

**Problem Solved:
A Case Study on Enabling Proper
Valuation & Consumer Education
for High Performance Homes**

EEBA Summit

October 10, 2017

Ryan Miller



About the BPAs

501(c)(6) trade associations
located in NC, SC, GA and MD
500+ member companies

Support HERS Raters, “Green”
Builders, Contractors and others

Executive Director
NCBPA & SCBPA

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www.BuildingNC.org

www.BuildingSC.org



Why Are We Involved?

To increase the quantity and quality of energy efficient, green and high performance construction in our states, the BPAs seek to:

1. Add more “green” fields to our MLSs
2. Auto-populate MLSs with valuable “green” data
3. Improve “green” feature visibility in the market
4. Improve consumer education – buyers and sellers
5. Support proper “green” valuation by Appraisers
6. Convert more code builders to “green” builders

“The Money Machine”



EE Homes Sell For More, Faster

Certified homes sell for 9.6% more⁶

Certified homes sell for 4.2% more & 18 days faster⁶

Certified homes sell for 2.1 to 5.3% more⁹

PACE homes delivered \$199 to \$8,882 in savings above cost of improvements⁷

ENERGY STAR homes sold at \$5,566 premium at \$2.99 per ft² more, & 89 days faster¹⁰

Homes designated relatively energy efficient sold for an average \$3,416 premium⁴

Houses with one or more green element sell for 5.9% more²

Homes that disclose energy costs sold 20 days faster⁵

Homes that use “green” fields consistently perform better on market indicators⁸

New certified homes sold for 12.9% more, \$13.82 per ft² more, & 42 days faster¹

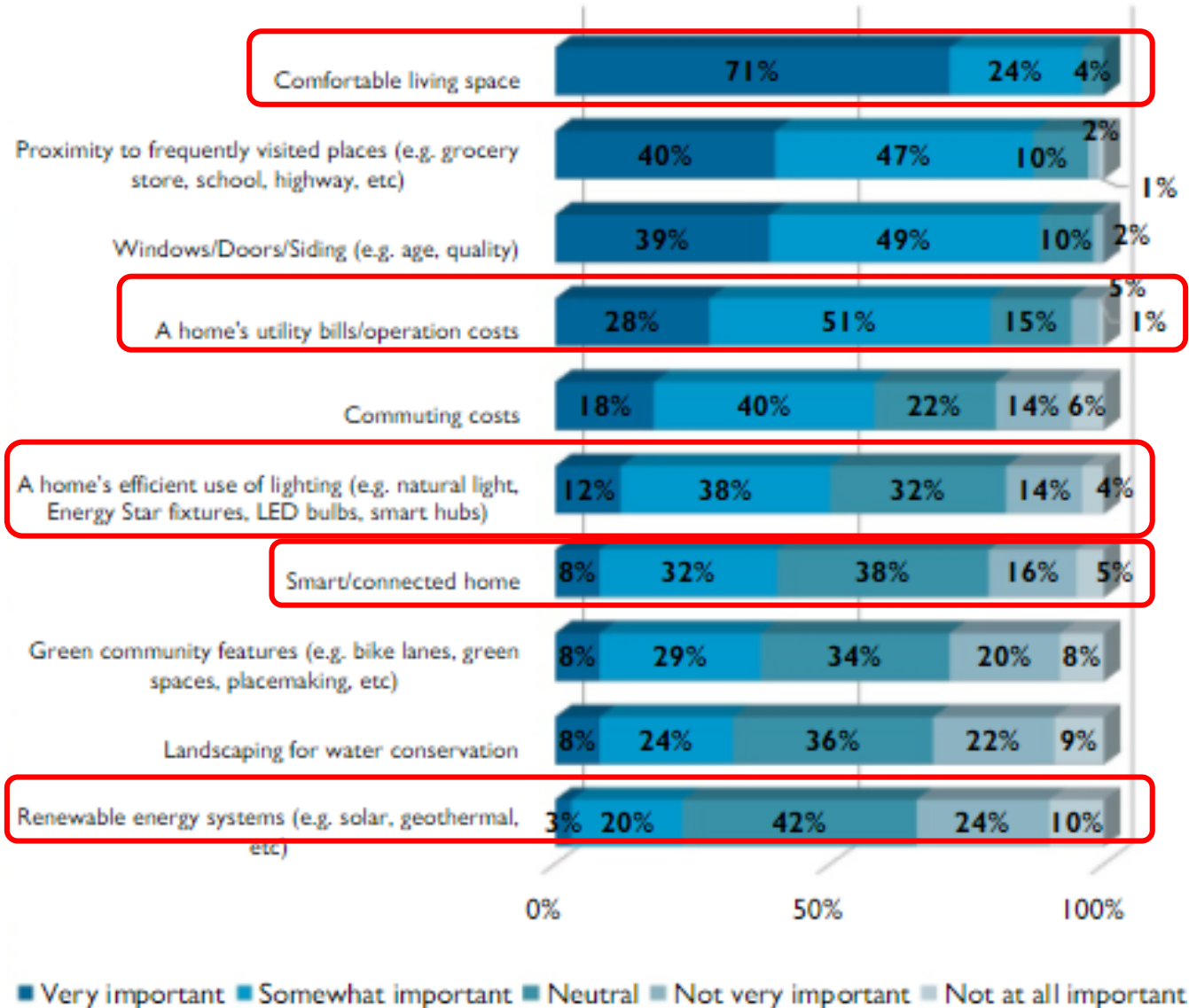
Certified homes sold for a higher percentage of their asking price & 31 days faster²

Sources: ¹Argeris, 2010; ²Cadena & Thomson, 2015; ³Carson Matthews, 2009; ⁴Corgel, Goebel, & Wade, 1982; ⁵Elevate Energy, 2015; ⁶Griffin, 2009; ⁷Goodman & Zhu, 2016; ⁸Institute for Market Transformation, 2015; ⁹Kahn & Kok, 2013; ¹⁰Pfleger et al., 2011.

