About EM&V

Iowa 111(d) Stakeholder Meeting

February 22, 2016
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Evaluation Overview
Evaluation Overview

- Why evaluation is important
- View evaluation as a continuous communication tool
- Discuss current evaluation practices in Iowa
- Understand how evaluation fits into the program planning and design process
What is Evaluation?

**Definition**

Evaluation is a systematic process for an organization to obtain information on its activities, its impacts, and the effectiveness of its work, so that it can improve its activities and describe its accomplishments.*

**Benefits**

An effective evaluation will help you lean about your successes [and shortcomings], share information with key audiences, and improve your services*

* Source: The Manager’s Guide to Evaluation, Mettessich
EM&V

- EM&V = Evaluation, Measurement and Verification
  - Evaluation is at the program level
  - Measurement is at the project level
  - Verification is at the project level
  - Both M and V are often components of E!
Why Evaluate?

- Better and more cost-effective programs!
  - Ensure that the program is delivering the benefits that it was designed to produce
  - Optimize energy and non-energy benefits
  - Provide valuable information about program operations
Evaluation is more important than ever!

- The stakes are higher today with more reliance on the “energy efficiency power plant”
- The penalties may be greater for non-performance
- Increased need for accountability that public benefits funds or rate payers monies are being spent wisely
- Increased need in jurisdictions with rising goals, disappearing low hanging fruit, and rising baselines
What Is Generally Measured

- Energy savings
- Demand savings
- Environmental impacts
- Economic impacts
- Customer satisfaction
- Technology penetration
- Other program specific research issues
Types of Evaluation

- Impact
- Process
- Market

Process + Impact + Market Assessment = well rounded evaluation
Evaluation in Iowa
The Evaluation Feedback Loop

- Program Design
- Implementation

- Process Evaluation
- Impact Evaluation
- Cost-effectiveness Analysis
- Feedback Loop
Stakeholder Engagement

- Resource Planning
- Program Managers
- Evaluation
- Regulators and Others
Impact Evaluation Challenge

Impact evaluation attempts to measure what did not happen.

Savings: The difference between energy use after the program and what the energy use would have been without the program.

\[
\text{Impact} = \text{Actual post} - \text{Actual pre} \pm \text{Adjustment}
\]

Not an easy question to answer; we need a baseline...
What Do We Measure in Iowa

- Gross and Net Energy & Demand Savings
- Participation and Market Effects
Forms of Impact Evaluation

- Establishment or verification of savings estimates
  - Engineering review
  - Billing analysis
  - Metering
  - Load shape analysis
  - Building simulation modeling

- Verification of savings

- Assessment of savings directly resulting from program funding (net-to-gross)
  - But not currently in Iowa
Why Savings May be Adjusted

- Use of equipment
- Discrepancies between tracking systems and actual installations
- Incorrect installation or setting of controls
- Location of equipment
- Hours of use
- Installation/removal rate
### Overview of Iowa Impact Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review existing documentation</td>
<td>Confirm assumptions and calculations</td>
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<tr>
<td></td>
<td>Prepare for additional data collection</td>
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<tr>
<td>Conduct on-site data collection</td>
<td>Verify installation, counts, and current conditions</td>
</tr>
<tr>
<td></td>
<td>Adjust energy savings and kW impact estimates</td>
</tr>
<tr>
<td>Monitor end-use equipment</td>
<td>Provide critical information on hours of use, load factors, and other</td>
</tr>
<tr>
<td>Provide final “best” estimates of savings</td>
<td>Verify gross energy and demand savings</td>
</tr>
<tr>
<td>Conduct building energy simulation and billing analysis</td>
<td>Provide the best results in a pre/post design with a comparison group</td>
</tr>
<tr>
<td>Coordinate with other evaluation activities</td>
<td>Provide on-site/ metering sample and approvals for site visits</td>
</tr>
<tr>
<td></td>
<td>Match findings from participant surveys (installation rates, free ridership, spillover) to observed results</td>
</tr>
</tbody>
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Impact Evaluation and the TRM

TRMs are developed for a variety of reasons and are used in different ways

- CA - primarily used to inform program design
- In the NW - establish saving values that form the basis for verifying saving targets
- MI and PA - the TRM specifies the basis for determining ex ante savings claimed by utilities; for some measures, the PA TRM specifies fully-deemed savings
- TX – used prospectively for program planning and reporting claimed savings

More to come today about Iowa’s TRM
Process Evaluation
What is Assessed

- Program design and processes
- Program administrative activities
- Program delivery and implementation activities
- Customer response
- Internal and external program barriers
- Market response
Importance of Researchable Issues

Researchable questions serve as the foundation of a process evaluation

- Start with the question: What do we want to know about the program?
- Typically developed around program goals and metrics
- Can focus on issues both within and outside the program

# Overview of Iowa Process Activities

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<td>Identify and interview key program players and market actors</td>
<td>Ensure program feedback from all perspectives&lt;br&gt;Sends a message that program is important</td>
</tr>
<tr>
<td>Develop process-related researchable issues</td>
<td>Focuses and prioritizes data collection activities&lt;br&gt;Ensures that research needs are met</td>
</tr>
<tr>
<td>Collect data from key market actors and program participants</td>
<td>Provides feedback on program progress towards meeting specified goals and objectives&lt;br&gt;Assesses program operations, delivery mechanisms, marketing, and market effects</td>
</tr>
<tr>
<td>Conduct program tracking system review</td>
<td>Ensures necessary data is tracked for evaluation purposes</td>
</tr>
<tr>
<td>Conduct benchmarking research with interview of program managers of similar programs</td>
<td>Compares program performance with other similar programs&lt;br&gt;Identifies best practices</td>
</tr>
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Evaluation and the CPP
EM&V and CPP

- Iowa’s current EM&V activities position Iowa well for CPP EM&V compliance

- Rate-based approach
  - Detailed guidance is provided for most types of EE
  - States can develop their own approaches

- Mass-based approach
  - EPA doesn’t require a showing of EM&V because compliance is measured via tons emitted at the plant
  - Very little guidance for states

- And let’s not forget EM&V for rate-payer funded programs
Questions?