Standardization of Energy Efficiency Information: The Northeast Regional Perspective

Presented to EIA Energy Conference

July 11, 2016
About NEEP

Mission
Accelerate energy efficiency as an essential part of demand-side solutions that enable a sustainable regional energy system

Approach
Overcome barriers and transform markets via Collaboration, Education and Enterprise

Vision
Region embraces next generation energy efficiency as a core strategy to meet energy needs in a carbon-constrained world

One of six regional energy efficiency organizations (REEOs) funded by the US Department of Energy (US DOE) to link regions to US DOE guidance, products and programs
Benefits of Standardization: A Common Language

**kWh per year**
- Lost Opp Large - C&I: 2%
- Retrofit Large C&I: 3%
- Retrofit Small C&I: 7%
- C&I Lighting / Appliances: 10%
- Retrofit - Low Income: 14%
- Residential Behavior: 3%
- Residential Lighting / Appliances: 21%
- Lost Opp - Residential: 35%

**Calories per serving**

| Nutrient               | Per Serving | % Daily Value
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>300</td>
<td>-</td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>120</td>
<td>24%</td>
</tr>
<tr>
<td>Total Fat</td>
<td>16g</td>
<td>24%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>8g</td>
<td>39%</td>
</tr>
<tr>
<td>Trans Fat</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td>Sodium</td>
<td>15mg</td>
<td>1%</td>
</tr>
<tr>
<td>Potassium</td>
<td>320mg</td>
<td>9%</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>44g</td>
<td>15%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>4g</td>
<td>16%</td>
</tr>
<tr>
<td>Sugars</td>
<td>32g</td>
<td>8%</td>
</tr>
<tr>
<td>Protein</td>
<td>2g</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>2%</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>15%</td>
<td>-</td>
</tr>
<tr>
<td>Calcium</td>
<td>2%</td>
<td>-</td>
</tr>
<tr>
<td>Iron</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Riboflavin (Vitamin B2)</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>15%</td>
<td>-</td>
</tr>
<tr>
<td>Folate</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>Magnesium</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Copper</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>Manganese</td>
<td>10%</td>
<td>-</td>
</tr>
</tbody>
</table>

*Serving Size: 1 Banana (130g)*
*Servings per Container: 1*
Enhancing Credibility of Results

- What Evaluation Measurement & Verification (EM&V) approach was used to estimate savings?
- Do we have confidence in the accuracy of the results?
- How do the EM&V approaches compare across states?
- How do the EM&V approaches used align with any existing state, regional or national EM&V protocols?
Facilitate Transactions
How Energy Efficiency Stakeholders Can Use Standardized Data

Compare program impacts to help identify best practices

Support system & transmission planning, forecasting

Aggregate results to inform regional and national impacts / policies

Incorporate EE data into air quality plans
Regional Drivers of Standardization

Independent System Planning and Forecasting of Energy Efficiency

Forward Capacity Markets (ISO-NE and PJM)

Tracking, Analyzing, Benchmarking Across States for Market Transformation

Regional Greenhouse Gas Initiative

NECPUC and MACRUC and NESCAUM
NEEP and the Regional EM&V Forum

Build a Transparent and Common EM&V Platform
NECPUC/MACRUC Resolutions

- PUCs and SEOs
- DEPs, EPA, RGGI
- EE Program Administrators
- ISO-NE, NYISO, PJM
Varied Tools Support Standardization

- Policy Guidance: Cost-Effectiveness and Net Savings
- Credentialing/Certification Research
- Standardized Forms to Document Methods and Results
- Regional Energy Efficiency Database
- Home Energy Labeling Information Exchange
Key Features of Standardized Products...

Can Also Be Challenges

- Voluntary...build coalition of the willing
- Organic...can end up as a lowest common denominator product
- Developed with stakeholder and expert peer input...can take time
- Cofunded with multistate and national support...lacks individual state control
- Educates a broad stakeholder community...when successfully implemented
- Many aspects transferable to other regions or nation
Streamlined EM&V Reporting and Review: via 2 Standardized Forms

NOT THIS!
(Impact Evaluation Studies)
Methods for Estimating Gross Impacts
Describe and characterize the methods for estimating gross and adjusted gross impacts.

1. Select method(s) for gross impact analysis:
   - [ ] Deemed savings
   - [ ] Engineering desk review
   - [ ] Measurement & verification
   - [ ] Large scale consumption data analysis
   - [ ] Top-down analysis (macro consumption)
   - [ ] Other (describe below)  [ ] Not applicable

   Provide additional description:

2. Select sampling method(s) for gross impact analysis:
   - [ ] Census
   - [ ] Sample
   - [ ] Other
   - [ ] Not Applicable

   Sampling Unit
   - Participant Sample Size
   - Non-Participant Sample Size

http://www.neep.org/initiatives/emv-forum/model-emv-methods-standardized-reporting-forms
NEER Objectives

• Provide a consistent framework for EE to be included as an “eligible resource” in federal and state plans
• Demonstrate verification of EE projects according to the appropriate eligibility standards
• Facilitate the opportunity for inter- and intrastate trading

Benefits of a NEER

The NEER will:

• Not prescribe EM&V but will outline consistent requirements for data
• Aggregate rate payer and non-rate payer programs
• Support the development of financial instruments representing verified EE savings
• Be flexible to support a range of EE projects and program types
NEER Development Elements

- States Initiative on Principles and Governance
- Policy & Integration Working Groups
- Committee to Draft Functional Requirements
- Development and Implementation

NEER Development Elements
Identifying Trends in Regional Data
The Regional Energy Efficiency Database (REED)


**REED features:**
- Annual & Lifetime Savings
- Peak Demand Savings
- Avoided Air Emissions
- Program Expenditures
- Job Creation Impacts
- Cost of Saved Energy
- Program Funding Sources
- Supporting Information

Learn more at reed.neep.org
Policies Provide Extensive Savings

Annual verified electric savings have more than doubled in recent years, moving from ~3,100 GWh in 2009 to ~6,300 GWh in 2014. This is a direct result of regulatory policies and executive leadership in states supporting energy efficiency as a first order resource.

