

BUILDINGENERGY BOSTON

Home Energy Labeling: The New Granite Countertops of Real Estate

August 14, 2020 · 11:00 am

Presenters:

**Samantha Caputo (NEEP), Julia Dumaine (CT DEEP),
Ellen Tohn (Tohn Environmental Strategies)
& Craig Foley (LEAR Realty Partners)**



Home Energy Labeling: The New Granite Countertops of Real Estate

Building Energy Boston – NESEA

August 14, 2020

Northeast Energy Efficiency Partnerships



“Assist the Northeast and Mid-Atlantic region to reduce building sector energy consumption by at least 3% per year and carbon emissions by at least 40% by 2030 (relative to 2001)”

Mission

We seek to accelerate regional collaboration to promote advanced energy efficiency and related solutions in homes, buildings, industry, and communities.

Vision

We envision the region's homes, buildings, and communities transformed into efficient, affordable, low-carbon, resilient places to live, work, and play.

Approach

Drive market transformation regionally by fostering collaboration and innovation, developing tools, and disseminating knowledge



Today's Speakers



Julia Dumaine

Economist, Connecticut DEEP



Ellen Tohn

Tohn Environmental Strategies



Samantha Caputo

Senior Policy Associate, NEEP



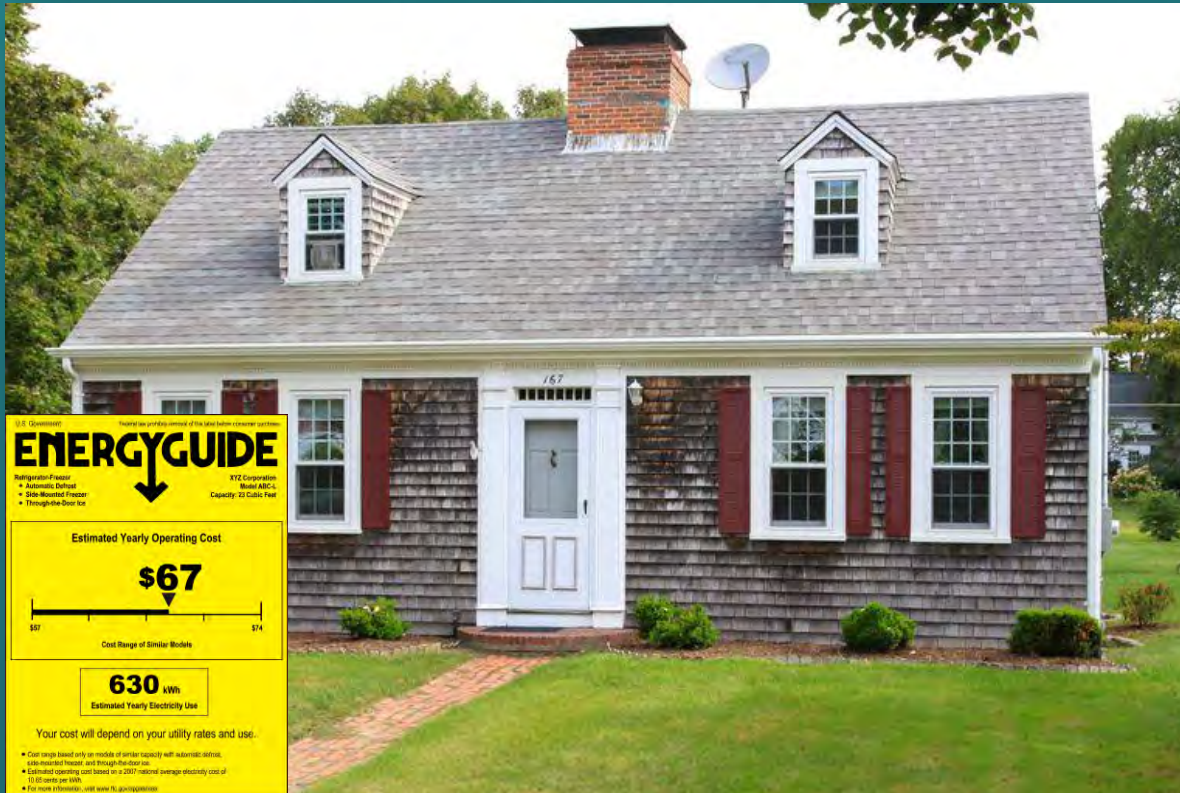
Craig Foley

CSO, LAER Realty Partners

Why Residential Labeling?



FIRST STEP Towards Improving Energy Performance You can't manage what you don't measure



Making the Invisible, Visible



State and Local Gov't

- Support for energy efficiency and clean energy **program management**
- Labeling and retrofiting homes to **meet state energy and climate goals**
- Economic growth
 - home performance contractors, energy auditors, weatherization installers, HVAC technicians, etc.