*Not all studies shown have been peer reviewed.

What Do Consumers Want the Most?

Importance of Home Features to Clients



Consumer Demand

1. On average, energy costs are higher than either property tax or insurance for U.S. homes at \$2,506 per year ([U.S. Census](#)).
2. Attic insulation achieves highest return on investment of all home improvement projects studied at 116.9% ([Remodeling Report](#)).
3. Energy efficient homes can improve occupant health outcomes related to asthma, hypertension, and allergies ([DOE](#)).
4. 70% of households report that EE is important ([Demand Institute](#)).
5. 84% of homebuyers said that HVAC costs are at least somewhat important factors in their home purchase (68% appliances and 67% lighting) ([NAR](#)).

Do We Have HPH Inventory?

High Performance Homes: Benefits for Today and Tomorrow



As of 2016, over **1.5 million homes** are considered High Performance Homes. These are new and existing homes that have third-party verifications* identifying energy upgrades.

A young woman with dark hair, wearing a bright blue top, is smiling warmly at the camera. She is standing on a porch in front of a light-colored house. The porch has a white railing and a hanging basket of orange flowers. The background shows green foliage and a tree trunk.

Buyers need access to energy efficiency information that is credible and easy to understand.

Sellers need tools that can accurately appraise the value of improved energy performance.

The Big Picture Issues

1. Not properly listing available “green” features is a major miss for builders, homeowners and agents.
2. Electronic data from rating and certification programs is readily available to auto-populate into MLS listings.
3. Training agents and others to become building scientists hasn’t worked.
4. The many rating and certification programs lack standardized documentation.
5. Homeowners often fail to report to their agent performance upgrades made in the past 1 – 10 years.
6. There is a major shortage in qualified appraisers – whether “green” certified or able to properly value.

Where The Green Data Comes From

More than 40 programs and rating systems exist in NC, alone!



Perceived Costs vs. Returns

High-performance building doesn't demand high cost

Sept. 6, 2017 | by Steve Arel

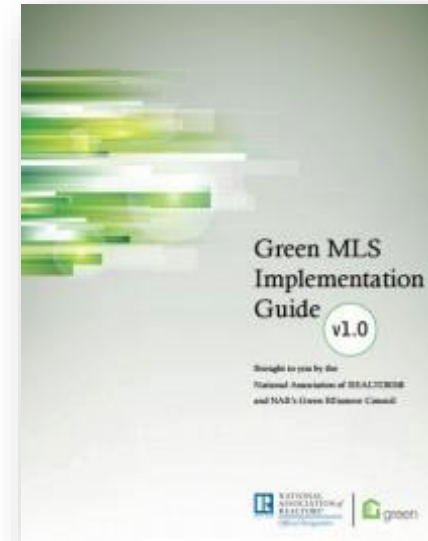
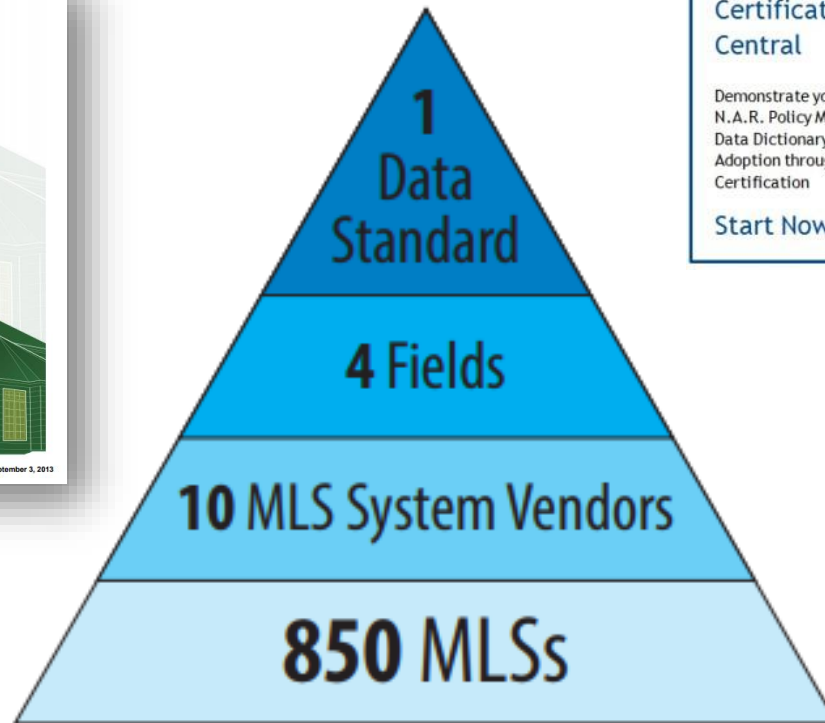


iStock photo

It used to be that high-performance building was a niche market. Achieving energy efficiencies seemed a hurdle too high to get over and too costly to afford.

Not anymore.

Lots and Lots of MLSs



"I am so glad to have this resource. When I went before my local MLS last November to enhance our MLS with green searchable fields, I had very little data to present. How much easier it is today (just a short 6 months later) with the information here. We have kinks to iron out before we expand our fields to include green features in existing homes, but we will, thanks to all the information you are making available.

