes the aggregate for the individual
  • Compounded by need for countability and success in often politicized arenas

• This leads to a reliance on shorthand
  • “Programmable thermostats save energy.” (Implied: automatically)

• At the expense of nuance and context
  • “Programmable thermostats save energy, when set correctly.”

• We often unfairly judge people
  • Most are well-meaning, energy-conscious and even innovative
  • They just have lives beyond energy efficiency.
  http://homeenergy.org/show/article/id/914

  https://doi.org/10.1016/0378-7788(95)00925-N
Nate Adams
Energy Smart Home Performance
Energy Efficiency

Myth Busting:

1. It’s Really Efficiency Last
2. Not Your Father’s Heat Pump
<table>
<thead>
<tr>
<th>Audit Number (date)</th>
<th>Name</th>
<th>Projected SIR</th>
<th>Projected Payback</th>
<th>Customer Concerns</th>
<th>Blower Door</th>
<th>sf</th>
<th>Pre EUI</th>
<th>Pre Electric Use</th>
<th>Pre Gas Use (therm)</th>
<th>Pre Fuel Oil (gal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>131101</td>
<td>Brian &amp; T</td>
<td>0.8</td>
<td>22.20</td>
<td>Second floor not heating well, twins waking up from naps cold</td>
<td>3200</td>
<td>3300</td>
<td>55.0</td>
<td>9000</td>
<td>1469</td>
<td></td>
</tr>
<tr>
<td>140505</td>
<td>Jon and H</td>
<td>0.42</td>
<td>47.64</td>
<td>Uneven temperatures, electrification</td>
<td>2550</td>
<td>1764</td>
<td>55.2</td>
<td>4500</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>140701</td>
<td>Adam Ga</td>
<td>0.4</td>
<td>48.40</td>
<td>2nd floor 15 degrees warmer, son didn't sleep well, pipe freezing concern, resilience</td>
<td>5800</td>
<td>2450</td>
<td>74.2</td>
<td>5800</td>
<td>1580</td>
<td></td>
</tr>
<tr>
<td>141105</td>
<td>Alec and</td>
<td>0.67</td>
<td>24.50</td>
<td>Son's allergies, addition comfort, moisture</td>
<td>3850</td>
<td>2800</td>
<td>51.6</td>
<td>12300</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>150121</td>
<td>Kevan Mc</td>
<td>0.22</td>
<td>69.90</td>
<td>Second floor comfort, stop moist basement, overall comfort</td>
<td>8000</td>
<td>1728</td>
<td>82.1</td>
<td>7000</td>
<td>1150</td>
<td></td>
</tr>
<tr>
<td>150223</td>
<td>Carlton</td>
<td>0.23</td>
<td>67.10</td>
<td>Office comfort, general comfort, reduce ice dams, don't crack string instruments, craft room comfort</td>
<td>9000</td>
<td>2852</td>
<td>59.9</td>
<td>11000</td>
<td>1300</td>
<td></td>
</tr>
<tr>
<td>150311</td>
<td>Jim and J</td>
<td>0.14</td>
<td>169.00</td>
<td>Ice icicles, poor comfort in master</td>
<td>3250</td>
<td>2568</td>
<td>48.7</td>
<td>7200</td>
<td>980</td>
<td></td>
</tr>
<tr>
<td>150406</td>
<td>Ryan and</td>
<td>0.5</td>
<td>44.50</td>
<td>Ice dams, cold bedroom, hot second floor</td>
<td>6475</td>
<td>2565</td>
<td>102.6</td>
<td>17000</td>
<td>2000</td>
<td></td>
</tr>
<tr>
<td>140424</td>
<td>John and</td>
<td>0.13</td>
<td>134.20</td>
<td>Ice dams, addition comfort, 2nd floor comfort, allergies</td>
<td>3450</td>
<td>1700</td>
<td>82.6</td>
<td>16000</td>
<td>618</td>
<td></td>
</tr>
<tr>
<td>150501</td>
<td>Paul and</td>
<td>0.1</td>
<td>153.00</td>
<td>Add AC, create comfortable house</td>
<td>4000</td>
<td>1300</td>
<td>99.9</td>
<td>8000</td>
<td>1000</td>
<td></td>
</tr>
</tbody>
</table>
# Efficiency Last

<table>
<thead>
<tr>
<th>Projected SIR</th>
<th>Projected Payback</th>
<th>Customer Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8</td>
<td>22.20</td>
<td>Second floor not heating well, twins waking up from naps cold</td>
</tr>
<tr>
<td>0.42</td>
<td>47.64</td>
<td>Uneven temperatures, electrification</td>
</tr>
<tr>
<td>0.4</td>
<td>48.40</td>
<td>2nd floor 15 degrees warmer, son didn't sleep well, pipe freezing concern, resilience</td>
</tr>
<tr>
<td>0.67</td>
<td>24.50</td>
<td>Son's allergies, addition comfort, moisture</td>
</tr>
<tr>
<td>0.22</td>
<td>69.90</td>
<td>Second floor comfort, stop moist basement, overall comfort</td>
</tr>
<tr>
<td>0.23</td>
<td>67.10</td>
<td>Office comfort, general comfort, reduce ice dams, don't crack string instruments, craft room comfort</td>
</tr>
<tr>
<td>0.14</td>
<td>169.00</td>
<td>Icicles, poor comfort in master</td>
</tr>
<tr>
<td>0.5</td>
<td>44.50</td>
<td>Ice dams, cold bedroom, hot second floor</td>
</tr>
<tr>
<td>0.13</td>
<td>134.20</td>
<td>Ice dams, addition comfort, 2nd floor comfort, allergies</td>
</tr>
<tr>
<td>0.1</td>
<td>153.00</td>
<td>Add AC, create comfortable house</td>
</tr>
</tbody>
</table>
Efficiency Last

