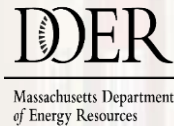


Welcome to the 2018 Summit!



HELIX

Home Energy Labeling Information eXchange



SUSTAINABLE REAL
ESTATE
CONSULTING
SERVICES



WELCOME

Carolyn Sarno Goldthwaite, NEEP

Welcome to the 3rd HELIX Summit!

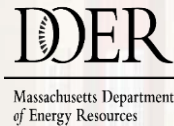


ne
ep



HELIX

Home Energy Labeling Information eXchange



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ESTATE
CONSULTING
SERVICES



Northeast Energy Efficiency Partnerships



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

Mission

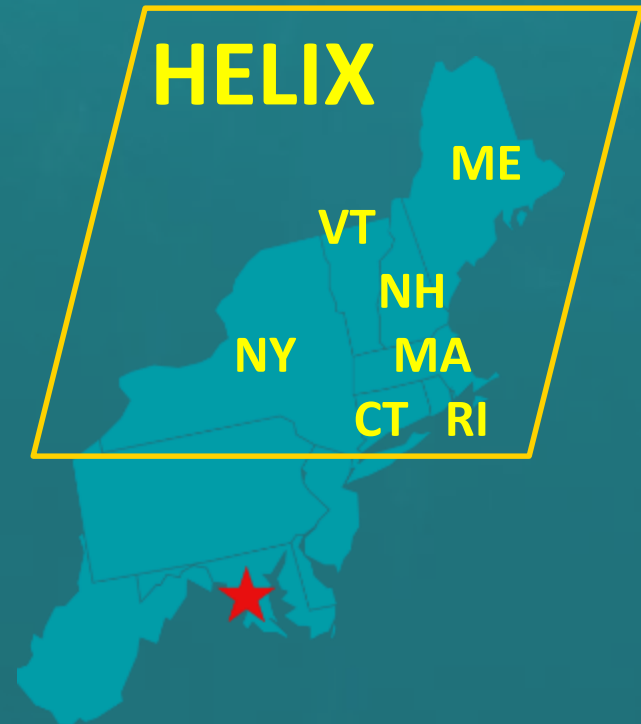
We seek to accelerate regional collaboration to promote advanced energy efficiency and related solutions in homes, buildings, industry, and communities.

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



About NEEP

A Regional Energy Efficiency Organization



One of six REEOs funded in-part by U.S. DOE
to support state and local efficiency policies and programs.

Thank you to our event sponsors!

ne
ep



STATE OF RHODE ISLAND

OFFICE OF
ENERGY RESOURCES

nationalgrid



ENERGY • ECONOMY • EQUITY • ENVIRONMENT

Thank you to our Allies for their support!



Thank you to our State Partners for their support!



CONNECTICUT

State Partners: CT DEEP, CT Energy Efficiency Board, Eversource Energy, United Illuminating Company, Southern Connecticut Gas and Connecticut Natural Gas

Partners in 2017 / 2018



NEW HAMPSHIRE

State Partners: NH Office of Energy Policy and Planning, NH Public Utilities Commission, Eversource Energy, NH Electric Coop, Unitil and Liberty Utilities

Partners in 2017 / 2018



NEW YORK

State Partners: NYSERDA

Partners in 2017 / 2018



RHODE ISLAND

State Partners: RI Office of Energy Resources, National Grid RI, RI Department of Education and RI Energy Efficiency & Resource Management Council

Partners in 2017 / 2018



VERMONT

State Partners: Efficiency Vermont

Partners in 2017 / 2018



Susan Coakley, NEEP



SO WHAT IS THIS HELIX I KEEP HEARING ABOUT?


Samantha Caputo, NEEP
Véronique Bugnion, ClearlyEnergy




HELIX

Home Energy Labeling Information eXchange

**HELIX PLATFORM**

National Grid Rhode Island 



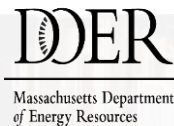
ProjectsInventoryDataContact

HELIX

The Home Energy Labeling Information Exchange (HELIX) is a database which automatically populates real estate listings with home energy information from the U.S. Department of Energy's Home Energy Score and other sources. The database was developed by regional stakeholders as a free software tool to allow home buyers access to home energy information in the real estate purchasing process. Learn how to get started.

Upload your buildings listGetting Started Guide

Highlights of HELIX Database



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SERVICES



What Is HELIX?

HELIX facilitates consolidation of energy data in a single portal



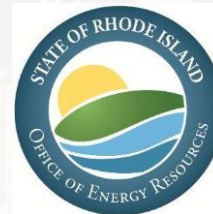
Who Is Using HELIX?

HELIX has 7 States in efficiency pilot; 20 solar States

Data Intake

Data Front-End
&
Management

Data Export



What Do States Want to Use HELIX For?

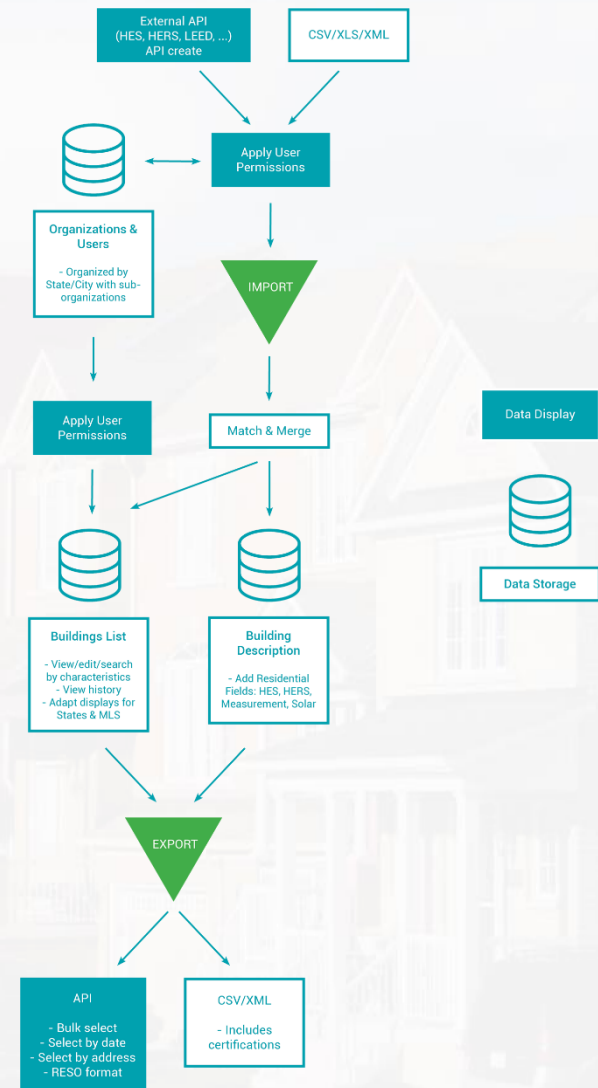
	CT	ME	MA	NH	RI	VT
National Program Certification Program Data						
Certified Passive House (Passive House Institute)	✓		✓	✓	✓	✓
ENERGY STAR Certified Homes	✓		✓	✓	✓	✓
HERS Index Score	✓		✓	✓	✓	✓
Home Energy Score	✓		✓	✓	✓	✓
Home Performance with ENERGY STAR	✓		✓	✓	✓	✓
Indoor airPLUS	✓		✓			✓
LEED For Homes	✓		✓	✓	✓	✓
NGBS New Construction						✓
PHIUS+ (Passive House Institute US)			✓			✓
WaterSense	✓		✓		✓	
Zero Energy Ready Home	✓				✓	✓
Other Home Energy Performance Data						
Annual modeled fuel consumption (native units)			✓			✓
Annual modeled total MMBtu			✓			✓
Annual modeled energy costs						
Solar PV data						
Blower door test results	✓	✓	✓	✓	✓	✓
Energy code compliance			✓			✓
Energy efficient products		✓	✓			

	CT	ME	MA	NH	RI	VT
State/Local Program Certification Data						
Mass Save Tier III home			✓			
Mass Save Tier II home			✓			
Mass Save Tier I home (New construction program)			✓			
Connecticut Home Energy Solutions	✓					
Connecticut Home Energy Solutions-Income Eligible	✓					
Connecticut Weatherization Assistance Program (WAP)	✓					
Efficiency Maine rebate programs/measures installed		✓				
Efficiency Vermont Certified						✓
Efficiency Vermont Certified- High Performance						✓
Vermont Home Energy Profile						✓
Efficiency Vermont Home Improvement Certification						✓

HELIX Structure

HELIX expands SEED open source framework

- HELIX expands the Standard Energy Efficiency Database: SEED
 - Variety of data sources and import methods
 - Handles residential certifications, solar, home consumption metrics, code compliance, home efficiency measures
 - Provides expanded export capabilities
- Open source



HELIX For Auditors, Realtors and Assessors

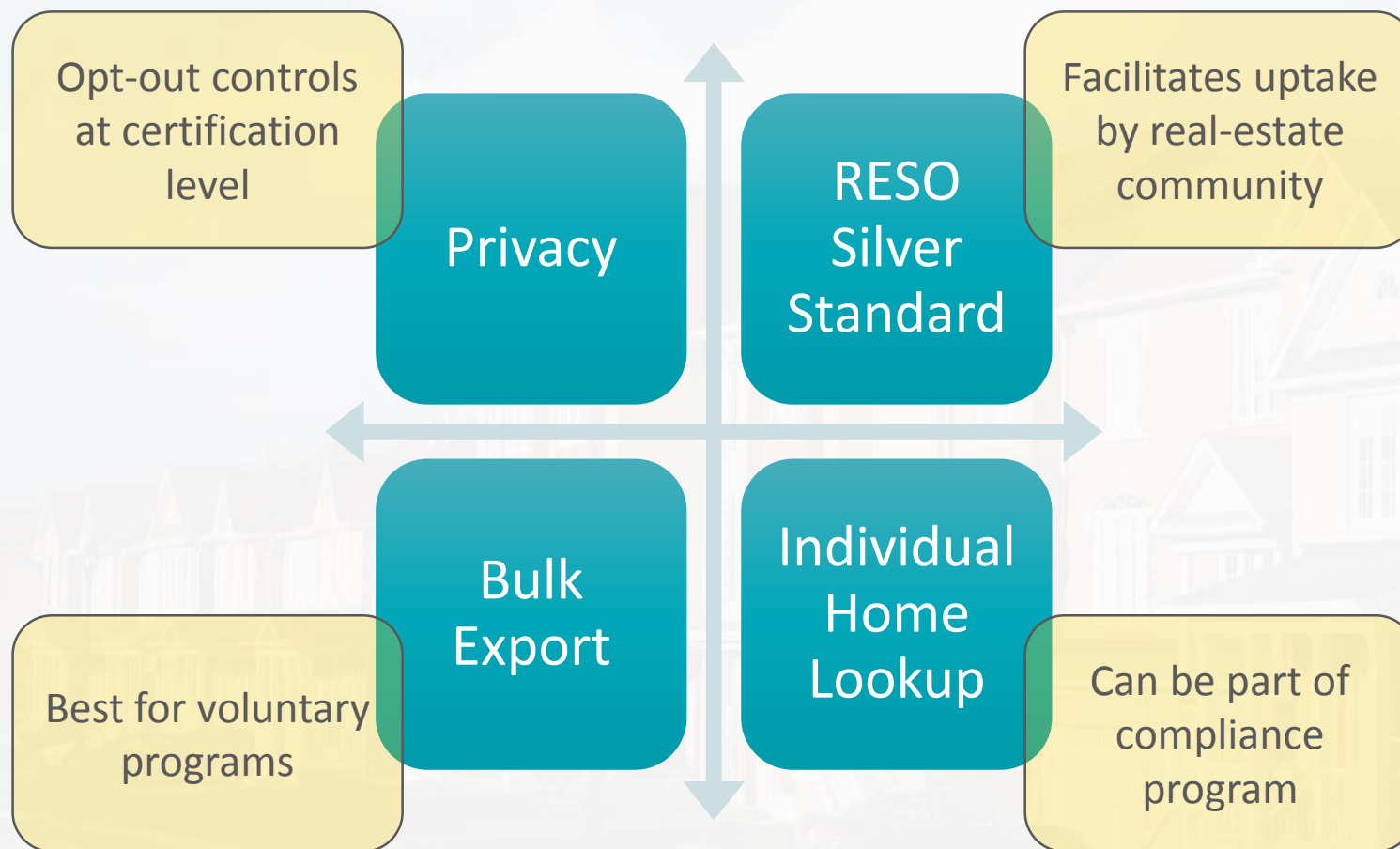
HELIX works across 7 pilot efficiency



HELIX for Cities & States



HELIX for MLSs



Where Does HELIX Go From Here?

Geographic Expansion

- Continue incorporating regional program data
- Finish incorporating certification data
- Expand to NEEP's 13 States

Scope Expansion

- Funded to collect, manage and export residential solar information for 20 States
 - Generic infrastructure to collect efficiency measures on home
- In discussions to include:
 - Code compliance
 - Efficiency program attributes
 - Green addendum attachment



Massachusetts Department
of Energy Resources



SUSTAINABLE REAL
ESTATE
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SERVICES



DATA, DATA EVERYWHERE: WHAT KIND OF DATA IS OUT THERE AND HOW IS IT TRANSFORMING THE REAL ESTATE MARKET?

Ed Carley, NASEO, moderator

Madeline Salzman, U.S. DOE

Asa Foss, USGBC

Ryan Meres, RESNET

Robin LeBaron, Pearl Certification



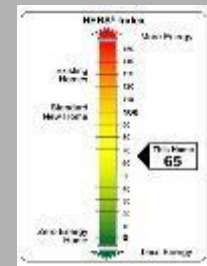
Home Energy Labeling: A Guide for State and Local Governments

Created by the EMPRESS Team



The EMPRESS (Energy Metrics to Advance Residential Energy Scores in States) project is a State Energy Office-led 2017-2020 project supported by funding from the U.S. Department of Energy State Energy Program and private sector partners. The project is focused on enhancing large-scale residential home energy labeling and harmonizing various energy scoring programs to better support the market valuation of energy efficient homes.

Project Partners include: the Rhode Island Office of Energy Resources, the Massachusetts Department of Energy Resources, the Missouri Division of Energy, the Arkansas Energy Office, the Oregon Department of Energy, the National Association of State Energy Officials, Earth Advantage, Energy Futures Group, and Vermont Energy Investment Corporation.



Data, Data Everywhere! What kind of data is out there,
and how is it transforming the real estate market?



December 7, 2019

Providence, RI



Presenters

- *Moderator: Ed Carley, NASEO*
- *Madeline Salzman, U.S. DOE*
- *Asa Foss, USGBC*
- *Ryan Meres, RESNET*
- *Robin LeBaron, Pearl Certification*
- *Katrin Klingenberg, Passive House Institute US*



Energy Metrics to Promote Residential Energy Scorecards in States (EMPRESS)

- EMPRESS is a State Energy Program funded grant

- GOALS:

1. Developed recommendations for consistent elements to be included in home energy labeling initiatives

- E.g.- GHG impact, Mbtu/year, total energy cost, date of issue, etc.

2. Encourage Home Energy Score (HES) and Energy Rating Index software providers to use a single energy modeling engine (Energy Plus) to promote consistency and reduce confusion



How can the EMPRESS project help me?

- The EMPRESS team has compiled:
 - Background information on Home Energy Score and Home Energy Rating System, including cost
 - Sample legislation and ordinances
 - Pros and cons of voluntary and mandatory approaches
 - Recommendations for elements that should be on all labels
 - Examples of labels used in other jurisdictions
 - Workforce identification and training recommendations
 - Information on working with real estate professionals
 - <http://empress.naseo.org> for more



EMPRESS Resources

Home Energy Labeling: A Guide for State and Local Governments

Created by the EMPRESS Team



The EMPRESS (Energy Metrics to Promote Residential Energy Scores) State Energy Office-led 2017-2018 project supported by funding from the Energy State Energy Program and private sector partners. The project focused on large-scale residential home energy labeling and harmonizing various programs to better support the market valuation of energy efficiency.

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NASEO
National Association of State Energy Officials

HOME ENERGY LABELING CASE STUDIES ABOUT EMPRESS RESOURCES

Sample Legislation & Ordinances

Home > Case Studies > Sample Legislation & Ordinances

The EMPRESS Team is accepting comments on this material until October 19, 2018. To submit comments on any material on this page, please use the "Submit a comment" box at the bottom of this page.

Label Consistent Metrics and Information for an Asset-Based Home Energy Performance Label

		A. Policy Objective		B. Metric Characteristics					
		Greenhouse Gas (GHG) Reductions	Energy Use Reductions & Cost Savings	Use cases	Double	Greater Impact on the home to change the score?	Readily Understood by Consumers**	Cost of Delivery	Finance Industry Recognition
Choose one or more primary metrics	1. Primary Metrics***								
	Home Energy Rating System (HERS) Index	Usually Yes - improvement in HERS/NHERI is generally correlated with GHG reductions	Yes - Directly compares the home's energy & cost to the reference code R2C 2006.	Primarily used for new home marketing programs (e.g., ENERGY STAR) & code compliance.	Somehow - index will change when reference code baseline is updated and location.	Yes	This index generally requires some explanation by the consumer.	Generally \$400-1000	Available, but not often used.
	Home Energy Score		Yes - Directly compares a home's energy & cost to the national averages (derived from 2009 Energy Information Agency data)	Primarily used for existing home marketing.					
	Greenhouse gas (GHG) impact	Yes	Yes - Indirectly via action in GHG emissions may be correlated with a reduction in energy use and/or cost depending on fuel mix.						
	Site energy use in millions of British Thermal Units per year (MMBtu/year)	Usually Yes - reduction in MMBtu or kWh-equivalent is generally correlated with GHG reductions.	Yes - Lower MMBtu and kWh-equivalent directly indicate lower energy use and/or cost.						
	Site electricity hour equivalent per year (kWh-equivalent/hour)								
		2. Secondary Metrics							
		Air energy use in million of British Thermal Units per year (MMBtu/year)	Usually Yes - reduction in MMBtu or kWh-equivalent is generally correlated with GHG reductions.	Yes - Lower MMBtu and kWh-equivalent directly indicate lower energy use and/or cost.					
		Site electricity hour equivalent per year (kWh-equivalent/hour)							

Case Studies & Sample Labels

Home - Case Studies

The EMPRESS Team is accepting comments on this material until comments on any material on this page, please use the "Submit this page."

Advancing large-scale home energy labeling and harmonizing the disparate energy scoring programs used for effective programs and the factors that have led to their success. What project the possible adoption of mandatory or voluntary building labeling in a country with 60 air conditioning units per year (kWh-equivalent/hour) and 60 air conditioning

Case Studies & Sample Labels

Home > Case Studies

The EMPRESS Team is accepting comments on this material until October 19, 2018. To submit comments on any material on this page, please use the "Submit a comment" box at the bottom of this page.

Advancing large-scale home energy labeling and harmonizing the disparate energy scoring programs that have evolved in the past decade, require a targeted evaluation of effective programs and the factors that have led to their success. What programs are in place now—and what does that tell us about the possible adoption of mandatory or voluntary building labeling in a country with 50 unique states?

This action offers case studies across nine jurisdictions and gives State Energy Offices and other decision-makers information on home energy labeling best practices and tools. These case studies cover characteristics of current programs, several of which are still evolving. The list presented is not exhaustive; look at the state of home energy labeling program implementation in 2017. Case studies are listed in three categories of Mandatory and Voluntary.

Existing home energy labeling strategies include:

- mandated utility bill disclosures at time of sale
- independently designed asset ratings
- other data to help homeowners, real estate professionals, and homebuyers obtain comparative energy performance information about residential properties

By and large, the market has driven the development of these tools, serving the interests of early adopters of home energy labeling. Many state energy programs and utility programs have picked them up as they emerged, using them to help satisfy state energy reduction goals.

EMPRESS.NASEO.org



Resources

- EMPRESS: <http://empress.naseo.org>
- HELIX: <https://neep.org/home-energy-labeling-information-exchange-helix>
- Home Energy Information Accelerator: <https://betterbuildingsinitiative.energy.gov/accelerators/home-energy-information>





Thank you

Ed Carley

National Association of State Energy Officials

Senior Program Manager, Buildings

703-299-8800 x 119

ecarley@naseo.org





Home Energy Score

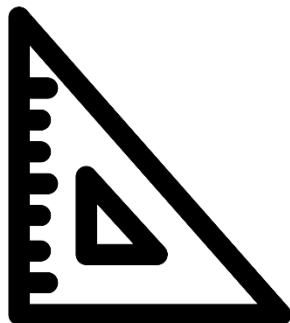
Data Everywhere Panel
HELIX Summit 2018

Residential Buildings Are...



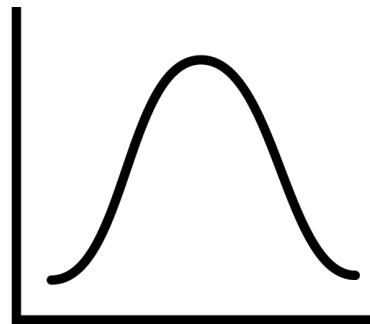
95%

of U.S. buildings



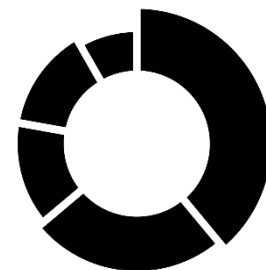
70%

of U.S. building
stock square
footage



50%

of peak demand
on electricity
grids



21%

of U.S. energy use

Efficiency is Good for Residents



Helps Reduce Costs.
Energy burdens average higher than both property taxes and home insurance.



Smart Investment.
Efficiency features payback via energy savings over time.

Improves Quality of Life



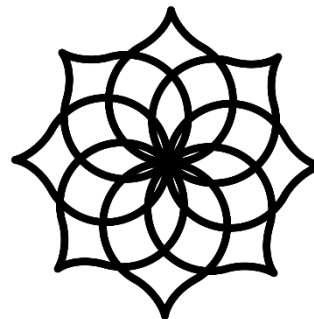
Reduce environmental impact.



Increased comfort.



Improved health outcomes.



Less draftiness.



Increased control.



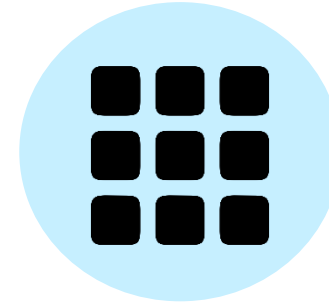
Peace of mind.

Ideal World



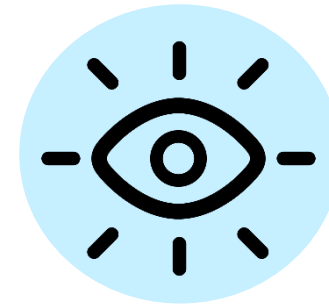
Home Energy Use.

Homes are energy efficient, contributing to modern & livable building stock.



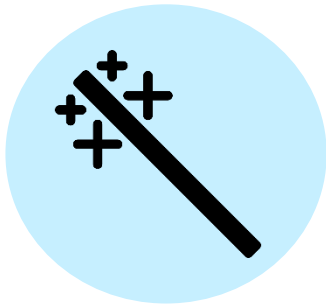
Data Collection & Access.

Data is standardized, useful, and protects personal information.



Data Management & Insight.

Data informs policy design, incentive packages, and goal setting.



Efficiency Upgrade Packages.

Programs increase efficiency in targeted ways to meet energy goals & improve lives.



Energy Savings!

Actual World



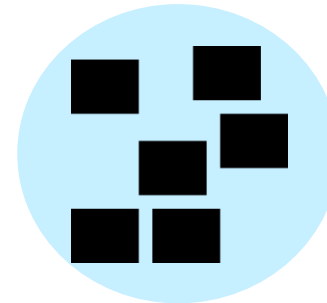
Home Energy Use.

Probably bad and wasteful but not exactly sure why...



Efficiency Upgrade Packages.

Impacts are difficult to measure and associated costs are high.



Data Collection & Access.

No standard approach, all assessments are different. Do we have access?



Data Management & Insight.

Solutions must be customized, unable to generate comparisons across users.



Home Energy Score

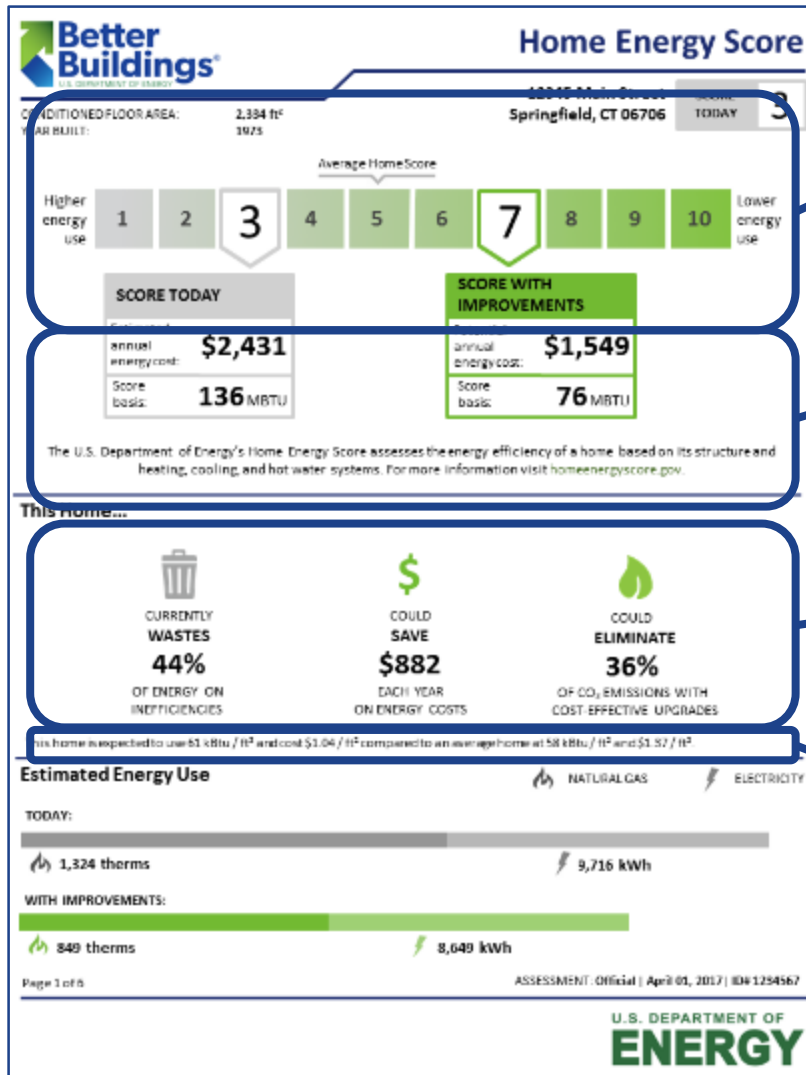
U.S. DEPARTMENT OF ENERGY
Home Energy Score



Features

- ✓ “Miles per gallon” rating for homes*
- ✓ Scale for easy-to-understand interpretation
- ✓ Building energy model estimates annual energy use, costs, emissions
- ✓ Recommendations for cost-effective improvements
- ✓ Easily show energy features and expected costs of comp homes
- ✓ Backend tool for various home energy assessments
- ✓ Can be included in home inspections
- ✓ Useful information for consumers, Home Energy Score Partners, real estate agents, lenders, appraisers, city & state governments

Home Energy Score Report



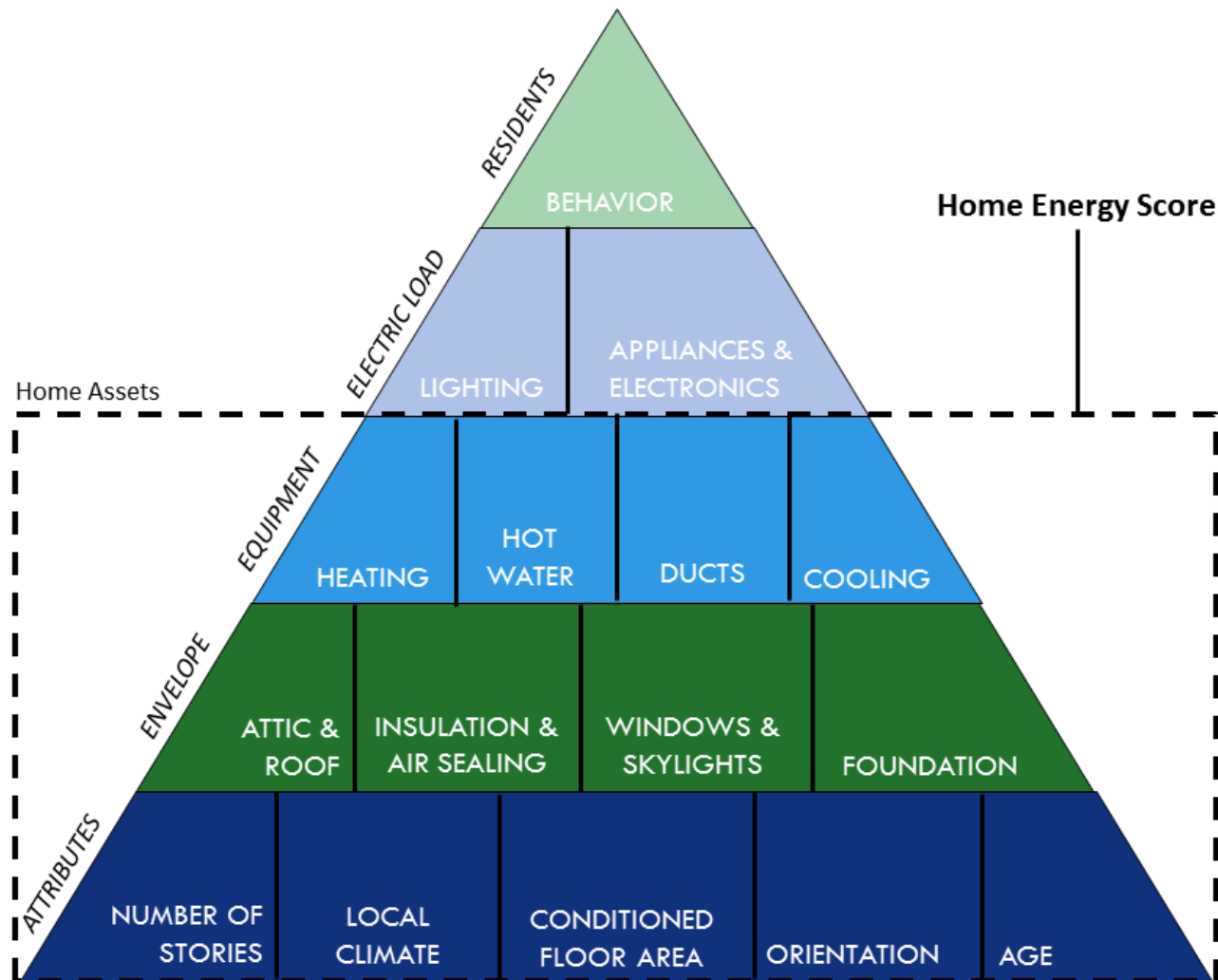
For the Consumer: Easy to understand home rating, motivation to improve and compete.