- Jane Bixler Conn, GREEN, Tallahassee, Florida

The “Green MLS” Opportunity

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2. Auto-populate this data via systems integrations with data sources from national, state and local programs and rating systems.
3. Perform market studies to analyze “green” impact and identify tangible sales and appraisal ROI for features.
4. Move builders to list new construction homes on MLS for the purposes of increasing available comps.
5. Increase consumer, realtor, appraiser and lender visibility and acknowledged market value.
6. Connect MLS directories to webpages with info on “more green features” for further education.

Abe Kruger



Principal

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SK Collaborative Services

1. Commercial, Single Family, & Multi-family green certifications
2. Fannie Mae & Freddie Mac Green Assessments
3. Code compliance testing
4. HERS Ratings
5. Healthy Housing Index/Fitwel
6. Utility energy efficiency program consulting
7. Training and curriculum development



Michelle Foster



Vice President of Innovation Services
Home Innovation Research Labs



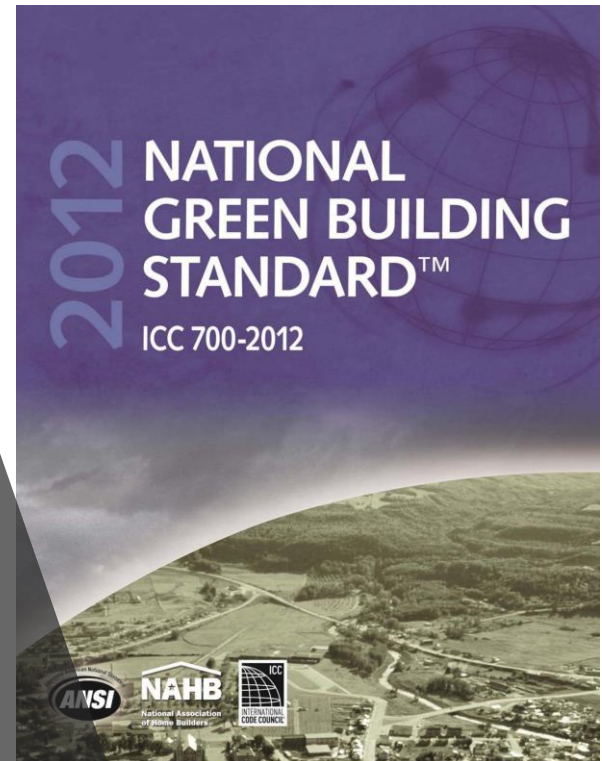
Home Innovation
RESEARCH LABS™

Mission

Improve quality,
durability,
affordability, &
environmental
performance of
homes



Provides Value
Affordable
Flexible
Rigorous
Third-party



Home Innovation
NGBS GREEN CERTIFIED™



To eliminate real estate transactional barriers to green, high-performance homes, must develop a transparent path for consumers to make informed decisions

Bob Burns



President & CEO

Rburns@PivotalEnergySolutions.com



About Pivotal Energy Solutions

Not construction experts, building scientists, energy efficiency experts, nor real estate experts....



*Problem Solvers and
Technical Solutions Providers*

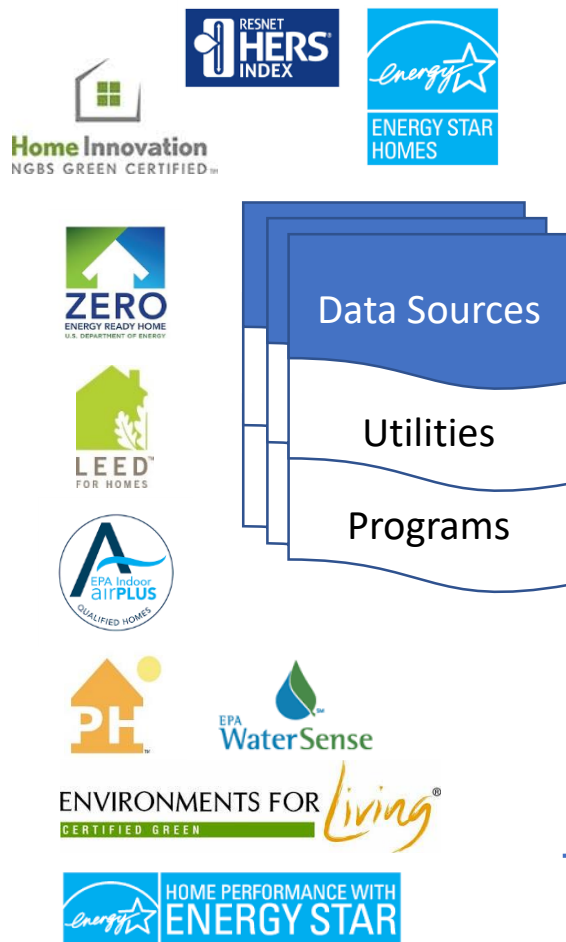
- Founded in 2011
- Based in Phoenix, AZ, with staff in Portland, OR
- Focused on Workflow and Data Management for the Energy Efficiency Industry



