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

EEBA Summit

October 10, 2017
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www.BuildingNC.org
www.BuildingSC.org

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
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
EE Homes Sell For More, Faster

Certified homes sell for 9.6% more.

Certified homes sell for 4.2% more & 18 days faster.

Certified homes sell for 2.1 to 5.3% more.

PACE homes delivered $199 to $8,882 in savings above cost of improvements.

Homes that disclose energy costs sold 20 days faster.

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

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

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

Homes designated relatively energy efficient sold for an average $3,416 premium.

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

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


*Not all studies shown have been peer reviewed.
What Do Consumers Want the Most?

Importance of Home Features to Clients

- Comfortable living space: 71% Very important, 24% Somewhat important, 4% Neutral
- Proximity to frequently visited places (e.g., grocery store, school, highway, etc): 40% Very important, 47% Somewhat important, 10% Neutral, 2% Not very important, 1% Not at all important
- Windows/Doors/Siding (e.g., age, quality): 39% Very important, 49% Somewhat important, 10% Neutral, 2% Not very important, 1% Not at all important
- A home's utility bills/operation costs: 28% Very important, 51% Somewhat important, 15% Neutral, 5% Not very important, 1% Not at all important
- Commuting costs: 18% Very important, 40% Somewhat important, 22% Neutral, 14% Not very important, 6% Not at all important
- A home's efficient use of lighting (e.g., natural light, Energy Star fixtures, LED bulbs, smart hubs): 12% Very important, 38% Somewhat important, 32% Neutral, 14% Not very important, 4% Not at all important
- Smart/connected home: 8% Very important, 32% Somewhat important, 38% Neutral, 16% Not very important, 5% Not at all important
- Green community features (e.g., bike lanes, green spaces, placemaking, etc): 8% Very important, 29% Somewhat important, 34% Neutral, 20% Not very important, 8% Not at all important
- Landscaping for water conservation: 8% Very important, 24% Somewhat important, 36% Neutral, 22% Not very important, 9% Not at all important
- Renewable energy systems (e.g., solar, geothermal, etc): 3% Very important, 20% Somewhat important, 42% Neutral, 24% Not very important, 10% Not at all important

Legend:
- Very important
- Somewhat important
- Neutral
- Not very important
- Not at all important
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.

Source: Elevate Energy
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!
High-performance building doesn't demand high cost

Sept. 6, 2017 | by Steve Arel

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.
"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

1. Add more “green” fields to MLS directories.

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
abe@skcollaborative.com
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
Mission
Improve quality, durability, affordability, & environmental performance of homes
Provides Value
Affordable
Flexible
Rigorous
Third-party
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 exerts, 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 Sources
- Utilities
- Programs

Data Distribution

Real Estate End-Points
- MLS
- Aggregators
- Portals

Data Hub

Markets

Utilities

Profiles

Aggregators

Hybrid

PORTALS

NewHomeSource

CoreLogic

Home Innovation

MLS

Zero

EPA WaterSense

LEED

RESO®

Home Performance with ENERGY STAR

Living

Homes

PG

Energy Star Homes

Green Certified

Certified Green

Energy Ready Home

LIFE AFTER

Rental

30

Homes

Gated

Rental"
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

- Home Innovation NGBS Green Certified™
- Energy Star Homes
- RESNET HERS® Index
- Zero Energy Ready Home
- LEED® for Homes
- EPA Indoor airPLUS
- WaterSense

Existing Homes

- Home Performance with ENERGY STAR
- U.S. Department of Energy Home Energy Score

Solar

- SEIA Solar Energy Industries Association®
<table>
<thead>
<tr>
<th>Data Field</th>
<th>Definition (v1.5)</th>
<th>Example(s)</th>
</tr>
</thead>
</table>
| 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                                                                                                                                                                                                     |
<table>
<thead>
<tr>
<th><strong>Energy Data</strong></th>
<th><strong>Verified Property Data</strong></th>
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<tbody>
<tr>
<td>GreenVerification[Type] Status</td>
<td>BuildingAreaTotal</td>
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<td>GreenVerification[Type] URL</td>
<td>BuildingAreaSource</td>
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<tr>
<td>GreenEnergyGeneration</td>
<td>BuildingAreaUnits</td>
</tr>
<tr>
<td>PowerProductionType</td>
<td>AboveGradeFinishedArea</td>
</tr>
<tr>
<td>PowerProduction[Type] Annual</td>
<td>AboveGradeFinishedAreaSource</td>
</tr>
<tr>
<td>PowerProduction[Type] AnnualStatus</td>
<td>AboveGradeFinishedAreaUnits</td>
</tr>
<tr>
<td>PowerProduction[Type] Size</td>
<td>BelowGradeFinishedArea</td>
</tr>
<tr>
<td>PowerProduction[Type] YearInstall</td>
<td>BelowGradeFinishedAreaSource</td>
</tr>
<tr>
<td>GreenIndoorAirQuality</td>
<td>BelowGradeFinishedAreaUnits</td>
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<tr>
<td>CoolingYN</td>
<td>FoundationArea</td>
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<td>Cooling</td>
<td>FoundationDetails</td>
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<tr>
<td>HeatingYN</td>
<td>Basement</td>
</tr>
<tr>
<td>Heating</td>
<td>Roof</td>
</tr>
<tr>
<td>ElectricOnPropertyYN</td>
<td>Stories</td>
</tr>
<tr>
<td>Gas</td>
<td>BedroomsTotal</td>
</tr>
<tr>
<td>ElectricExpense</td>
<td>DirectionFaces</td>
</tr>
<tr>
<td>FuelExpense</td>
<td>NewConstructionYN</td>
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<tr>
<td>GreenEnergyEfficient</td>
<td>BuilderName</td>
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<tr>
<td></td>
<td>BuilderModel</td>
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</tbody>
</table>
Where The Green Data Comes From