For the Lender: Comparable home energy use & cost estimates between homes, estimated savings from improvements.

For the Partner: Analysis of home's potential to help achieve energy-related goals.

For the Appraiser: Comparison of home's energy use estimate to other homes in the region.

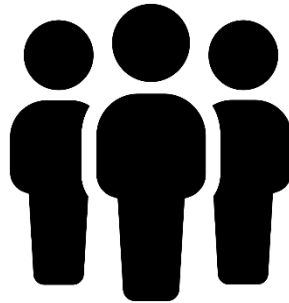
An Asset Rating



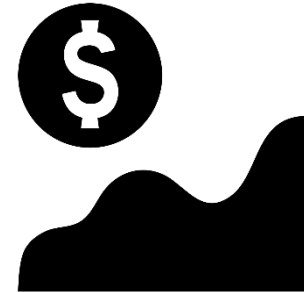
Why Not Use Energy Bills?



Data Privacy. Most utility bills are considered private information, which complicates their use in real estate and financing.



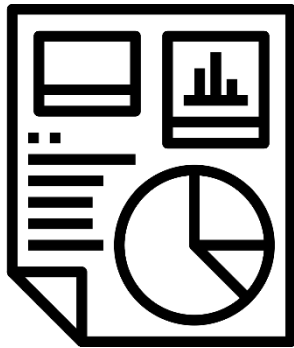
Occupancy Variables. Bills depend on more than just the home assets, like the number of residents and occupancy rate year-round.



Economic Variables. Energy use also depends on economic factors, such as energy price and resident income. These factors may not hold true for future occupants.

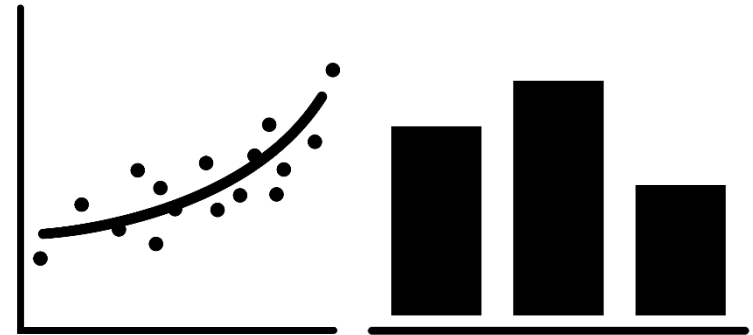
Asset scores rate the home features themselves, leaving residents, their private data, and their preferences out of the equation.

Home Energy Score



Individual reports: Like a miles-per-gallon rating or “nutrition facts” for a home

- ✓ Estimate energy costs, recommended upgrades
- ✓ Improve energy literacy



Data in aggregate: Consistent home energy information to understand sector wide issues, gains, and tracking

- ✓ Target upgrades and incentives
- ✓ Track sales rate, price, premiums; influence appraisal and financing
- ✓ Analyze efficiency gains

Data In Aggregate

Sample of 100,000+ Home Energy
Scores Averages:

4.7

Score Today

7.3

Score with Improvements

Annual Savings Potential

22% **\$600** **2.0**

Energy

Energy Bills

TCO_{2eq}

**Most Common Cost-Effective
Upgrade Recommendations:**

- ✓ Home Air Sealing
- ✓ Duct Air Sealing
- ✓ Attic Insulation
- ✓ ENERGY STAR Water Heater
- ✓ ENERGY STAR Heating System
- ✓ ENERGY STAR Air Conditioner

Data Collected by

500+

Home Energy Score Certified Assessors™
nationwide

Partners & Collaborators Nationwide



Accelerator Toolkit

Dozens of resources that help:

- ✓ Grow the inventory of home energy information
- ✓ Use common data standards
- ✓ Integrate with real estate

<https://betterbuildingsinitiative.energy.gov/sites/default/files/attachments/HEIA%20TOOLKIT%20081318.pdf>



Home Energy Information Accelerator: Toolkit to Bring Home Energy Data to the Real Estate Market

AUGUST 2018

U.S. DEPARTMENT OF
ENERGY

EnergyPlus Harmonization Effort

Home Energy Score™ 3rd Party Software Providers

SnuggPro

ID Energy

Design
Avenue

Franklin
Energy

AJO

OptiMiser

Pearl

Energy
Savvy

HPXML

API

Output

Home Energy Score™
Scoring Tool

HERS® Software Providers

Ekotrope

PSD

Wrightsoft

Pivotal

Weatherization
Assistance Program's
NEAT Tool

HPXML

API

Output

HPXML

API

Output

HPXML

API

Output

ANSI/RESNET 301 Energy Rating Index Ruleset / Agreed Upon Rulesets (As Applicable)

HPXML

HPXML

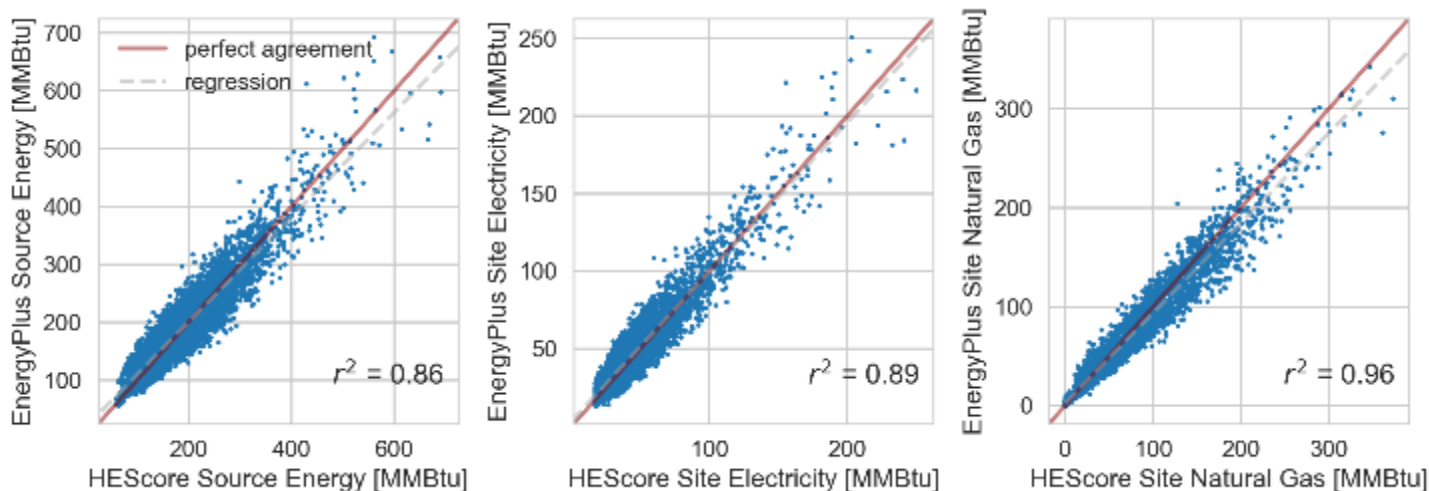
HPXML

OpenStudio/EnergyPlus Building Energy Model Simulations

EnergyPlus Harmonization Effort

Benefits

- ✓ **Accelerates new technologies** into software tools
- ✓ **Increases consistency** across DOE/industry programs
- ✓ **Reduces developer effort** to use EnergyPlus
- ✓ **Lowers industry-wide costs** of maintaining multiple engines
- ✓ **Allows private-sector competition** around innovations for user interface, business support, etc.



Questions?

Madeline Salzman

madeline.salzman@ee.doe.gov

(202) 586-2540



LEED

RESIDENTIAL

ASA FOSS

Director, Residential Technical Solutions



Program Scope and Applicable Building Types



Single-Family Homes



High-Rise



Low-Rise Multifamily



Single-Family Production



Gut Rehab

LEED Certifications (United States)

350,000 units certified

325,000 multifamily

24,000 single family

LEED Registrations (United States)

775,000 units registered

760,000 multifamily

14,000 single family

LEED Certifications (New England)

52,000 units certified

51,000 multifamily

1,300 single family

LEED Registrations (New England)

215,000 units registered

214,000 multifamily

1,000 single family



3.1 BILLION SQ.
FT.

OF COMMERCIAL
LEED® CERTIFIED
PROJECTS

(CUMULATIVE)

WHAT'S THE VALUE OF LEED?

Occupants prefer to live in a sustainable building

8.9% rental premium

Lower Interest Rates

Fannie Mae – Green Financing Loans

Freddie Mac – Multifamily Green Advantage

WHAT'S THE VALUE OF LEED?

Added income of a property, adds value to the property when it's time to refinance

ie \$100,000 in added income, at 6% capitalization rate, increases added value by \$1.6 Million

Institutional Investors prefer to purchase LEED properties

SINGLE FAMILY SALES PREMIUM

North Carolina: 9.5% premium for certified properties in metro markets

Maryland: 2-5% premium for ENERGY STAR

DC: 3.5% premium for homes listed with green features

California: 9% sales premium for green certified homes

SINGLE FAMILY SALES PREMIUM

Meta-Analysis of Green Home Premiums

Green certified homes sell for a 4.3% premium
(+/-) 1.0% (90% confidence levels for the means)

WHY THE SALES PREMIUM?

1) Green = Quality

Improved comfort, health and quality of home and reduced maintenance

2) Lower utility bills

3) Doing the right thing (for the environmental)

LEED PREMIUM

Texas study on RESALE price

6% premium for certified homes in general
(primarily ENERGY STAR)

8% premium for LEED certified homes.



GREEN BUILDING INFORMATION GATEWAY

GBIG

SEARCH 🔍

BUILDINGS

LEADERS



Search



Special: California State Government LEED Projects



105 Buildings

Activities: 128 (27.36 Million sqft)

LEED EB 2009 (31) • LEED NC 2.2 (27) • LEED NC 2009 (23) ...

ACTIVITY SUMMARY

LEED-HOMES v2008 Gold certified on 09/20/2010



77/136

Possible points

LOCATION



This project is located at:

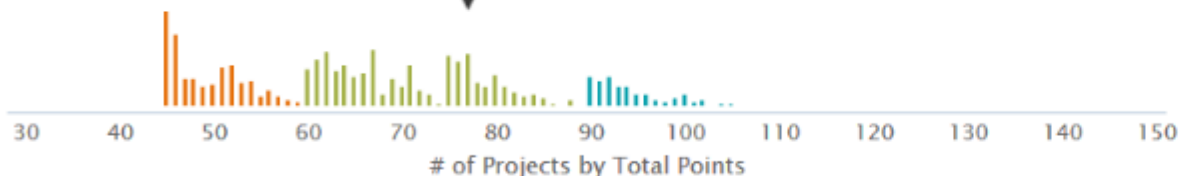
1 Gomes Way, Harwich, MA, USA

ACTIVITY DETAILS

Activity Type	LEED
Space Type	Single-Family Home
CBSA	Barnstable Town, MA Metropolitan Statistical Area
USGBC Chapter	Massachusetts Chapter

COMPARE

This Project



Data on HERS Rated Homes

HELIX Summit ~ December 7, 2018 ~
Providence, RI

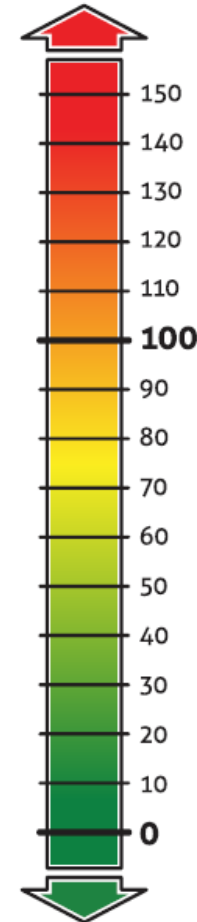
**Ryan Meres, Program
Director
RESNET**



What is the HERS Index?



- ✓ The **national standard** by which a home's energy efficiency is inspected and rated.
- ✓ A typical home built to 2006 energy efficiency standards scores 100 on the HERS Index.
- ✓ A 1-Point change in the HERS Index represents a 1% change in energy use.
- ✓ A lower Index Score means a home uses less energy.
- ✓ A home with a HERS Index Score of 0 produces as much energy annually as it uses.

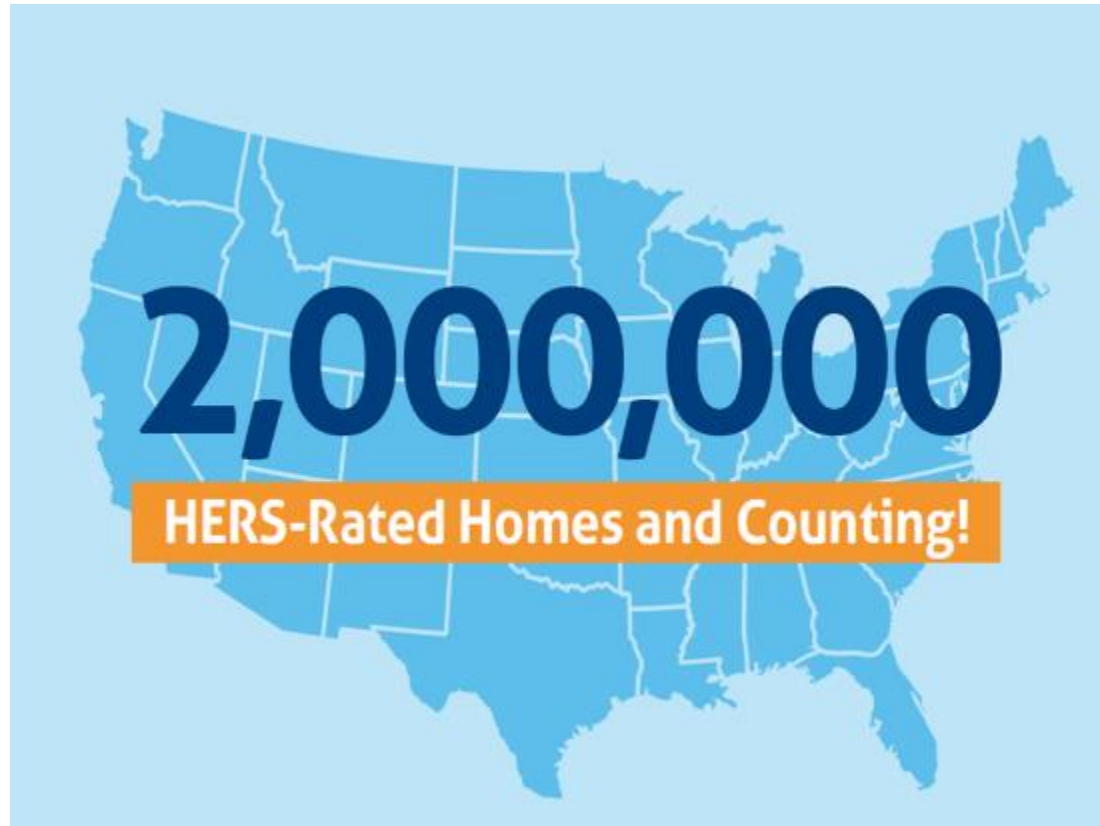


- ✓ A simple, easy to understand system for prospective homebuyers, Realtors, Appraisers and utilities to compare the energy performance of homes.



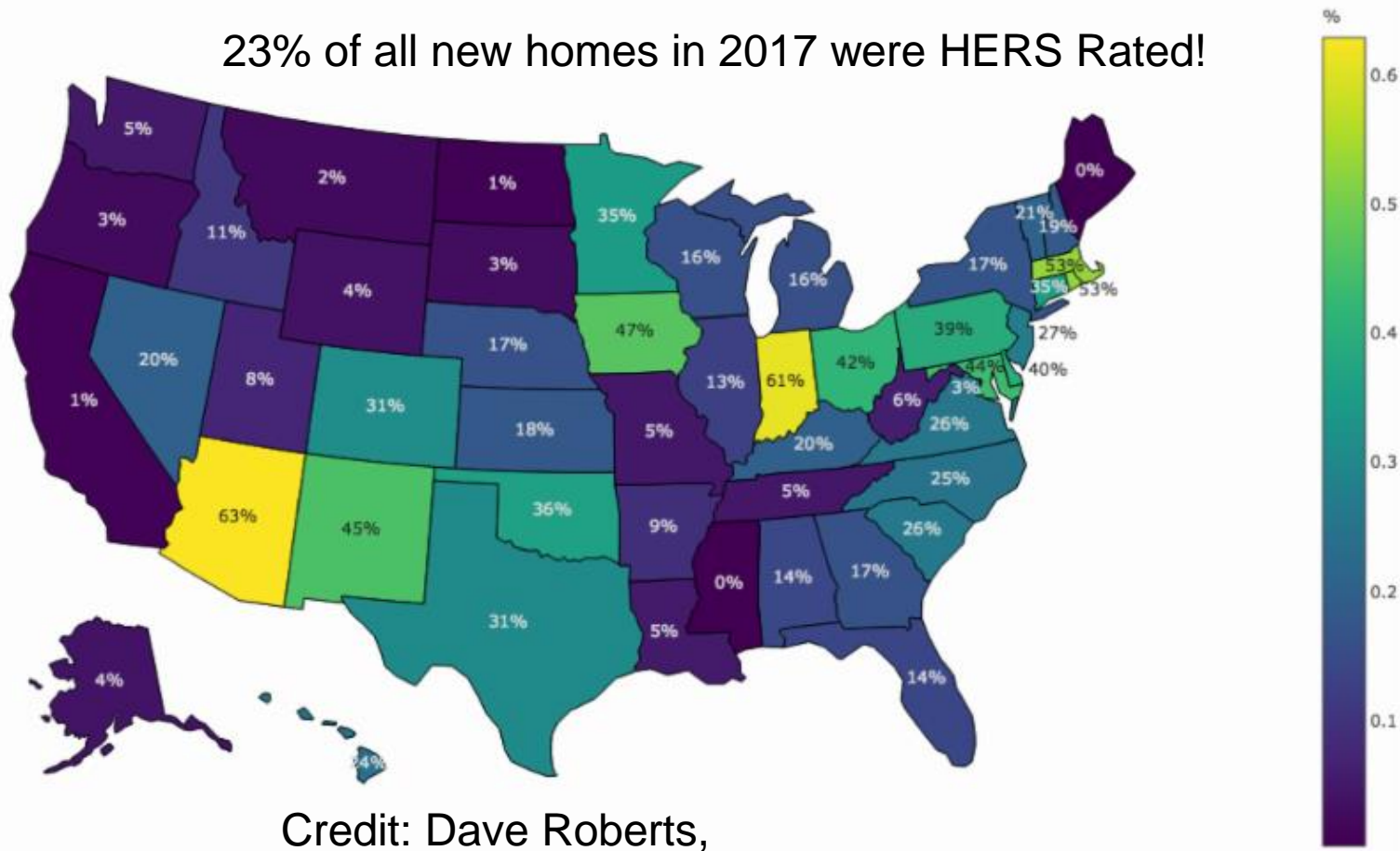
The HERS Index accounts for a home's energy consumption of heating, cooling, water heating, lighting and some appliances.

More Than 2 Million HERS Ratings



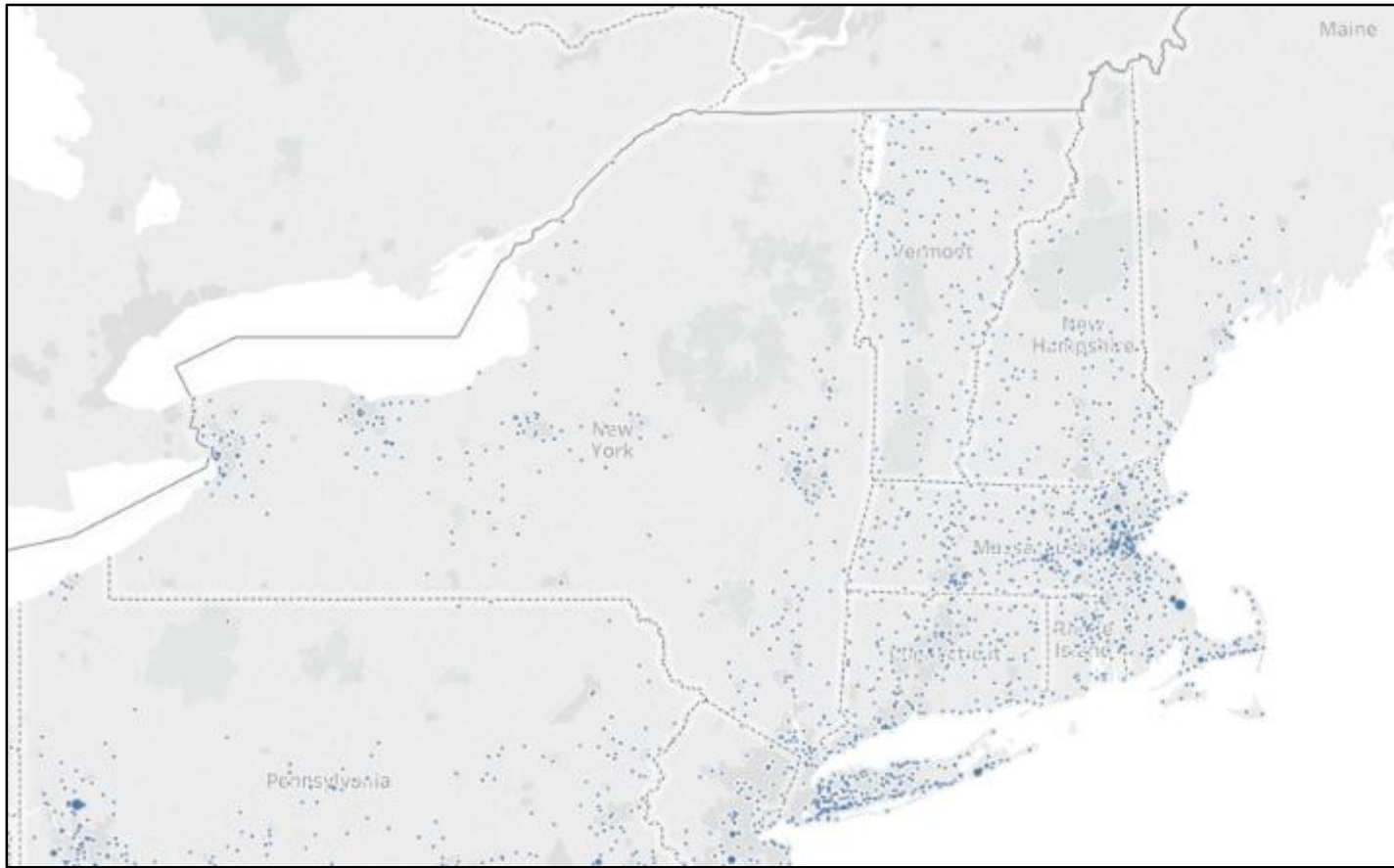
Percentage of New Homes HERS Rated

23% of all new homes in 2017 were HERS Rated!