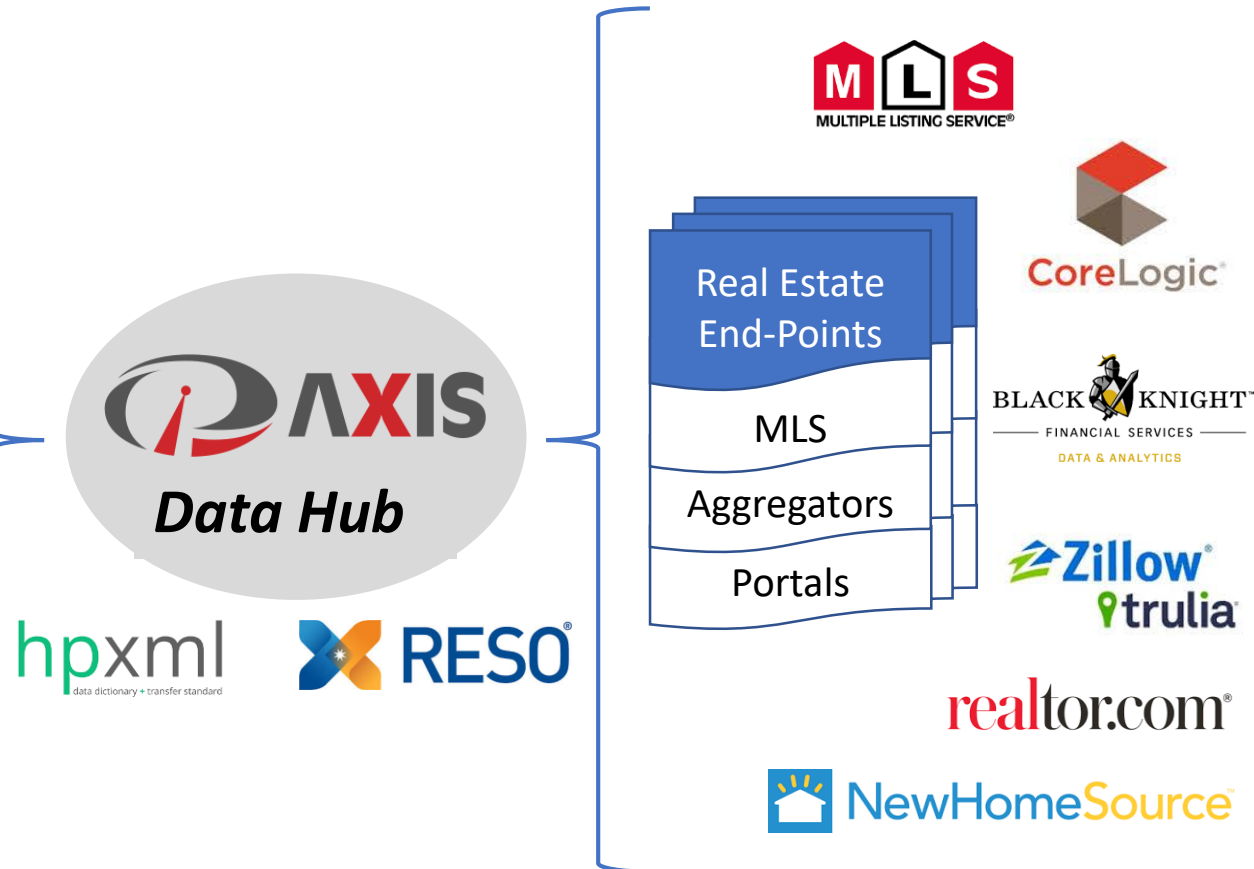
Pivotal's Real Estate Vision

Creating a conduit between the Energy Efficiency Industry and Real Estate Industry

Data Aggregation



Data Distribution



Panelist Questions

What is the actual data that we're talking about?

Where does it come from?

Where does it need to go?

And, how do we need it to get there?

What Data We Are Talking About

New Construction



Existing Homes



Solar



RESO Data Example

Data Field	Definition (v1.5)	Example(s)
Green Verification Program	The name of the verification or certification awarded to a new or pre-existing residential or commercial structure. If more than one certification has been awarded, leverage multiple iterations of the green verification fields via the repeating element method.	LEED Home Energy Score Home Energy Rating System (HERS) Home Performance with ENERGY STAR
Green Verification [Type] Body	The name of the organization providing the green verification. A private sector organization or government agency runs each green verification program.	LEED: U.S. Green Building Council Zero Energy Ready: U.S. Department of Energy HERS: RESNET
Green Verification [Type] Year	The year the verification was awarded. This is important in case the home has undergone significant changes since this year that may jeopardize its status.	2013
Green Verification [Type] Rating	The level of the home's energy efficiency expressed in a qualitative value, according to the Green Verification Program. Many green verification programs have rating systems that provide an indication of the home's level of energy efficiency.	LEED: Certified, Silver, Gold, Platinum NGBS New Homes: Bronze, Silver, Gold, Emerald
Green Verification [Type] Metric	The level of the home's energy efficiency expressed in a quantitative value, according to the Green Verification Program. Many green verification programs have rating systems that provide an indication of the home's level of energy efficiency.	HERS: Whole number typically ranging from 0 to 150 (lowest is most efficient) Home Energy Score: 1 to 10 (highest is most efficient)
Green Verification [Type] Version	The version of the verification that was awarded. Some rating programs have a year, a version, or both.	V2017 V.1.2

Additional Data Fields (and Opportunities)

