Designing Pilots and Acceptance Criteria for EM&V2.0 Tools

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The Purpose of Pilots: Testing the EM&V2.0 Value Proposition
What did participants in the June Forum webinar say about EM&V2.0?

• Is it clear how EM&V 2.0 tools can support evaluation?
  – 21 yes, 3 no

• Are you interested in exploring 2.0 tools and methods in your work?
  – 12 yes, 2 maybe

• Are you interested in participating in commercial pilot design or implementation?
  – 7 yes, 4 maybe

• Are you involved in, or going to be involved in any programs that rely on an existing use baseline?
  – 6 yes, 2 maybe, 4 no
What are the potential benefits of M&V2.0? What is the value proposition?

• Increase visibility, quickly obtain ongoing and interim savings feedback
  – Increase savings and enhance customer experience

• Automate parts of the process that computers do well, streamline data acquisition and processing
  – Target and segment customers
  – Reduce time and cost to quantify savings
  – Maintain/improve accuracy in final savings
  – Increase throughput, number of projects going through the pipeline
What are the biggest [potential] benefits of EM&V2.0 tools? Results from June Forum webinar poll:

- Faster feedback on program performance: 18 votes
- Enhanced eval/TRM calibration: 16 votes
- Increasing cost effectiveness of EM&V: 14 votes
- Contractor oversight: 12 votes
- Customer segmentation: 10 votes
What do we know based on research, industry work to date?

- Proprietary commercial tools are generally as accurate (or more so) as industry standard models for existing use baselines.

- Case studies are beginning to provide some evidence for some elements of the value proposition:
  - Often focus on benefits to program administrators.
  - Often not addressing use of tools to claim/evaluate savings.
  - May or may not be public, difficult to synthesize across cases.

- Encouraging results when commercial 2.0 tools applied to historic program data for gross savings estimation:
  - Low levels of uncertainty at building and aggregate level.
  - Generalizations still premature, different info available in each case.
What additional value might pilots provide?

• Does value proposition prove out?

• Whether multiple pilots give consistent results

• Where 2.0 methods work well, do not work well, and associated project characteristics

• How practitioners can use 2.0 tools to complement professional expertise, maintain accuracy, speed results, with fewer resources

• ...

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Residential vs commercial 2.0 tools

• Currently more market offerings for commercial, industrial than for residential
  – M&V often bundled with analytics for site operational efficiency

• C&I- whole building and submeter-based, also calibrated simulation

• Residential – comparison group and building-level

• NEEA published inventories on tools for commercial, industrial, however market constantly evolving
Based on what you know and would like to know about M&V2.0 tools, what questions should a pilot answer?

Assume:
1. Audience and pilot partners = program implementation, administration, evaluation, and regulation
2. Pilots are conducted in real-world commercial or residential buildings

Specify:
Applicability to commercial, residential, or both
What should commercial pilots aim to evaluate? Results from June Forum webinar poll:

- Value in cont. feedback: 18
- Savings uncert. due to model error: 14
- How NR Adj are handled: 10
- Time and cost of 2.0 vs traditional approaches: 12
Notes from the Field

Residential Case Studies and Pilots

Tim Guiterman, Director of Quantify Solutions

ENERGY SAVVY
EnergySavvy at a glance

Cloud software for the utility industry

Quick Facts

- 30+ utility/DSM clients
- 100% cloud software
- Seattle & Boston offices
- Founded in 2008
- M&V 2.0: 6 clients (8 programs)
M&V 2.0: How it Works

ENERGY USAGE BEFORE CHANGE

ENERGY USAGE AFTER CHANGE

ESTIMATED

DIFFERENCE

ACTUAL
## EnergySavvy's M&V 2.0 / Program Optimization in Action

<table>
<thead>
<tr>
<th>Utility Location</th>
<th>Program Type</th>
<th>M&amp;V 2.0</th>
<th>Program Optimization</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS</td>
<td>Res Weatherization</td>
<td></td>
<td>✓</td>
<td>Contractor Scorecard/ Intelligent QA/QC</td>
</tr>
<tr>
<td>APS</td>
<td>Res HVAC</td>
<td></td>
<td>✓</td>
<td>Pilot to determine ability to enhance the effectiveness of energy efficiency programs by increasing the timeliness and accuracy of impact estimates while reducing the cost of impact evaluation</td>
</tr>
<tr>
<td>Midwest</td>
<td>Res Behavioral</td>
<td></td>
<td>✓</td>
<td>Pilot to determine if M&amp;V 2.0 software could (1) enhance evaluation through timely insights, and (2) drive program improvement through targeted QA/QC</td>
</tr>
<tr>
<td>Midwest</td>
<td>Res HVAC and water heating</td>
<td></td>
<td>✓</td>
<td>EnergySavvy and traditional EM&amp;V firm collaborating on multi-year evaluation effort</td>
</tr>
<tr>
<td>Ameren Missouri</td>
<td>Res HVAC</td>
<td>✓</td>
<td>✓</td>
<td>Pilot to determine if M&amp;V 2.0 software could (1) enhance evaluation through timely insights, and (2) drive program improvement through targeted QA/QC</td>
</tr>
<tr>
<td>Northeast #1</td>
<td>Res HVAC (gas-only)</td>
<td>✓</td>
<td></td>
<td>Pilot to assess value to (1) manage contractor performance through metered savings scorecards and granular insights, and (2) inform planning and evaluation</td>
</tr>
<tr>
<td>Northeast #2</td>
<td>Res HVAC, weatherization and lighting</td>
<td>✓</td>
<td>✓</td>
<td>Pilot to determine if (1) M&amp;V 2.0 software could provide indicative results compared to known outcomes utilizing bimonthly consumption data, and (2) provide quicker insight into program activity and analyze customer data in new ways</td>
</tr>
<tr>
<td>PSEG Long Island</td>
<td>Res HVAC and lighting</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Case Study: Arizona Public Utilities

**Challenge**
Managing a large network of contractors

**Solution**
Monitor performance of individual contractors

![Diagram showing 60+ independent contractors and continuous monitoring of programs and contractor performance.](Image)
Case Study: Contractor Scorecard

Challenge
Contractors are unaware of their project performance

Solution
Issue scorecards to contractors to communicate performance of projects
Case Study: Attic Inspections

Challenge
Reduce costs and intrusiveness of QA/QC process

Solution
Use intelligent monitoring to reduce and target # of QA/QC inspections

APS shifted approximately 25% of the overall inspection budget to directly improve the program.

*All percentages are the percent of total annual projects (assumes 2,000 projects/year)
Case Study: PSEG Long Island

Can M&V 2.0 match the existing results in less time with bimonthly data?

1,100 Homes in HPD program

Reproduce evaluation results with M&V 2.0

Reliable estimate of performance 7 months into program

6% margin of error
An Example of Integrated Evaluation

EnergySavvy & EM&V firm jointly evaluating Res HVAC program

- Collaboration on models
- Continuous reporting
- Supplemental evaluator work
- Early insights and feedback
Thank You

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