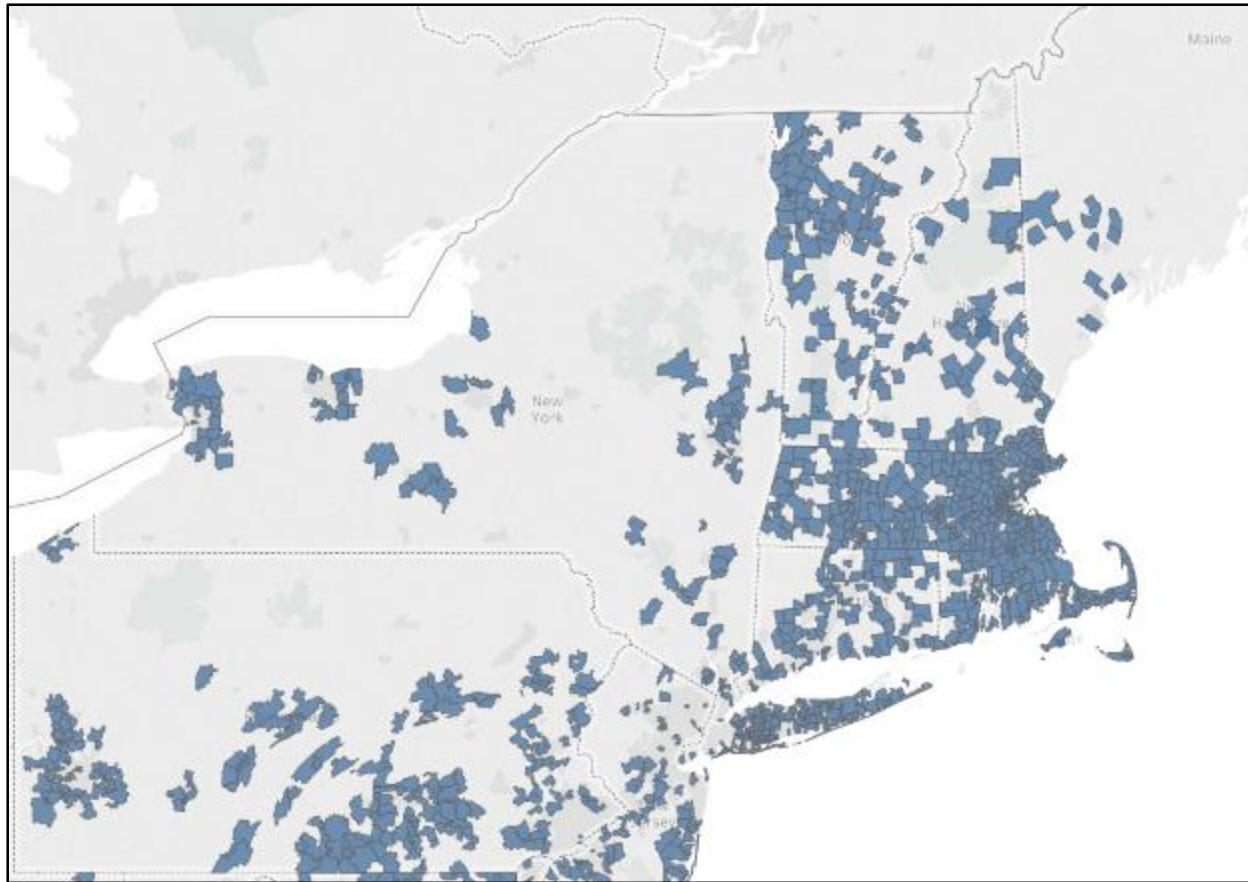


Credit: Dave Roberts,
NREL

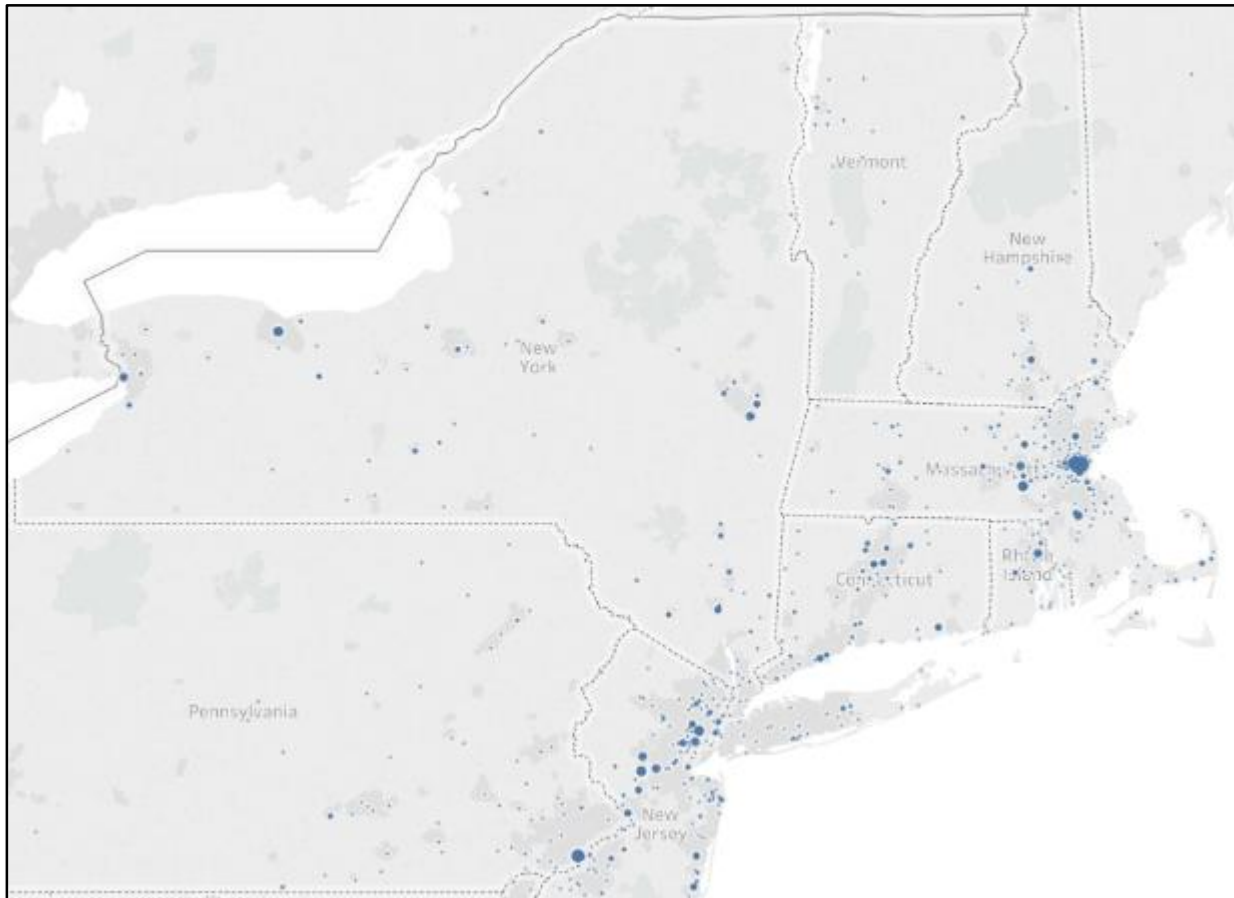
Single Family HERS Ratings, 2014-17



Single Family HERS Ratings by Zip Code, 2017

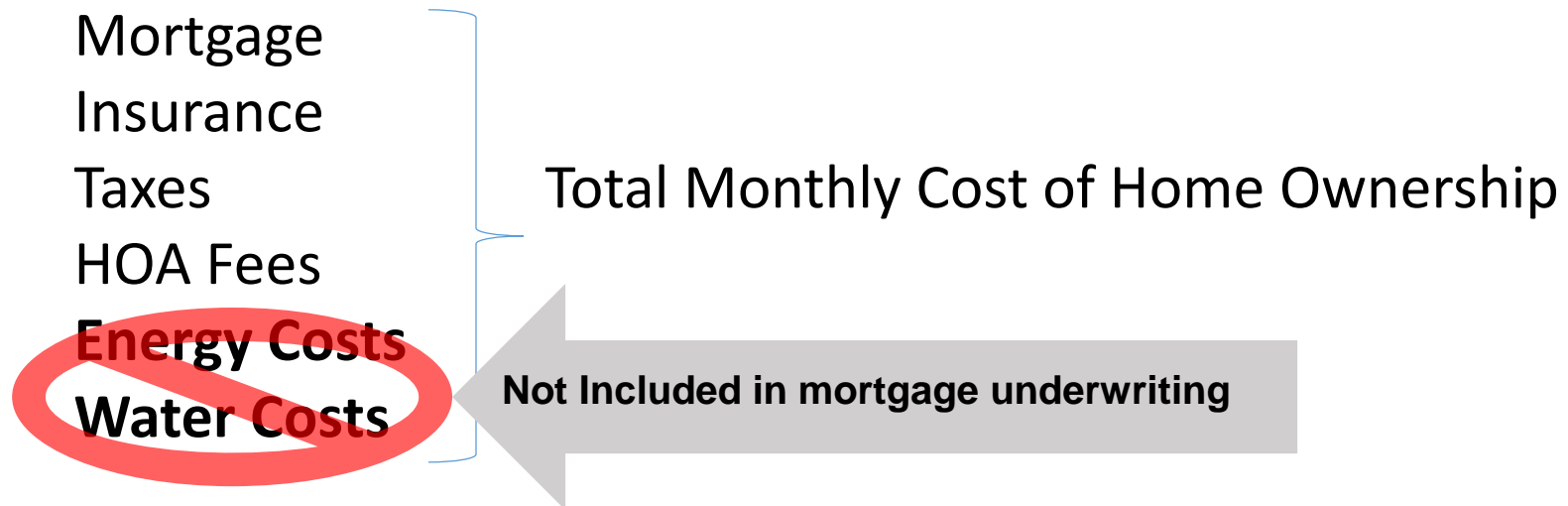


Low-Rise Multifamily HERS Ratings, 2014-17



Energy Costs More than Property Taxes or Insurance

The average homeowner pays more for energy costs than property taxes or insurance. (U.S. Census Bureau)



Energy Data in the Real Estate Transaction



Real Estate Agents

- Need access to data to include in the listing
- Market a home's EE and green features



Lenders/Underwriters

- Need data to support potentially higher loan value



Appraisers

- Need data to identify comparables and justify value.
- Need more data in the MLS to more easily compare EE features

A HERS API for MLS Data Providers

Auto-populate HERS Index scores into real estate listings!

RESO fields and corresponding RESNET Registry fields:

Green Verification Type: **(HERS Rating)**

Green Verification Year: **(Date of Rating)**

Green Verification Metric: **(HERS Index Score)**

Green Verification Status: **(Confirmed/Sampled/Threshold Rating)**

Green Verification Source: **(RESNET Registry)**

Green Verification URL: (Direct link to the home's rating info on RESNET's

Public Access to the Registry: <http://www.resnet.us/public-access-to-resnet-national-registry>).

Lower Mortgage Default Risk



RESEARCH REPORT

March 2013

Home Energy Efficiency and Mortgage Risks

Research funded by the Institute for Market Transformation

UNC CENTER for COMMUNITY CAPITAL • INSTITUTE for MARKET TRANSFORMATION

Report published by UNC Center for Community Capital and Institute for Market Transformation

- Loans on ENERGY STAR homes are **32 percent less likely** to go into default.
- Within efficient homes, the more efficient the house, the **lower the default risk**. For each point on the Home Energy Rating System (HERS) index of efficiency, the risk of default drops.
- This is the first report of its kind and is based on a sample of 71,000 home loans from across the country. The level of confidence is 99 percent.

Appraiser Portal

RESNET
RESIDENTIAL ENERGY SERVICES NETWORK

Online Appraisal Portal

The HERS Index is the **key to unlocking the value of green homes** and the HERS Index Score, developed and introduced by RESNET in 2006, is the **industry standard by which a home's energy efficiency is measured**. It has since grown to be regarded as a home's MPG for energy efficiency.



The **Appraisal Institute** and **RESNET** have partnered to provide appraisers with access to RESNET's National Registry of HERS Rated Homes through the **new Appraiser Portal**.



Accessing the Portal allows appraisers to begin to understand and value the energy efficiency of HERS-rated homes in their market including:



HERS Index scores



Estimated annual energy costs



Energy cost savings

Appraisers can search for HERS-rated homes in their area by city and state, zip code or address. Search results can be filtered by:



HERS Index score range



Builder



Year of construction



HERS rating company



And best of all, the results can be downloaded as an Excel file so appraisers can print the results and **access them offline**.

Other Programs Use HERS

National Programs



Local/Regional Programs



Utility Programs

Thank you!

Questions?

Contact Info:

Ryan Meres
Program Director
RESNET
ryan@resnet.us
760-681-2391



Setting the Standards for
Home Energy Efficiency



Presentation at the
HELIX Summit, Dec 7,
2018



the WHY of



“Everyone should have a home that is comfortable, healthy, safe and energy efficient”



60,000 HPwES upgrades in 2014 –
the 800-year plan

Taking Home Performance to Scale

Pearl's vision –
millions of home
upgrades per year





Staged improvements – at different times, by different contractors

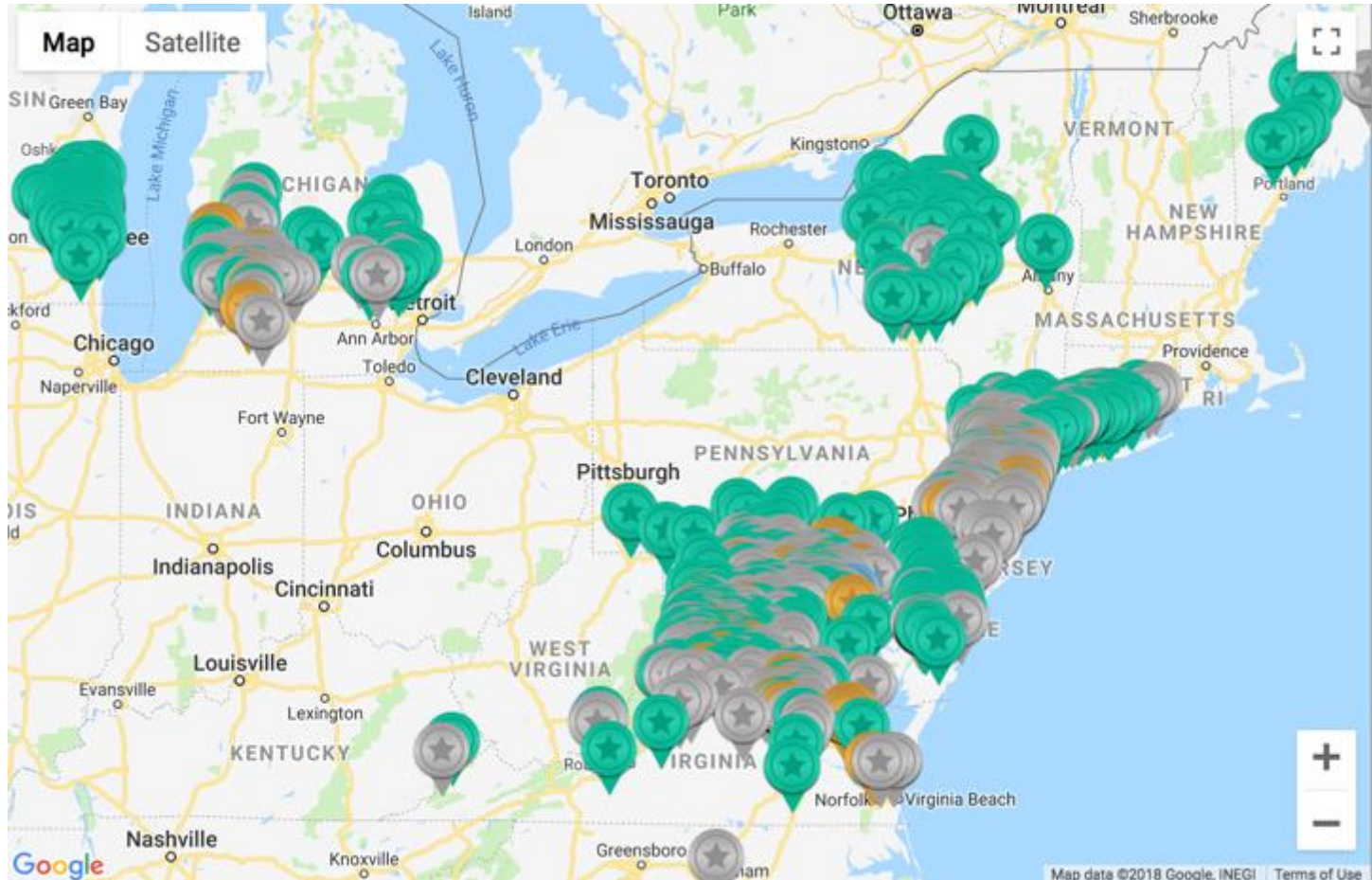


Virtuous Circle of Visible Value



- © 2011 Blackwell Publishing Ltd *Journal of Internal Medicine* 270: 101–110

Your Neighbor is Pearl Certified



Over 3,000 homes certified, 400 more per month



The Pearl Contractor Advantage Network

“

**All our installations are
Pearl Certified.**

**When we finish our work,
we'll send you a Pearl
Certification report.**

**Pearl's report can increase
the value of your home by
5% or more when you sell or
refinance**

”



The Pearl Broker Advantage Network

“

It's my fiduciary responsibility to get you the best price for your home.

Buyers want and will pay more for homes that cost less to own and operate, have better indoor for their families, and are comfortable.

I'm going to ask you some questions about your home's features that will help me uncover any hidden value we can market to interested buyers.

I do this with all of my listings to sell as them quickly as possible and for the best price.

”

In Their Own Words: Our Value Proposition



“We’re not just closing deals with Pearl, we’re opening the door with Pearl.”

John Kane
Home Solutions Expert
Allied Energy



“Pearl allows our agents to get maximum value for their homes.”

Carol Perry
CBDO
HomeSmart
International



“Pearl not only provides a home certification but also documentation of the value we add.”

Josh Goldschmidt
President
Eagle Construction



Pearl Certification Reports

1577 Spring Hill Road
Vienna, VA 22182

Gold Home
Certificate No. H-007171



Pearl Home Certification Report



007171



Certification Date: March 15, 2018

High-Performing Home

1577 Spring Hill Road, Vienna, VA 22182

Gold

High-performing asset specifications can be found in the Pearl Certification Report and Appraisal Institute's *Residential Green and Energy Efficient Addendum* that accompany this certificate.

A handwritten signature in black ink, reading "W. Casey Murphy".

W. Casey Murphy
Pearl VP of Quality
Management

The Home at a Glance



1577 Spring Hill Road,
Vienna, VA 22182

Certified on March 15, 2018
Pearl Gold Certificate | Pearl Score: 960

What You Need to Know

This home has many high-performing features, including its attic insulation, attic hatch, air sealing, forced air ducts and windows.

This home will be healthier, more comfortable, cleaner and quieter, and cost less to operate, than most Virginia homes.



This Pearl Gold home has verified high-performing assets for a number of features that enhance the quality of life for its owners. Pearl Gold Certified: it's what value *feels* like.

Certification Level



Gold
960 Pearl Points



Building Shell:
281 / 300 points



Heating and Cooling:
254 / 360 points



Baseload:
201 / 240 points



Home Management:
224 / 300 points

U.S. Homes Eligible for Pearl Certification Levels



Pearl Home Certification Report | pearlcertification.com/registry | Page 1

Is My Insulation Better than the



1577 Spring Hill Road,
Vienna, VA 22182

Certified on March 15, 2018
Pearl Gold Certificate | Pearl Score: 960

Special Performance Features of This Home



Central Air Conditioner:
High efficiency unit

This home's central air conditioner is very efficient, meeting the newest Federal standards that went into effect in 2015.



Forced Air Ducts:
In conditioned space

This home's ductwork is inside conditioned space - a big benefit for the lifetime of its systems. Installing ductwork in unconditioned space is bad building practice, as it not only wastes energy but also makes an expensive heating and cooling equipment work harder to cool the home - causing it to fail sooner.



Refrigerator:
Very efficient

ENERGY STAR certified refrigerators are about 9-10 percent more energy efficient than models that meet the federal minimum energy efficiency standard.



Dishwasher:
Very efficient

ENERGY STAR certified dishwashers use advanced technology to get your dishes clean while using less water and energy. Dishwashers that have earned the ENERGY STAR are, on average, about 5 percent more energy efficient and 15 percent more water efficient than standard models.



CFL/LED Lighting:
Very efficient


This home has CFL and LED lighting, which means its lamps not only use less energy, they last a very long time. LED lights also produce better light along the color spectrum and are dimmable.



Filters:
Very effective

The home's special air filter unit attracts and captures airborne particles and allergens, such as pollen, pet dander, and mold spores - promising healthier indoor air for residents.


Detail for the Early Adopter Geeks



1577 Spring Hill Road,
Vienna, VA 22182


Certified on March 15, 2018
Pearl Gold Certificate | Pearl Score: 960

HOME ASSET DETAILS
Building Shell




Platinum Level: 244
This Home: 281
Average Home: 150

Attic and Roof



Attic Hatch	R-10 or higher
R-Value	R-49
Insulation Type (predominant)	Polyurethane
Installation Quality	Grade 2

Wall Insulation



R-Value	R-19
Insulation Type (predominant)	Fiberglass
Installation Quality	Grade 1

Pearl Home Certification Report | [pearlcertification.com/registry](#) | Page 8

and yes, a completed AI Addendum

Client:	Jane Doe		Client File #:	
Subject Property:	1577 Spring Hill Road, Vienna, VA 22182		Appraisal File #:	

EFFICIENCY FEATURES (Water, Energy, and Environmental. See types defined in glossary).				
The following items are considered within the appraisal analysis of the subject property:				
Insulation	<input type="checkbox"/> Fiberglass Blown-In <input checked="" type="checkbox"/> Foam Insulation <input type="checkbox"/> Cellulose <input checked="" type="checkbox"/> Fiberglass Batt Insulation <input checked="" type="checkbox"/> R-Value Wall R-19 Ceiling R-49 <input checked="" type="checkbox"/> Other R-15 Conditioned basement			
Building Envelope	Envelope Tightness: 4.0 Unit: <input type="checkbox"/> CFM25 <input type="checkbox"/> CFM50 <input checked="" type="checkbox"/> ACH50 <input type="checkbox"/> ACH natural Instructions: Insert the rating as a number that could be 0.5 to 7ACH50 or higher. The lower the number, the more air tight the envelope. Building Codes for area show maximum Envelope Tightness allowed based on the climate zone. Not all areas have adopted a building code. http://hcap-energy.org/			
Windows	<input type="checkbox"/> ENERGY STAR® <input checked="" type="checkbox"/> Low E	<input type="checkbox"/> High Impact	<input type="checkbox"/> Storm <input checked="" type="checkbox"/> Double Pane <input type="checkbox"/> Triple Pane	<input type="checkbox"/> Tinted <input type="checkbox"/> Solar Shades
Day Lighting	<input type="checkbox"/> # of Skylights:		<input type="checkbox"/> # of Solar Tubes:	<input type="checkbox"/> Other (Describe): % of lighting LEDs: 20
ENERGY STAR® Appliances	ENERGY STAR®: <input checked="" type="checkbox"/> Dishwasher <input checked="" type="checkbox"/> Refrigerator <input type="checkbox"/> Washer/Dryer <input type="checkbox"/> Other Energy Source: <input type="checkbox"/> Propane <input type="checkbox"/> Electric <input type="checkbox"/> Natural Gas <input type="checkbox"/> Other (Describe): Note: ENERGY STAR® appliances do not result in an ENERGY STAR® Home.			
Water Heater	<input checked="" type="checkbox"/> ENERGY STAR®		Size: <=55 gallons <input type="checkbox"/> Tankless	<input type="checkbox"/> Solar (next page) <input type="checkbox"/> Heat Pump <input type="checkbox"/> Coil
HVAC & Related Equipment Describe in comments area.	<input type="checkbox"/> High Efficiency HVAC SEER 14.0 Efficiency Rating % AFUE* 85.0% *Annual Fuel-Utilization Efficiency	<input type="checkbox"/> Heat Pump Efficiency Rating: COP: HSPF: SEER: EER:	Thermostat/Controllers? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Programmable Thermostat? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Auxiliary Heat Source? <input type="checkbox"/> Yes <input type="checkbox"/> No Radiant Floor Heat? <input type="checkbox"/> Yes <input type="checkbox"/> No Geothermal? <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Vehicle Ready? (car charger) <input type="checkbox"/> Yes <input type="checkbox"/> No	
Indoor Environmental Quality	<input checked="" type="checkbox"/> Energy (ERV) or Heat Recovery Ventilator (HRV) <input checked="" type="checkbox"/> Other Measured Whole-House Ventilation Device (See glossary) <input type="checkbox"/> Humidity Monitoring Device installed		<input type="checkbox"/> Non Toxic Pest Control <input type="checkbox"/> Radon System: <input type="checkbox"/> Active <input type="checkbox"/> Passive	
Water Efficiency	<input type="checkbox"/> Reclaimed Water System (Describe): <input type="checkbox"/> Greywater reuse system <input type="checkbox"/> Water Saving Fixtures		<input type="checkbox"/> Rain Barrels Used in Irrigation <input type="checkbox"/> Cistern size: gallons <input type="checkbox"/> Location of cistern:	
Utility Costs	Annual Utility Cost: \$ /year, based on: to (full year) Includes (check all that apply): <input type="checkbox"/> Electric <input type="checkbox"/> Heating <input type="checkbox"/> Water <input type="checkbox"/> Other:			# Of Occupants:
Comments Include source for information provided in this section.	The following property has a number of high-performing features as detailed in the Pearl Certification report. According to a 2017 study by Remodeling magazine, air sealing and attic insulation has the highest value-to-cost ratio of any home improvement and was the only improvement to have a ratio higher than 1.0 (i.e., the added home value was more than the cost to perform the work). With the cooperation and approval of the Appraisal Institute, Pearl Certification has an AI REPORTS® License Agreement. The Appraisal Institute makes no representations, warranties or guarantees as to, and assumes no responsibility for, the data, analysis or work product provided by the individual appraiser(s) or any other individual in the specific contents of the AI Reports®.			

Completed by: W. Casey Murphy	Title: Vice-President of Quality Systems	Date: 03/15/2018
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The objective of this Addendum is to standardize the communication of the high performing features of residential properties. Identifying the features not found on the appraisal form provides a basis for comparable selection and analysis of the features. Builders, contractors, homeowners, and third party verifiers are encouraged to complete this Addendum and present to appraisers, agents, lenders, and homeowners. Complete the pages that apply to the property appraised and provide to appraiser prior to the completion of an appraisal. Provide the Addendum to the lender at the time of loan application to assist them in understanding the property type so an appraiser with sufficient knowledge of this property type will be engaged to provide an appraisal to meet secondary mortgage market guidelines.

One-Page “Home Highlights” Flyer



1577 Spring Hill Road,
Vienna, VA 22182

Certified on March 15, 2018
Pearl Gold Certificate | Pearl Score: 960

Learn more about this Pearl Certified home's benefits: read the free report at www.pearlcertification.com/registry.

Pearl Certification is a national firm that provides third-party certification of **high-performing homes**: homes with “performance assets” that make them **healthy, safe, comfortable, energy and water efficient**. Pearl is an ENERGY STAR Partner.

This Pearl Gold home has verified high-performing assets for a number of features that enhance the quality of life for its owners. Pearl Certified: it's what value feels like.

What You Need to Know

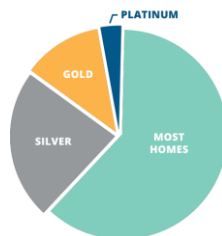
This home has many high-performing features, including its attic insulation, attic hatch, air sealing, forced air ducts and windows.

This home will be healthier, more comfortable, cleaner and quieter, and cost less to operate, than most Virginia homes.



Gold Certified: Special Performance Features of this High-Performing Home

U.S. Homes Eligible
for Pearl Certification Levels



Attic Insulation:
Top 9% of VA
homes

Attic Hatch: Well-
insulated

Air Sealing: Top
2% of VA homes

Forced Air Ducts:
In conditioned
space

Windows: Top
25% of VA homes

Thermostat:
Smart home
feature

Filters: Very
effective

Room Ventilation:
Lower indoor
humidity

Whole House
Ventilation: Better
air and energy
savings

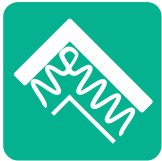


House Tour Placards



1577 Spring Hill Road,
Vienna, VA 22182

Certified on March 15, 2018
Pearl Gold Certificate | Pearl Score: 960



Attic Insulation: Top 9% of VA homes

This home's attic is very well-insulated - it will keep you warmer in the winter and cooler in the summer. Feel at home in your home!

With the superior insulation installed in this attic, you'll feel the difference right away: this house will be more comfortable - particularly in second floor rooms. Good attic insulation also protects against excessive winter heat loss that causes roof damage from snow melt.

Plus, enjoy lower utility bills year round.

Social Media Posts



Social Media Posts: 1577 Spring Hill Road, Vienna, VA

ATTIC INSULATION

New listing at 1577 Spring Hill Road, Vienna has been awarded Pearl Gold Certification in part because it scored very high for attic insulation. That's the stuff that keeps us cool and comfortable in the summer/warm and cozy in the winter. The US Department of Energy offers a good primer on insulation so you can see why it's all the rage. Link to: <https://energy.gov/energysaver/insulation>

AIR SEALING

Air sealing might not be as sexy as new windows, but it is the single most cost-effective way to reduce energy bills and improve comfort. It's reason enough to take a look at 1577 Spring Hill Road, Vienna, a Pearl Gold Certified property for its many high-performing features. You won't be able to see the impressive air sealing, but you'll feel the difference every season. [Link to listing]



Potential HELIX Data: Pearl Certification Level

Pearl Certification Levels



Pearl Silver

700 points



Pearl Gold

825 points



Pearl Platinum

975 points

Potential HELIX Data: Home Feature Data

- Furnace: 92.5 AFUE, multistage gas valve
- Air conditioner: 20 SEER,
- Ducts: <5% leakage, R-6 insulation
- Air source heat pump 18 SEER / 10.5 HSPF, ENERGY STAR Verified HVAC Installation
- Gas storage water heater: UEF .72
- Attic insulation: fiberglass R-49
- Wall insulation: cellulose R-20
- Windows: U-factor 0.27, SHGC 0.35
- Wi-Fi thermostat
- Home Energy Management system

Potential HELIX Data: “Third Party”

Labels





Make your home's value visible

www.pearlcertification.com

Robin LeBaron
robin@pearlcertification.com
646-416.2650

Networking Break - Thank you to our event sponsors!