Energy Data

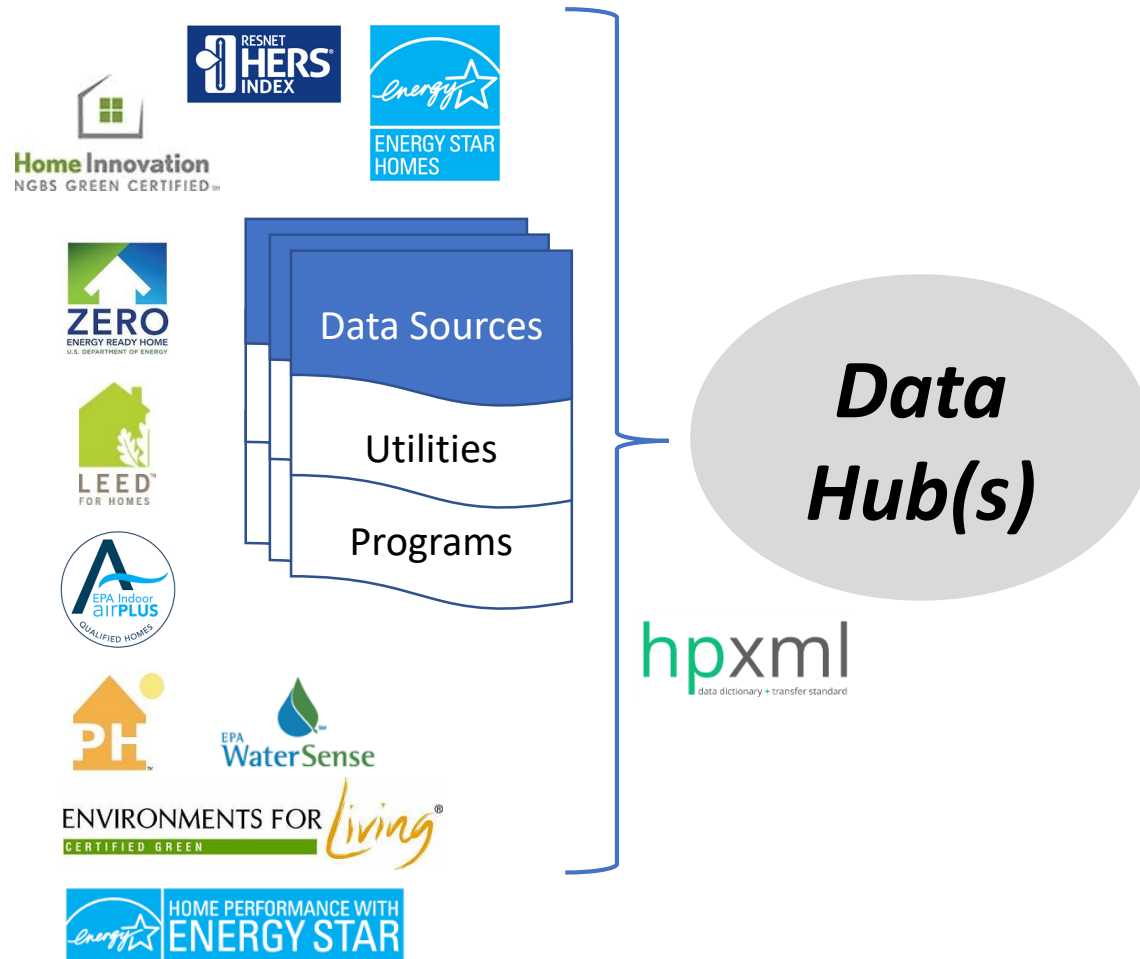
GreenVerification[Type] Status
GreenVerification[Type] URL
GreenEnergyGeneration
PowerProductionType
PowerProduction[Type] Annual
PowerProduction[Type] AnnualStatus
PowerProduction[Type] Size
PowerProduction[Type] YearInstall
GreenIndoorAirQuality
CoolingYN
Cooling
HeatingYN
Heating
ElectricOnPropertyYN
Gas
ElectricExpense
FuelExpense
GreenEnergyEfficient

Verified Property Data

BuildingAreaTotal
BuildingAreaSource
BuildingAreaUnits
AboveGradeFinishedArea
AboveGradeFinishedAreaSource
AboveGradeFinishedAreaUnits
BelowGradeFinishedArea
BelowGradeFinishedAreaSource
BelowGradeFinishedAreaUnits
FoundationArea
FoundationDetails
Basement
Roof
Stories
BedroomsTotal
DirectionFaces
NewConstructionYN
BuilderName
BuilderModel

Where The Green Data Comes From

Data Aggregation



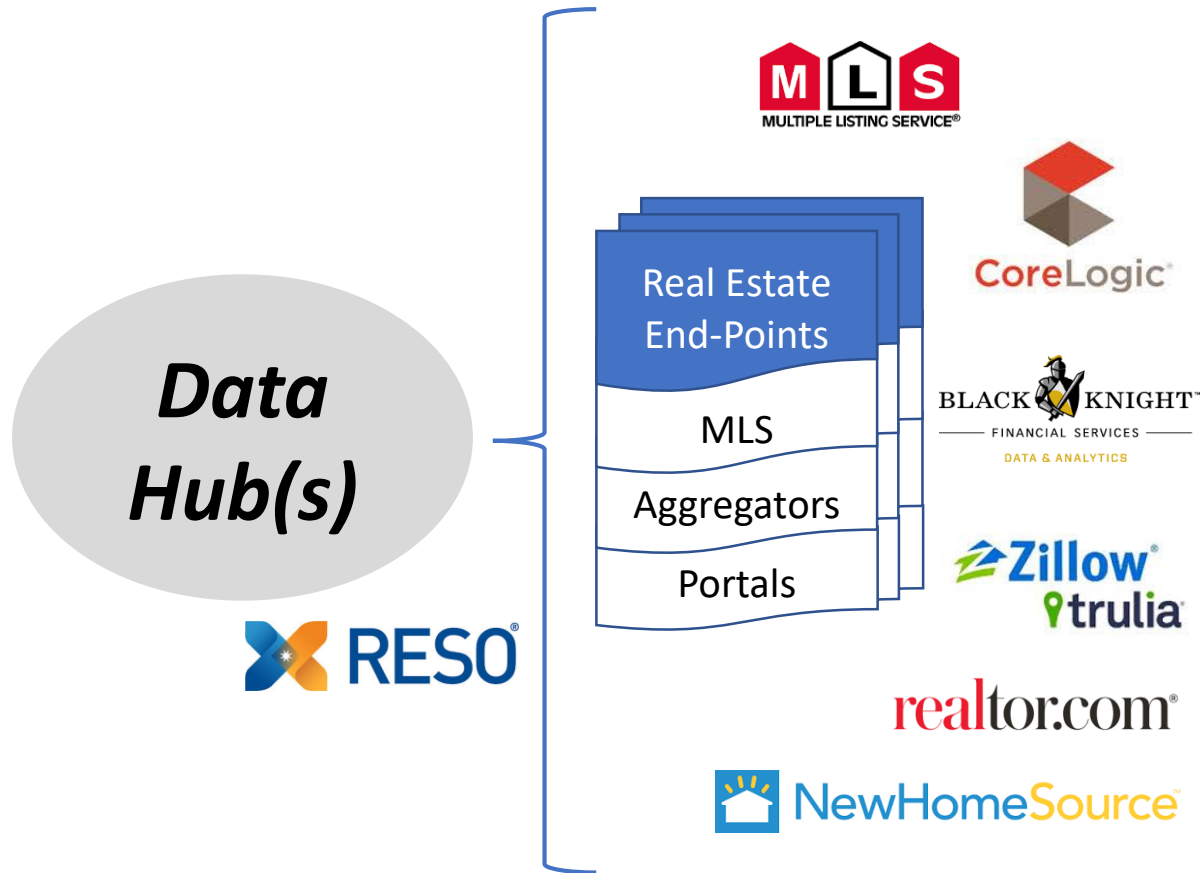
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Where The Green Data Needs to Go

