Panelists

- Emily Levin, VEIC
- Ron Mohr, Los Angeles County, CA
- Zach Wilson, District of Columbia/New City Energy
Select DOE Resources

- **The DOE Buildings Performance Database (BPD)**
  - The nation's largest dataset of information about the actual energy-related characteristics of commercial and residential buildings
  - Explore and compare energy use and building characteristics across real estate sectors and regions, and compare buildings to a custom peer group
  - buildings.energy.gov/bpd

- **Standard Energy Efficiency Data (SEED) Platform**
  - An open source software application that helps organizations manage data on the energy performance of large groups of buildings
  - Combine data from multiple sources, clean and validate it, and share the information with others
  - buildings.energy.gov/seed

- **Best Practices in Energy Data Collection and Tracking in the Public Sector**
  - A guide on strategies that state and local governments and schools have implemented to access and utilize public sector energy consumption data
  - Establish a robust energy data collection and tracking process for buildings and other energy-using assets in a portfolio
  - Forthcoming on the State and Local Solution Center: energy.gov/eere/slsc
Emily Levin, VEIC
Vermont Energy Investment Corporation
Getting Home Energy Data into the Real Estate System: Vermont’s Vision

Emily Levin
May 27, 2015
About VEIC

- Nonprofit founded in 1986
- Designs, delivers, and evaluates energy efficiency programs nationwide
- 300+ employees
- Locations: VT, DC, OH, NJ

www.veic.org
Home Energy Labeling: National Landscape & Vermont Activities
Why Label Homes

+ Bill savings
+ Green jobs
- CO₂

OWNER DISCLOSES
ENERGY RATING

Owners invest in
energy efficiency
upgrades

Buyers/renters
fully informed

Market values
energy performance

Buyers/renters
favor efficient
properties

Labels Make Sense

Major appliances • Cars • New Homes • Commercial Properties
National Activities

- BPI Standards
- Green MLS Implementation
- Real Estate Transaction Standard (RETS)
- Appraisal Institute Green & Energy Efficient Addendum
- Building Energy Data Exchange Specification (BEDES)
- Standard Energy Efficiency Data Platform (SEED)
- Building Performance Database (BPD)
DOE Home Energy Score

Home Energy Score

Score: 7
Score with improvements: 3
Estimated annual savings: $411

Uses more energy: 1, 2, 3, 4, 5, 6, 7, 8
Uses less energy: 9, 10

Address: 12345 Honeysuckle Lane
Smithville, AR 72466
Home size: 1,800 square feet
Year built: 1970
Air conditioned: Yes

The Home Energy Score is a national rating system developed by the U.S. Department of Energy. The Score reflects the energy efficiency of a home based on the home's structure and heating, cooling, and hot water systems. The Home Facts provide details about the current structure and systems. Recommendations show how to improve the energy efficiency of the home to achieve a higher score and save money.
Vermont’s Rating and Labeling History

1987
Energy Rated Homes of VT (HERS)

2011
Building Energy Disclosure Working Group

2012
Thermal Efficiency Taskforce

2013
Act 89 - Voluntary Building Energy Disclosure Working Group

2015
Building Energy Labeling Pilot Program
The Vermont Home Energy Score ranks a home’s total energy use based on typical occupancy and weather in Vermont. The lower the score, the more energy-efficient the home.

**REPORT INFORMATION**

**Score Issue Date:** 6/23/13

**Owner:** John Doe

**Organization:** Common Sense Energy

**Address:** 123 Main Street, Anytown, VT 05000

**Year Built:** 2002

**Size (sq. ft.):** 1723

**Heating Fuel Used:** oil, wood

**Other Energy Features:** solar hot water

**HOME INFORMATION**

**Estimated Annual Energy Cost**

- Oil/Propane: $2,950
- Electric: $5,150
- Wood: $360

**Energy Use:** $4,000

*Energy use and costs are estimates only. Actual usage and costs may vary and are based on many factors such as weather and occupant behavior, including use of wood stoves.

**Turn the Page to See How You Rank Nationally**

**DRAFT**
Score & Label Elements

Name & Logo

Assessor Data

General Home Data

Home Score (MMBtu/yr)

Wedge graphic & reference points

Estimated annual energy costs ($/yr)

U.S. DOE
Tool Selection

For consistency, all Vermont scores will be produced by the same energy modeling tool.