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STATE OF RHODE ISLAND

**OFFICE OF
ENERGY RESOURCES**

nationalgrid



ENERGY • ECONOMY • EQUITY • ENVIRONMENT

FROM VOLUNTARY TO MANDATORY: HOW POLICIES AND PROGRAMS ARE SHAPING THE MARKET

Madeline Salzman, U.S. DOE, moderator

Julia Dumaine, CT DEEP

Kevin Rose, National Grid, RI

Ian Finlayson, Massachusetts Department of Energy Resources

Lisa Timmerman, City of Portland, Oregon

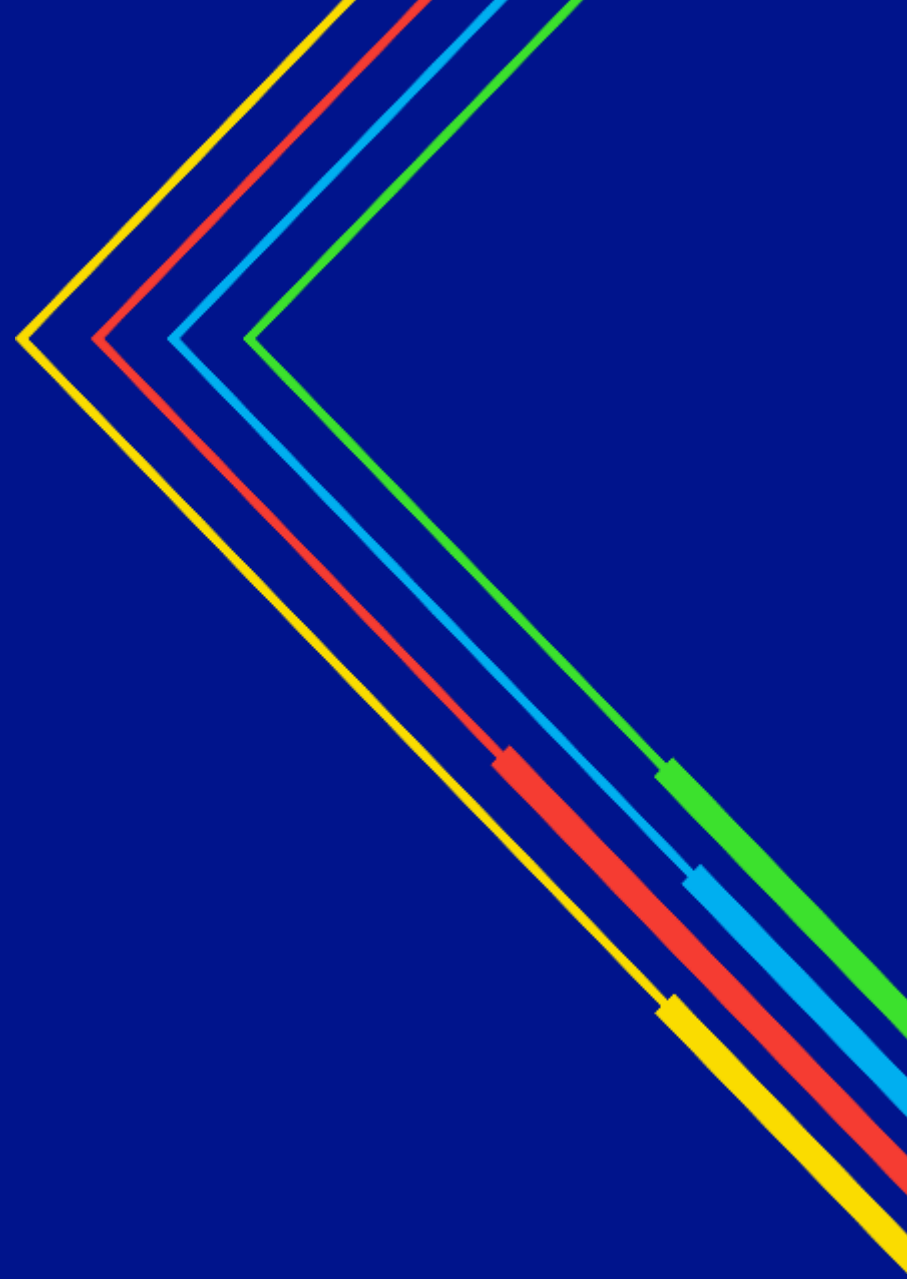
Lauren McNutt, Dunsky Energy Consulting

R.I. DOE HES Pilot

Kevin Rose

12/7/18

national**grid**



Agenda

01 Drivers

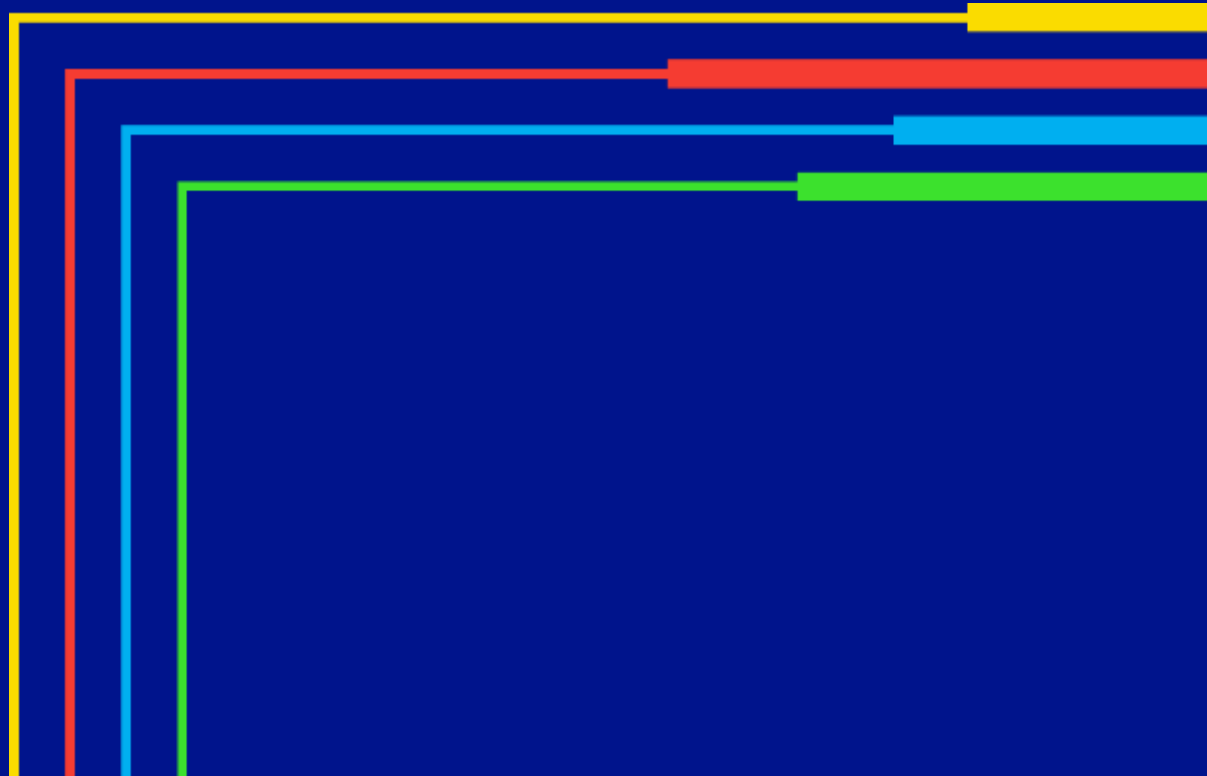
02 Pilot Basics

03 Lessons (so far)

01

Drivers

national**grid**



Drivers

Short term

Increased retrofit conversion rate?

Mid term

More “repeat customers”?

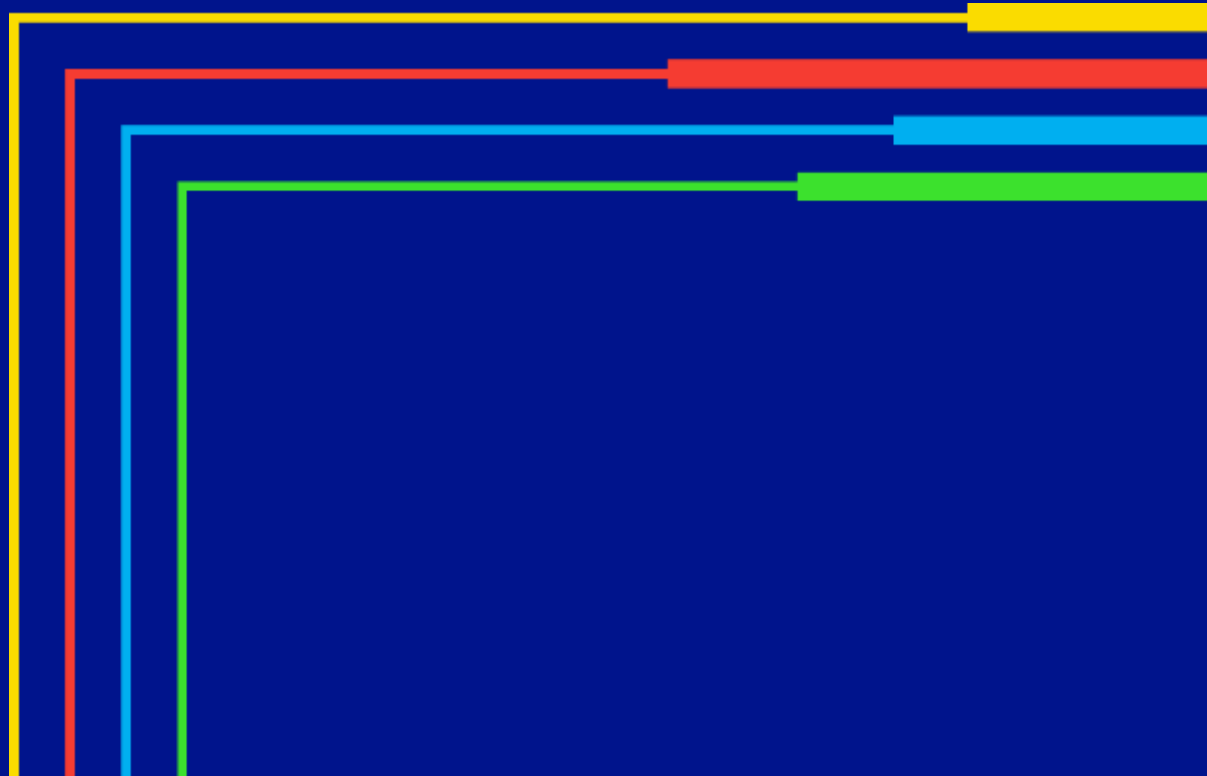
Long term

Market demand for efficiency
Data pipeline

02

Pilot Basics

national**grid**



Pilot Basics

150 Home Energy Scores

- Launched earlier this year
- Incorporated into our HPwES program
- Customers can opt-in to sharing

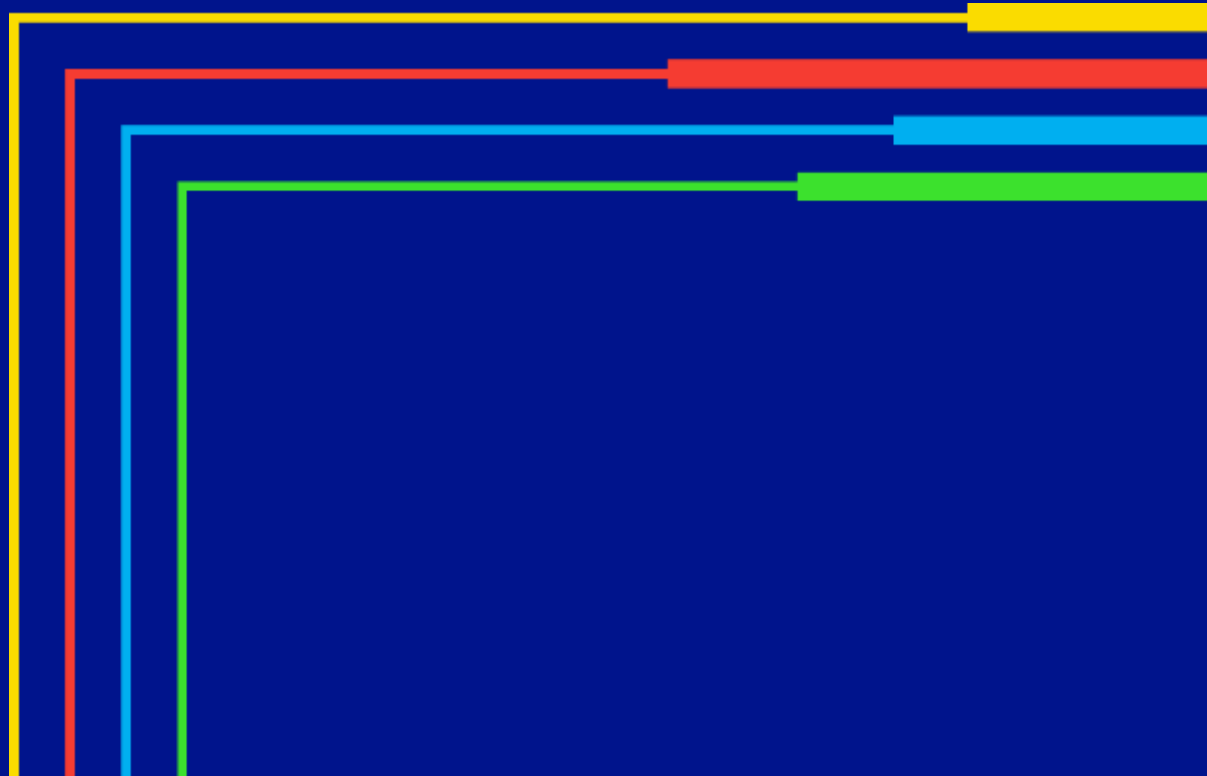


ETA for results: late 2019

03

Lessons (so far)

national**grid**



Opt-in Consent Form

Customer Consent and Release: DOE Home Energy Score Program

The undersigned (“Customer”) understands that The Narragansett Electric Company d/b/a National Grid (“National Grid”) is collaborating with the United States Department of Energy (“DOE”) to provide interested Customers who are homeowners with a Home Energy Score (“HES”) report through the DOE’s Home Energy Score Program (“Program”). Like a miles-per-gallon rating for a car, the Home Energy Score or HES provides an estimate of a home’s energy use as well as associated costs and other information based on a standard assessment of its energy-related assets.

☐ **By checking this box**, the Customer hereby consents and agrees to the disclosure of Customer Information (as defined below) by National Grid or by its contractor, Rise Engineering, a division of Thielsch Engineering, Inc. (“Contractor”), to the DOE. “Customer Information” will include Customer’s address, description of home (e.g. year built, dimensions), and energy feature details (e.g. window types, heating and cooling system characteristics). Customer Information is needed for the DOE to (i) produce a HES report for the Customer’s residence as set identified below (“Property”) and (ii) deliver that report to the Customer. The Customer further understands that the DOE may publish or disclose analyses and aggregates using the Customer Information. Except as stated below, the DOE will not publish or disclose the Customer Information to any third parties and the DOE will not, directly or indirectly, identify the Customer in any publication or disclosure. Customers’ name and energy consumption/utility bill information are not shared with DOE.

☐ **By checking this box**, the Customer hereby further consents and agrees to the inclusion of the Customer’s HES report in future real estate listings and disclosure by the DOE of the HES report to any relevant multiple listing service, as well as to any intermediary databases serving to populate these listings, through accepted and secure methods of data transportation.

Customer agrees to release, indemnify and hold harmless National Grid, the Contractor and National Grid’s affiliates and its and their respective officers, directors, employees, agents, successors and assigns from any and all liability, claims, losses, damages or expenses arising out of, resulting from or in connection with (a) the disclosure of Customer Information by National Grid or by the Contractor to the DOE and (b) any use of the Customer Information or Customer’s HES report as described hereunder.

The undersigned represents and warrants that he or she read this Customer Consent and Release and fully understands the contents hereof.

Sign: _____ Date: _____

Lessons (so far)

About 40% consent to sharing

- Customers reluctant to share if they don't know what the score is going to be.
- We allow customers to change their mind later

Real estate professionals are interested

- AI chapter training events

Summary

Midway through 150 home pilot

Short, Medium, and Long-term drivers

No conclusions to be made yet

60% of customers *don't* opt in to sharing

Can't scale up if we can't prove cost-effectiveness

nationalgrid

Home Energy Ratings in Connecticut: Driving Market Transformation

December, 2018

Julia Dumaine



Connecticut Department of Energy and Environmental Protection

Energize Connecticut

- Created in 1998 by the Connecticut Legislature
- \$240 million, ratepayer-funded initiative dedicated to empowering Connecticut to make smart energy choices, save money, and use clean, affordable energy.
- Managed and administered by
 - The Connecticut Energy Efficiency Fund
 - The Connecticut Department of Energy and Environmental Protection
 - The Connecticut Green Bank
 - Eversource
 - United Illuminating



Empowering you to make
smart energy choices

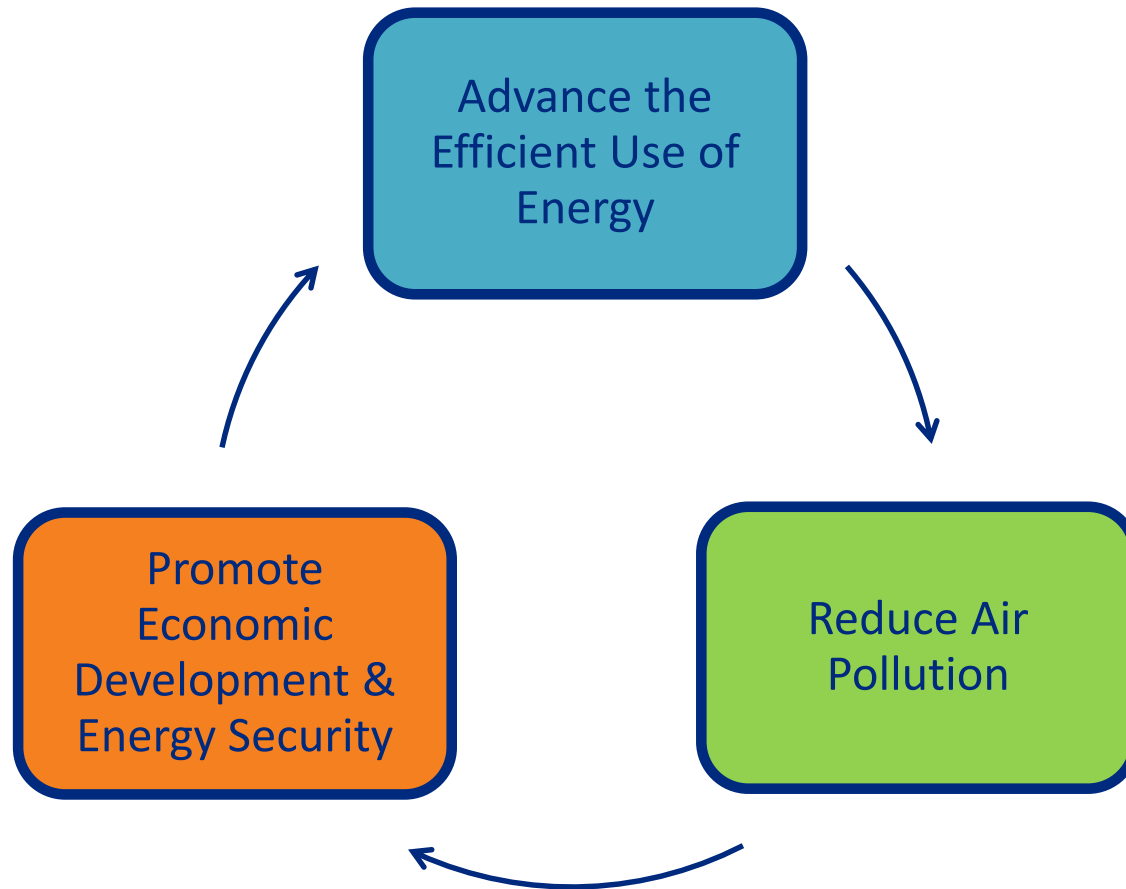
EVERSOURCE



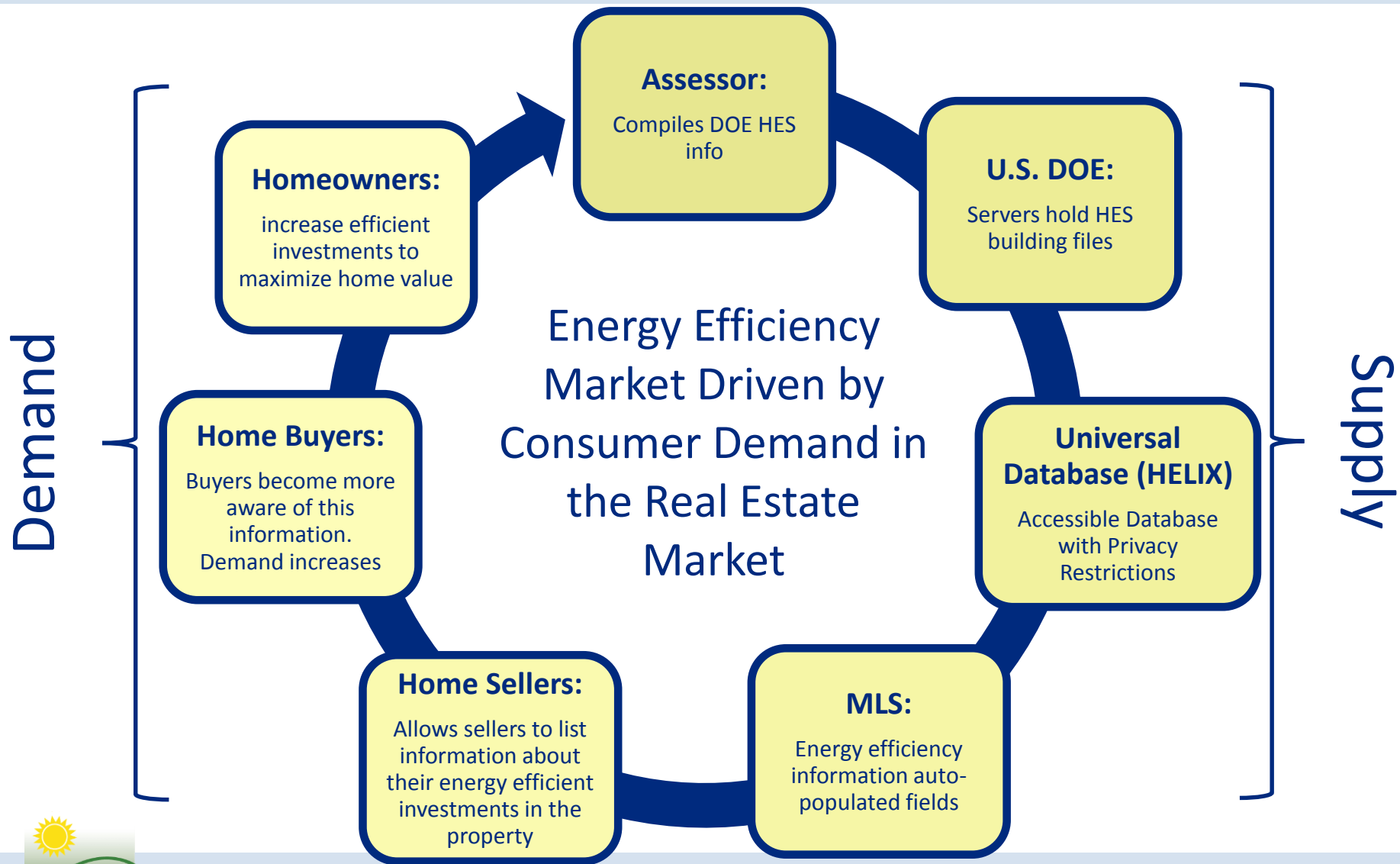
Connecticut Department of Energy and Environmental Protection

Conservation & Load Management

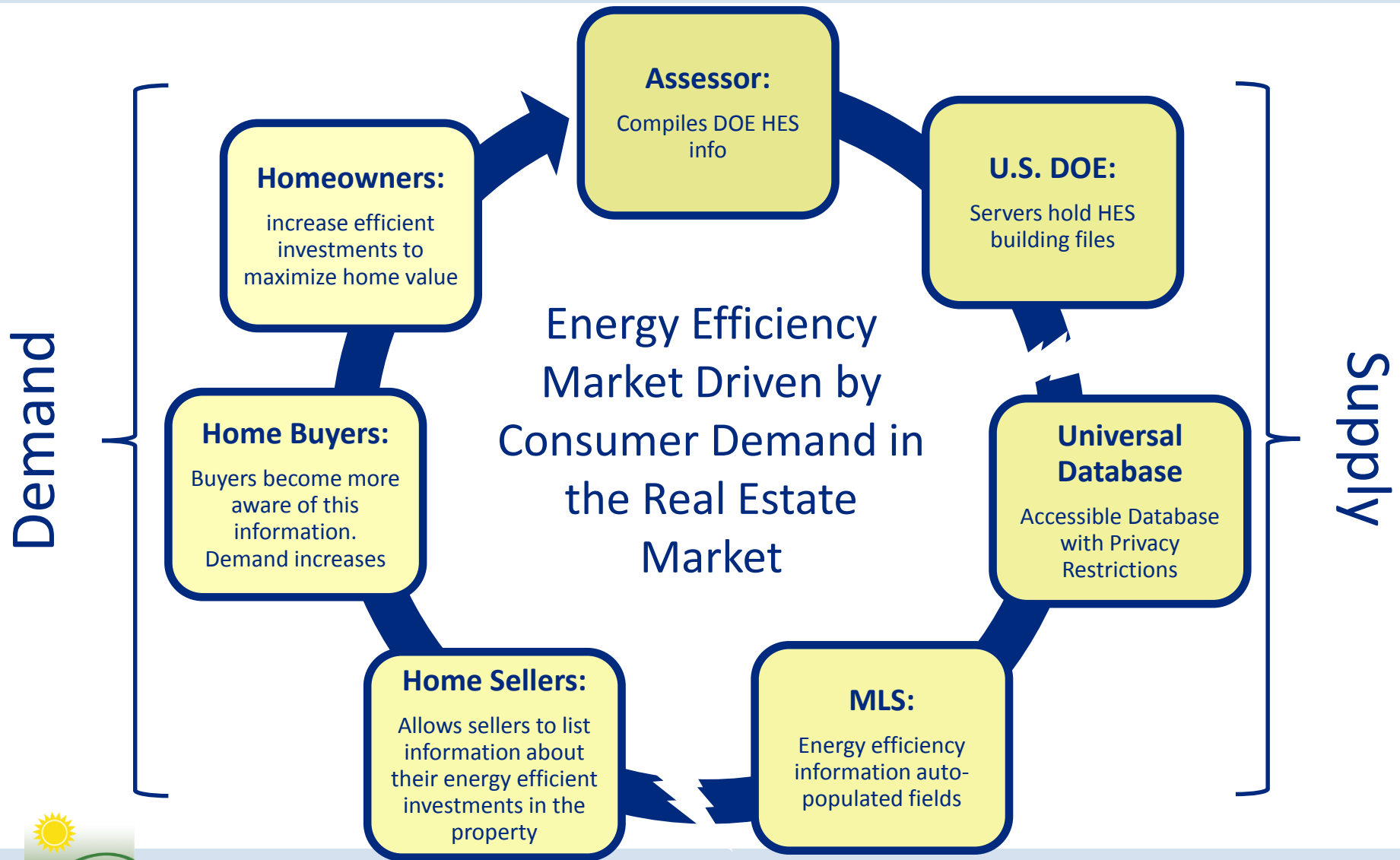
Mission: Public Act 98-28



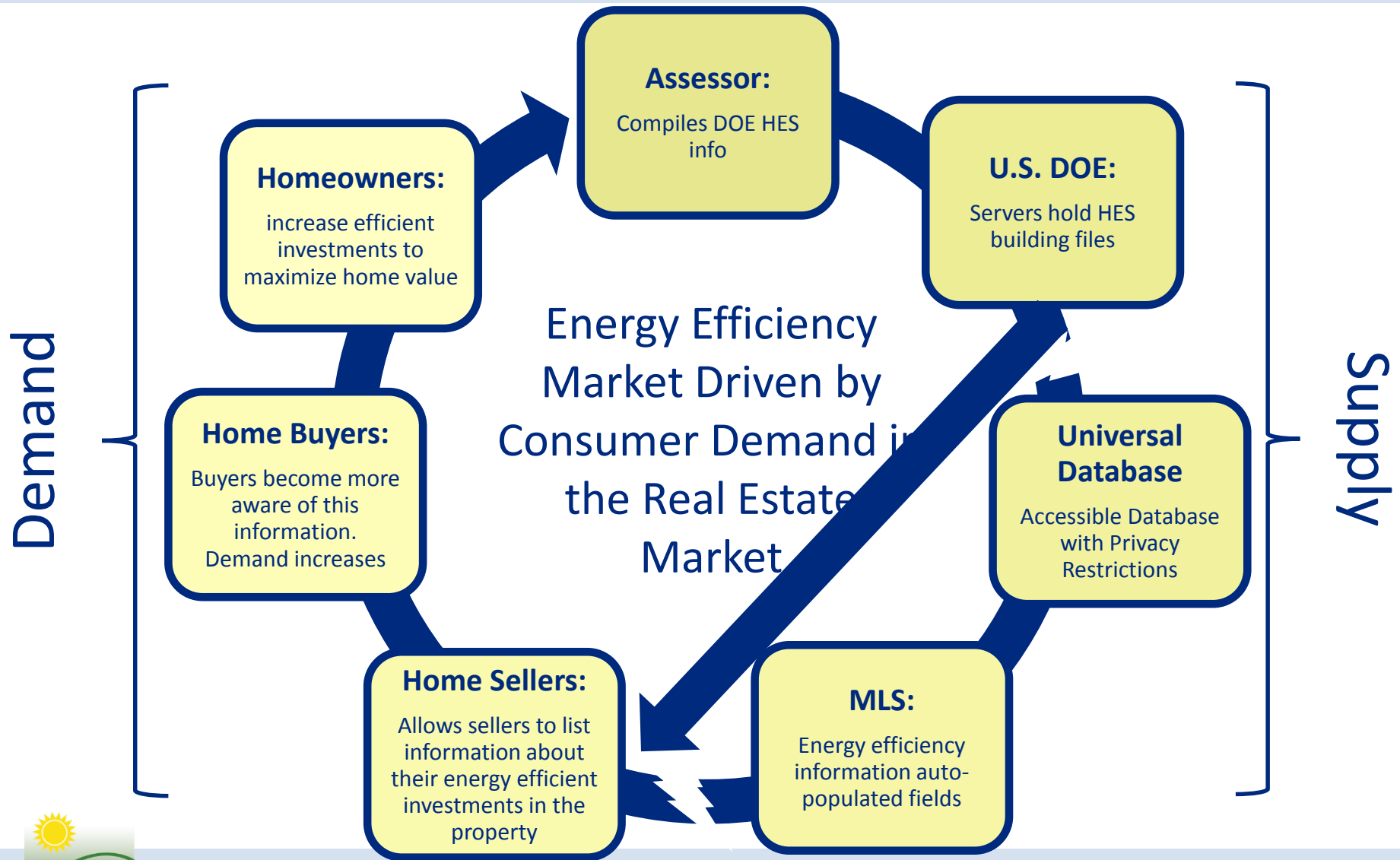
Future State Vision



Future State Vision



Future State Vision



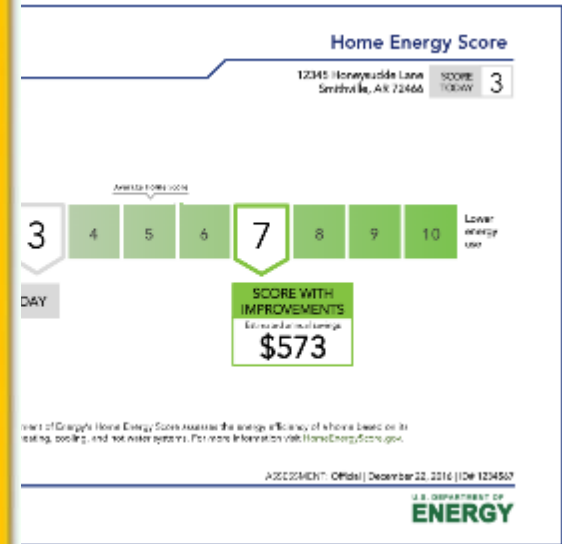
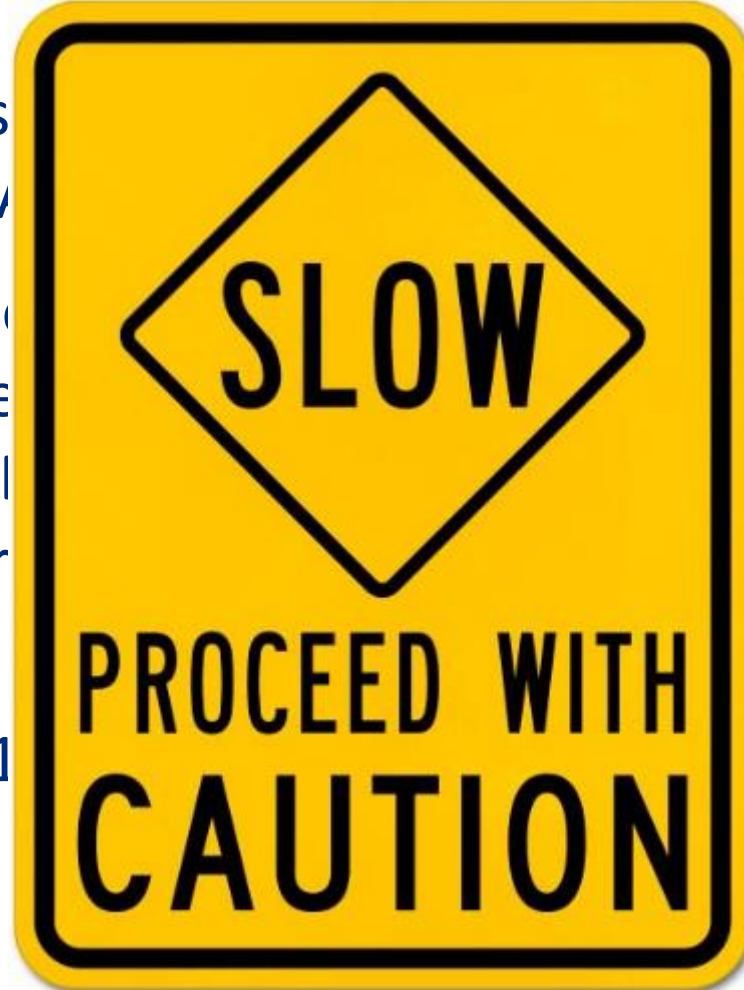
Engagement with the Real Estate Industry/HELIX