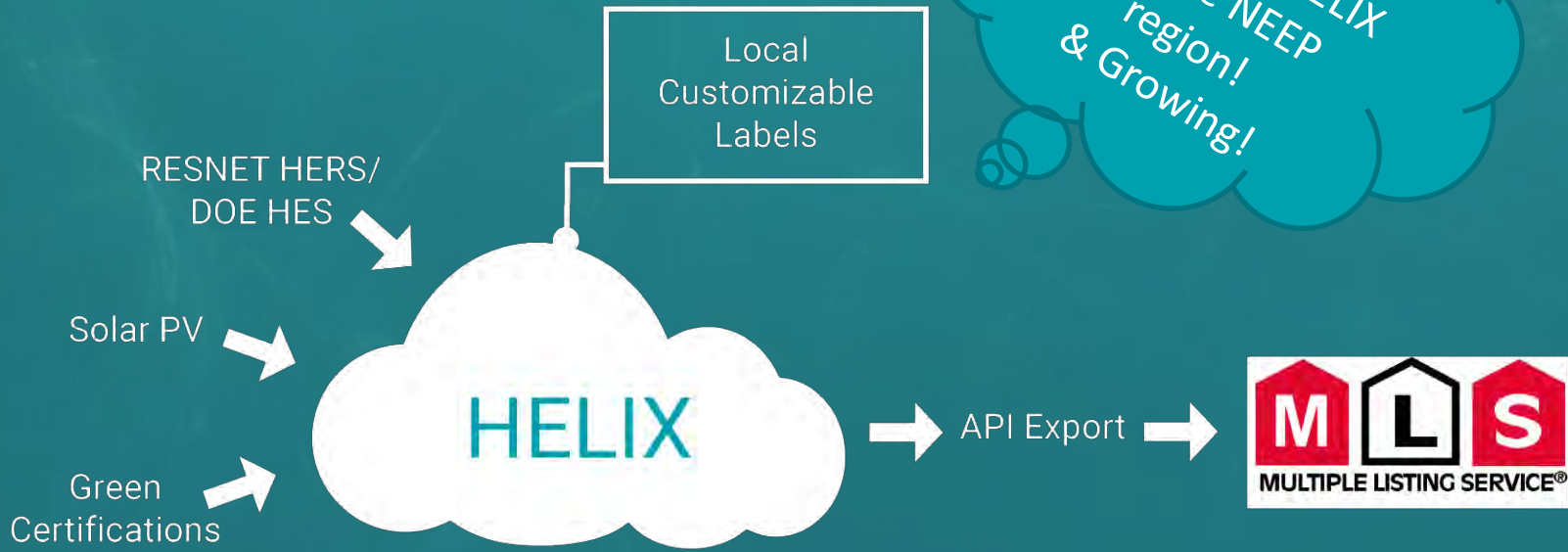
Real Estate Professionals

- Lenders, Realtors, & appraisers use labeling in **mortgaging, marketing, & appraising**
- Access to **verified data**
- Meet market interest in **sustainable and high performing homes**
- Transparency for buyers and sellers

The Gap



The Solution



Over 370,000 records in HELIX for the NEEP region! & Growing!

- Flexible policy management tool**
- Track/manage compliance
 - Export to local MLS
 - Create custom labels
 - Access for local real estate professionals
 - Trainings and technical assistance

The Many Benefits of Residential Labeling



Health



Comfort



Safety



Cost Savings



Energy Savings



Resilience



Cleaner
Environment



Reduced
Greenhouse Gases

Motivating Energy Efficiency Improvements through Home Energy Labeling

Julia Dumaine

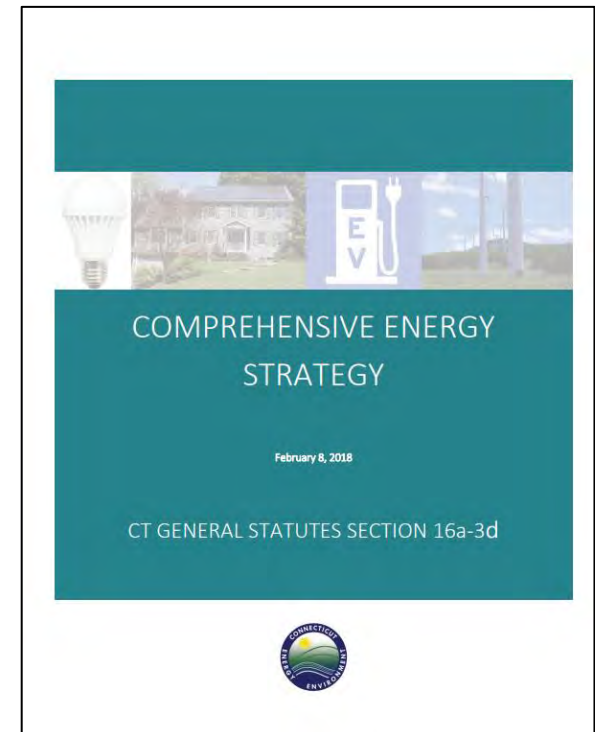
Connecticut Department of Energy and Environmental Protection



2018 CT Comprehensive Energy Strategy

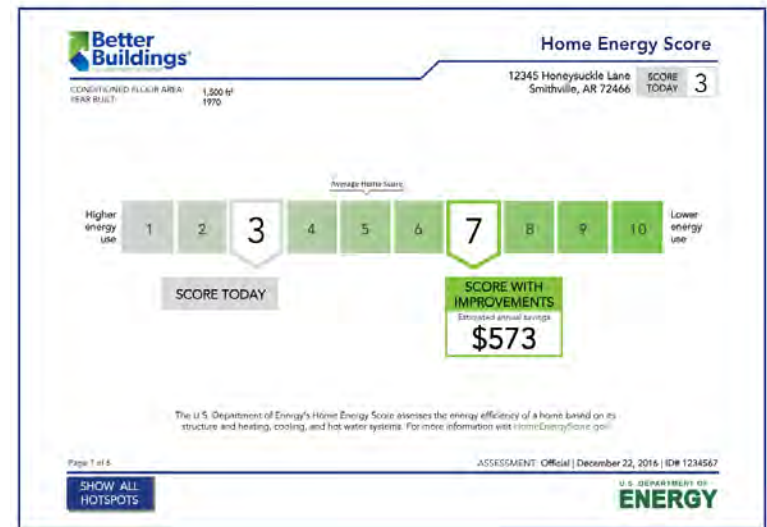
Strategy #2: Advance market transformation of the energy efficiency industry

- A. Integrate energy efficiency with real estate market forces
- B. Develop a sustainable workforce to meet industry demand
- C. Standardize efficiency with energy performance codes, standards, and certifications
- D. Transition to cleaner thermal fuels and technologies