Data Distribution



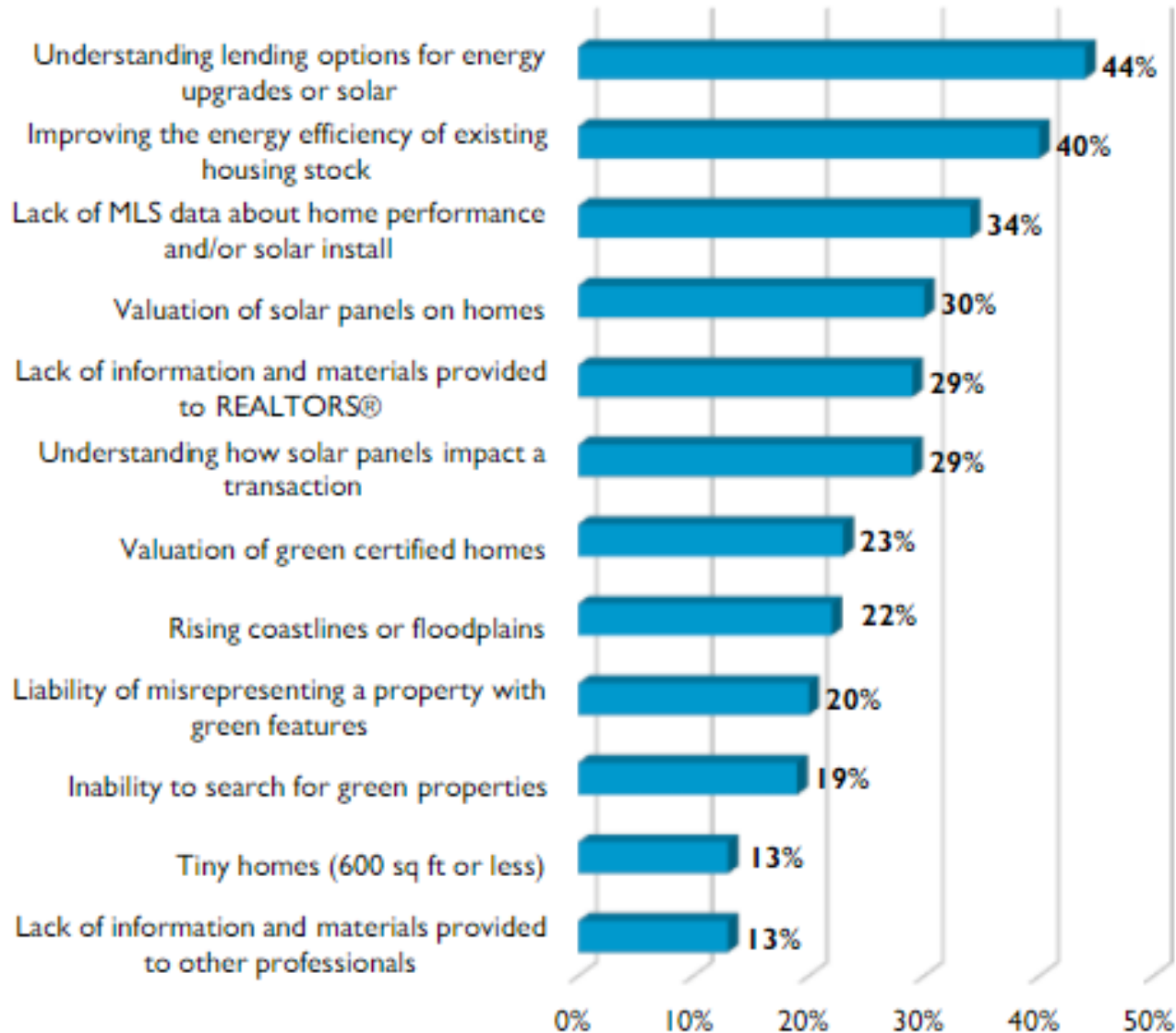
Has any market been successful in this
type of effort?

Where do we stand?

How do we gain support from industry stakeholders on the value of these efforts?