- Home Energy Labeling Information eXchange (HELIX)
 - *“The purpose of this project is to develop a database capable of automatically populating real estate listings (whether they are accessed through local Multiple Listing Services (MLS) or portals like Trulia and Zillow) with home energy information from Home Energy Score and other sources when it is available and approved by the seller.”*
- Beta-testing HELIX
 - Protection of customer data is primary concern
 - Identifying how and with whom information will be shared with by HELIX (automated versus manual data transfer)
- NEEP and CT in discussions with the MLS
 - Connecticut is not mandating scores (voluntary)
 - Quality assurance and consistency
 - Data sharing
 - Educating the industry



Integrating the DOE Home Energy Score

- Connecticut was the first state to implement in 2014
- Home Energy Score is required for all HES assessments of homes and all HVAC technicians are required to be HES Assessors
- Beginning of 2015, the program was implemented in Spanish language



Integrating the DOE Home Energy Score

- Lessons Learned after Opt-In
 - Significant decrease in HEScore participation
 - Data sharing concerns
 - Stigmatization of homes
 - Lack of understanding/training and support by contractors
 - Messaging and education must be consistent across the board– starting with the technicians and assessors
- DEEP & Utilities hosted trainings in Summer of 2018 to educate technicians
 - DEEP provided overview of state vision
 - DOE Home Energy Score Representative
 - Both covered topics related to technical knowledge and messaging

Key to Success: Consistent Messaging

2. “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



Connecticut Department of Energy and Environmental Protection

Key to Success: Consistent Messaging

3. “Why is a Score valuable in the residential real estate market?”

“Efficiency investments face a challenge in that they are not visible to buyers like new countertops or a remodeled bathroom. When improvements are done well, they are completely out of sight in attics or behind walls, with benefits that only become obvious after living in the home.” – Home Energy Information Guide

- a) Most buyers consider location and character before other features (like energy)
- b) The Home Energy Score allows sellers to showcase efficiency investments
- c) The information can be used by appraisers and mortgage lenders for energy-related financing products
 - a) Ex: Fannie Mae Homestyle® Energy Mortgage



Key to Success: Consistent Messaging

4. “What is the ultimate goal of the score?”

TO SAVE ENERGY!

- a. The Score is used to make people more aware and drive efficiency improvements.
- b. Energy plays a huge role in the comfort, safety, and affordability of a home
- c. This contributes towards Connecticut achieving our energy reduction and reliability goals, and environmental goals.



Connecticut Department of Energy and Environmental Protection

Key to Success: Technical Knowledge

4. “It is difficulty to predict a score and explain to a customer why they got what they did,”
- a. A home’s unique feature are modeled to determine annual energy use

One-Story House



- 2000 sq/ft floor plan
- 5440 sq/ft exposed surface (walls, ceiling, floor)

Two-Story House



- 2000 sq/ft floor plan
- 4080 sq/ft exposed surface (walls, ceiling, floor)

Key to Success: Technical Knowledge

5. “Language being used to explain the score might be different between relevant players,”
 - a. Real estate industry is embracing efficiency and the score more and more nationwide
 - b. Many online resources both at the state and federal level
 - [DOE Real Estate Professionals Fact Sheet](#)
 - EnergizeCt.com is currently building out a “Trade Ally” landing page for real estate professionals that will use the same language as elsewhere on the site.



Next Steps: Begin Data Sharing with HELIX

- Utilities finalizing data sharing agreements with DOE to provide HEScores to HELIX and third parties
- Need for increased communication and collaboration with MLSs to streamline processes
- Working with NEEP to establish a payment mechanism to support HELIX

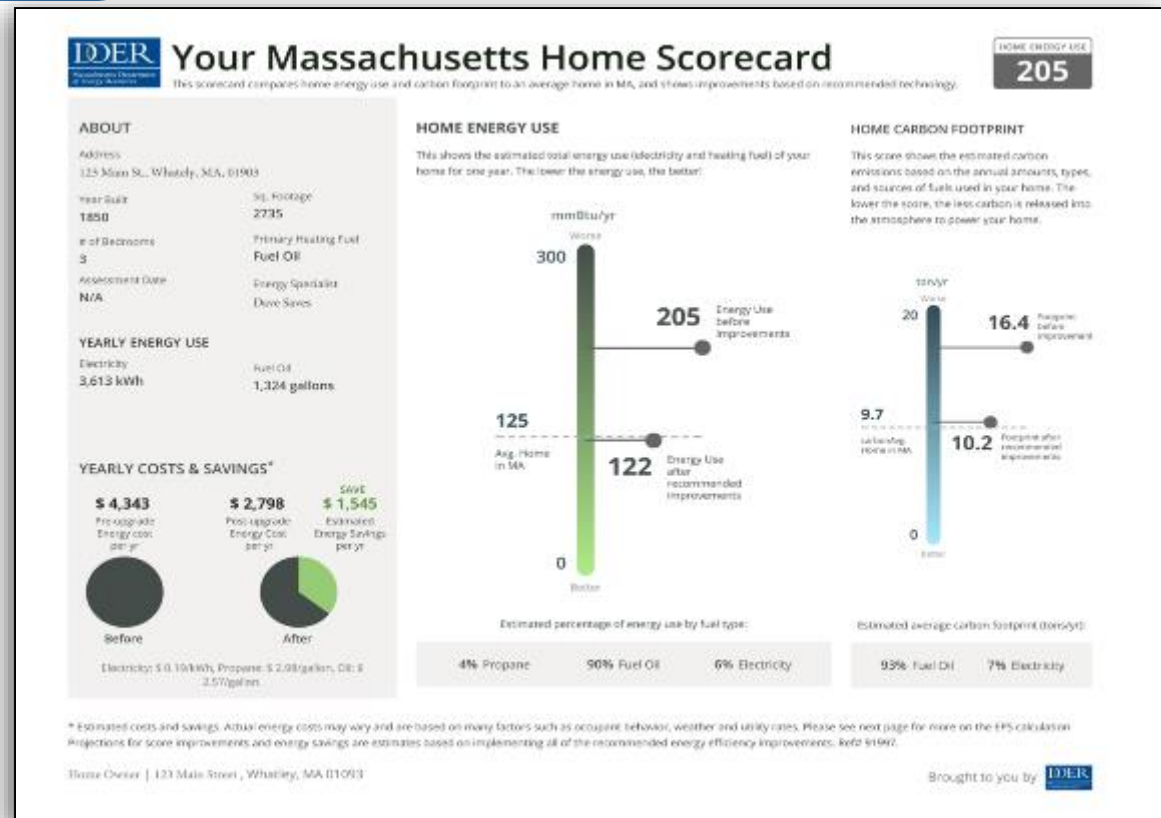




Connecticut Department of Energy and Environmental Protection



Home Energy labeling: lessons learned in MA



Ian Finlayson, Deputy Director, Energy Efficiency Division

MA Dept. of Energy Resources

Why Scorecards in Massachusetts?

- Create Transparency for Consumers
- Help drive residential energy improvements, which will:
 - Lower energy bills for homeowners & renters
 - Improve home values; and
 - Reduce greenhouse gas emissions

Lessons learned from Europe (EU)

- Study trips:
 - Oxford University, UK – 2007
 - Salzburg, Austria – 2008
 - Wels, Austria – 2011
 - Vienna, Austria – 2013
- Interviews & Lit. review
 - 2008 – Denmark, Germany, Austria, UK
 - 2012 – Denmark, Austria, Portugal, Ireland, UK
 - 2017 – Germany, Ireland, Austria



Carrots, Sticks & Tambourines

Scorecards
1 leg of a
3- leg stool



Scorecard design matters

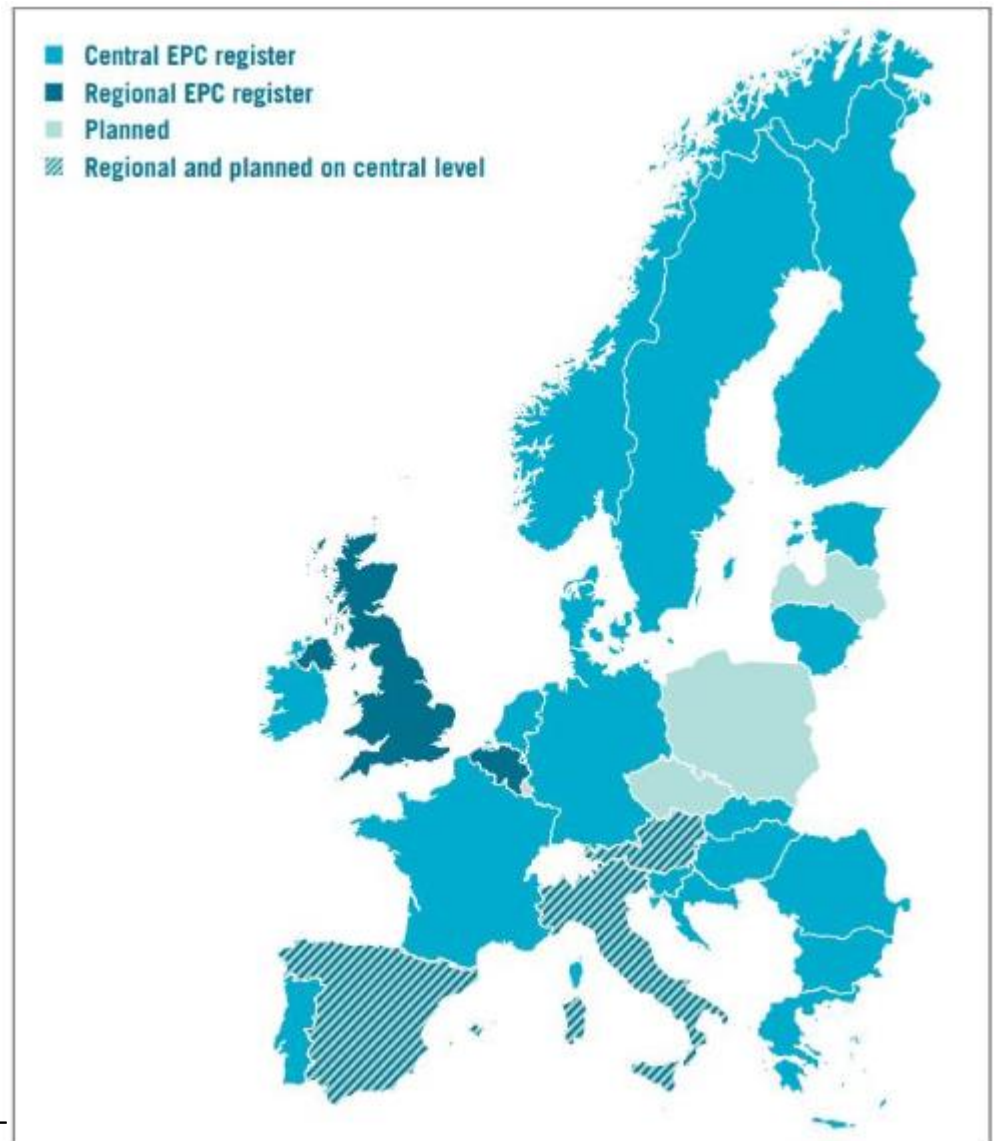
- Leverage behavioral research
 - Have a comparison to peers
 - Show potential for improvement
 - Units don't matter (smiley faces, stars, letters, numbers)
- Plan for the long-term
 - Have a score(s) that is durable/replicable over decades
 - i.e. not \$\$ as the primary metric
 - Plan for an improving average over time
 - The point is to see an improvement in housing stock
 - Account for PV (rooftop solar) and EV (home charging)
 - There are reasons not to use a letter grade
 - E.g. EU: A, A+, A++

Voluntary disclosure doesn't work: Critical mass is needed in MLS

- Ireland and Germany both started with voluntary disclosure in real estate listings
- Representatives from both countries said their EPCs were failing until they made a policy correction and required disclosure at time of listing
- Once the policy changed the market valuation improved rapidly
 - Ireland up to 10% premium for 'B' or better

Store the Score – (aka HELIX)

- EU initially split (2014)
 - Nation-state dataset (19)
 - Regional dataset (5)
- Trend towards a nation-state database model (28 in EU)



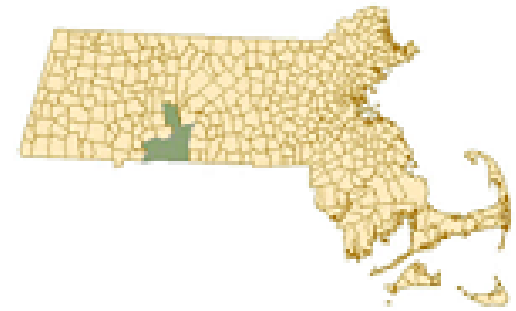
Lessons learned closer to home

- Field Studies: 2012-2014
 - Home MPG pilot in Springfield area
 - Cape Light Compact – DOE Home Energy Score pilot
- Current implementation: 2017-2018
 - Home MVP pilot statewide
 - ENE program for 19 Municipal Light Plants



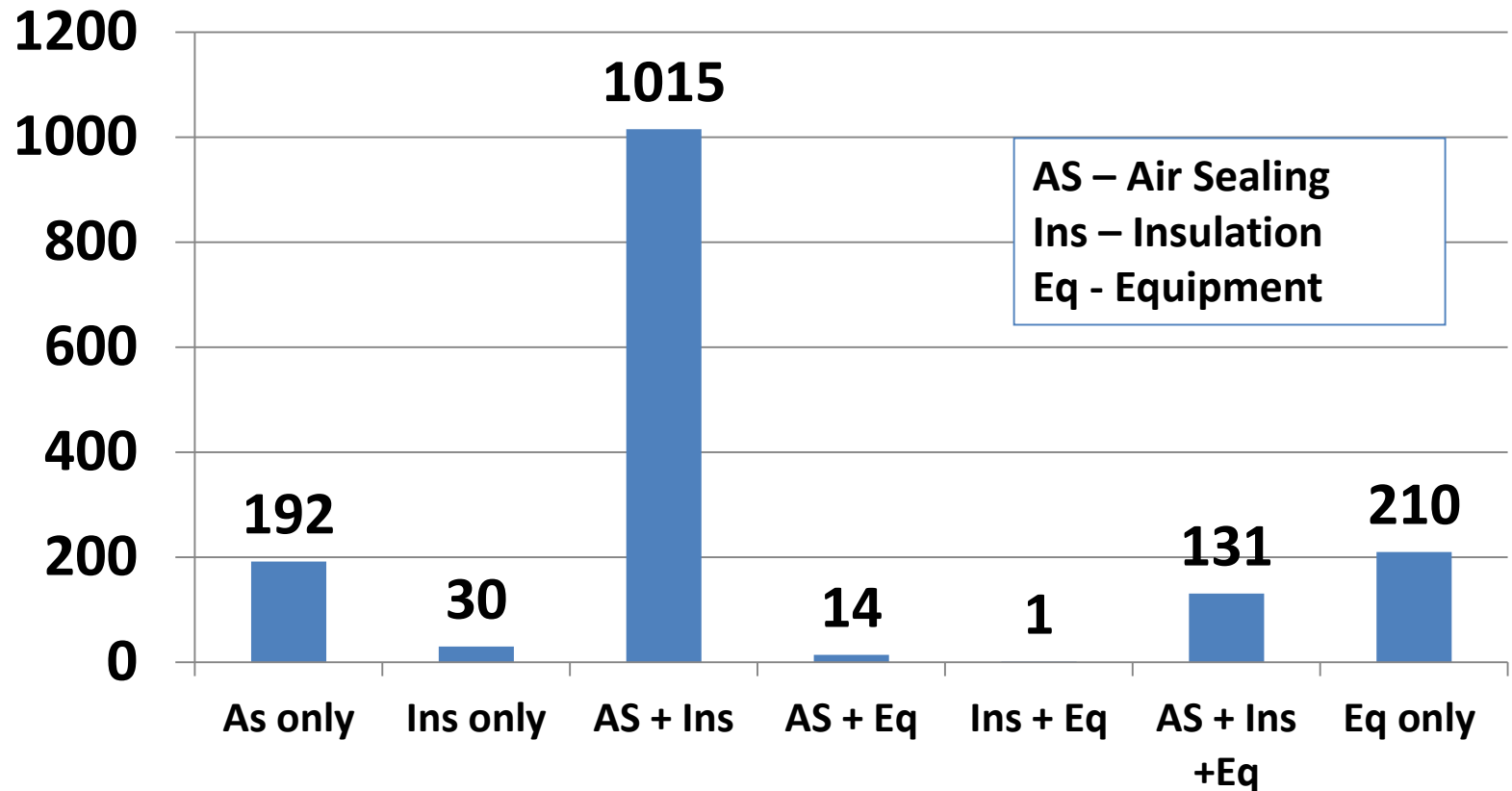
Springfield Area Pilot

\$2.6m 2012-2014



- 4 State U.S. DOE funded Pilot
- Massachusetts Pilot Municipalities
 - Springfield, Belchertown, East Longmeadow, Hampden, Longmeadow, Monson, Palmer, and Wilbraham
- Utilities/ PAs
 - National Grid
 - Western Mass Electric (now Eversource)
 - Columbia Gas
- Lead Vendors
 - Honeywell – WME (now Eversource West)
 - CSG (now CLEAResult) - NGRID, Columbia)

Home MPG Results



- 3,866 audits / scorecards, 1,593 retrofits / updated scorecards
- 41% completed efficiency work
- Avg savings per home: 20 MMBtus
 - 25% more savings per household vs. Mass Save
- Outreach increased participation:
 - 25% more households completed installations over Mass Save



Springfield lessons learned

- Scorecard integrated in audit software is critical
 - Avoid dual data entry
- Marketing and outreach takes time
- \$\$\$ matter for selling efficiency, even if they don't make a good scorecard metric
 - Incentives inspire investment
- Homeowners (& auditors) like a scorecard
 - And can handle more than one metric
- MA only state to meet the ambitious DOE goal of 20% energy savings in 2% of target market

Cadmus evaluation: Q's on scorecards

- Easy to understand
 - 100% Phone survey (very 65%, somewhat 35%)
- Useful in decision to make improvements
 - 99% Phone survey (very 67%, somewhat 31%)
 - 84% On-line survey (very 44%, somewhat 40%)
- Useful in home-buying
 - 99% Phone survey – (very 74%, somewhat 25%)
 - 99% On-line survey – (very 70%, somewhat 29%)
- Include in Mass Save assessments
 - 91% on-line survey (strongly agree 44%, agree 47%)

Scorecard Design & Metrics

- Asset rating (not operational)
- Energy use metric: MMBtu/year
- Carbon footprint: carbon metric tons/year
- Compared to area average & expected score after implementing recommended measures
- Expected cost savings associated w/recommendations
- Post-implementation scores based on what was implemented & compared to prior scores

ENERGY PERFORMANCE SCORE



Address: 1107 NE Golf Ct Rd, Dracut, MA 01826

Reference Number: 410000091

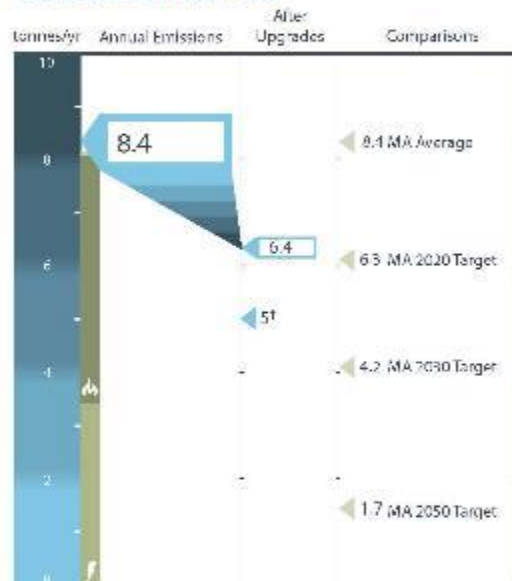
Energy Use: 126 MMBtu/yr \$1,888
Electric: 7,131 kWh/yr \$570
Natural Gas: 1,014 therms/yr \$1318

Carbon Emissions: 8.4 tonnes/yr
Electric: 3.4 tonnes/yr
Natural Gas: 5 tonnes/yr

Energy Use



Carbon Emissions



*With energy from renewable sources

This score measures the total energy use (electricity, natural gas, propane, heating oil) of this home for one year. The lower the score, the less energy required for normal use. Actual consumption and costs may vary.

Measured in millions of British Thermal Units (MMBtu/yr).

This score measures the total carbon emissions based on the annual amounts, types, and sources of fuels used in this home. The lower the score, the less carbon is released into the atmosphere to power this home.

Measured in metric tonnes of carbon per year (tonnes/yr).

Type: Single Family
Bedrooms: 4
Year Built: 1962
Audit Date: 10/29/08
Auditor: Earth Advantage Institute
Denver, MA
Ryan



Visit www.Energy-Performance-Score.com for tips to maximize energy savings



YOUR HOME'S ENERGY PERFORMANCE SCORE

Home MPG, a program within Mass Save®, provides you with your home's "miles per gallon" energy performance rating, called an "energy performance score" or EPS. By helping you better understand your home's energy use, Home MPG helps you make smart decisions about implementing improvements that make your home more energy efficient and reduce your energy costs.

PREPARED FOR

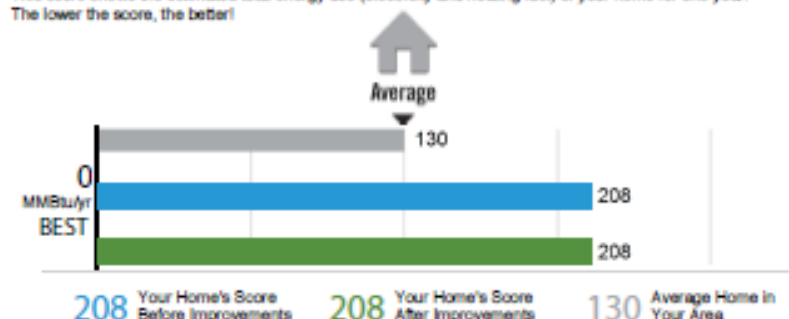
123 Test Street
Testville, NY 14850
Ref #: GSN637

Year Built: 1975
Sq Footage: 1800
Bedrooms: 3
Primary Heating Fuel: Electricity

Assessment Date: 9/12/2012
Energy Specialist: Performance Manager

208 Your Home's ENERGY PERFORMANCE SCORE

This score shows the estimated total energy use (electricity and heating fuel) of your home for one year. The lower the score, the better!



Estimated percentage of energy use by fuel type: Electric: 86%, Natural Gas: 14%
Estimated percentage of energy use by end use: Heating 80%, Cooling 5%, Hot Water 25%,
Appliances and Lighting 10%

THE BOTTOM LINE

PER YEAR

\$0

ESTIMATED ENERGY SAVINGS

Based on implementing all of the recommended energy efficiency improvements

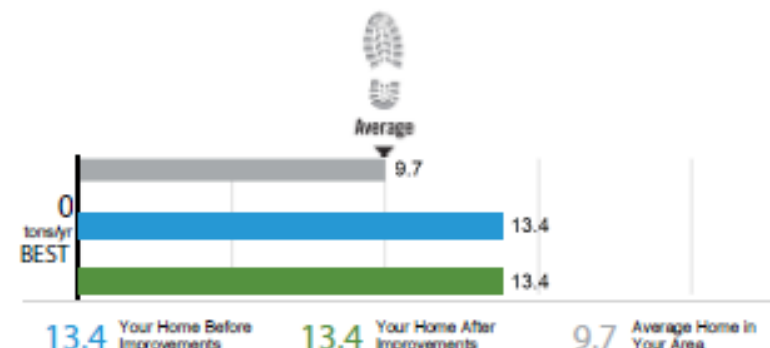
PER YEAR

\$9989

CURRENT ESTIMATED ENERGY COSTS

13.4 Your Home's CARBON FOOTPRINT

This score shows the estimated carbon emissions based on the annual amounts, types, and sources of fuels used in your home. The lower the score, the less carbon is released into the atmosphere to power your home.



For more information on Home MPG or to create an online account to manage your home's information, visit masssave.energy-performance-score.com

Actual energy costs may vary and are based on many factors such as occupant behavior, weather and utility rates. Please see reverse for more on the EPS calculation. Projections for ratings and energy savings are estimates based on implementing all of the recommended energy efficiency improvements.



Western Massachusetts
Electric

A Northeast Utilities Company



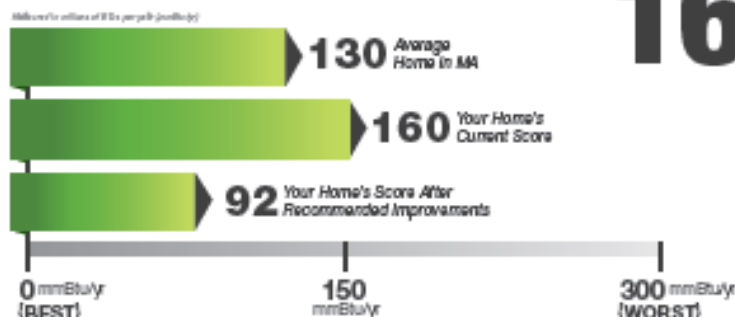


YOUR HOME'S ENERGY PERFORMANCE SCORE

Home MPG, a program within Mass Save®, provides you with your home's "miles per gallon" energy performance rating, called an "energy performance score" or EPS. By helping you better understand your home's energy use, Home MPG helps you make smart decisions about implementing improvements that make your home more energy efficient and reduce your energy costs.

Your Home's ENERGY PERFORMANCE SCORE

This score shows the estimated total energy use (electricity and heating fuel) of your home for one year. The lower the score, the better!

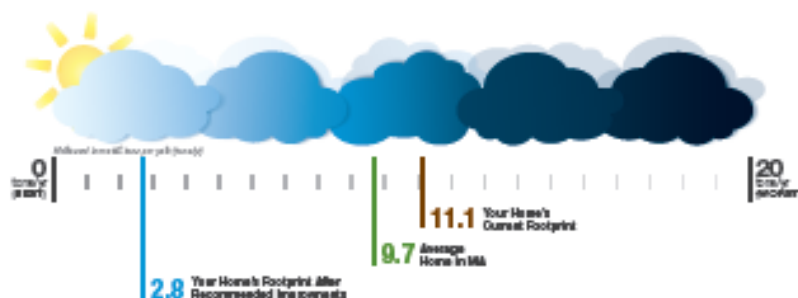


Estimated percentage of energy use by fuel type: Electric: <XXX%>, Natural Gas: <XXX%>

160

Your Home's CARBON FOOTPRINT

This score shows the estimated carbon emissions based on the annual amounts, types, and sources of fuels used in your home. The lower the score, the less carbon is released into the atmosphere to power your home.