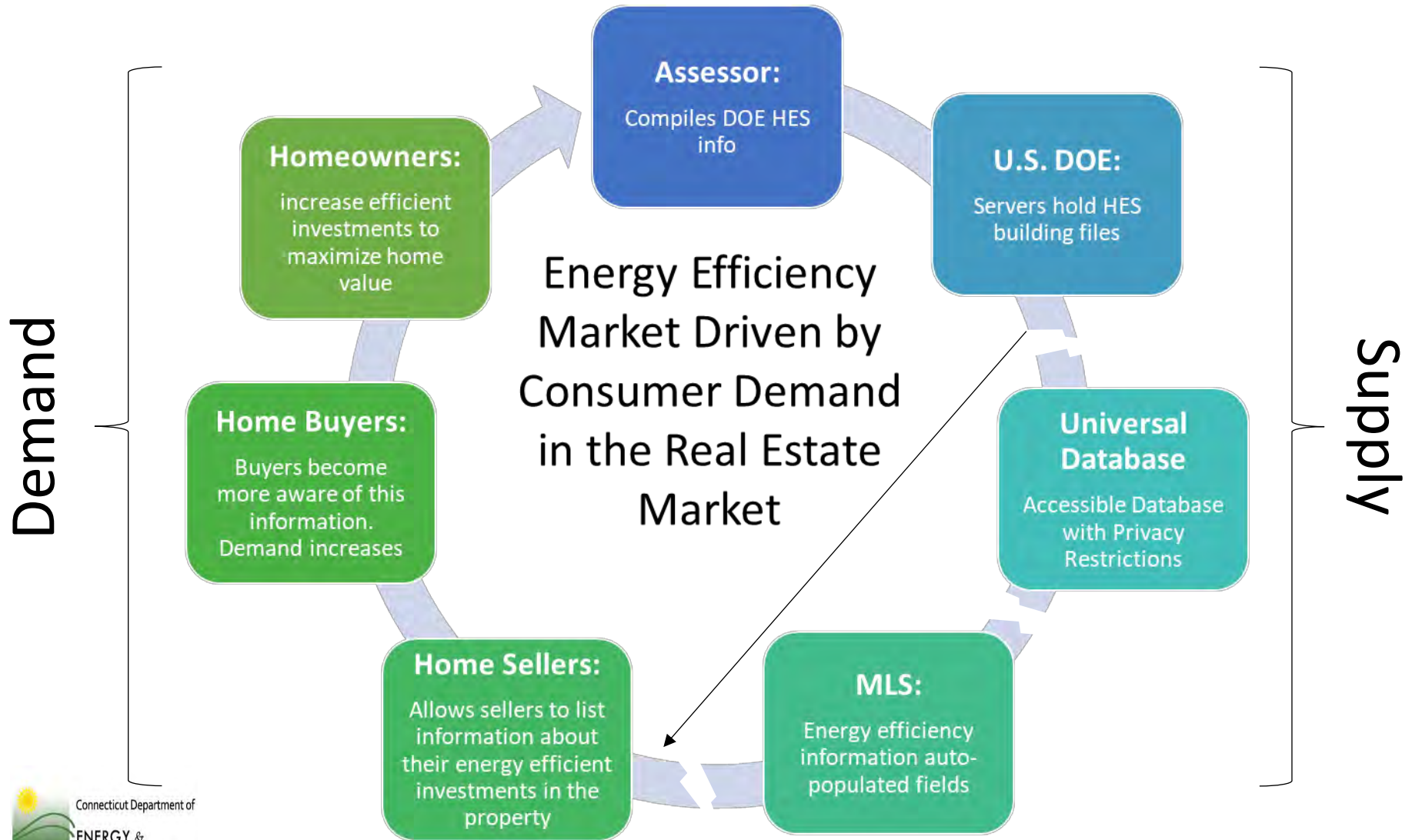


Home Energy Labeling in Connecticut

- Statutory goal of achieving market transformation through C&LM programs
- Connecticut was first statewide Home Energy Score implementer in April 2015
- Home Energy Score is a feature of all energy assessments in qualifying homes that opt-in
- All lead technicians are required to be Assessors



Real Estate-Driven Market Transformation



Creating a Database

- *Home Energy Labeling Information eXchange (HELIX)*
 - Three-year project to develop the universal database capable of auto-populating real estate listings with home energy information in a standardized format
 - Partnership of seven states (New England + New York) using U.S. DOE SEP Competitive Grant received by Vermont



Who Needs to be at the Table?

Appraisers

Inspectors

Lenders

MLS's

Realtors

Utilities
UI SCG CNG
EVERSOURCE

Contractors
(HVAC, Energy
Auditors, Builders)

Engaging Contractors

Leverage existing communication pathways.

- CT focused on utility Home Energy Solutions contractors to start

Conduct outreach to ensure their questions and concerns are addressed.

- Held roundtables and circulated surveys to understand contractor concerns.

Employ consistent messaging.

- Took the top FAQs and created messaging materials to share and train on.

Build and maintain technical knowledge.

- Engage with DOE, they are a resource to help build technical knowledge.

How can you express the benefit to contractors?

- DOE Home Energy Score creates a roadmap of deeper energy efficiency measures for customers which contractors can leverage as a sales tool.

Engaging Contractors- examples of concerns

“A lower score may end up being detrimental to a home,”

FALSE: a more informed consumer makes a better decision.

- a) Studies have shown that homebuyers like having energy information, and high bills or a low score do not necessarily “kill” a sale
- b) A low score does not necessarily mean that a home is poorly built.
 - The score estimates a home’s total energy use, not energy per sq. ft.
 - A 4,000sq. Foot, beautiful home will likely be expected to use more energy each year than the average U.S. home

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy
26 MPG (combined city/hwy) 22 city 32 highway
3.8 gallons per 100 miles
You save **\$1,850** in fuel costs over 5 years compared to the average new vehicle.

Annual fuel COST
\$2,150

Fuel Economy & Greenhouse Gas Rating 7 out of 10
Smog Rating 10 out of 10

fueleconomy.gov
Calculate personalized estimates and compare vehicles.

EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy
11 MPG (combined city/hwy) 9 city 15 highway
9.1 gallons per 100 miles
You spend **\$14,400** more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel COST
\$5,400

Fuel Economy & Greenhouse Gas Rating 1 out of 10
Smog Rating 5 out of 10

fueleconomy.gov
Calculate personalized estimates and compare vehicles.

Engaging Realtors

Customize training to meet them where they are.

- Working with local realtor associations to engage on familiar platforms and provide CEU's

Use data and evidence.

- Demonstrate that the stock of data is growing, available, and be prepared to address concerns about labeling.

Engage them in the process.

- Most realtor associations and MLSs are member-based organizations. Education helps empower them to demand change.



Craig Foley, CSO and REALTOR®, conducting a training on energy efficiency and solar PV for Connecticut realtors in September, 2019.

Engaging the Multiple Listing Services

Establish the necessary technology.

- HELIX allowed us to establish credibility and open discussions.

Recognize and adjust to different industry timelines.

- MLS board engagement can change.

Leverage their membership base— the realtor community.

- Educate the realtors to demand this information be available.

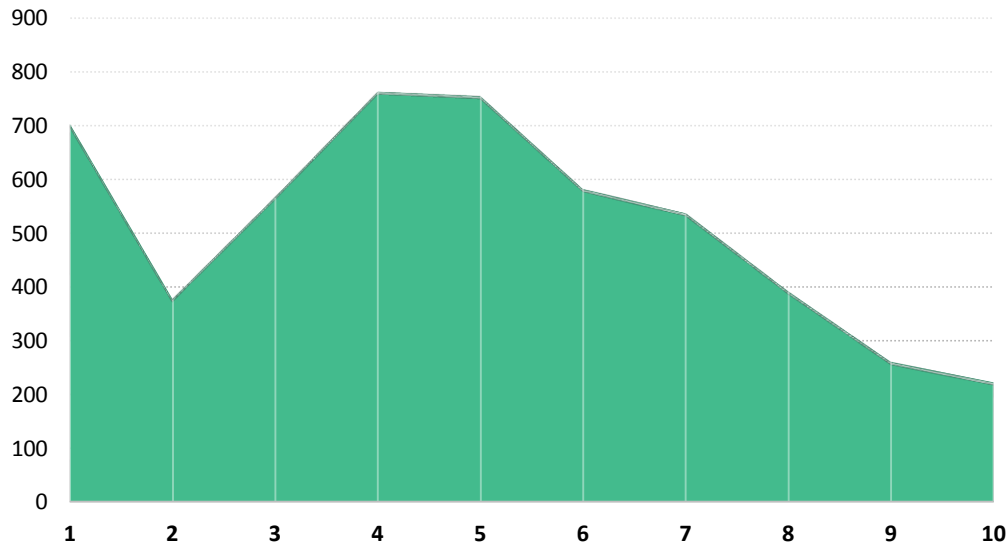
Build and maintain technical knowledge.