✓ DOE's Home Energy Score Tool
  - Most accurate
  - Free & publicly available
  - Supported by LBNL
  - APIs to enable data transfer from other audit tools
  - Credibility of DOE tool
  - Good working relationship with DOE
Asset vs. Operational

- **Asset**
  - Modeled energy performance
  - Standardized for occupancy & weather
  - Fixed over time

- **Operational**
  - Actual energy usage
  - Dependent on occupancy & weather
  - Changes over time
Coordination and Oversight

- Efficiency Vermont will serve as statewide coordinator

- An Advisory Board will provide guidance and oversight

- Collaborating with Northeast Energy Efficiency Partnerships (NEEP) and other northeastern states on a regional approach

- Received a State Energy Program award from DOE to advance labeling and benchmarking in VT and NH
Getting Home Energy Data into the Real Estate System
Regional MLS

- Northern New England Real Estate Network operates the MLS for VT and NH
- Engaged and interested in “greening the MLS”
- Already offer green fields for new homes
- Willing to work with on enhancements:
  - Adding “coded features” to existing fields
  - Incorporating a new label and score
- Bottom-line advice: keep it simple
NNEREN - VT MLS Public View

Condominium
20 Thorn Bush Rd Hinesburg, Vermont 05461  $259,900

MLS #: 3063781
Price: $259,900
Total Rooms: 5
Bedrooms: 2
Total Baths: 2
Acre: 0.09
Square Feet: 1348
Sq Ft Above Grade: 1348
Sq Ft Below Grade: 0
Taxes: $0
Tax Year: 2009
Year Built: 2010
Condo Fees: $175

Remarks:
Great Hinesburg “Smart Growth” neighborhood to be built by Sterling Construction in Thistle Hill. Home is Energy Star and National Green Building Standards rated. Garden homes with maintenance-free living in a village setting; lawn mowing, snow removal, trash, and landscaping handled by association. Home near 14 acres of wooded common land with walking trails. This home features 9 foot ceilings, GE appliances, and first floor master bedroom and laundry. Ground-level is awaiting your custom design touches! Other plans available.

Features:
- Style: Townhouse
- Color: Sand
- Amenities: Garden Space, Snow Removal, Trash, Other
- Full Baths: 2
- 3 / 4 Baths: 0
- 1 / 2 Baths: 0
- Roofs: Association, Private
- Water Heater: Gas-Natural
- Basement: Unfinished, Walk Out, Other
- Construction: Wood Frame
- Driveway: Paved
- Electric: 100 Amp, Circuit Breaker(s)
- Exterior: Vinyl
- Foundation: Concrete
- Garage / Parking: Attached, Auto Open, Off Premises
- Heating / Cooling: Baseboard, Multi Zone
- Heat Fuel: Gas-Natural
- Lot Description: Common Acreage, Subdivision, Trail/Year, Trail, Village
- Roof: Shingle-architectural

Interior Features:
- Cable, Eat-in Kitchen, Living Room, Living/Dining, Master BR with BA, Smoke Det-Hdwd w/Blkt, Vaulted Ceiling, Walk-in Closet
- Water: Public
- Sewer: Public
- School District:
  - Elementary: Hinesburg Elementary School
  - Junior High: Hinesburg Elementary School
  - High School: Champlain Valley UHSD #15
- Foot Print:
- Seasonal: No
- Surveyed: Yes
- Zoning: Res
- Flood Zone: No
- Book: 197
- Pages: 128
- Map: 167B&C
- Lot #: 58

Home Energy Rated Index Score
HERS Index: 58

BUILDING CERTIFICATIONS (max 99)
- Energy Star Cert. Home
- HERS Rated
- LEED for Homes-Platinum
- LEED for Homes-Gold
- LEED for Homes-Silver
- LEED for Homes-Certified
- Ntl Grn Blg Stnd-Emerald
- Ntl Grn Blg Stnd-Gold
- Ntl Grn Blg Stnd-Silver
- Ntl Grn Blg Stnd-Bronze
- Passive House
- VT Bids Greener Certified
- Other
NEEP HELIX Project

Making data readily accessible with appropriate privacy protections is critical to the inclusion of home energy information in home appraisals and sales.

- Three-year regional project
- Research, design, develop & deploy
- Publicly accessible database (HELIX)
- Database for DOE Home Energy Score data
- Conduit for incorporating data into MLS
Vision for SEED

Source: DOE
Vision for Vermont

Audit Tool A
Audit Tool B
Audit Tool C
Audit Tool D

DOE Home Energy Score ‘Data Handler’ (TBD)

DOE HEScore API

HELIX (TBD)

EE Program DB
NNREN MLS
Other
Find the Right Partners

Energy Audit Tools
HPXML
DOE Home Energy Score
SEED
BEDES
MLS
HELIX

CoreLogic
Education is Key

- Real estate industry symposium planned for October 29th
- Realtors, appraisers, and bankers from VT and NH
- Continuing education courses
- Objective is to create a registry of green real estate professionals available to people who are looking to buy and sell energy-efficient homes
Thank you!