Estimated average carbon footprint (tons/yr): Electric <XX>, Natural Gas <XX>

11.1

PREPARED FOR

<Customer Name>
<Customer Address>
<City>, <State> <Zip>
Ref #: <Site ID>

Year Built: <XXXX>
Sq Footage: <XXXX>
Bedrooms: <X>
Primary Heating Fuel: <XXXX>

EPS Report Date: <XX/XX/XXXX>
Energy Specialist: <Energy Specialist Name>

DOLLARS & SENSE

Current Estimated Energy Costs **\$2000** Per Year



ESTIMATED ENERGY SAVINGS
\$1150 Per Year

Based on implementing all of the recommended energy efficient improvements

Your Massachusetts Home Scorecard

This scorecard compares home energy use and carbon footprint to an average home in MA, and shows improvements based on recommended technology.

ABOUT

Address
123 Main St., Whatley, MA, 01903

Year Built
1850

Sq. Footage
2735

of Bedrooms
3

Primary Heating Fuel
Fuel Oil

Assessment Date
N/A

Energy Specialist
Dave Saves

YEARLY ENERGY USE

Electricity
3,613 kWh

Fuel Oil
1,324 gallons

YEARLY COSTS & SAVINGS*

\$ 4,343

Pre-upgrade
Energy cost
per yr



Before

\$ 2,798

Post-upgrade
Energy Cost
per yr



After

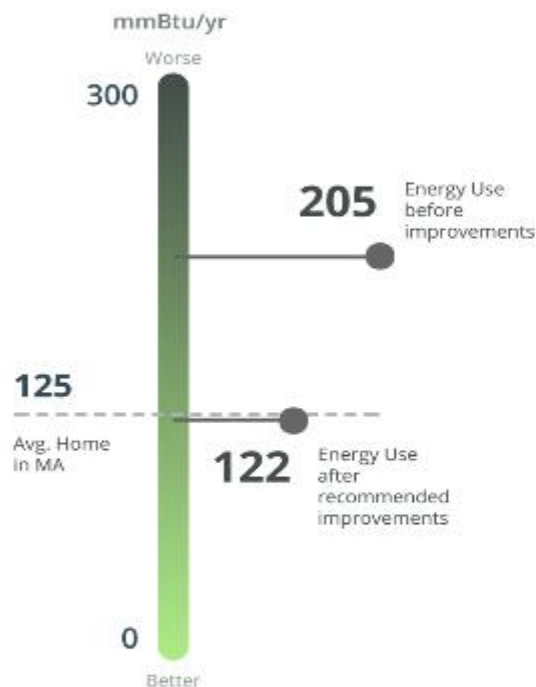
**SAVE
\$ 1,545**

Estimated
Energy Savings
per yr

Electricity: \$ 0.19/kWh, Propane: \$ 2.98/gallon, Oil: \$ 2.57/gallon.

HOME ENERGY USE

This shows the estimated total energy use (electricity and heating fuel) of your home for one year. The lower the energy use, the better!



Estimated percentage of energy use by fuel type:

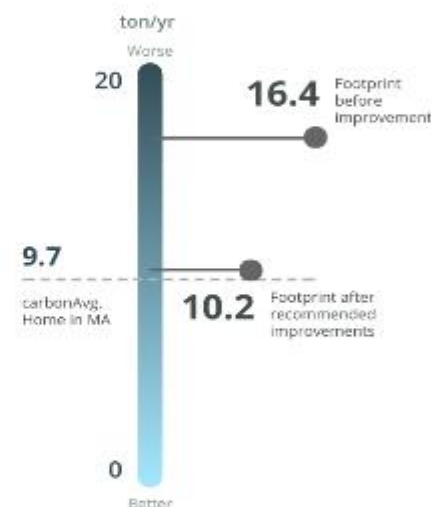
4% Propane

90% Fuel Oil

6% Electricity

HOME CARBON FOOTPRINT

This score shows the estimated carbon emissions based on the annual amounts, types, and sources of fuels used in your home. The lower the score, the less carbon is released into the atmosphere to power your home.




Estimated average carbon footprint (tons/yr):

93% Fuel Oil

7% Electricity

* Estimated costs and savings. Actual energy costs may vary and are based on many factors such as occupant behavior, weather and utility rates. Please see next page for more on the EPS calculation. Projections for score improvements and energy savings are estimates based on implementing all of the recommended energy efficiency improvements. Ref# 91997.

Home Owner | 123 Main Street, Whatley, MA 01093

Brought to you by 

Where are we now with scorecards in Massachusetts?

- 2019-2021 3-year Energy Efficiency Plan requires scorecards be integrated into the home audit
 - “before” and “after” EE implementation
- DOER working to finalize scorecard design & requirements with input from Mass Save PAs
- Scorecards electronically provided to DOER on a quarterly basis
- MA Baker Administration plans to re-file scorecard disclosure legislation in December

Thank You!

Ian Finlayson

Department of Energy Resources

Ian.Finlayson@mass.gov

617 626 4910



Home MPG Pilot Examples – Large Home

Oil Home in Wilbraham, MA

Year Built: 1956

Sq Footage: 2,891ft²

Bedrooms: 5

Heating Fuel: Oil

Score BEFORE: 195

Score AFTER: 156

Est. Energy Savings: \$908/year

Est. GHG savings: 3.5 tons/year

Total Mass Save incentive of \$3672 for:

21 CFLs, and 1 LED bulb

11 hours of air sealing

Wall insulation (\$2,740 from Mass Save)

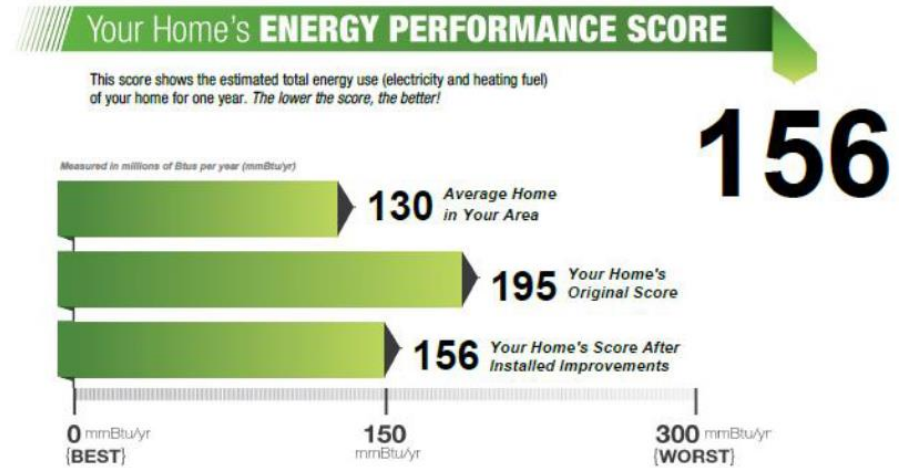
Homeowner cost:

This household** - \$913

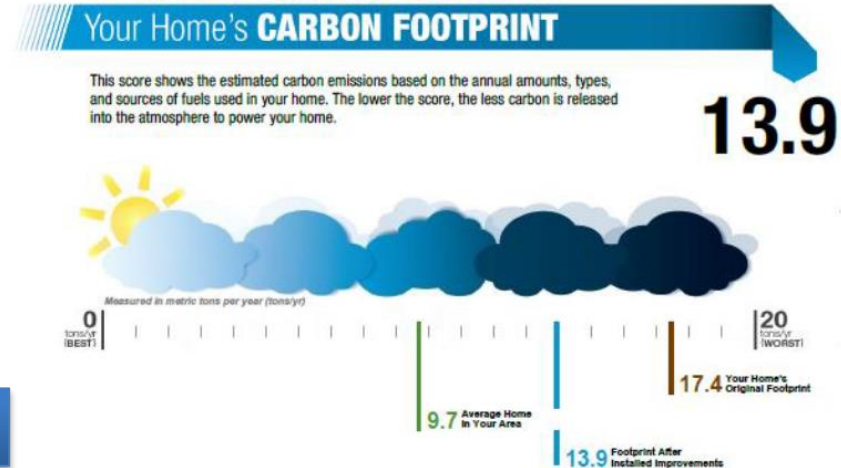
Low-income household - \$0

Moderate income household* - \$274

2017 Zillow Home Value: \$293,000



Estimated percentage of energy use by fuel type: Electric: 13%, Oil: 87%



* Mass Save covers up to 90% of insulation costs, up to \$3,000 for households at 61-80% of median income

** Mass Save covers up to 75% of insulation costs, up to \$2,000 for households above 81% of median income



City of Portland Home Energy Score

HELIX Summit
December 7, 2018

Lisa Timmerman
Portland Bureau of Planning and Sustainability





City of Portland

HOME

ENERGY

SCORE

Know the score. Outsmart energy waste.

How it works

Regulated party = Seller or homebuilder

Time of disclosure = At or before listing

Assessment completed by = 100+ authorized home energy assessors

Information disclosed = Home Energy Score and home energy report

Disclosure required in = Real estate listings and displayed in the home for prospective buyers



U.S. DEPARTMENT OF
ENERGY

THIS HOME'S
SCORE **4**
OUT OF 10

THIS HOME'S ESTIMATED
ENERGY COSTS

\$1,507
PER YEAR



Home Energy Score



Official Assessment | ID# 193810

The Home Energy Score is a national rating system developed by the U.S. Department of Energy. The Score reflects the average energy efficiency of a home based upon the home's structure and heating, cooling, and hot water systems. The average score is a 5. Learn more at HomeEnergyScore.gov.

HOW MUCH ENERGY IS THIS HOME LIKELY TO USE?

Electric: 6,153 kWh/yr. \$701

Natural Gas: 739 therms/yr. \$806

Other: _____ gal/yr \$0

TOTAL ENERGY COSTS PER YEAR \$1,507

How much
renewable
energy does
this home
generate?
_____ kWh/yr

THIS HOME'S CARBON FOOTPRINT:



What should my home's carbon footprint be? Between now and 2030, Portlanders should reduce carbon pollution per household to 3 metric tons per year to reach our climate goals.

- Actual energy use and costs may vary based on occupant behavior and other factors.
- Estimated energy costs were calculated based on current utility prices (\$0.11/kwh for electricity; \$1.09/therm for natural gas; \$2.58/gal for heating oil; \$2.21/gal for propane).
- Carbon footprint is based only on estimated home energy use. Carbon emissions are estimated based on utility and fuel-specific emissions factors provided by the OR Department of Energy.
- Reissuing 2-7 years after the assessment date requires a free reprint of the Report from www.greenbuildingregistry.com/portland to update energy and carbon information.
- This report meets Oregon's Home Energy Performance Score Standard and complies with Portland City Code Chapter 17.10B.

Score
today:

4

Score with
improvements*:

7

Estimated energy savings
with improvements:

\$273 PER YEAR

Estimated carbon reduction
with improvements:

20% PER YEAR

TACKLE ENERGY WASTE TODAY!

Enjoy the rewards of a comfortable, energy efficient home that saves you money.

- ☒ Get your home energy assessment. Done!
- ☐ Choose energy improvements from the list of recommendations below.

Need help deciding what to do first? Non-profit Enhabit offers free 15-minute phone consults with expert home advisors. Call 855-870-0049.

- ☐ Select a contractor (or two, for comparison) and obtain bids.

Checkout www.energytrust.org/findacontractor or call toll free 1-866-368-7878.

- ☐ Explore financing options at www.enhabit.org or www.energytrust.org.

* PRACTICAL ENERGY IMPROVEMENTS | COMPLETE NOW OR LATER

To achieve the "score with improvements," all recommended improvements listed below must be completed. Improvements all have a simple payback of ten years or less and may be eligible for mortgage financing. For a more detailed explanation of costs and payback, please get a bid from a contractor.

FEATURE	TODAY'S CONDITION	RECOMMENDED IMPROVEMENTS
Cathedral Ceiling/Roof	Roof insulated to R-11	Insulate cathedral ceiling/roof to R-30 or maximum possible
Duct insulation	Un-insulated	Insulate to R-8
Duct sealing	Un-sealed	Reduce leakage to a maximum of 10% of total airflow
Envelope/Air sealing	Not professionally air sealed	Professionally air seal
Heating equipment	Natural gas furnace 80% AFUE	Upgrade to ENERGY STAR
Water Heater	Standard natural gas tank	Upgrade to ENERGY STAR, minimum 0.67 EF (Energy Factor)
Air Conditioner	None	
Attic insulation	Ceiling insulated to R-30	
Basement wall insulation	None	
Floor insulation	Insulated to R-0	
Foundation wall insulation	None	
Skylights	None	
Wall insulation	Insulated to R-3	
Windows	Double-pane, low-E glass	
Solar PV	None	

Visit www.energytrust.org/solar to learn more (Note: Solar PV is not included in "Score with Improvements")

YOU CAN DO IT YOURSELF!

Looking for low-cost ways to cut energy waste, boost your comfort and lower your energy bills?

Visit the resources below to learn about easy changes you can make today:

www.energytrust.org/tips and www.communityenergyproject.org/services



RMLS Auto-population



[Click here to view more photos](#)

Price: 637,000
Beds: 2
Baths: 1
County: Multnomah
Style: COLONIL / DTCHCOL
Year Built: 1924 / REMOD
Status: ACT
SQFT: 1982

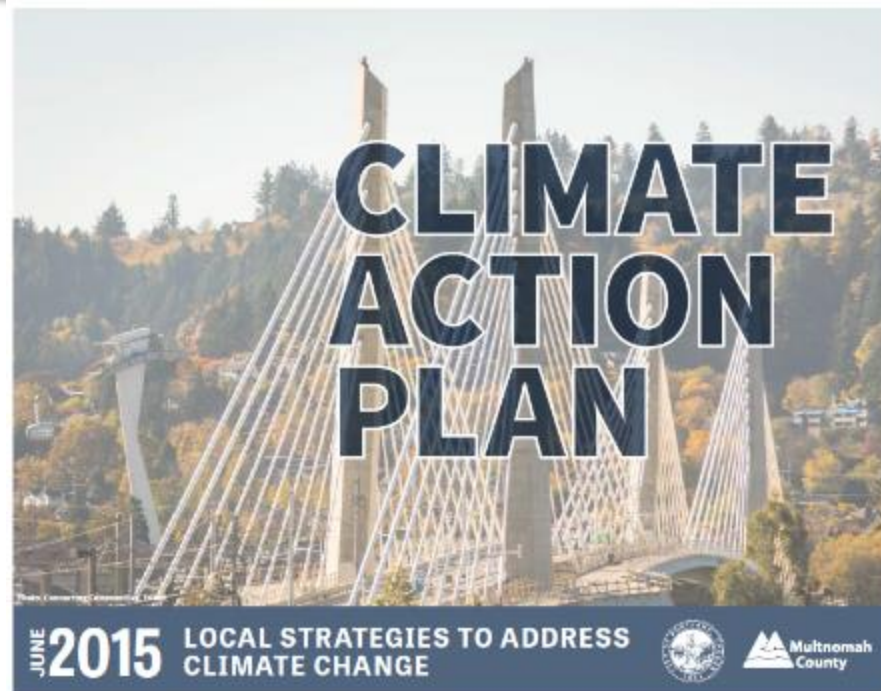
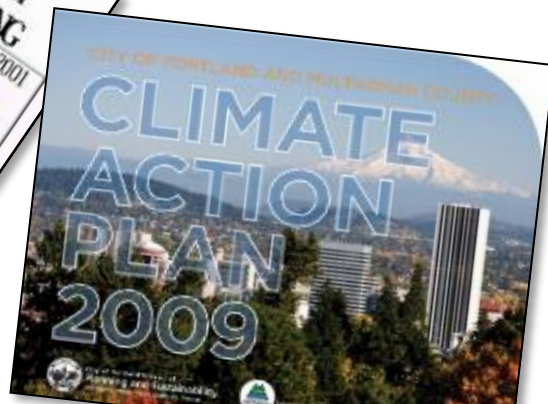
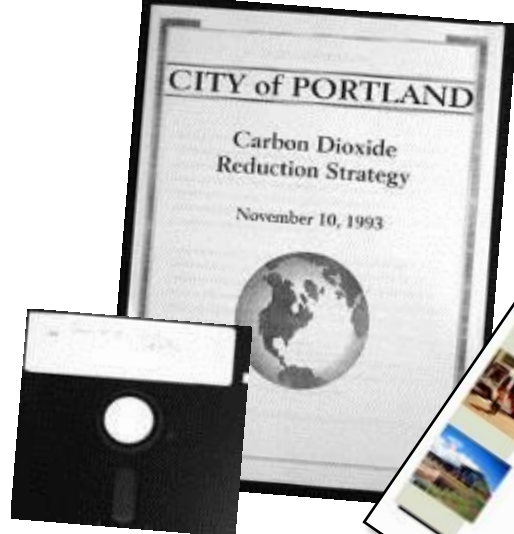
ML#: 18106125
Area: Portland Northeast
Elem School: Alameda
Middle School: Beaumont
High School: Grant
Short Sale Y/N: NO
Bank Owned/REO Y/N: NO
Waterfront:
Body of Water:
Tax/Year: \$6,640.22

Prop Type: DETACHD
Nbrhd/Bldg: ALAMEDA
Levels: 3
Garage: 0
Roof:
Exterior Desc: ALUM
MstBdrm Level: U
Fireplaces:
Bsmt/Fnd: FULLBAS
View:

Acres: 0.11
Lot Size: 3K-4,999SF
Lot Dim:
Lot Desc:
Heat/Fuel: FOR-AIR / GAS
Cool: CENTAIR
Water/Sewer: PUBLICWTR / PUBLICSWR
Hot Water: GAS
Zoning:

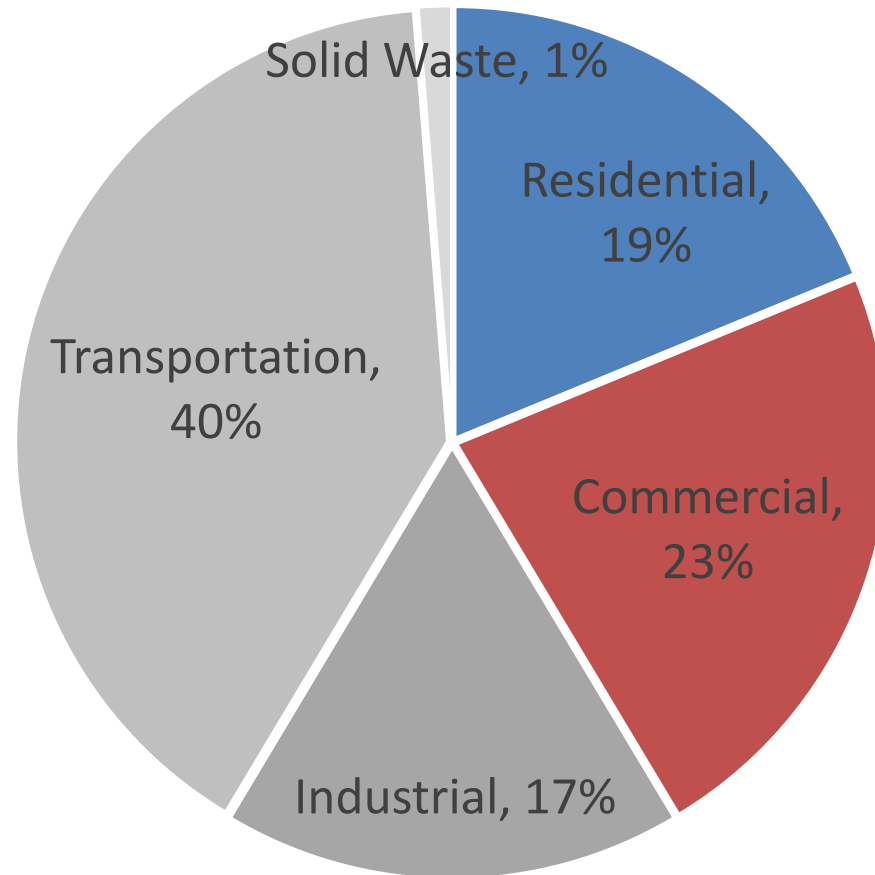
REMARKS: [Video/Virtual Tour #1](#) [Video/Virtual Tour #2](#)

Alameda Dutch Colonial on name brand street awaits! Perched high above the street this classic Dutch Colonial boasts large well proportioned rooms, high ceilings and gorgeous period finishes. Recently updated kitchen exudes period appropriate subway tile & wood grain finishes. High ceilings, french doors and the best schools are all here!! The incredible deep backyard and private spaces are an additional perk of this truly special home! Home Energy Score:3.00 HES report at <https://api.greenbuildingregistry.com/report/hes/OR10064898-20180719>

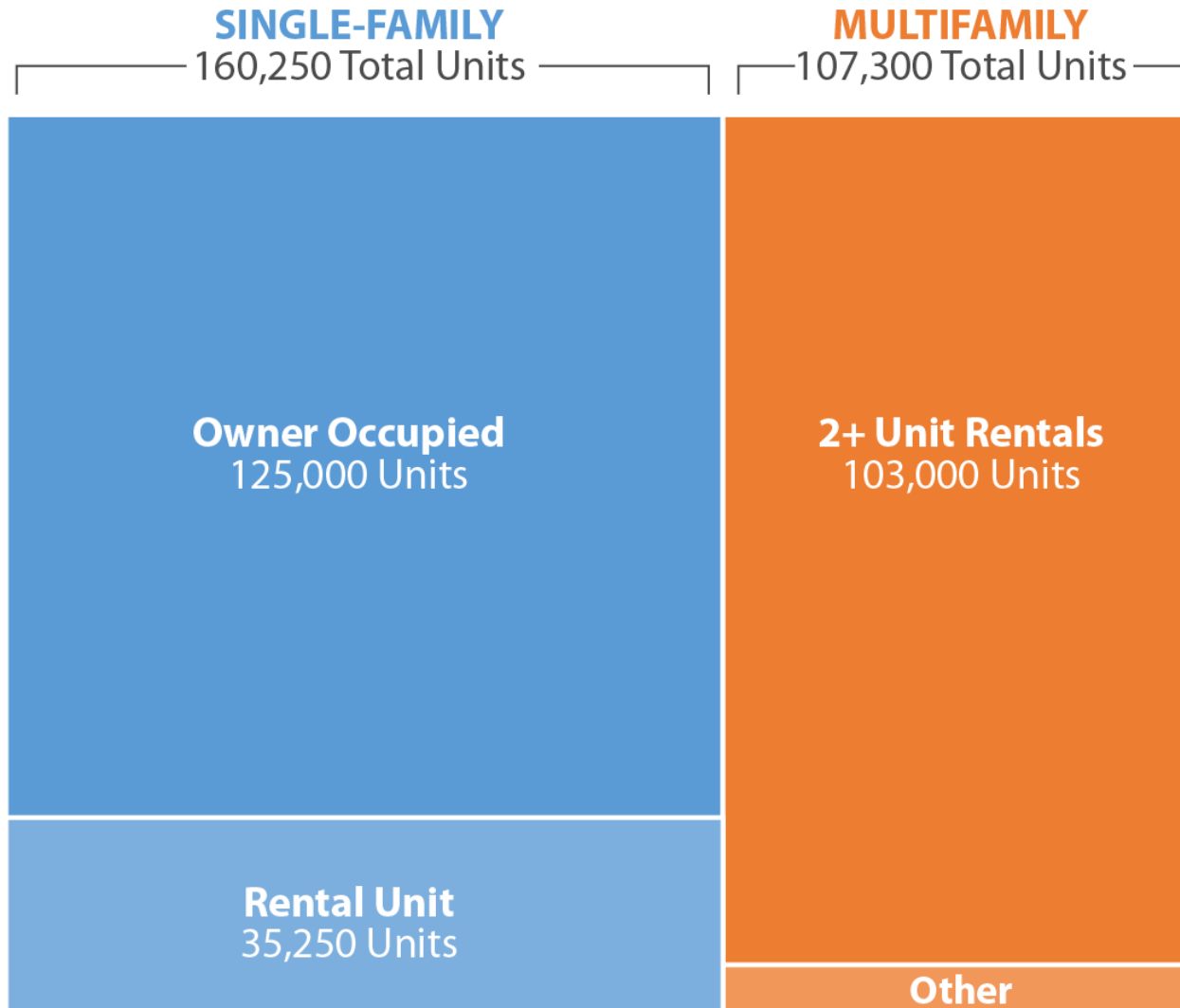


Carbon Emissions by Sector

(for Multnomah County, 2014)



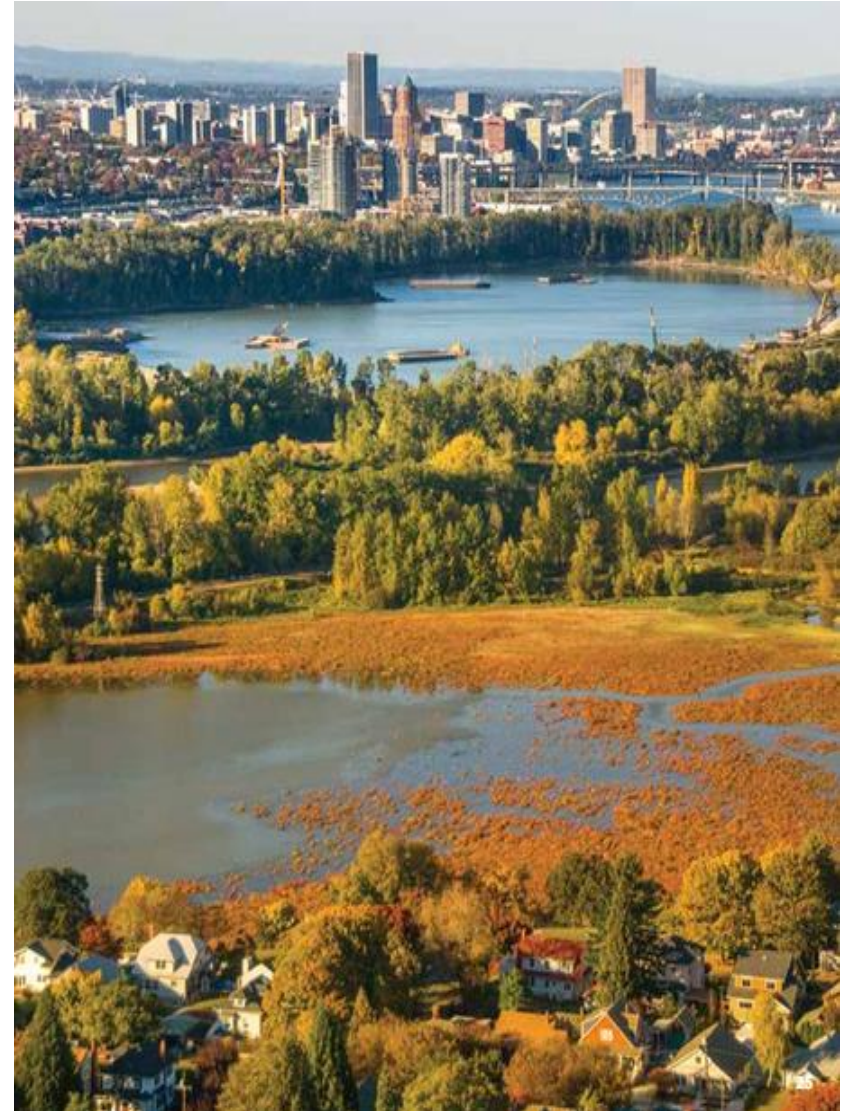
Portland Housing Units



Climate Action Plan Priority

Action 1B

Require **energy performance ratings** for all homes so that owners, tenants and prospective buyers **can make informed decisions** about energy costs and carbon emissions



Stakeholder Engagement

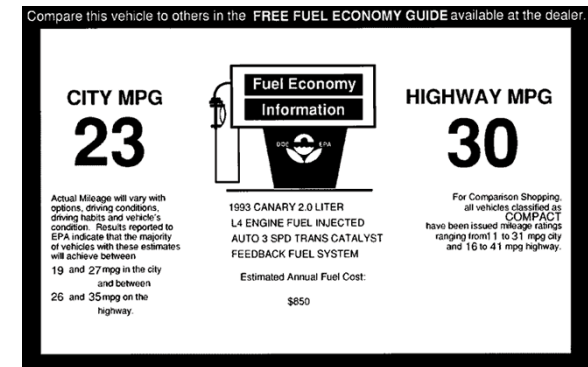
- Professionally run consumer focus groups
- Facilitated discussions with real estate and energy efficiency industry
- Equity stakeholder discussion with CBOs representing low income, tenants and communities of color
- Individual meetings with realtor association

Real Estate Industry Response

- Makes housing even less affordable
- Unfairly impacts low income homeowners with sub-standard homes
- Pointless without mandatory upgrades
- Only addresses a small % of houses
- Punishes those selling older homes or buying fixers

Next Steps for 2019 and beyond

- Increase brand recognition and demand
 - Improve the score appearance in listings
 - Increase marketing/outreach through available networks
- Enforcement
 - Relationship with RMLS
- Analysis and evaluation
 - 8000+ scores analysis
- Financing





Thank you!