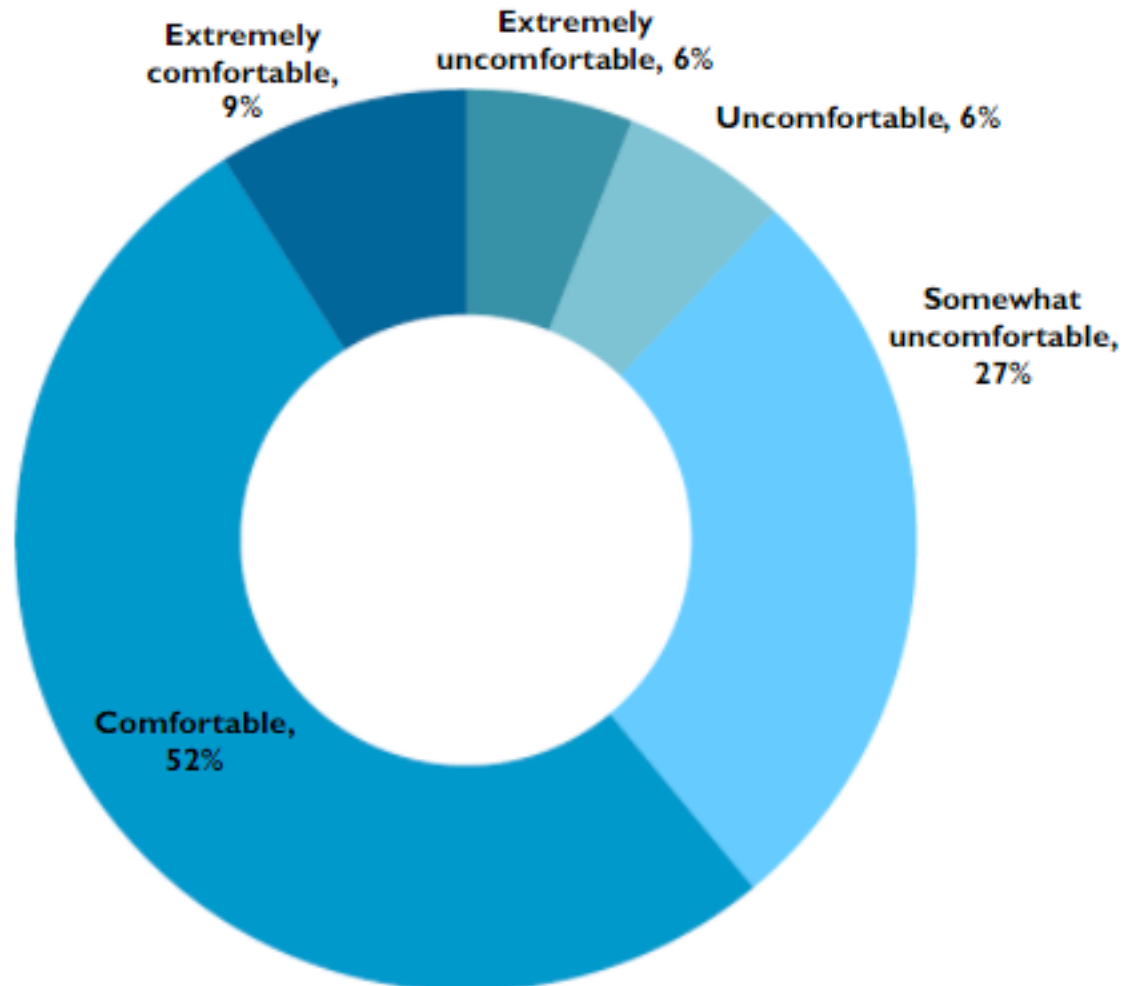
Top Issues from U.S. REALTORS

Issues and Considerations in Market



REALTOR Comfort re: Performance

Comfort Answering Clients' Questions About Home Performance



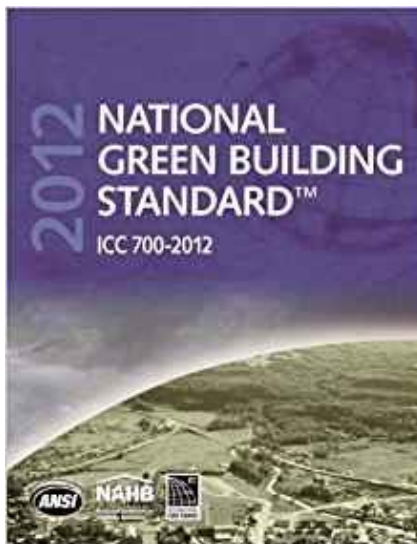
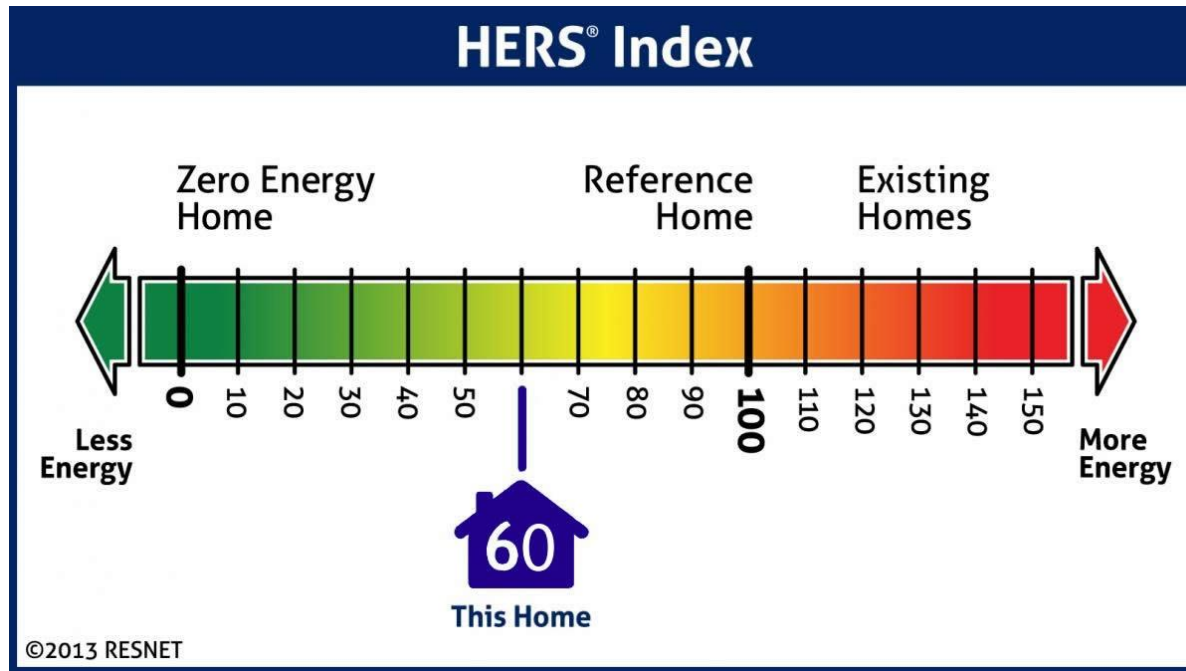
What are the mechanics of the process?