Emily Levin
Manager, Consulting
Vermont Energy Investment Corporation
802-540-7694
elevin@veic.org
Ron Mohr
Los Angeles County
County of Los Angeles’s Current Regional Infrastructure “DATA” Efforts

Ronald Mohr
County of Los Angeles
Internal Services Department
County Office of Sustainability
What are the County’s Current ‘DATA’ Efforts

- Hosting & development of DOE’s Suite of Commercial Building Analysis Tools
  - Standard Energy Efficiency Data Platform (SEED)
  - Energy Asset Scoring
  - Building Synch (Energy Auditing schema)
  - All DOE components are built on the common BEDES schema

- Utility Billing Data tracking & reporting for municipal agencies (EEMIS, 15,000+ Service Accounts, 56 local governmental agencies)
- The Interactive Energy Atlas of Los Angeles County
What is SEED?

• SEED is an standardized, open source software application/database that helps governmental agencies in gathering & managing energy performance data for a large portfolio of buildings
  – Application development has been funded and led by DOE, it ties in with numerous other tools designed to measure and improve building performance

• Users can combine data from multiple sources, (Assessor, GIS, Energy Star) clean it, validate it, report it and share it with others
What’s SEED’s Ultimate Goal?

• The application provides an easy, flexible, and cost-effective method to improve the gathering, archiving and accessibility of data to help influence the implementation of policies, programs and investments in energy efficiency, and demonstrate the resulting economic and environmental benefits of those efforts
  – Without having relevant data on the energy performance of existing building stock, local governments have been severely limited in pursuing local codes & ordinances or programs that can influence energy consumption

• SEED is the SECOND step in a process, EPA Energy Star, SEED, Building Sync, Asset Score....
How & Who?

• Throughout the nation, local governments (maybe State), are adopting building performance reporting regulations for private and/or public buildings

• Some of the players include New York City, Seattle, Washington DC, San Francisco, Austin, Philadelphia, Chicago
Roadmap for SEED Adoption

- **City Council Motion**: 12/3/14
- **Kick-Off Workshop**: 1/15/15
- **Dialogue Meetings**: 1/15 – 4/16
- **Draft Proposed Program**: Summer 2015
- **Final Workshop**: Fall 2015

**Public Agencies Taking Action to Save Energy**
SEED Development Has Already Started
‘Exposing’ Data

• Data analysis from LA City effort
  – Data Analysis showed that building energy accounted for 51% of GHG total emissions
  – 50% of energy consumed by the local building stock, came from 4% of the buildings
  – Somewhere near 4500 parcels will be in the first reportable group...> 20,000 sq ft.
County of Los Angeles’s SEED Data Infrastructure Goals

• The County is already hosting & administering DOE’s SEED for use by the City of Los Angeles, the County will offer SEED to any LG wishing to utilize their services.

• The County is currently in a collaborative partnership developing DOE’s Building Synch capabilities in order for Building Owners to easily evaluate their facility with other tools, including DOE’s Asset Scoring application.
Thank You

Ronald Mohr
County Office of Sustainability
County Of Los Angeles
c. 323-627-4070
rmohr@isd.lacounty.gov
Zach Wilson
District of Columbia/New City Energy
BuildSmart DC
A Public-facing, Municipal Building Efficiency Portal for the District
Better Buildings Summit | 5-27-15

More data. **Less Carbon.** Zero Excuses.

Zach Wilson
Program Manager, DGS (DC Gov)
Sustainability & Energy Division
BuildSmart DC

DGS + NEW CITY ENERGY + pepco = BuildSmart DC
DC Department of General Services
Site Overview: Main Pages

BUILDINGS

Search the Building Directory to learn about utility costs, building performance and efficiency projects.

Enter Keyword

FILTER

1-15 of 356 buildings

Waterfront Municipal Center West
1101 4TH STREET SW
Office
EnergyStar Rating 50

Department of Human Services #1
2100 MARTIN LUTHER KING JR AVENUE SE
Office
EnergyStar Rating 45

Parkview Elementary
3560 WARDER STREET NW
Repurposed School
EnergyStar Rating 54

Waterfront Station is a mixed-use urban center in Southwest Washington, DC. The project includes seven new buildings totaling over 2 million square feet including Class-A office space, new residential units and neighborhood oriented retail in the heart of Southwest. Show More
## Site Overview: Public Data Downloader

<table>
<thead>
<tr>
<th>Last Recorded Day</th>
<th>Last 10 Days</th>
<th>Monthly Energy Usage</th>
<th>Downloads</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/25/2015</td>
<td>Electricity Demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>09/13/13 - 05/25/15</td>
<td>Electric</td>
<td>Dec. '14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water</td>
<td>Jan. '13 – Dec. '14</td>
</tr>
</tbody>
</table>

Download

Download

Download
What Data Gets Mashed Up?