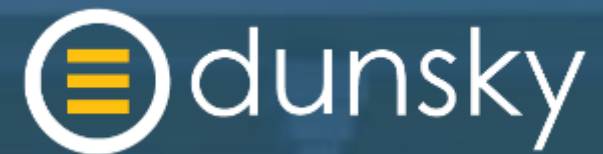
Program Website:

www.pdxhes.com

Email:

HESinfo@portlandoregon.gov

lisa.timmerman@portlandoregon.gov



Home Energy Labeling & Disclosure

From Voluntary to Mandatory:

The International Experience

December 7, 2018

Photo: [Home for Sale Sign](#) by Mark Moz, Creative Commons

EXPERTISE



EFFICIENCY



RENEWABLES

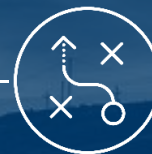


MOBILITY

SERVICES



ASSESS
opportunities



DESIGN
strategies



EVALUATE
performance

CLIENTS



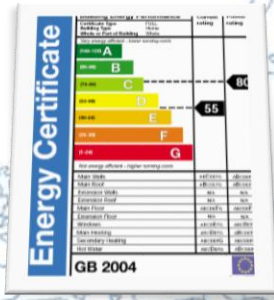
* selection of clients

1. **Overview** of international labeling & disclosure programs
2. **Opportunities & limitations** with voluntary & mandatory programs
3. **How** to get the most out of either approach

Overview of **international** labeling & disclosure programs

European Mandatory Programs

EU 28 National Mandatory Programs



AU 2 State Programs



International analysis of experience worldwide

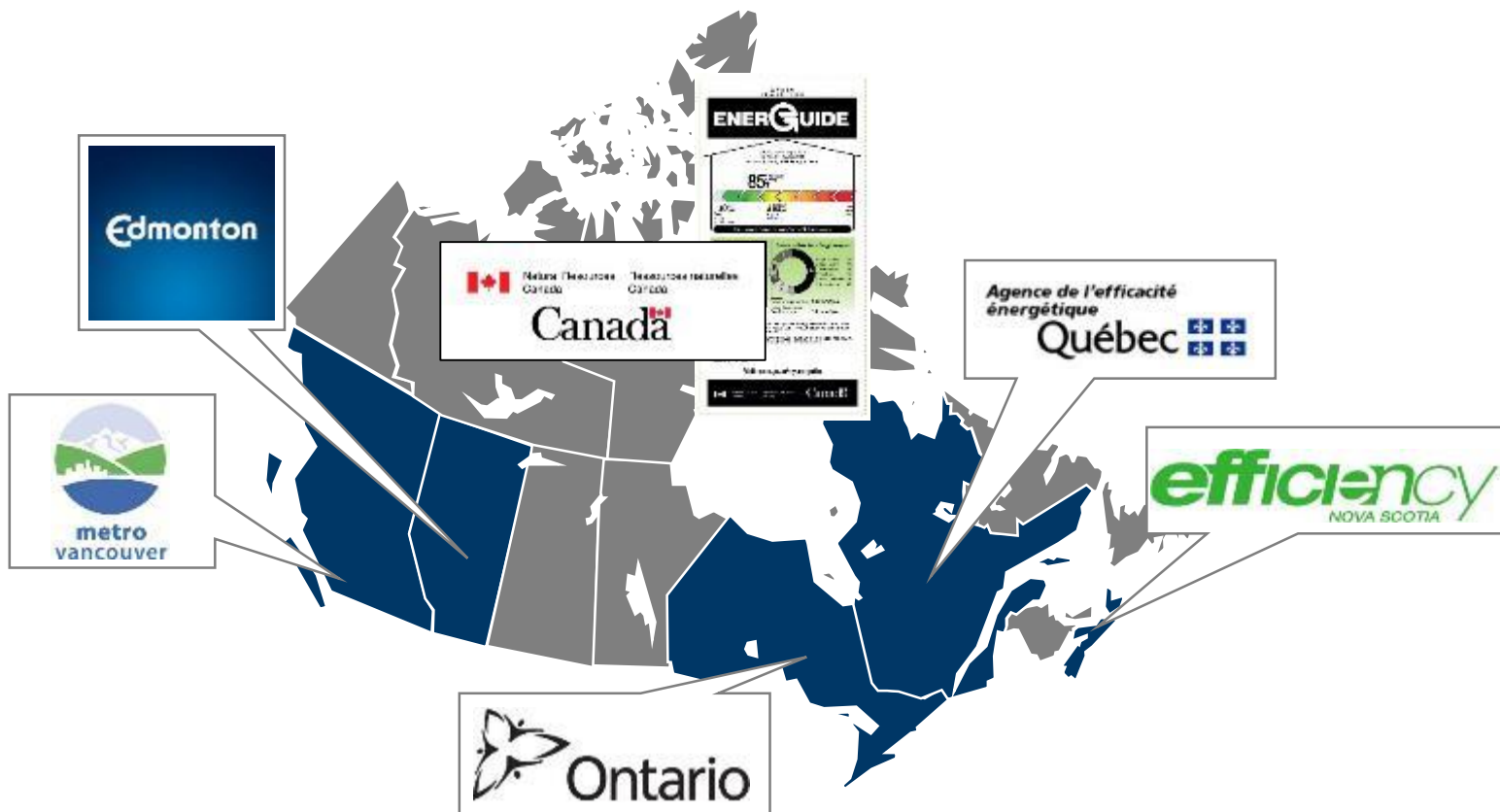
- **EU (8 national programs):**

- Denmark
- France
- **Germany**
- Hungary
- Ireland
- Portugal
- Sweden
- UK

- **Australia (2 state programs):**

- ACT
- Queensland

Canadian Voluntary Programs



Opportunities & limitations with voluntary & mandatory programs

Opportunities

- **Increase awareness:** Educate industry and community
- **Easier to digest:** REALTORS® likely to be supportive
- **Address administrative capacity:** Establish and test systems before scaling up
- **Prepare the market:** Balance roll-out with industry capacity
- **Can move the market to some degree:** Prove the feasibility and value of a mandatory approach



Limitations

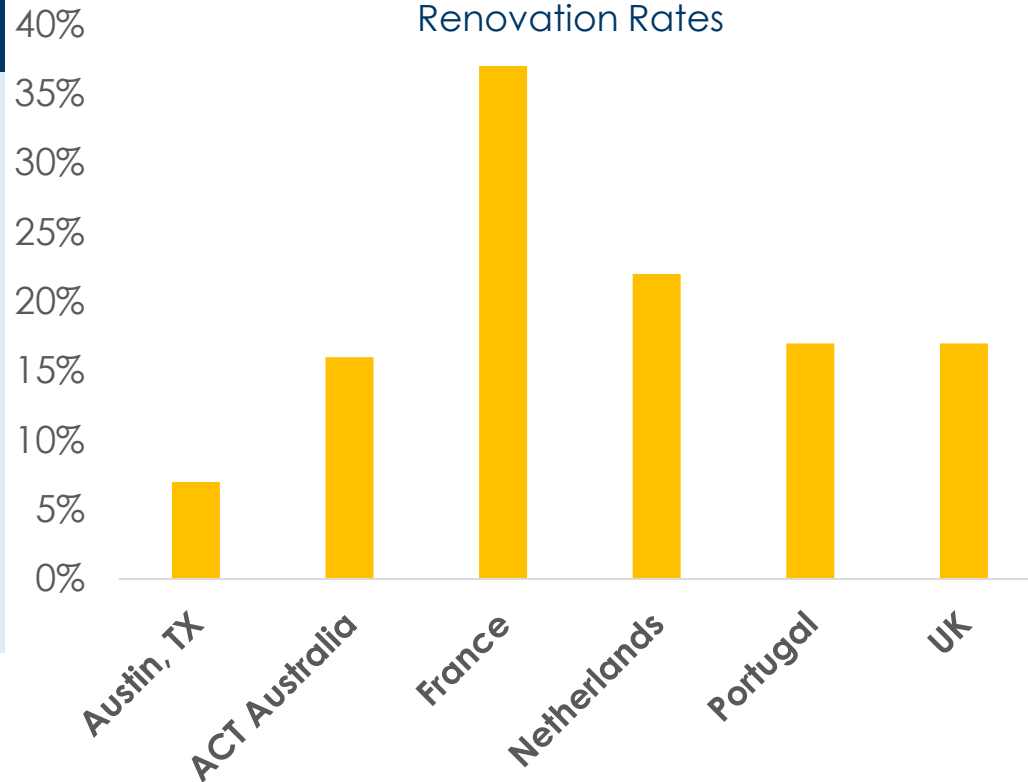
- **Low participation:** Relies heavily on industry to promote
- **Scale** needed to build capacity (Energy Advisors)
- **Low community-wide energy savings**
- **May not be representative** of future mandatory program
- **Short timeframe (of voluntary pilots)** may not demonstrate conversion rate



Opportunities

- **Strong correlation between energy rating and sale price:** 2% to 6% increase in sale price for one letter improvement in EU
- **High rate of home improvements:** 12-37% homeowners conduct all or part of recommendations
- **Over time, provides an accurate inventory of building stock:** Benefits multiple stakeholders

Home Energy Labeling & Disclosure
Renovation Rates



Challenges

- **Poor program design** can lead to failure (or fall short of expectations)
- **Loss of trust** in the process, energy advisors and ratings can derail a program.
- **Privacy concerns** can limit what information is shared reducing impact
- **Costs/time to get a home energy assessment** needs to be addressed to alleviate homeowner and REALTOR® concerns

Germany



How to **get the most out of either**
approach

HOME
FOR
SALE

How to get the most out of voluntary programs



PROVIDE OPPORTUNITY TO RAISE AWARENESS

- Educate industry/community on the value of, and need for, home energy labeling & disclosure
- Improve understanding of impacts on industry and how to mitigate

BUILD CAPACITY AND SUPPORT

- Develop, test and evaluate functional labeling & disclosure systems/processes, QA/QC, customer support etc.
- Help the market and homeowners transition

Edmonton currently offers a \$400 rebate on evaluations.

PROOF OF CONCEPT

- Set appropriate targets to reflect that Voluntary will not deliver on market transformation objectives
- Evaluate the appropriate metrics to show that Voluntary has built needed capacity to move ahead with Mandatory programs

Moving from voluntary to mandatory: Example

EXAMPLE: GERMANY

START DATE

- 1997 (voluntary)
- 2007 (mandatory)

BENEFITS

- Voluntary was useful to socialize home energy labeling & disclosure prior to mandatory requirement

CHALLENGES:

- Dual system creates confusion
- Privacy concerns limits access to data
- Non-functional enforcement and quality assurance (although recent efforts have been made to improve this)
- Limited public awareness and acceptance



How to get the most out of mandatory programs



SET COMMITMENT AND GOAL

- Clearly outline the long-term market transformation goals
- Engage in extensive stakeholder consultation

ENCOURAGE AND ENFORCE COMPLIANCE

- Choose and adapt the rating system
- Create tools, offer training, assistance & support before enforcing fines

INCREASE HOME ENERGY IMPROVEMENTS

- Include upgrade recommendations and estimated cost/benefit
- Link to the home energy ecosystem
- Develop method of attributing GHG reductions to demonstrate impact

France's compliance system has resulted in compliance rates of 85% and conversion rates of almost 40%

Denmark's policies have given rise to industry-driven solutions to help homeowners on their renovation journey.

Questions?

Lauren McNutt

Consultant

(514) 504 9030 ext. 29

Lauren.mcnutt@dunsky.com



Thank you to our event sponsors!



STATE OF RHODE ISLAND

OFFICE OF
ENERGY RESOURCES

nationalgrid

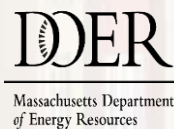
WHAT'S IT WORTH: CHALLENGES WITH ACCESSING AND VALUING ENERGY EFFICIENCY IN THE REAL ESTATE TRANSACTION

Craig Foley, moderator
John Breault, State-Wide MLS, Rhode Island
Laurie Fielder, VSECU
Joe Buonannata, Connecticut Green Bank
Rob Lynch, Maine Appraisal Institute Chapter
Gayle Oberg, Little River Realty



HELIX

Home Energy Labeling Information eXchange



SUSTAINABLE REAL
ESTATE
CONSULTING
SERVICES



What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction

Introduction: Baseline Challenges

Work our way from the **end of the real estate transaction to the beginning**

- Laurie Fielder, VGREEN Program Director, VSECU
- Rob Lynch, SVP, United Valuation Group, Scarborough, ME
- Gayle Oberg, Owner/Broker, Little River Realty, Stowe, VT
- John Breault, VP, MLS & Member Services, RIAR and Statewide MLS
- Joe Buonannata, Associate Manager, Residential Financing Programs, Connecticut Green Bank

What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction

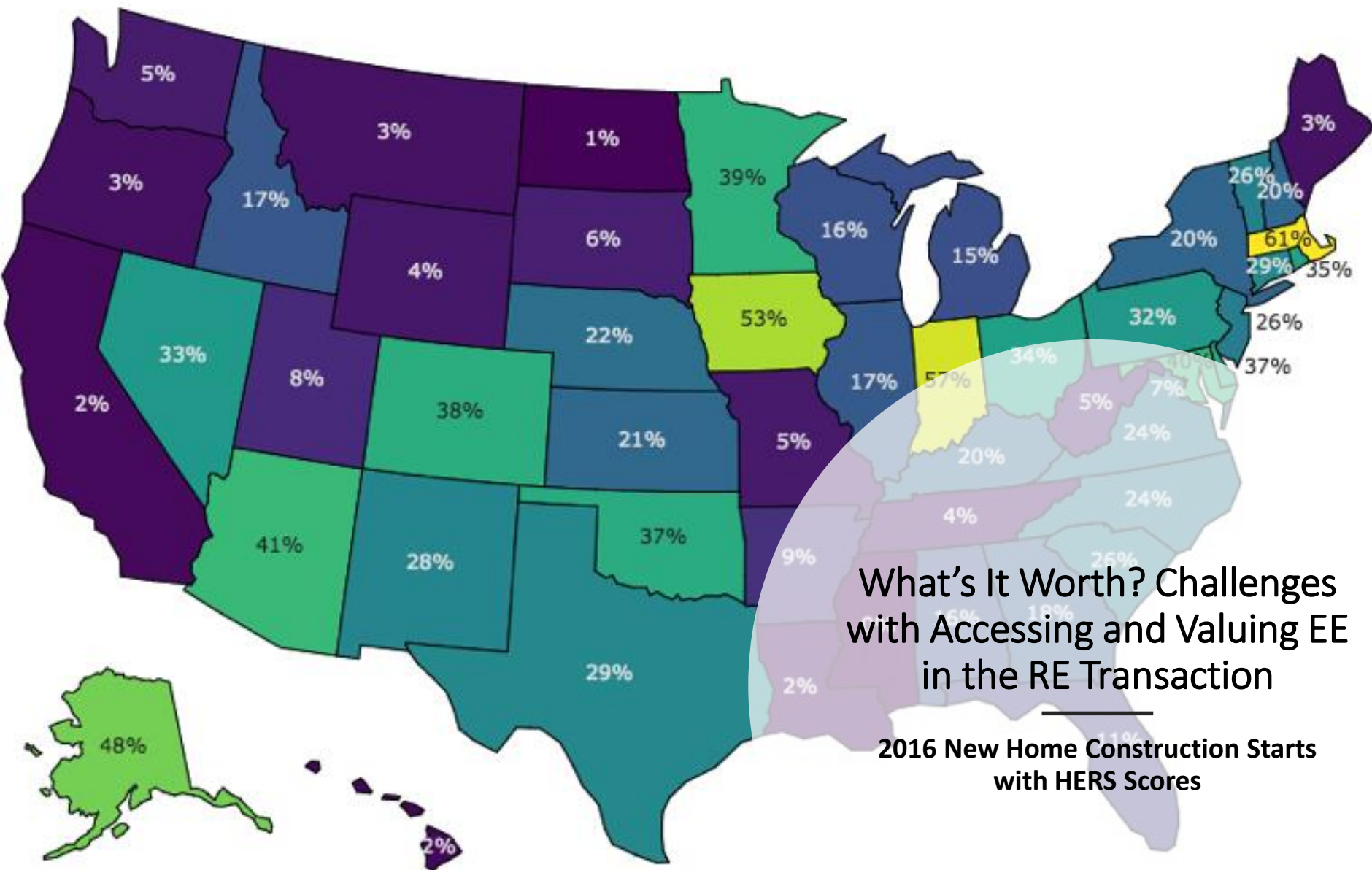
2018 ACEEE State Efficiency Scorecard

Northeast / Mid-Atlantic Rankings

- #1 - Massachusetts (8th year as #1)
- #3 - Rhode Island (2nd year as #3)
- #4 - Vermont (2nd year as #4)
- #5 - Connecticut
- #6 - New York
- #10 - Maryland
- #12 - Washington D.C.
- #14 - Maine
- #18 - Pennsylvania / New Jersey
- #21 - New Hampshire
- #22 - Delaware



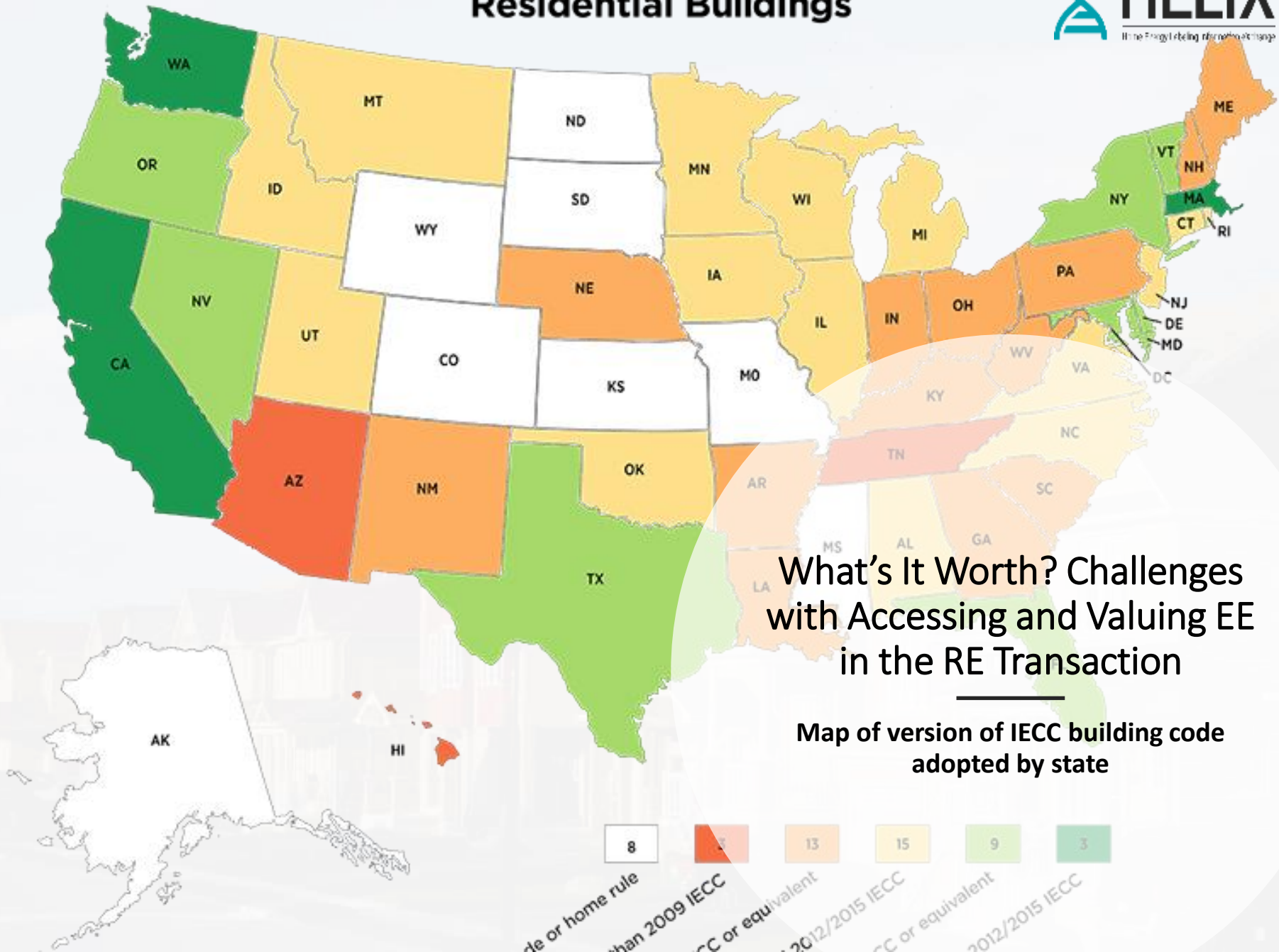
■ Top 10
★ Most Improved



What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction

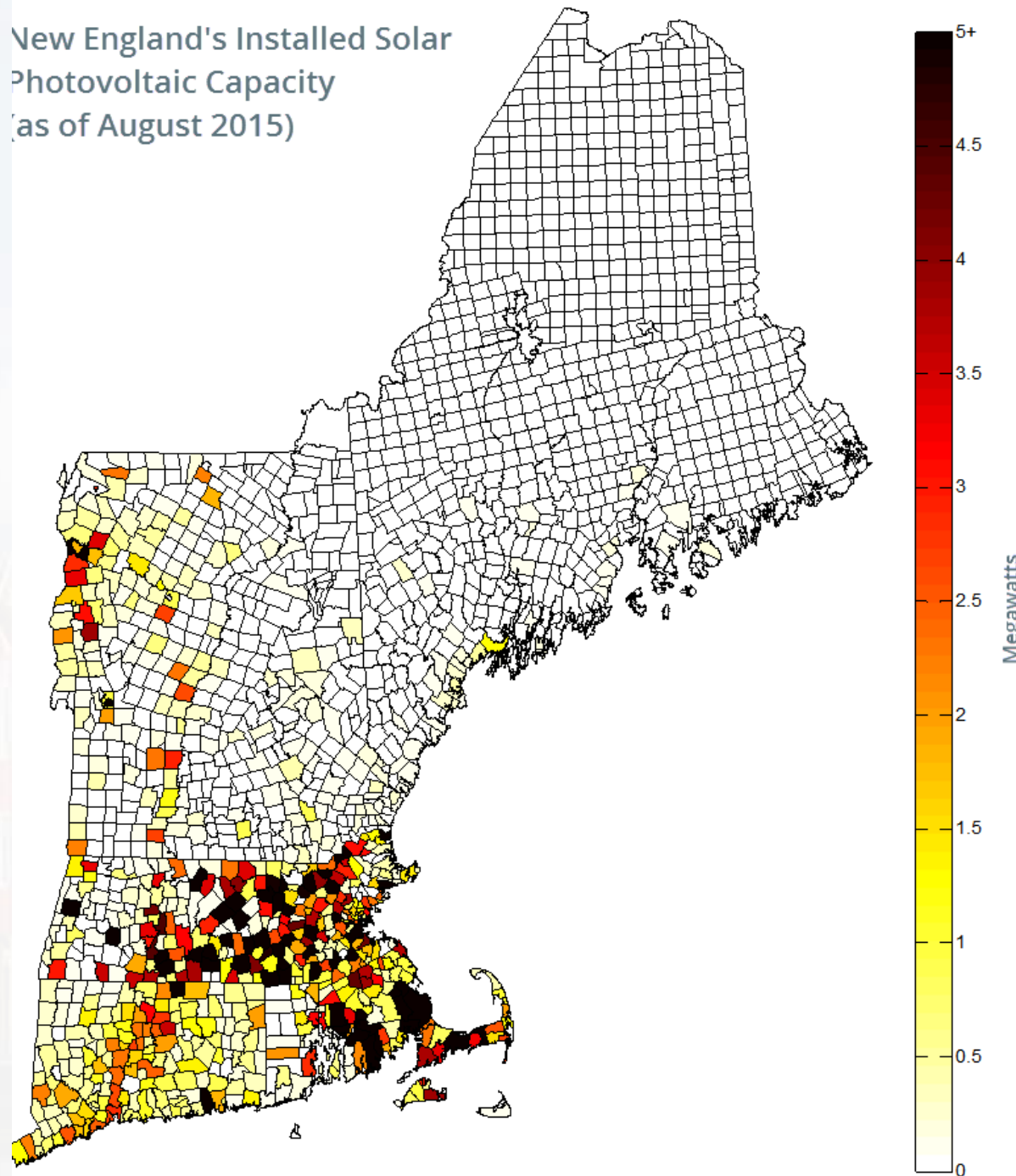
2016 New Home Construction Starts with HERS Scores

Residential Buildings

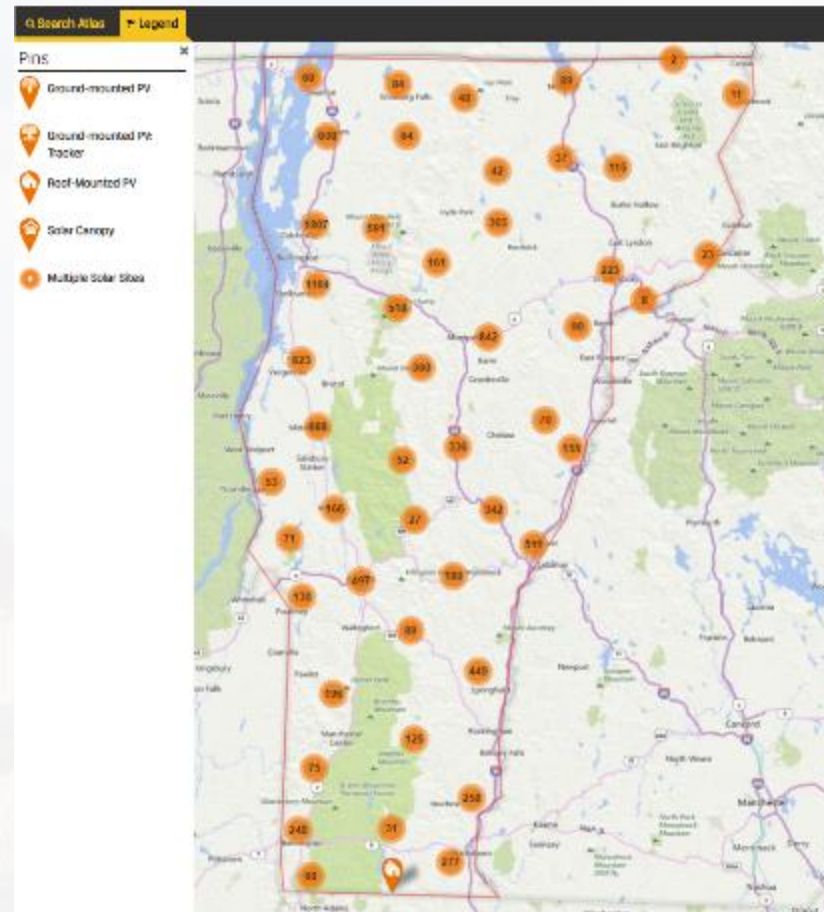


What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction

2015 Map of installed
solar PV capacity in
New England



What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction



VSECU



A credit union for everybody in Vermont

MEMBER-OWNED • NOT-FOR-PROFIT • 65,000+ MEMBERS
9 BRANCH LOCATIONS • MISSION DRIVEN • SOLAR POWERED
TRADITIONAL BANKING PRODUCTS & SERVICES, MOBILE & ONLINE

VSECU is committed to improving the lives of Vermonters by empowering the possibilities for greater social, environmental, and financial prosperity.

WHO CAN JOIN?

Anyone who lives or works in Vermont • NESEA members

VGREEN

CLEAN ENERGY FINANCE PROGRAM

Flexible, affordable financing options designed to maximize the benefits of the energy savings achieved through upgrades

- **ENERGY IMPROVEMENT LOANS**

Flexible terms up to 20 years, maximum loan amount of \$60,000

- **VGREEN ITC LOAN**

12-year term and lower payments for first 15 months, maximum loan amount of \$60,000

- **DISCOUNTED ENERGY IMPROVEMENT HOME EQUITY LOAN**

Discounted rates, terms up to 15 years, no closing costs, no pre-payment penalties

- **ENERGY IMPROVEMENT MORTGAGE**

Fixed rate, terms up to 40 years, energy audit required

- **OFF-GRID MORTGAGE**

Fixed rate, 30-year term, maximum loan-to-value = 70%, estimate of cost to connect to the grid required



THE GREEN APPRAISAL

- Appraisal ordered by lender
- Tell lender about special 'green' certifications, labels, or features, for example:
 - ✓ HERS (Home Energy Rating Score)
 - ✓ Home Performance with ENERGY STAR® certified
 - ✓ Certifications from Efficiency Vermont
 - ✓ LEED certified
 - ✓ Solar PV
- Lender requests a 'Residential Green and Energy Efficient Addendum' for appraisal



Client File #: **Appraisal File #:**

Residential Green and Energy Efficient Addendum

AI Reports®
Form 820.04*

Green: **Subject Property:** **City:** **State:** **Zip:**

Additional instructions to call in the selection of green properties and the completion of this form can be found at:
http://www.appraisalinstitute.org/education/green_energy_addendum.asp

The appraiser hereby certifies that the information presented within this addendum:

- has been researched in the appraiser's development of the appraisal of the subject property only for the stated (and intended) use(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 is not to be used for any other purpose other than that intended by the appraiser as the client's intended use(s) in the report;
- is the result of the appraiser's review inspection of and responses about the subject property's green and energy efficient features. Substantive verification: Data provided herein is assumed to be accurate and if found to be inaccurate will reflect the appraiser's opinion or conclusion;
- is not made as a representation or as a warranty as to the efficiency, quality, function, operability, reliability or cost savings 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 saving resources and using processes that are environmentally responsible and resource-efficient throughout a building's lifecycle (e.g., design, construction, operation, maintenance, renovation, and demolition). This practice results in complete buildings that enhance the quality of life by reducing the negative impacts of global climate change, such as global warming, air quality, and water scarcity. High performance buildings use green building practices to reduce the negative impacts of global climate change.