- Bring their IT staff to the table if possible.

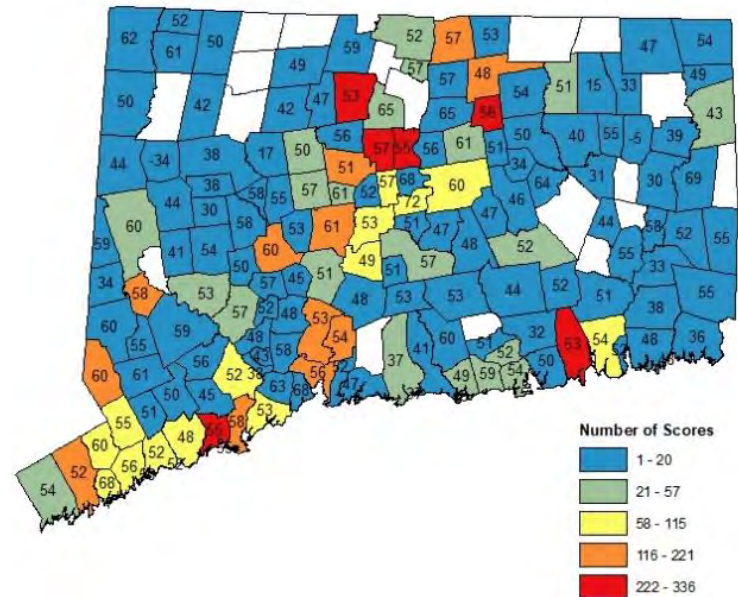
Track Your Data

- **Connecticut has almost 15,000 property records in HELIX to date**
 - Includes LEED, HERS Index, DOE Home Energy Score, and NGBS New Construction

No. of Home Energy Scores since 2018



HERS Index Average Score by Town



- Average score ~5 (expected)

Score	Average Baseline Asset Energy (MBTU)	Average Year Built	Average Square Footage
1	181	1949	2,803
5	95	1965	2,011
10	39	1975	1,794

Additional Challenges

- Stream-lining re-scoring of updated homes
- Improving lender and appraiser education and exposure
- Increase contractor-motivated adoption by customers
- Sustainable funding for training
- Potential for mandatory energy information disclosure through [SB 177 An Act Concerning Energy Consumption Data and Labeling](#)

Consumers Value Building- Based Health Certifications

Ellen Tohn, Tohn Environmental Strategies

etohn@tohnenvironmental.com

Tohn Environmental Strategies



We work at the intersection of health, energy and housing/community.

- Strategic planning
- Applied research
- Program design and evaluation
- One Touch®: Creating healthy and energy efficient housing.

Consumers believe their home can impact their health

Over 72% of consumers

believe their house has a moderate to strong impact on their health and are at least somewhat concerned about indoor air quality

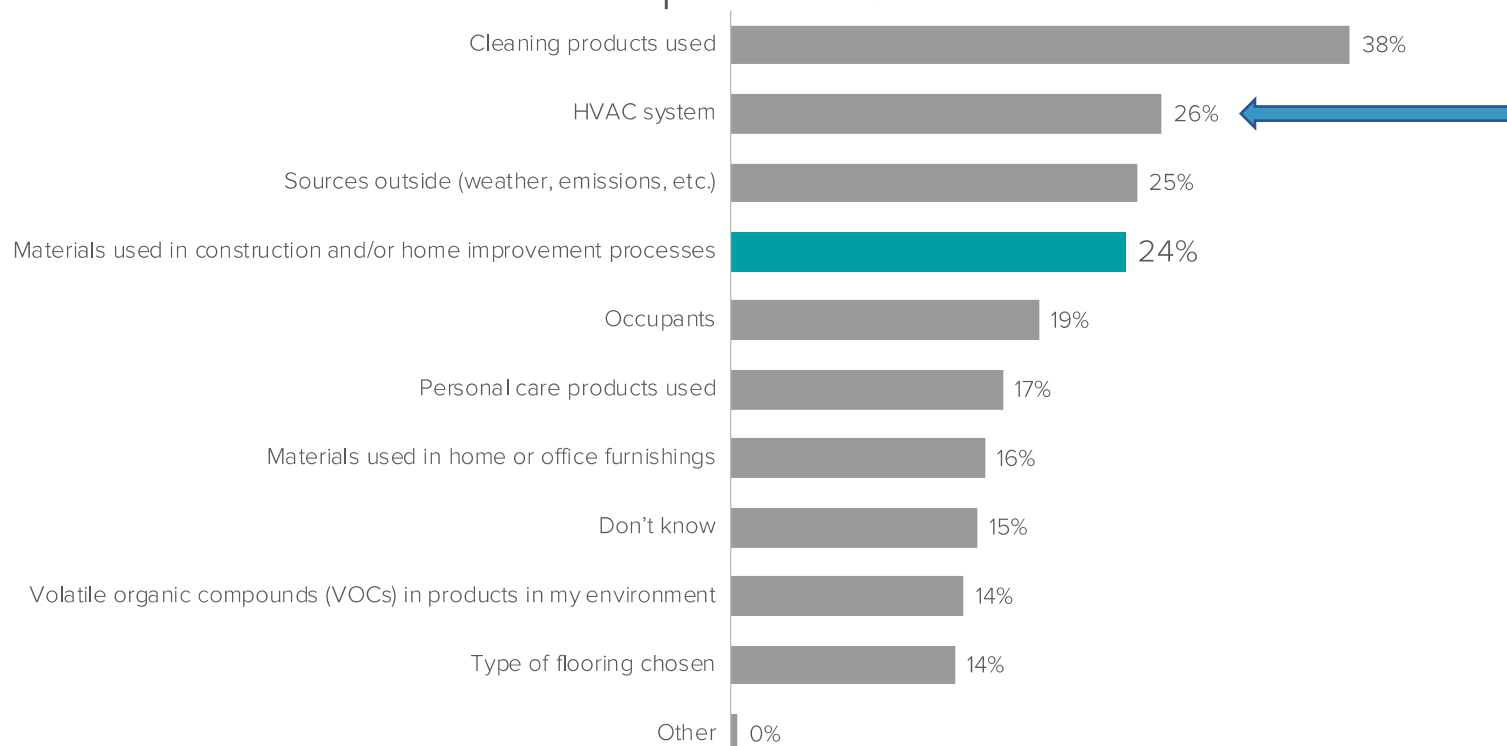
30% of households are concerned about their home endangering their health

Sources: The Shelton Group, Home Performance Association Webinar and 2019 Conference; Healthy Homes Remodeling: Consumer Trends and Contractor Preparedness, 2019, prepared by the Joint Center for Housing Studies at Harvard University.