**Interval**

*Pepco’s Green Button Electricity Interval Data is the foundation.*
Additional interval sources (Natural Gas, Building Automation) are being piloted.

**Billing**

*Electronic Utility Billing is provided by Washington Gas and DC Water.*
*Pepco is still sending the District paper bills!*

**External Analyses**

*BuildSmart DC transmits data via API to multiple third parties, including two-way communication with the EPA’s Energy Star Portfolio Manager.*

**Building**

*DGS-SE works across the District government to collect and maintain up-to-date information on buildings including occupancy rates and hours.*

**Project**

*DGS-SE collects project information to enhance building data and track project effectiveness.*

**Temperature**

*BuildSmart DC collects temperature data from the national weather service and directly from temperature sensors on site at some facilities.*
## ...And Who Uses It?

<table>
<thead>
<tr>
<th><strong>Operations Engineers / FMs</strong></th>
<th><strong>Energy &amp; Sustainability Division</strong></th>
<th><strong>Efficiency Experts / Analytics</strong></th>
<th><strong>The Public</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Check Load Curves</td>
<td>- Maintains Portfolio Data</td>
<td>- Access Data via API and Export Tools</td>
<td>- Checks Facility Performance</td>
</tr>
<tr>
<td>- Manage Equipment Schedules</td>
<td>- Creates and Tracks Projects</td>
<td>- Track Projects</td>
<td>- Uses Data for Research</td>
</tr>
<tr>
<td>- Impact Utility, O&amp;M, and Capital Costs</td>
<td>- Engages and Trains other Divisions</td>
<td>- Recommend Improvements</td>
<td>- Keeps DC Accountable</td>
</tr>
<tr>
<td></td>
<td>- Generates Budget and Forecast Reports</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Manages Supply</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Project M&V is currently being built out as follows:
Anomaly Detection

- **Interval Data** – Automated Quality Control (live)

![Interval Data Table]

<table>
<thead>
<tr>
<th>Billing Account</th>
<th>Internal Account</th>
<th>Billing Name</th>
<th>Billing Address</th>
<th>Interval Field</th>
<th>Master Name</th>
<th>Master Address</th>
<th>Master ID</th>
<th>Start Date</th>
<th>End Date</th>
<th>Last 12 Months Billing kWh</th>
<th>Last 12 Months Interval kWh</th>
<th>Not Zeros Adjusted Variance</th>
<th>Zeros Adjusted Variance</th>
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</thead>
<tbody>
<tr>
<td>580105815759</td>
<td>03152391511</td>
<td>200 I St SE</td>
<td>225 Virginia Av SE</td>
<td>200 I Street Municipal Building</td>
<td>200 I STREET NE</td>
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<td>1/14</td>
<td>1/15</td>
<td>5301.50</td>
<td>3842.29</td>
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<td>03152391611</td>
<td>200 I St SE</td>
<td>225 VIRGINIA AVE S.E #1</td>
<td>200 I Street Municipal Building</td>
<td>200 I STREET NE</td>
<td>7</td>
<td>1/14</td>
<td>1/15</td>
<td>392084.04</td>
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<td>0312878117</td>
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<td>225 Virginia Ave SE S1</td>
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<td>1/14</td>
<td>1/15</td>
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<td>1/15</td>
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<td>0.77</td>
<td>0.77</td>
<td></td>
</tr>
</tbody>
</table>

- **Load Curve Analysis** (under development)

![Load Curve Diagram]
Engaging Occupants Via Kiosks

Energy Data for Wilson Building

**YESTERDAY’S TOTAL ENERGY COST**

$2,222

That could power a computer for 13 years.

**2%**

regression from last week

**MAY 25 ELECTRICITY USAGE**

Turn off the lights when you leave the office.

**MORE WAYS TO SAVE ENERGY**

DC ENERGY HEROES

Alyssa Turner
Deputy Facilities Services Officer
GSS
14 years of service

GREEN SCHOOLS CHALLENGE

DGS-SE and DCPS – Green Schools Challenge: Accepted
Touch to read more about DGS-SE and DCPS work

TRANSPORTATION

Federal Triangle
- Franconia-Springfield: 6 MIN
- Van Ness East: 3 MIN
- Large Town Center: 4 MIN
- New Carrollton: 7 MIN

Biking

Capital Bikeshare
14th & D St NW / Ronald Reagan Building
7 AVAILABLE / 10 DOCKS

Weather

**78°**

Later Today 84°
Tonight 85°
Thu 70° / 88°
BuildSmart DC
A Public-facing, Municipal Building Efficiency Portal for the District
Better Buildings Summit | 5-27-15

Zach Wilson
Program Manager, DGS (DC Gov)
Sustainability & Energy Division