What's the actual solution?

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Ratings and Certifications = Foundation



NGBS Data Already Goes to Pivotal

September 19, 2016 | Upper Marlboro, MD

NGBS™ and Pivotal Energy Solutions Announce Data Sharing Agreement

Home Innovation Research Labs and Pivotal Energy Solutions are pleased to announce the availability of NGBS Green Certified homes through Pivotal's Axis energy efficiency data collection and sharing platform.

Over 85,000 U.S. homes have met the requirements of the ICC 700 National Green Building Standard™ (NGBS) - the only residential green building rating system approved by ANSI as an American National Standard. The NGBS Green stringent third-party verified certification process ensures that homes and apartments are built in compliance with the NGBS and focuses on three highly marketable attributes: healthy homes; lower operating costs; and sustainable lifestyle. NGBS Green homes must achieve high performance metrics in several key areas, including, site design, resource efficiency, water efficiency, energy efficiency, indoor environmental quality, and building operation/maintenance. An NGBS Green Certified home can be awarded a Bronze, Silver, Gold, or Emerald certification level, depending on the number of green practices successfully incorporated in its design and construction. And NGBS Green is the only national green home certification program that requires increasingly higher point thresholds in every category – not merely an increase in the overall points for the home.

Sample Screenshots of "GreenQuery"

GREEN QUERY [RESULTS](#) [CONTACT](#)

HOME DETAIL

Lot Number	
Address	52
City	Ra
State	NC
ZIP Code	27

ASSOCIATED COMPANIES

Builder	Revolution Homes
Electric Utility	Duke Progress Energy
Rating Company	Energy QA, Inc
Rating Provider	North Carolina Building Performance Association, Home Innovation Research Labs
Gas Utility	PSNC Energy

DOWNLOADS

- [Green Addendum](#)
- [Program Report](#)
- [Floorplan Marketing Brochure](#)
- [Subdivision Marketing Brochure](#)

[General](#) [Fuel Summary](#) [Energy Rating](#)

GREEN QUERY [RESULTS](#) [CONTACT](#)

[General](#) [Fuel Summary](#) [Energy Rating](#) [Building Shell](#) [Lights & Appliances](#)

ANNUAL ENERGY COST (\$/YR)

Natural gas	\$617.86
Electric	\$891.08

ANNUAL END-USE COST (\$/YR)

Heating	\$486.67
Cooling	\$153.32
Water Heating	\$126.60
Lights & Appliances	\$742.35
Photovoltaics	\$0.00
Service Charges	\$258.00
Total	\$1,766.94

ANNUAL END-USE CONSUMPTION

Heating (Therms)	464
Heating (kWh)	275
Cooling (kWh)	1527
Hot Water (Therms)	131
Lights & Appliances (Therms)	32
Lights & Appliances (kWh)	7295

ANNUAL ENERGY DEMANDS (KW)

Heating	0.1
Cooling	1.7
Water Heating (Winter Peak)	-
Water Heating (Summer Peak)	-
Lights and Appliances (Winter Peak)	0.7
Lights and Appliances (Summer Peak)	1.3
Total Winter Peak	0.8
Total Summer Peak	3.0

What are some of the hold-ups in the industry?

How are/should we address them?

Hold-Ups and Potential Barriers

1. Data Aggregation (Energy Efficiency Industry)
 - Data quality and consistency
 - Hesitancy to share data
2. Data Distribution (Real Estate Industry)
 - Adoption of RESO standards
 - Lack of data volume to warrant support for green fields
3. Common Issues
 - Market value of data not established
 - Legal/PII Concerns

What is the specific ask of the folks in
this room?

What is our call to action?

Resources

National Resources

- NAR's Green Designation:

www.GreenResourceCouncil.org

- NAR's Sustainability Website:

<https://www.nar.realtor/topics/sustainability>

- Appraisal Institute's Green Building Resources:

www.AppraisalInstitute.org – “green building resources”

- NAHB's Green Buildings Program:

www.NAHBgreen.org

- EcoBroker:

www.EcoBroker.com

National Resources

- Elevate Energy:

www.ElevateEnergy.org

- Green the MLS Tool Kit

www.GreenTheMLS.org

- Green Real Estate Toolkit:

<http://www.ecoachievers.com/resources/green-real-estate-toolkit/>

Q&A