60%

Have been at least moderately concerned
about indoor air quality

They perceive IAQ issues to stem from the original construction of the home; nearly 1 in 4 believe construction materials are the cause of poor IAQ



And HVAC systems

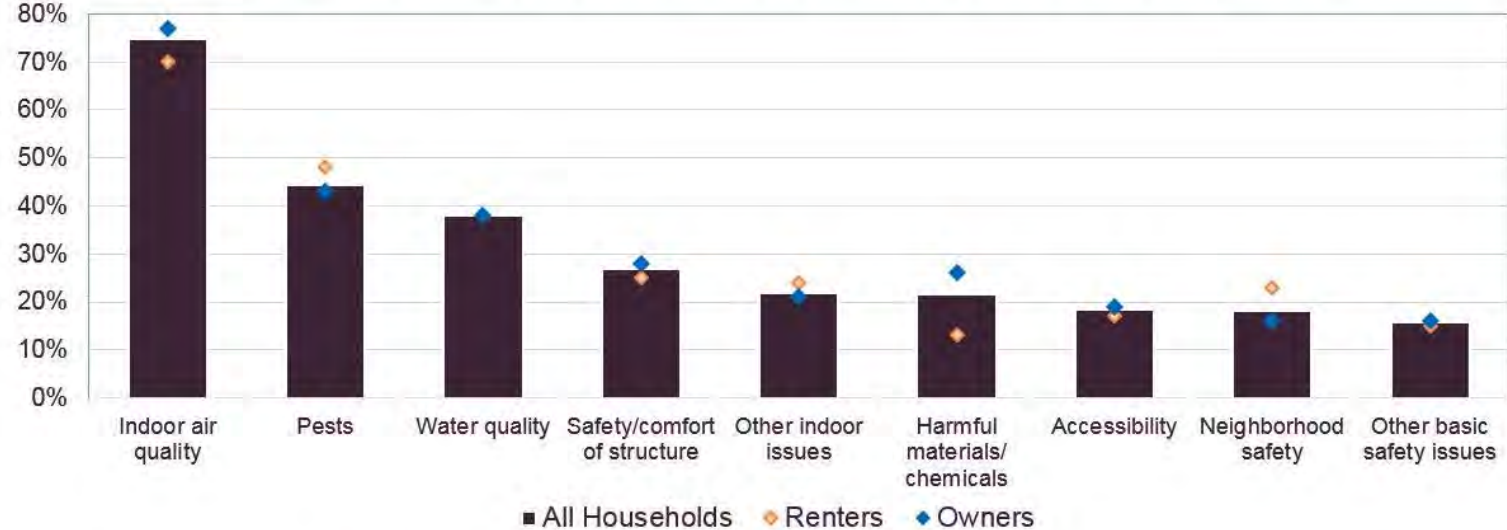
Which of the following do you believe most impacts the indoor air quality in your home or work environment?

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Source: *Eco Pulse*™, Shelton Group, 2018
n=2,012

Figure 1: Indoor Air Quality, Pests and Water Quality Issues Top List of Concerns

Which general category(ies) best describes your concern about the impact of your home on your household's health?



Notes: Out of a sample of 501 homeowners, 250 renters concerned about specific healthy housing issues.
Source: Farnsworth Group and Joint Center Healthy Homes Surveys, August 2018.

Post Covid Air Purification Searches Are Exploding

RISING	
air purifier for viruses	Breakout
best air purifier for viruses	Breakout
medify air purifier	Breakout
rainbow vacuum	Breakout
air purifier mask	650%
ultraviolet air purifier	450%
air purifier necklace	350%
air doctor purifier	350%
winx true hepa air purifier	300%
personal air purifier	250%
air genie air purifier	250%
reme halo air purifier	200%
levoit air purifier filter	200%
ion air purifier	190%
honeywell true hepa air purifier	180%
smart air purifier	170%
hepa filter air purifier	140%
air purifier costco	140%
uv air purifier	140%
levoit air purifier reviews	140%
whole home air purifier	140%
uv light air purifier	140%
iwave air purifier	130%
true hepa air purifier	120%
homedics air purifier	120%

Pre-Covid homeowners were motivated to make health repairs

Over 30% of homeowners

have completed or plan to make healthy homes repairs/actions (air filters, ventilation, mold/moisture)

20-40% of homeowners exploring health repairs

motivated by a concerns for a household member with physical symptoms they associated with the home

We link energy efficiency & health

80% think energy efficient homes are healthier

60% believe telling someone that an energy efficient home is a healthier home is an effective way to get people to spend \$1500 on efficient home features

WGBC Report: Doing Right by Planet and People



ASID, WELL Platinum Certified (Washington, DC)
"ASID's new office headquarters was designed for environmental sustainability, and health and wellness, with a focus on indoor air quality, employee satisfaction, and productivity. In their new office, **employee absenteeism has decreased by 19% and presenteeism by 16%.**"

Cundall, WELL Gold Certified (London, UK)
"Cundall's new office, which focused on improved indoor air quality, including continuous monitoring of carbon dioxide (CO₂) and volatile organic compounds (VOCs), has **saved the company £200,000 due to a reduction of four sick days per year per employee and a 27% reduction in staff turnover.** WELL Certification increased the project cost by 3.6%. Based on the above noted savings, these costs had a **return on investment of less than two months.**"

ULI Report: The Business Case for Healthy Buildings



ULI Urban Land Institute Center for Sustainability and Economic Performance

CBRE's offices in Toronto and Vancouver — Key features include daylight/circadian lighting, ventilation/air quality, collaborative space, active staircase, sit/stand desks. Value added: **greater employee satisfaction, recruitment and retention**; and enhanced landlord/tenant partnerships. In these WELL-certified offices, **the total employee turnover rate has fallen by almost a third and the hiring rate for new talent has doubled**.

Arup's Boston office – Key features include daylight/circadian lighting, ventilation/air quality, collaborative space, sit/stand desks. Value added: **improved productivity, attitude, collaboration and social cohesion among employees**.