Sources: 2013-14 data is drawn from EIA form 861. 2011-12 data is drawn from NEEP’s REED Database and ACEEE Scorecard/program administrator reports (D.C. Del., NJ. Pa.). 2009-10 data is drawn from ACEEE scorecards.
Benchmarking Per Capita Energy Efficiency Investments (Electric and Natural Gas Programs Combined)

Efficiency investments are increasing across New England and the Mid-Atlantic. In 2016, combined efficiency program investments will average approximately $45 per capita.

Source: 2011-14 data is drawn from NEEP’s REED Database with the exception of DC, DE, NJ, and PA, which are drawn from ACEEE Scorecard. 2015-16 data is drawn from energy efficiency program plans in each state. For further information on which program administrators are included in REED, please see the REED Footnotes website.
REED Data Collection & Use

Partnerships to date...

• **ISO-NE:** ISO-NE collects data from PAs (for its EE forecast) and sends CSV file to NEEP → reduces reporting burden for PAs

• **NY ISO:** Cross checks its NY EE data with REED

• **EIA DSM Forum 861:** Informed parameter terminology and definitions (2012-13?); other needs/opportunities?

• **LBNL:** Initial discussion - align LBNL and REED program typology

• **ACEEE:** Recent discussions to better coordinate next year with REED data → ACEEE for its annual EE Scorecard

...Materials in REED

• Enabling legislation
• Annual Reports
• Program Plans
• Technical Reference Manuals
• Potential Studies
• Net and Gross Savings Assumptions
• Description of Review and Approval Process
• Relevant NEEP Documents and Resources
Regional Database Attracts A Diverse Audience

- MA, 30.03%
- NY, 5.47%
- DC, 5.01%
- CA, 4.95%
- TX, 1.77%
- Canada, 1.52%
- IL, 3.11%
- VT, 3.00%
- VA, 3.65%
- CO, 2.06%
- FL, 2.32%
- MD, 2.30%
- CT, 2.57%
- Brazil, 2.66%
- PA, 1.80%
- Brazil, 2.66%
- Canada, 1.52%
- MA, 30.03%
- NY, 5.47%
- DC, 5.01%
• Home Energy Labeling Information eXchange (HELIX)
  – 3 year project (2016-2018)
  – New England + New York
  – Database development and implementation
  – Outreach to real estate community

Coming in 2018
INFORMATION FLOW - 2018

Auditor: compiles DOE Home Energy Score info using software

Seller: consents to share Home Energy Score data stored in DOE files

HELIX: enables data access and transmission with privacy restrictions

MLS: listed homes feature verified energy info (auto-pop)
POLICIES + PROGRAMS: RESIDENTIAL RATING
Takeaways: Threading the Needle of Standardization

- Achieving consensus without mediocrity
- Avoiding extra burden
- Providing structure and allowing flexibility
- Defining rigor
- Compatibility with other products and activities

*Pilot efforts, education and coordination are and will be important*
**New Opportunities for Standardization?**

*Policy Trends and Next Generation Energy Efficiency*

<table>
<thead>
<tr>
<th>TREND</th>
<th>NEXT GENERATION POLICY</th>
<th>STATES</th>
</tr>
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<tbody>
<tr>
<td>Grid Modernization</td>
<td>Examining new utility frameworks responsive to emerging technologies/societal challenges and anticipating proliferation of multi-directional power flows, while also emphasizing greater customer engagement.</td>
<td>MA, NY, CT, RI, DC, NH</td>
</tr>
<tr>
<td>Strategic Electrification and Geo-targeting</td>
<td>Planning to procure savings from energy systems as a whole — across all fuels — with an emphasis on targeting distributed energy resources and their capabilities to defer or limit the need for further investments in distribution and transmission system assets.</td>
<td>VT, RI, NY, MA, ME</td>
</tr>
<tr>
<td>Advanced Building Policies</td>
<td>Shifting toward a whole-building approach to efficiency emphasizing advanced building energy codes, code compliance mechanisms, and building energy rating and labeling practices that drive toward “zero energy.”</td>
<td>RI, MA, CT, VT, DC, NY, DE</td>
</tr>
<tr>
<td>New Program Strategies</td>
<td>Harnessing new technology and policy innovations within utility program plans to enhance customer understanding around energy usage through expanded energy data access, information communication technologies, and strategic energy management strategies.</td>
<td>MA, VT, CT, NY</td>
</tr>
<tr>
<td>Integrating Energy Efficiency and Demand Response</td>
<td>Pairing energy efficiency program planning with opportunities for demand response in a manner that enhances cost-effectiveness and reduces peak load growth.</td>
<td>MD, CT, RI, MA, PA.</td>
</tr>
<tr>
<td>EM&amp;V 2.0</td>
<td>Coupling new data collection technologies and software-as-a-service analytic tools with traditional evaluation, measurement, and verification strategies for real-time feedback of efficiency program impacts that is less costly and sufficiently accurate.</td>
<td>States exploring use as customer engagement tool</td>
</tr>
<tr>
<td>Ongoing Evolution of Financing Tools</td>
<td>Leveraging private capital investments to increase funding available for energy efficiency programs through the use of Green Banks and related credit facilities, while also preserving proven program structures.</td>
<td>NY, CT, PA, NJ</td>
</tr>
</tbody>
</table>

See NEEP’s *2016 Regional Roundup* for more information.
Thank you!

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