Office comfort problems in 1957 Cape Cod Case Study
Efficiency Last

Carlton Sears:
“My office used to dip into the 50s on cold days. It was 7 degrees out the other day, my office was within 1-2 degrees of the rest of the first floor.”
Efficiency Last

What do consumers care about?
Ask them.
Large projects happen, as do energy savings.

Efficiency Last, Comfort First.
Not Your Father’s Heat Pump

- Built 1915
- 1728 square feet
- 1 occupant
- Foamed walkup attic
- 1960 cfm50 leakage
- 57,611 BTU/hr Manual J

- Built 1918
- 1764 square feet
- 1 occupant
- Foamed walkup attic
- 1860 cfm50 leakage
- 54,713 BTU/hr Manual J
Not Your Father’s Heat Pump

Furnace Heated

Air Source
Heat Pump Heated
(cold climate aka ccASHP)
Not Your Father’s Heat Pump

Furnace Heated
Cost to Operate
12/15 - 12/16
$1813.62

ccASHP Heated
Cost to Operate
12/15 - 12/16
$1730.00
<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018 to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>cooling:</td>
<td>415 kWh</td>
<td>0 kWh</td>
</tr>
<tr>
<td>heatpump heating:</td>
<td>4650 kWh</td>
<td>3720 kWh</td>
</tr>
<tr>
<td>continuous fan:</td>
<td>212 kWh</td>
<td>6 kWh</td>
</tr>
<tr>
<td>electric heat:</td>
<td>96 kWh</td>
<td>128 kWh</td>
</tr>
<tr>
<td>electric reheat:</td>
<td>0 kWh</td>
<td>0 kWh</td>
</tr>
<tr>
<td>total electric:</td>
<td>5373 kWh</td>
<td>3854 kWh</td>
</tr>
</tbody>
</table>
## Not Your Father’s Heat Pump

### Estimated Yearly Usage vs. Energy Costs ($$$)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018 to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>cooling</td>
<td>$45</td>
<td>$0</td>
</tr>
<tr>
<td>heatpump heating</td>
<td>$513</td>
<td>$410</td>
</tr>
<tr>
<td>continuous fan</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>electric heat</td>
<td>$11</td>
<td>$14</td>
</tr>
<tr>
<td>electric reheat</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total Electric</strong></td>
<td><strong>$569</strong></td>
<td><strong>$424</strong></td>
</tr>
</tbody>
</table>

I have daily data on 5 electrifications and one hybrid through the 2017-2018 cold snap.
Myth Busting:

1. It’s Really Efficiency Last
2. Not Your Father’s Heat Pump

nate@energysmartohio.com

natethehousewhisperer.com
Discussion: Nate Adams

Open and close your control panel

Raise your hand to enter the discussion

Please use the questions box to submit questions, comments, or alert us of technical difficulties

If you have called in on a phone today, double check that you’ve selected telephone as your audio option.
Efficiency is last (on the list of homeowner concerns)
- Customers DO care about comfort – but what else?
- Ask them, and focus on what the customer is trying to solve
- Have the homeowner list their issues, rank them and say how much they’d be willing to spend to resolve each

ASHPs should be considered at the start of most every project
- Cold-climate ASHPs especially have made great technological progress
- Very often meet (or even beat) operational costs of gas furnaces in cold climates
- GSHPs have their applications, but higher initial costs often tip the balance
Pamela Brookstein
Elevate Energy
Our goal is as basic as it is bold: smarter energy use for all.

https://www.elevateenergy.org/
Myth Number One

All real estate agents are full-time, making a living selling property.
Myth Number Two

There is an MLS.
(Multiple Listing Service)
Truth!

http://blog.narrpr.com/rpr-partners/
95/100 MLSs that cover the largest metro areas have Green Fields
Myth Number Three

If I want help reaching my real estate community, I should call the National Association of REALTORS®!