Home rating systems

Program	# Certified	New/Existing Homes
EPA Indoor Air Plus	Over 19,000 homes certified. 25% in AZ. Mostly single family.	New home focus
Well Building	29 multifamily registered, 3 completed. Over 4,000 registered projects, including commercial and hospitality.	New buildings Multifamily focus
Fitwel® Center for Active Design	700 multifamily projects certified or pending.	New & existing Multifamily focus
Living Building Challenge International Living Future Institute	Over 100 certified , 550 registered. Single, multifamily, commercial. 8 certified homes, 2 are single family	New & existing
Earthcraft Southface	Over 50,000 certified. Southeast focus. Majority residential.	New & existing
Pearl	240 homes, newer program. Over 23,000 homes with certified HVAC equipment.	New & existing

HCAC contractor
using healthy
homes messages
in marketing



Rodenhiser Home Services is now offering many discounted services that can help improve the overall health of your home.

Air conditioning specials can keep your family cool as temperatures rise. Indoor air quality products, hands free/voice activated faucets and reliable hot water can all contribute to maintaining a healthy home

Our technicians have been trained to practice social distancing and sanitation processes throughout the service so schedule now to keep your home happy and save!

Craig Foley, CSO LAER Realty Partners Co-founder REthink39 Group

- Craig works to unlock the value of sustainability in the real estate industry
- NAR leadership positions include
 - 2019 Chair Sustainability Advisory Group
 - 2020 Chair Presidential Advisory Group exploring impact of extreme weather events on the real estate industry
- Fannie Mae Energy Advisory Council
- Freddie Mac Energy Efficiency Task Force





NATIONAL
ASSOCIATION of
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green

Big Picture: Tailwinds
for Industry
Leadership to
Advance a
Sustainable Future

Fannie Mae

Single-Family Green MBS

Accessibility Share This

Providing a sustainable and innovative approach to green financing.

The Single-Family Green Mortgage-Backed Security (MBS) is another important step in Fannie Mae's

- Capital Markets
 - Mortgage-Backed Securities
 - Single-Family
 - Green MBS
 - Multifamily
 - Structured Transactions Products
 - Commentary and News
 - MBSenger
 - Contact Information
 - Credit Risk Transfer

Sustainability Summit

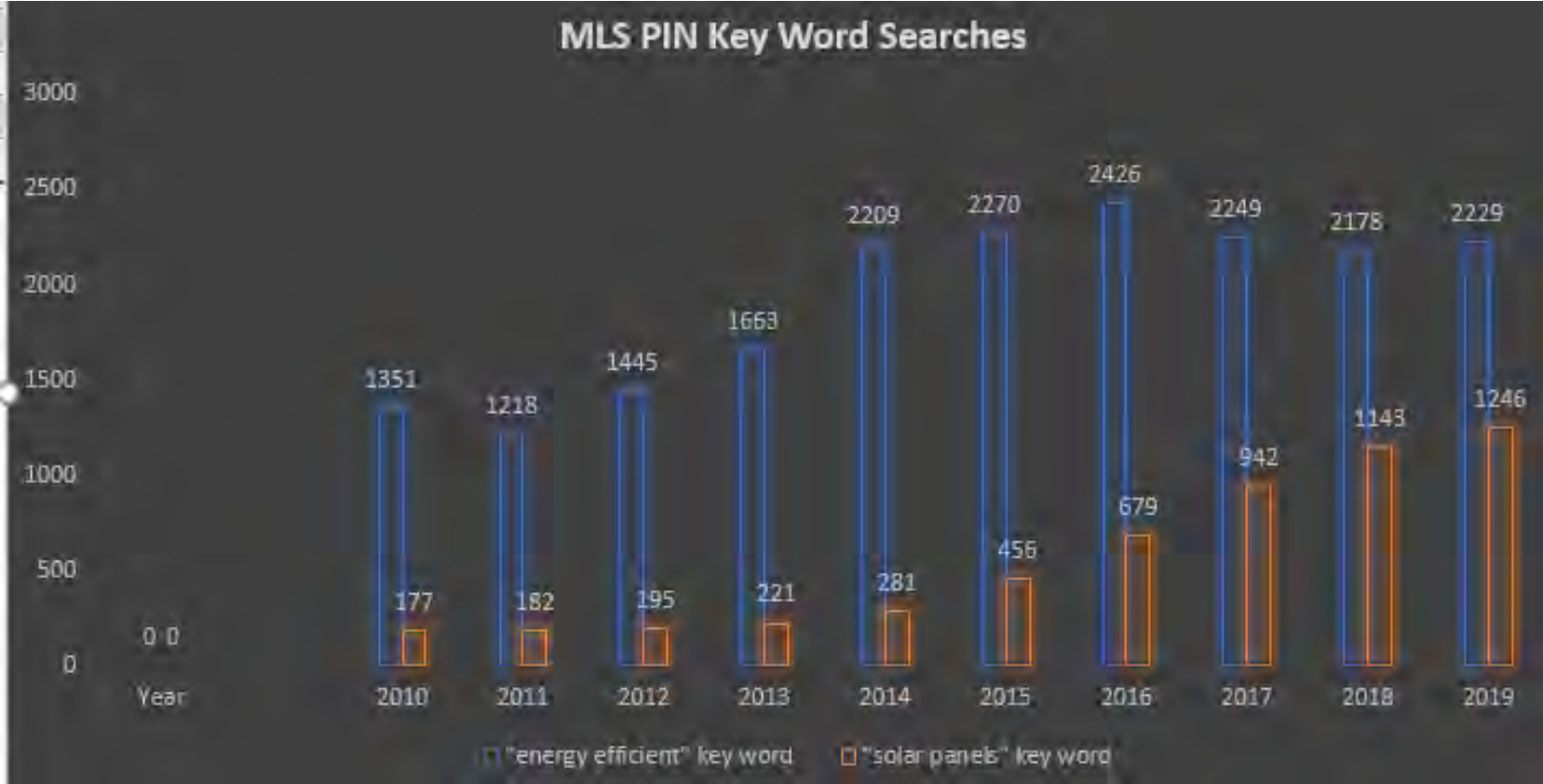
July 29, 2020 from 11:00am - 2:00pm CT via Live Stream