The Elements of Green Building: A green building is an edifice that fully integrates the elements of green building: energy (13 points), (2) water, (2) indoor air quality, (2) indoor air quality, and (2) maintenance and operation. A Green Building will be energy efficient, but an energy efficient building is not necessarily a Green Building.

Green Building:

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

Certification	Year Certified:	Certifying Organization: <input type="checkbox"/> Green Innovation Research Trust (GIG-TRUST) <input type="checkbox"/> USGBC (LEED) <input type="checkbox"/> Other:	<input type="checkbox"/> Verification Required on site	<input type="checkbox"/> Certification is attached to this report
Rating	Score:	<input type="radio"/> LEED Certified <input type="radio"/> LEED Silver <input type="radio"/> LEED Gold <input type="radio"/> LEED Platinum <input type="checkbox"/> GIG-TRUST National Green Building Standard Certified <input type="checkbox"/> GreenSource <input type="radio"/> Silver <input type="radio"/> Gold <input type="radio"/> One world (Name: End User/ Organization title (optional))		
Additions	Describe any additions or changes made to the appraisal since it was certified:			
Comments	Do changes require recertification to verify rating is still applicable? <input type="radio"/> Yes <input type="radio"/> No			
Comments	If a property is to be green but not formally certified, it still deserves proper description and analysis to take this measure. The method analysis to the subject's property, score, and, and local level analysis and rating analysis of its local value.			

http://www.appraisalinstitute.org/education/green_energy_addendum.aspx



income 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:

Green Certification Certifications attest that the home meets certain minimum thresholds.	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 NGBS Home Remodel:	
	Home Innovation Research Labs NGBS New Home: <input type="checkbox"/> Bronze <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Emerald	
	Living Building Challenge (LBC): <input type="checkbox"/> Living Building Certified <input type="checkbox"/> Petal Certification	
Energy Label Labels disclose the state of the home's energy assets.	Passivhaus Standard: <input type="checkbox"/> PHI Low Energy <input type="checkbox"/> EnerPHit <input type="checkbox"/> Passive House	
	Passive House Institute US: <input type="checkbox"/> PHIUS+ 2015	
	USGBC LEED: <input type="checkbox"/> Certified <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Platinum	
	Other:	
	Date Verified: <u> / / </u>	Green Certification Version: <u> </u> Organization URL: <u> </u>
Energy Label Labels disclose the state of the home's energy assets.	RESNET's HERS Rating (0 to 150): <u> </u> <input type="checkbox"/> Sampling Rating <input type="checkbox"/> Projected Rating <input type="checkbox"/> Confirmed Rating	Estimated energy savings for this home: \$ <u> </u> /year <u> </u> kWh rate dated <u> / / </u> Energy Savings includes electricity, heating & Cooling. Score below 100 indicates energy costs are expected to be lower than average code-built home. HERS Index Report occupancy estimates energy cost based on number of bedrooms plus one. Only a "confirmed rating" is diagnostically tested.
	DOE's Home Energy Score (1 to 10): <u> </u>	Estimated energy savings for this home: \$ <u> </u> /year <u> </u> kWh rate dated <u> / / </u> Energy Savings includes electricity, heating & Cooling. Score above five indicates energy costs are expected to be lower than average local

What's It Worth? Challenges with Accessing and Valuing EE in the RE Transaction

46 Intervale Rd, Freeport, ME 04032



HERS Index Score



Builder's Name:	BrightBuilt
HERS Rating Company:	-
Year of Construction:	2016
Date submitted to Registry:	2017
Annual Energy Costs:	\$460
Annual Energy Savings:	\$3193
Energy Star Certified:	Yes

Green Customer Display
Page 1 of 2

Energy Star Certified
Home

Residential 4469057	Single Family Active	Lot 13 Carrie Lane/Waterbury Commons Lane VT 05676	Unit/Lot	Listed: 1/25/2016 Closed:	\$380,000
------------------------	-------------------------	---	----------	------------------------------	-----------



Property Panorama VT URL

County VT-Washington Village/Dist/Locale Construction Status Pre-Construction Year Built 0 Style Cape Color Total Stories 2 Zoning res Taxes TBD Yes Tax - Gross Amount \$0.00 Tax Year 2016 Tax Year Notes Owned Land Lot Size Acres 0.320000 Lot - Sqft 13,939 Common Land Acres Basement Yes Basement Access Type Interior	Rooms - Total 6 Bedrooms - Total 3 Baths - Total 3 Baths - Full 2 Baths - 3/4 0 Baths - 1/2 1 Baths - 1/4 0 SqFt-Apx Fin Above Grade 1,616 \$/SqFt Fin. Above Grade SqFt-Apx Fin AG Source Builder SqFt-Apx Unfn Above Grade 0 SqFt-Apx Unfn AG Source SqFt-Apx Fin Below Grade 0 SqFt-Apx Fin BG Source SqFt-Apx Unfn Below Grade 900 SqFt-Apx Unfn BG Source Builder SqFt-Apx Total Finished 1,616 Days On Market 1034 Delayed Showing No Date - Showings Begin
--	--

Remarks - Public Waterbury Commons is another great Waterbury neighborhood! These custom homes incorporate contemporary design elements with wonderful Vermont farmhouse architecture. You are going to love central living in the heart of Waterbury. Close to an incredible array of amenities. Amazing home designs with impressive features in a wonderful neighborhood setting. Built by award winning Arnot Development Group where attention to detail is their trademark. Employing contemporary building theory each home is constructed to incredible standards. Every Waterbury Commons Home is certified as 5 Star Energy Rated by Efficiency Vermont. Other home designs available! Choose your favorite finishes and make this house your own! Municipal sewer & water. Attached specs may not represent main photo. Final sale price subject to buyer customizations. Priced with the Chelsea design at 290k. Buyers can choose any ADG package or create a custom design.

Directions Stowe St, in Waterbury, to Lincoln St. Take right up Perry Hill and development is on your right. Bear left for Carrie Lane and phase 2.

Water Body Access Water Body Type Water Body Name Water Frontage Length Water Restrictions	ROW - Parcel Access ROW - Length ROW - Width ROW to other Parcel	Current Use No Flood Zone No Seasonal No Land Gains To Be Determined Resort	Timeshare/Fract. Ownrshp No T/F Ownership Amount T/F Ownership Type Foreclosed/Bank-Owned/REO No
---	---	--	---

Kitchen 1 Dining Room 1 Mudroom 2 Family Room 1 Bath - Full 2 Bath - Full 2 Bath - 1/2 1	Map Block Lot SPAN Number 696-221-11770 Property ID Deed - Recorded Type Warranty Deed - Book 341 Deed - Page 250-254 Deeds - Total	School - District Washington West School - Elementary Thatcher Brook Primary Sch School - Middle/Jr Cressett Brook Middle School School - High Harwood Union High School
---	--	---

Master Bedroom 2 Bedroom 1 Bedroom 2 Green Verification Program ENERGY STAR Certified Homes Green Verificatn Progrm 2 Green Verificatn Progrm 3	Power Production Type Power Production Type 2
--	--

Features - Exterior Porch - Covered, Window Screens Features - Interior Dining Area, Fireplace - Gas, Laundry Hook-ups, Master BR w/ BA, Walk-in Closet
--

NEREN
VT

“certified as 5
Star Energy
Rated by
Efficiency VT”

Residential 4710685	Single Family Closed	483 Twin Peaks Road Waterbury	VT 05677	Unit/Lot	Listed: 8/2/2018 \$399,500 Closed: 10/12/2018 \$375,000
------------------------	-------------------------	----------------------------------	----------	----------	--



Property Panorama VT URL

County VT-Washington
Village/Dist/Locale
Construction Status Existing
Year Built 1980
Style Cape, Contemporary
Color Cedar
Total Stories 1.75
Zoning Res
Taxes TBD No
Tax - Gross Amount \$5,862.24
Tax Year 2018
Tax Year Notes
Owned Land Yes
Lot Size Acres 2.800000
Lot - Sqft 121,968
Common Land Acres
Basement No
Basement Access Type

Rooms - Total 7
Bedrooms - Total 3
Baths - Total 2
Baths - Full 0
Baths - 3/4 2
Baths - 1/2 0
Baths - 1/4 0
SqFt-Apx Fin Above Grade 2,163
\$/SqFt Fin. Above Grade
SqFt-Apx Fin AG Source Municipal
SqFt-Apx Unfn Above Grade 0
SqFt-Apx Unfn AG Source Measured
SqFt-Apx Fin Below Grade 0
SqFt-Apx Fin BG Source Measured
SqFt-Apx Unfn Below Grade 0
SqFt-Apx Unfn BG Source Measured
SqFt-Apx Total Finished 2,163
Days On Market 23
Delayed Showing No
Date - Showings Begin

Remarks - Public: Welcome to this country home, just minutes from the Village. Nestled on the Stowe side of Waterbury, this Cedar sided contemporary home has combined design elements that harmonize with its natural surroundings. River-run stone landscaping walls curve around area planting beds for vegetables and blooming flowers. Relax on the deck, in the hot tub or in front of the firepit and absorb the peace and tranquility of the mature trees and wildlife. Inside you'll find a Kitchen-Living room with large center island, perfect for entertaining. The dining room has direct access to the outside deck for grilling. Rich Mahogany hardwood floors accent the first floor. Pleasant Master bedroom features a nook area with curved wall ideal for additional storage and bookshelves. The huge bonus room over the garage has access from both the master bedroom and first floor providing more living area, hobby room or home office space. Most time will be spent relaxing in the nicely appointed 3 season enclosed front porch with ceiling fans and wall lights. Owned solar panels take a big bite out of the monthly electrical costs. Most of the home has been updated with spray foam insulation that ease heating costs. Heated 2 car garage will keep the snow off your cars in the winter. Take a walk (or bike) in the wooded path out back that neighbors lands of the private Country Club of Vermont.
Directions: From Route 100 north just past Ben & Jerry's turn onto Guptill Road, 0.9 miles to Kneeland Flats Road, 0.4 miles to right on Twin Peaks Road, home #483 on Left.

Water Body Access Water Body Type Water Body Name Water Frontage Length Water Restrictions	ROW - Parcel Access ROW - Length ROW - Width ROW to other Parcel	Current Use Flood Zone No Seasonal No Land Gains Resort	Timeshare/Fract. Ownrshp No T/F Ownership Amount T/F Ownership Type Foreclosed/Bank-Owned/REO No
--	---	---	---

Kitchen 1 10 x 16 Living Room 1 11 x 13 Dining Room 1 12 x 17 Bedroom 1 10 x 12 Master Bedroom 2 15 x 17 Bedroom 2 13 x 15 Bonus Room 2 11 x 25 Laundry Room 1 9 x 11	Map 13 Block 214 Lot 0 SPAN Number 969-221-11050 Property ID 514-0483 Deed - Recorded Type Warranty Deed - Book 179 Deed - Page 64 Deeds - Total	School - District Harwood UHSD 19 School - Elementary Thatcher Brook Primary Sch School - Middle/Jr Harwood Union Middle/High School - High Harwood Union High School
--	--	---

Green Verification Progrm Green Verificatn Progrm 2 Green Verificatn Progrm 3	Power Production Type Photovoltaics Power Production Type 2
---	--

Green
Customer
Display
Sold MLS Data
Sheet:
Power
Production:
Photovoltaics

“Solar panels take a big bite out of monthly electrical costs”

4710685 Development / Subdivision: Twins Peak Planned Urban Development: Covenants: Yes Easements: Yes		Assessment Year: Assessment Amount: Tax Class: Homestead Tax Rate:
Condo Name: Building Number: Priser Number: Units Per Building: Condo Limited Common Area: Assessments - Special:	Condo Fees: Fee Frequency: Cooling: Other Electric: Circuit Breaker(s), Solar PV Solar Owned Heating: Slave - Wood, Invt Units Heat Fuel: Gas - LP/Bottle, Wood Sewer: 1200 Gallon, Leach Field, Leach Field - Conventional, Septic Water: Spring Well Water Heater: Electric, Owned	Mobile Park Name: Mobile Co-Op: Mobile Park Approval: Mobile Must Move: Mobile Make: Mobile Model Name: Mobile Serial Number: Mobile Anchor:
Deed 2 - Book: Deed 2 - Page: Deed 3 - Book: Deed 3 - Page: Deed 4 - Book: Deed 4 - Page: Deed 5 - Book: Deed 5 - Page: Surveyed: Yes Surveyed By: Valley Surveyors Inc Plan Survey Number: Footprint:	Cable Company: Spectrum Electric Company: Green Mountain Power Gas Company: Burns Energy Phone Company: Comcast	Rented: Rental Amount: Residence:
Area Description: Acute Golf Course, Near Country Club, Near Golf Course, Near Paths, Near Skiing Lot Description: Country Setting, Walking Trails, Wooded Construction: Wood Frame Foundation: Sub - Concrete Interior: Cedar, Stair, Wood Roof: Metal, Standing Seam Appliances: Dishwasher, Microwave, Range - Gas, Refrigerator Equipment: Air Conditioner, CO Detector, Smoke Detector, Stove/Wood Flooring: Carpet, Concrete, Hardwood, Slate/Stone, Tile Garage: No Garage Capacity: 2 Garage Type: Attached Garage Description: Auto Door, Direct Entry, Finished, Heated Driveway: Crushed Stone Parking: Garage, Off Street, Parking Spaces 3 Features - Accessibility: 1st Floor 2nd Bathroom, 1st Floor Bedroom, Bathroom w/step in Shower, 1st Floor Laundry		Roads: Currier Ave, Gravel, Public Road Frontage: Yes Road Frontage Length: 100 Possession: No Ongoing Items Included: Documents Available: Covenants, Deed, Property Disclosure, Survey, Tax Map
		Auction: No Date - Auction: Auction Time: Auction Price Determined By: Auctioneer - Responsible: Auctioneer License Number:



Gayle Oberg

Cell: 802-279-2316

gayle@theobergteam.com



Little River Realty

Off: 802-253-1553



Subject to errors, omissions, prior sale, change or withdrawal. Without notice, users are advised to independently verify all information. The agency referenced may or may not be the listing agency for this property. NREIA is not the source of information presented in this listing. Copyright 2018 New England Real Estate Network, Inc.

Listed By:
 Susan Chenette - Chenette Real Estate, LLC

Green
 Customer
 Display
 Sold MLS
 Data Sheet:
 Power
 Production:
 Photovoltaics







What's It Worth?

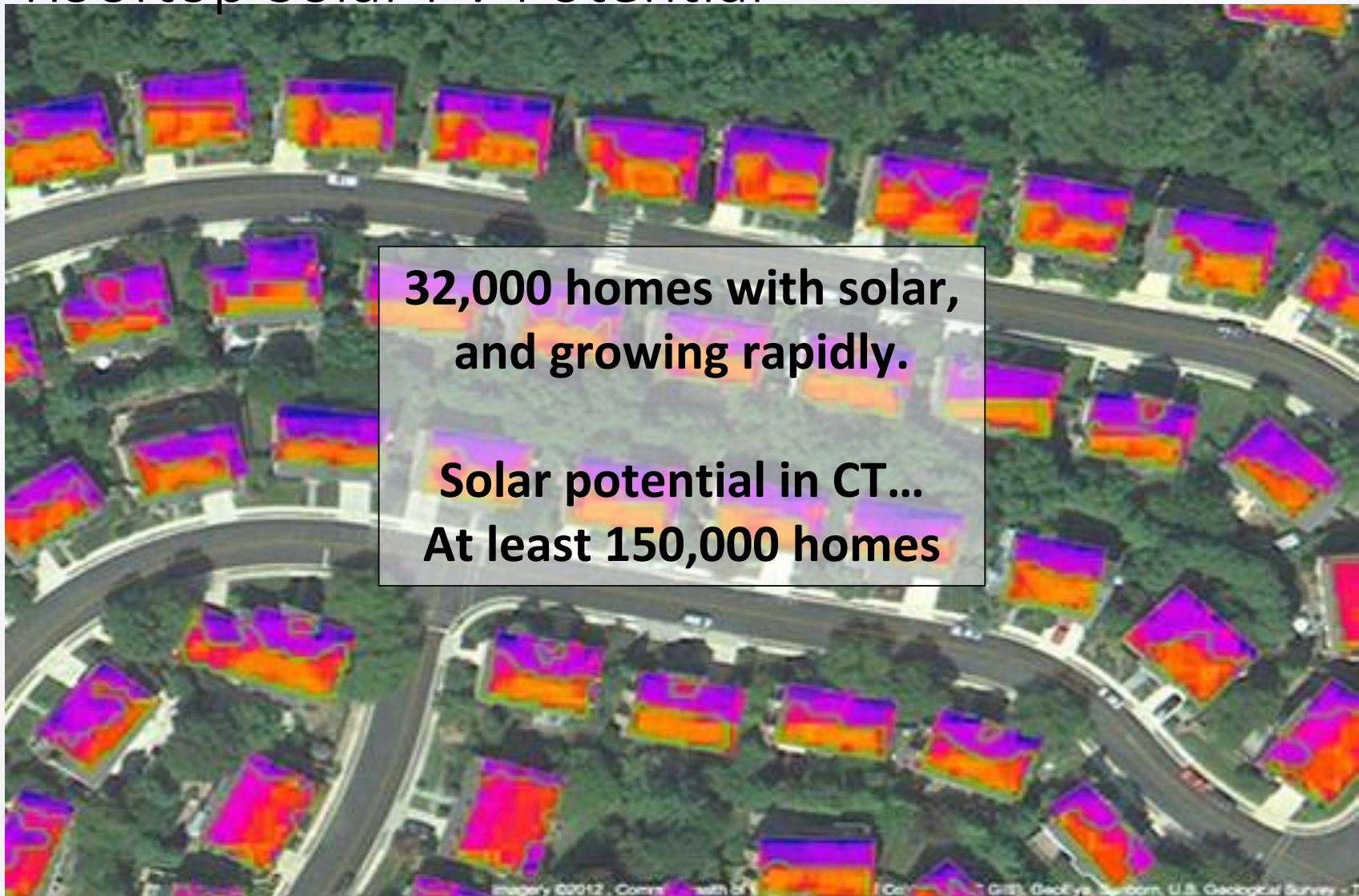
Challenges with Accessing and Valuing Energy Efficiency in the Real Estate Transaction

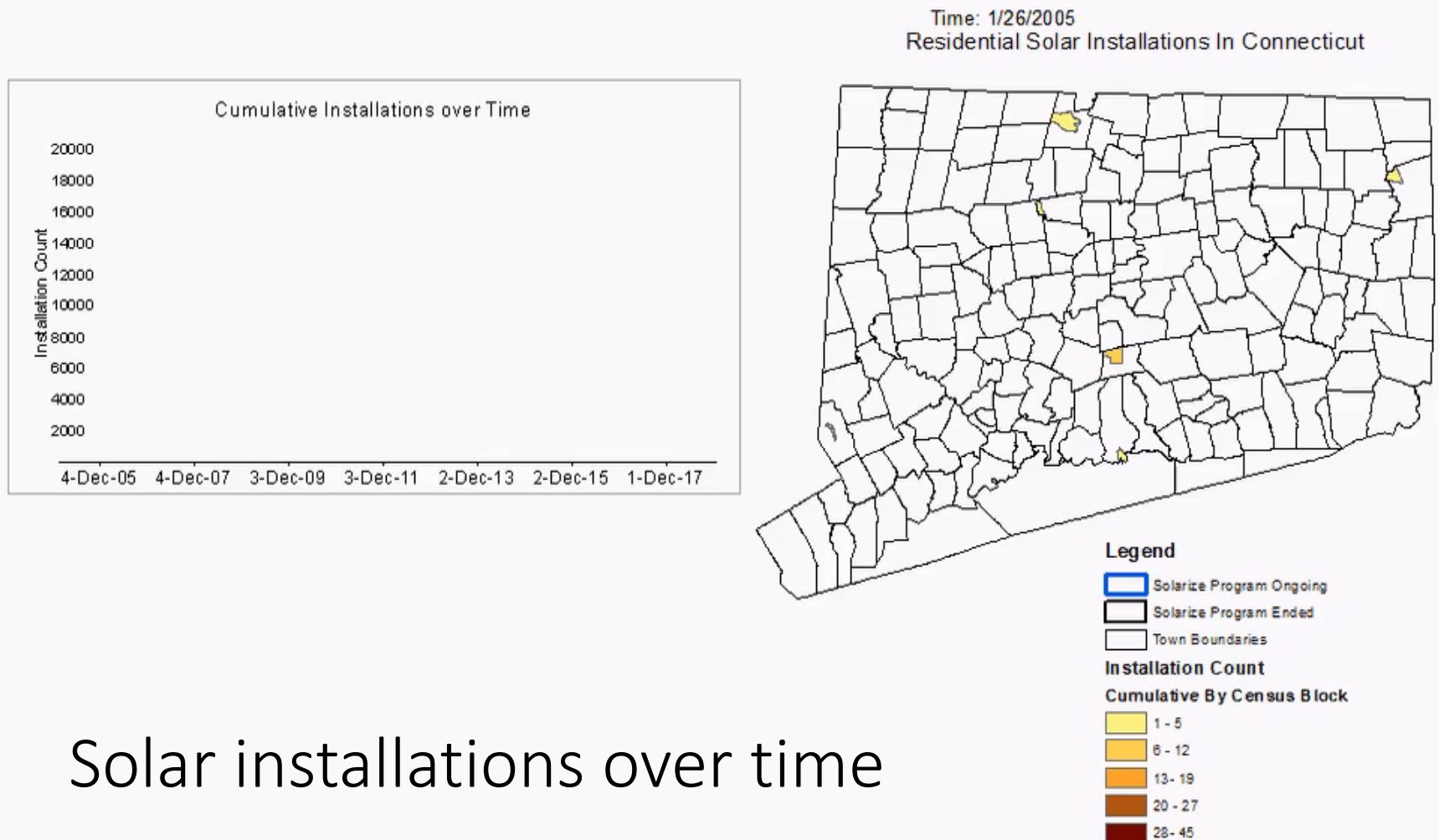
Joe Buonannata

- HELIX Summit
- December 7, 2018



Rooftop Solar PV Potential





What has CT Green Bank done so far?

- **Presented to industry groups**
 - Greater Hartford Association of Realtors
 - Eastern CT Association of Realtors
 - New Haven Middlesex Association of Realtors
 - New Hampshire Association of Realtors Green Symposium
- **Partnered with Craig Foley to craft message**
- **Advised on creation of online solar course for realtors**
- **Created resources for realtors, lenders, and appraisers**
- **Supported CT and Regional efforts**



Thank You!

Joe Buonannata

Associate Manager, Residential Programs

(860) 257-2172

Joe.Buonannata@ctgreenbank.com

Visit:

www.ctgreenbank.com

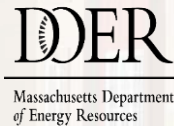
www.energizect.com

www.gosolarct.com



HELIX

Home Energy Labeling Information eXchange



SUSTAINABLE REAL
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CONSULTING
SERVICES



THE FUTURE OF HELIX

Carolyn Sarno Goldthwaite, NEEP



Year 1:

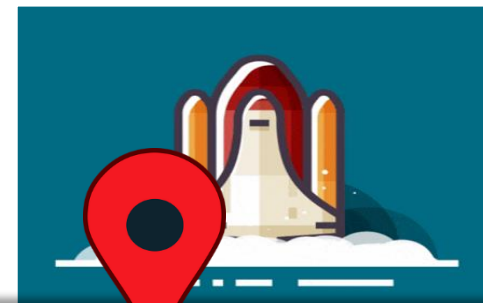
Research and Scoping

Year 2:

**Development and
Testing**

Year 3:

Full Implementation



Pilot

**Solar
PV**

Capturing the sun!

Partnership with LBNL / DOE SETO



[Photo credit: newportsolarri.com](http://newportsolarri.com)

What's next

- Different kinds of home energy performance data
 - HES Assessors
- A.I. Green Addendum
- Energy Codes
 - Fostering code compliance
 - Energy Certificate repository



The image features a close-up of four autumn leaves resting on a weathered wooden surface. The leaves are arranged in a horizontal row, with colors ranging from vibrant red to bright green. The wooden background is composed of vertical planks, some of which are secured with dark screws. A semi-transparent teal rectangular box is centered over the leaves, containing a quote in white serif font.

“Give me six hours to chop down a tree and I will spend the first four sharpening the axe.”

— *Abraham Lincoln, former U.S. President*

- [illegible]

Photo Credit:<http://tlists.com>

Training & Education

<https://neep.org/initiatives/resilient-high-performance-buildings-communities/green-real-estate-resources>



[Photo Credit: SolarWorld Americas](#)

89%

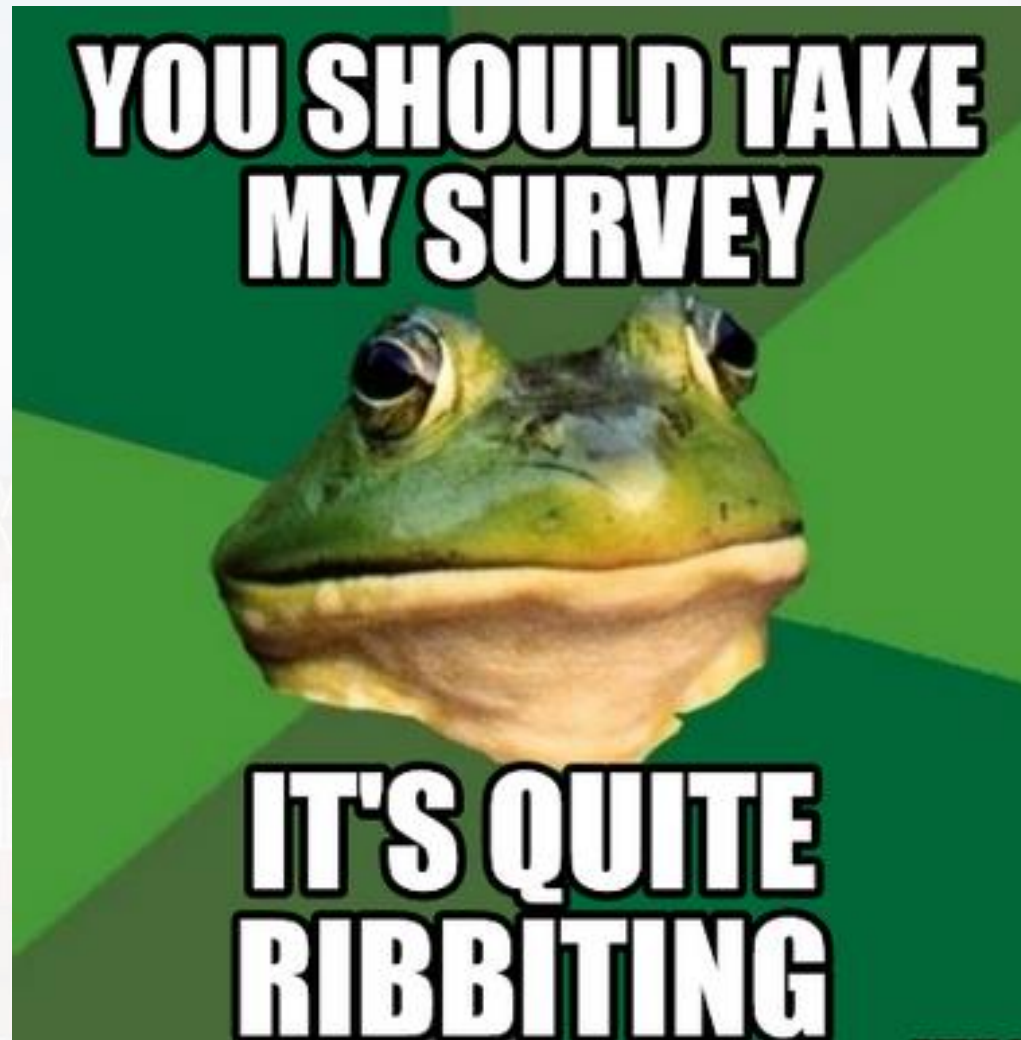
20 Days

NEW LISTING

SALE

Feedback

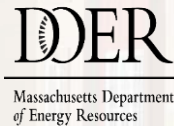
- *Presentations*
- *Location*
- *What do you know to know more about?*





HELIX

Home Energy Labeling Information eXchange



SUSTAINABLE REAL
ESTATE
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SERVICES



Thank you for attending today!



ne
ep

Happy Holidays!



For more information, contact:
cgoldthwaite@neep.org
Scaptuo@neep.org