Let’s go straight to the top!
## Truth! Real Estate is Local

<table>
<thead>
<tr>
<th>STATE</th>
<th>ASSOCIATION</th>
<th>WEBSITE</th>
<th>PHONE</th>
<th>FAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>DELAWARE ASSOCIATION OF REALTORS®</td>
<td><a href="http://www.delawarerealtor.com">www.delawarerealtor.com</a></td>
<td>(302) 734-4444</td>
<td>(302) 734-1341</td>
</tr>
<tr>
<td></td>
<td>KENT COUNTY ASSOCIATION OF REALTORS®</td>
<td><a href="http://www.kcar.org">www.kcar.org</a></td>
<td>(302) 678-9750</td>
<td>(302) 678-0848</td>
</tr>
<tr>
<td></td>
<td>NEW CASTLE COUNTY BOARD OF REALTORS®</td>
<td><a href="http://www.nccbor.com">www.nccbor.com</a></td>
<td>(302) 762-4800</td>
<td>(302) 762-4840</td>
</tr>
<tr>
<td></td>
<td>SUSSEX COUNTY ASSOCIATION OF REALTORS®</td>
<td><a href="http://www.scaor.com">www.scaor.com</a></td>
<td>(302) 855-2300</td>
<td>(302) 855-2319</td>
</tr>
<tr>
<td>FL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resources

We’ve compiled resources to help energy efficiency programs, contractors, and regional efficiency alliances engage with the real estate industry and learn more about what’s happening at the intersection of real estate and energy efficiency and clean energy. You can also subscribe to our monthly newsletter that features the latest news and recent developments in the fair value of high performance homes.
Pamela Brookstein
Market Transformation Specialist
Pamela.Brookstein@ElevateEnergy.org
773-269-2220

https://www.elevateenergy.org/value-high-performance-homes
Discussion: Pamela Brookstein

Open and close your control panel

Raise your hand to enter the discussion

Please use the questions box to submit questions, comments, or alert us of technical difficulties

If you have called in on a phone today, double check that you’ve selected telephone as your audio option.
• **Most real-estate agents work part-time, and sell few houses**
  • Find the “rock stars”: full-time, sell many homes and great at marketing

• **There are many hundreds of MLS services, not one central platform**
  • 700 nationwide, and 95/100 covering the largest metro areas have Green Fields (entry fields for green information)

• **All real estate is local**
  • Work with your local real estate community (state and local associations rather than the NAR)
  • Contact the education director of your local association and find out what kind of outreach might be helpful to their members

• **It’s our job to communicate the value of energy efficiency**
  • Can’t expect everyone to be knowledgeable and passionate
  • Understand customer needs and wants first
What are the gaps in knowledge around residential energy efficiency and the myths presented that, if filled, would help improve work in this area?
Closing Poll

- After today's call, what will you do?
  - Consider implementing one or more of the ideas discussed
  - Seek out additional information on one or more of the ideas
  - Make no changes to your current approach
  - Other (please explain)
Closing Poll Results

- After today's call, what will you do?

  - Consider implementing one or more of the ideas discussed – 26%
  - Seek out additional information on one or more of the ideas – 53%
  - Make no changes to your current approach – 18%
  - Other (please explain) – 3%
    - Other responses: Picked up some new concepts but not specific ideas to implement
Upcoming Seasonal Messaging Opportunities

Now is the time to start planning energy efficiency messaging!

Summer is cooling season

**Cut Energy Costs this Summer**

Burlington, VT

On hot summer days, stay cool while spending less on energy with these tips from Efficiency Vermont:

- **Block the Heat.** Caulk around window and exterior door frames and add window coverings to reduce heat gain. When it’s hotter outside than inside, close your windows, minimize sunlight through blinds and window coverings, and close exterior doors.
- **Is the House Hotter than the Outdoors?** Open your windows and let cool outside air blow in and hot air blow out. That will push out hot air and pull in cool air through your open windows.

**5 Ways to Beat the Heat**

July 13, 2013 / 0 Comments / in Energy Efficiency Tips / by Nicole Klosterman

- **1. Use Energy-Efficient Lightbulbs.** Choose bulbs that use less energy and last longer.
- **2. Keep Your Air Conditioning Unit Clean.** Regular maintenance can improve efficiency and save you money on energy bills.
- **3. Use Fans.** Circulate cool air in your home to keep your air conditioner working efficiently.
- **4. Seal Leaks.** Check your home for drafts and seal them with weatherstripping or caulking.
- **5. Program Your Thermostat.** Use time-based thermostats to save energy when you’re not home.

Efficiency Vermont

Greater Cincinnati Energy Alliance
Finds us at the HPC Conference

- **Home Performance Industry Round Up** (Mon. 10:30 – 5:00)
- **Better from A Distance: Saving Money and Improving Quality with Remote Techniques** (Tues. @ 10:30)
- **Home Performance with ENERGY STAR: All the Ingredients You Need for a Successful Program** (Wed. @ 8:30)
- **Advanced Residential Energy Efficiency Technologies** (Thurs. @ 10:30)
Resources to help improve your program and reach energy efficiency targets:

- **Handbooks** - explain *why* and *how* to implement specific stages of a program.

- **Quick Answers** - provide answers and resources for common questions.

- **Proven Practices** posts - include lessons learned, examples, and helpful tips from successful programs.

- **Technology Solutions** NEW! - present resources on advanced technologies, **HVAC & Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.

[Explore the Residential Program Solution Center](https://rpsc.energy.gov)
Thank You!

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

Please send any follow-up questions or future call topic ideas to:

bbresidentialnetwork@ee.doe.gov