f t in +



Small Picture: Challenge at the Boots on the Ground Level

Small Picture: Challenge at the Boots on the Ground Level





Small Picture: Challenge at the Boots on the Ground Level

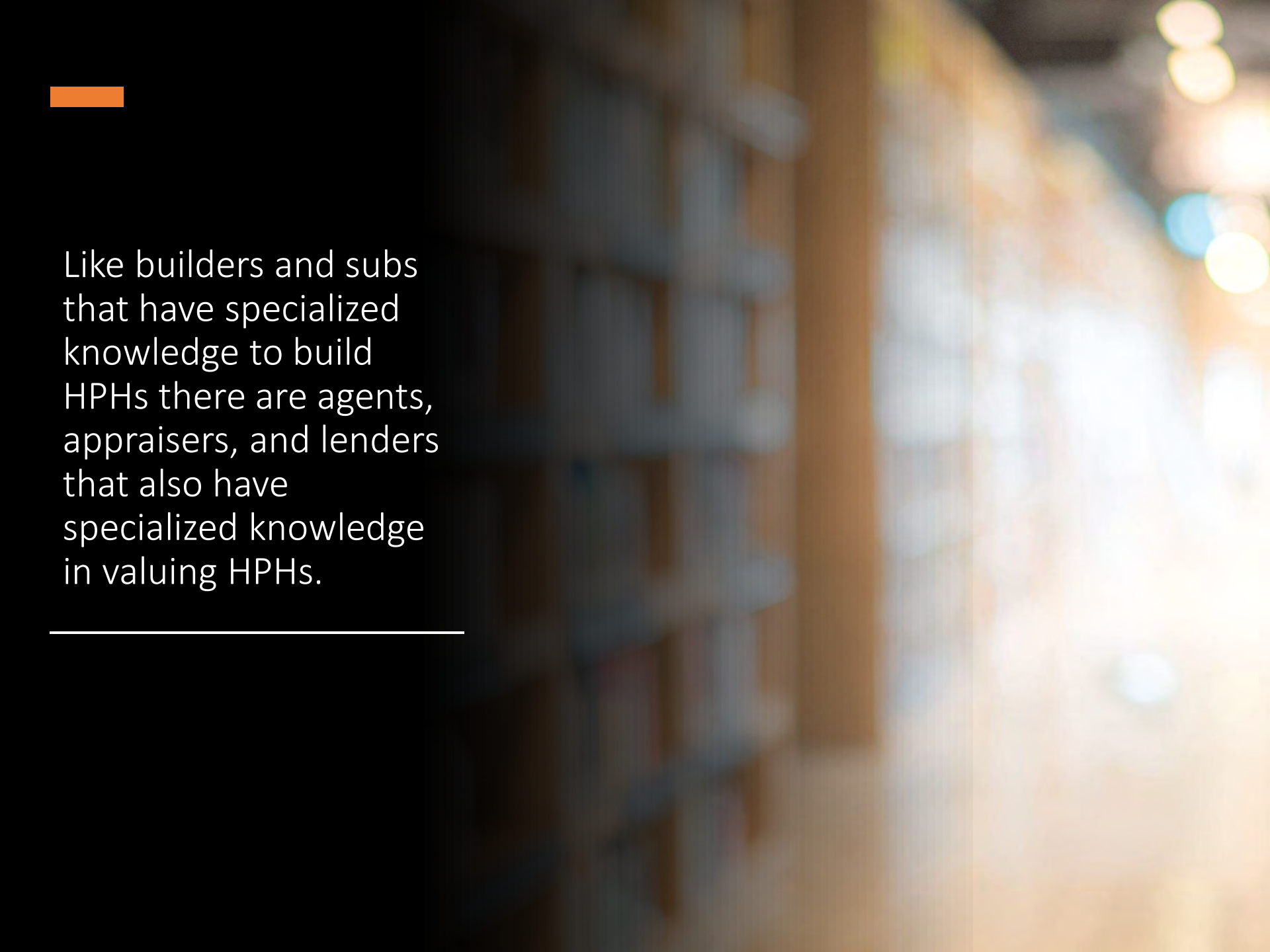
***Heating**

<input type="checkbox"/> A- Central Heat	<input type="checkbox"/> G- Steam	<input type="checkbox"/> M- Oil	<input type="checkbox"/> T- None	<input type="checkbox"/> Z- Passive Solar
<input type="checkbox"/> B- Forced Air	<input type="checkbox"/> H- Radiant	<input type="checkbox"/> N- Gas	<input type="checkbox"/> U- Hydro Air	<input type="checkbox"/> 1- Wind
<input type="checkbox"/> C- Hot Air Gravity	<input type="checkbox"/> I- Heat Pump	<input type="checkbox"/> O- Electric	<input type="checkbox"/> V- Geothermal Heat Source	<input type="checkbox"/> 8- ENERGY STAR
<input type="checkbox"/> D- Hot Water Baseboard	<input type="checkbox"/> J- Space Heater	<input type="checkbox"/> P- Propane	<input type="checkbox"/> W- Active Solar	<input type="checkbox"/> 9- Air Source Heat /
<input type="checkbox"/> E- Electric Baseboard	<input type="checkbox"/> K- Floor Furnace	<input type="checkbox"/> Q- Wood	<input type="checkbox"/> X- Ground Source Heat Pump	<input type="checkbox"/> 10- Solar Thermal
<input type="checkbox"/> F- Hot Water Radiators	<input type="checkbox"/> L- Humidifier	<input type="checkbox"/> R- Extra Flue	<input type="checkbox"/> Y- Hydronic Floor Heat (Radiant)	<input type="checkbox"/> S- Other (See Re

Cooling Zones

***Cooling**

<input type="checkbox"/> A- Central Air	<input type="checkbox"/> E- 2 Units	<input type="checkbox"/> N- Geothermal Heat Pump	<input type="checkbox"/> Q- Passive Cooling	<input type="checkbox"/> T- ENERGY
<input type="checkbox"/> B- Window AC	<input type="checkbox"/> F- 3 or More	<input type="checkbox"/> O- High Seer Heat Pump (12+)	<input type="checkbox"/> R- Swamp Cooler (Evaporative)	<input type="checkbox"/> U- Air Sou
<input type="checkbox"/> C- Wall AC	<input type="checkbox"/> H- None	<input type="checkbox"/> P- Overhangs Above South Facing Windows	<input type="checkbox"/> S- Wind	<input type="checkbox"/> G- Other /
<input type="checkbox"/> D- Heat Pump	<input type="checkbox"/> M- Active Solar			



Like builders and subs that have specialized knowledge to build HPHs there are agents, appraisers, and lenders that also have specialized knowledge in valuing HPHs.

The Real
Estate Value
Chain

Listing Agent

Buyer

Buyer's Agent

Appraiser

Bank Underwriter



Signs of movement in the market



Optional Services

Home inspectors
are responding to
buyer's interest in
EE



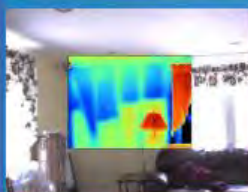
INFRARED (THERMAL) IMAGING

Thermal imaging service is totally amazing. I basically utilize my infrared camera to detect hidden issues in your building. If there are finished walls or ceilings in the living areas, basement or exterior shell of the structure, my IR camera can detect insulation voids or concealed issues without destroying or removing the wall/ceiling material. It's simply an infrared imaging and I can actually "see" and "measure" thermal energy emitted from an object. I can then map out any problems which can reveal serious issues that cannot be seen by the naked eye or with an X-ray photography.