Data Aggregation

Data Sources
Utilities
Programs

Data Hub(s)
Where The Green Data Comes From

More than 40 programs and rating systems exist in NC, alone!
Where The Green Data Needs to Go

**Data Distribution**

- Data Hub(s)
- MLS
- Aggregators
- Portals
- Real Estate End-Points

Logos:
- RESO
- CoreLogic
- Black Knight
- Zillow
- Realtor.com
- NewHomeSource
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

- Understanding lending options for energy upgrades or solar: 44%
- Improving the energy efficiency of existing housing stock: 40%
- Lack of MLS data about home performance and/or solar install: 34%
- Valuation of solar panels on homes: 30%
- Lack of information and materials provided to REALTORS®: 29%
- Understanding how solar panels impact a transaction: 29%
- Valuation of green certified homes: 23%
- Rising coastlines or floodplains: 22%
- Liability of misrepresenting a property with green features: 20%
- Inability to search for green properties: 19%
- Tiny homes (600 sq ft or less): 13%
- Lack of information and materials provided to other professionals: 13%
Comfort Answering Clients’ Questions About Home Performance

- Somewhat uncomfortable, 27%
- Uncomfortable, 6%
- Extremely uncomfortable, 6%
- Extremely comfortable, 9%
- Comfortable, 52%
What are the mechanics of the process?

What’s the actual solution?
The “Green MLS” Opportunity

1. Add more “green” fields to MLS directories.
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.
Ratings and Certifications = Foundation

HERS® Index

Zero Energy Home  Reference Home  Existing Homes

Less Energy  0  10  20  30  40  50  60  70  80  90  100  110  120  130  140  150  More Energy

©2013 RESNET

This Home

ENERGY STAR

Certified HOME

2012 NATIONAL GREEN BUILDING STANDARD™

HIGH PERFORMANCE HOME
www.columbiagreenbuilders.com
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”

**HOME DETAIL**

<table>
<thead>
<tr>
<th>Lot Number</th>
<th>S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>5211 Dixon Drive</td>
</tr>
<tr>
<td>City</td>
<td>Rn</td>
</tr>
<tr>
<td>State</td>
<td>NC</td>
</tr>
<tr>
<td>ZIP Code</td>
<td>27</td>
</tr>
</tbody>
</table>

**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

**GREEN QUERY**

**SEARCH**: 5211 Dixon Drive

**FUNCTIONS**: RESULTS, CONTACT

**FUEL SUMMARY**

**ANNUAL ENERGY COST ($/YR)**

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td>$67.86</td>
</tr>
<tr>
<td>Electric</td>
<td>$891.08</td>
</tr>
</tbody>
</table>

**ANNUAL END-USE COST ($/YR)**

<table>
<thead>
<tr>
<th>Use</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>$486.67</td>
</tr>
<tr>
<td>Cooling</td>
<td>$153.32</td>
</tr>
<tr>
<td>Water Heating</td>
<td>$126.60</td>
</tr>
<tr>
<td>Lights &amp; Appliances</td>
<td>$742.35</td>
</tr>
<tr>
<td>Photovoltaics</td>
<td>$0.00</td>
</tr>
<tr>
<td>Service Charges</td>
<td>$258.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1,766.94</td>
</tr>
</tbody>
</table>

**ANNUAL END-USE CONSUMPTION**

<table>
<thead>
<tr>
<th>Use</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Heating (Therms)</td>
<td>464</td>
</tr>
<tr>
<td>Heating (kWh)</td>
<td>273</td>
</tr>
<tr>
<td>Cooling (kWh)</td>
<td>1527</td>
</tr>
<tr>
<td>Hot Water (Therms)</td>
<td>131</td>
</tr>
<tr>
<td>Lights &amp; Appliances (Therms)</td>
<td>32</td>
</tr>
<tr>
<td>Lights &amp; Appliances (kWh)</td>
<td>7295</td>
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</table>

**ANNUAL ENERGY DEMANDS (KW)**

<table>
<thead>
<tr>
<th>Use</th>
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<tbody>
<tr>
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</tr>
<tr>
<td>Cooling</td>
<td>1.7</td>
</tr>
<tr>
<td>Water Heating (Winter Peak)</td>
<td>-</td>
</tr>
<tr>
<td>Water Heating (Summer Peak)</td>
<td>-</td>
</tr>
<tr>
<td>Lights and Appliances (Winter Peak)</td>
<td>0.7</td>
</tr>
<tr>
<td>Lights and Appliances (Summer Peak)</td>
<td>1.3</td>
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<tr>
<td><strong>Total Winter Peak</strong></td>
<td>0.8</td>
</tr>
<tr>
<td><strong>Total Summer Peak</strong></td>
<td>3.0</td>
</tr>
</tbody>
</table>
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:

• 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/