Home Inspections

Serving - MA#698, NH#107, ME
Maintenance & Pre-sale, New Construction Phase
Inspections, Warranty, Consultations, Water
Analysis, Radon Testing, Environmental Data
Reports



Thermal Imaging

Residential - Heat Loss, Moisture, Air leakage,
Insulation, Roof, Electrical, HVAC


Level 2 / Building Science Certified Thermographer
in compliance with ASNT (American Society for Non Destructive
Testing). We use high quality equipment and bring years of field
experience to your inspection.



Energy Audits / Blower Door Testing

Contact Us

Check out our reviews
Angie's list.

 AI Reports® Form 820.03*	Client File #:	Appraisal File #:
	Residential Green and Energy Efficient Addendum	
	Client:	
	Subject Property:	
City:	State:	Zip:

My ask to builders, remodelers, and architects

Additional resources to aid in the valuation of green properties and the completion of this form can be found at: http://www.appraisalinstitute.org/education/green_energy_addendum.aspx

- The appraiser hereby certifies that the information provided within this addendum:
- has been considered in the appraiser's development of the appraisal of the subject property only for the client and intended user(s) identified in the appraisal report and only for the intended use stated in the report.
 - is not provided by the appraiser for any other purpose and should not be relied upon by parties other than those identified by the appraiser as the client or intended user(s) in the report.
 - is the result of the appraiser's routine inspection of and inquiries about the subject property's green and energy efficient features. Extraordinary assumption: Data provided herein is assumed to be accurate and if found to be in error you the appraiser's opinions or conclusions.
 - is not made as a representation or as a warranty as to the efficiency, quality, function, operability, reliability or cost of the reported items or of the subject property in general, and this addendum should not be relied upon for such assessments.

Green Building: The practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's lifecycle from siting to design, construction, operation, maintenance, renovation, and deconstruction. This practice expands and complements the classic building design concerns of economy, utility, durability, and comfort (US EPA). Performance building and green building are often used interchangeably.

Six Elements of Green Building: A green building has attributes that fall into the six elements of green building known as (1) water, (2) energy, (3) materials, (4) indoor environmental quality, and (5) maintenance and operation. The energy and water elements are the most measurable elements of green or high performance housing. Appraisers need savings amounts to develop a score approach to support energy efficient contributory value.

THIRD-PARTY VERIFICATIONS (See types defined in glossary)

The following verified items are considered within the appraisal analysis of the subject property:

Environmental Protection Agency (EPA):	<input type="checkbox"/> Indoor airPLUS	<input type="checkbox"/> WaterSense	<input type="checkbox"/> ENERGY STAR
Energy Department (DOE):	<input type="checkbox"/> Zero Energy Ready Home (ZERH)		
Home Innovation Research Labs (HIRL) Home Remodel:			
Home Innovation Research Labs (HIRL) New Home:	<input type="checkbox"/> Bronze	<input type="checkbox"/> Silver	<input type="checkbox"/> Gold
Living Building Challenge (LBC):	<input type="checkbox"/> Living Building Certified	<input type="checkbox"/> Petal Core	
Pasadena Standard:	<input type="checkbox"/> High Low Energy	<input type="checkbox"/> EnerPac	<input type="checkbox"/> Passive
Passive House Institute US:	<input type="checkbox"/> PHUS-2015		
USGBC LEED:	<input type="checkbox"/> Certified	<input type="checkbox"/> Silver	<input type="checkbox"/> Gold
Other:			

Date Verified: <u> / / </u>	Green Certification Version: _____	ABOVE VALID ONLY IF CHECKED
Organization URL: _____	<input type="checkbox"/> Verification reviewed on site	<input type="checkbox"/> Verification attached to this report


Energy Label Labels disclose the size of the home's energy assets.	RESNET's HERS Rating (1 to 150): _____ <input type="checkbox"/> Sampling Rating <input type="checkbox"/> Projected Rating <input type="checkbox"/> Confirmed Rating	Estimated energy savings for this home: \$ _____/year _____ kWh rate dated _____ Energy Savings includes electricity, heating & Cooling. Score below 100 indicates energy costs are expected to be lower than average built home. HERS Index Report occupancy estimates energy cost based on no bedrooms plus one. Only a "confirmed rating" is diagnostically tested.
	DOE's Home Energy Score Score (1 to 10): _____ <input type="checkbox"/> Official Score <input type="checkbox"/> Unofficial Score	Estimated energy savings for this home: \$ _____/year _____ kWh rate dated _____ Energy Savings includes electricity, heating & Cooling. Score above five indicates energy costs are expected to be lower than average home. Home Energy Score estimates energy cost based on state average rates and the home's energy features.
Other Energy Score: Range (_____ to _____): _____	Estimated energy savings: \$ _____/year _____ kWh rate dated _____/_____ Describe energy label system: _____	

Date Verified: <u> / / </u>	Score or Rating Version: _____	ABOVE VALID ONLY IF CHECKED
Organization URL: <input type="checkbox"/> www.energyscore.us	<input type="checkbox"/> www.homeenergyscore.com	<input type="checkbox"/> Verification reviewed on site
Other: _____		<input type="checkbox"/> Verification attached to this report

Verified Energy Improvements Explain energy-related improvements: Cost of improvements: \$ _____	Date Verified: <u> / / </u>	Certificate of Efficiency Improvements Version: _____	ABOVE VALID ONLY IF CHECKED
	Organization URL: <input type="checkbox"/> Other: _____	<input type="checkbox"/> energy4atyou.com/performance	<input type="checkbox"/> Verification reviewed on site
			<input type="checkbox"/> Verification attached to this report

Completed by: _____ Title: _____ Date: _____

NOTICE: The Appraisal Institute publishes this form for use by appraisers where the appraiser deems use of the form appropriate. Depending on the scope of service, the appraiser may need to provide additional data, analysis and work product not called for in this form. The Appraisal Institute makes no representations, warranties or guarantees, and assumes no responsibility for, the data, analysis or work product, or third party certifications, verifications, data specifications, labels, valuations, used or provided by the individual appraiser(s) or others in the specific context of the AI Reports®. AI Reports® Form 820.03 Residential GI

 AI Reports® Form 820.03*	Client File #:	Appraisal File #:
	Residential Green and Energy Efficient Addendum	
	Client:	
	Subject Property:	
	City:	State: Zip:
Additional resources to aid in the valuation of green properties and the completion of this form can be found at http://www.appraisalinstitute.org/education/green_energy_addendum.aspx		

Our Takeaways



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