Challenging Topics in Cost-Effectiveness: Advanced Metering Infrastructure

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Advanced Metering Infrastructure

“Smart Meter”
Current Situation

Regional AMI Penetration (Electric 2015)

- AMI Meters
- Non-AMI

Data for this table was taken from the EIA 861 form, available at: https://www.eia.gov/electricity/data/eia861/
Current Situation in Perspective, 2015

Penetration Level:

- >80%
- 60-79%
- 40-59%
- 20-39%
- <20%

Source: GTM Research, December 2016
How does it compare?

Top 10 States by AMI Penetration

Source: GTM Research
## What are the Benefits?

### Economic
- Reliability
- Avoided T&D
- Reduction in meter reading & operations
- Engineering & field service operations
- Peak Load Reduction
- Reduced GHG emissions
- Energy Conservation

### Qualitative
- Risk reduction
  - Improved compliance with safety standards
  - Theft reduction
- System efficiency & resiliency
  - System planning
  - Crew productivity
- Customer
  - Customer satisfaction
  - Customer convenience
  - Demand Response
- Environmental
  - Conservation Voltage Reduction
  - Priority pollutant reduction
What are the Costs?

Capital Expenses
- Metering equipment
- Network & communications infrastructure
- Stranded Costs

Operations & Maintenance
- Infrastructure procurement
- Project management
- Information Technology systems
- Field services
- Revenue reduction

Customer Education
- Marketing
- Customer education

Source: ConEdison Capital Investment and Ongoing Cost-Benefit Comparison
## Overview of Cost-Benefit Analyses

<table>
<thead>
<tr>
<th>Utility</th>
<th>Year Proposed</th>
<th>Meters</th>
<th>Time-Varying Rates</th>
<th>Conservation Voltage Reduction</th>
<th>Stranded Costs</th>
<th>Customer Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL&amp;P (CT)</td>
<td>2007</td>
<td>3,000 (Deployed)</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>CMP (ME)</td>
<td>2007</td>
<td>622,000 (Deployed)</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>BG&amp;E (MD)</td>
<td>2010</td>
<td>1.23M (Deployed)</td>
<td></td>
<td>$</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Con Edison (NY)</td>
<td>2010</td>
<td>3.6M (Approved)</td>
<td>✓</td>
<td>$</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>GMP (VT)</td>
<td>2010</td>
<td>260,600 (Deployed)</td>
<td></td>
<td>✓</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Eversource (MA)</td>
<td>2015</td>
<td>5 percent (Proposed)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>✓</td>
</tr>
<tr>
<td>National Grid (MA)</td>
<td>2015</td>
<td>1.3M (Proposed)</td>
<td>$</td>
<td>$</td>
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<td>✓</td>
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<tr>
<td>Unitil (MA)</td>
<td>2015</td>
<td>103,000 (Deployed, to be upgraded)</td>
<td>✓</td>
<td>✓</td>
<td></td>
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</tbody>
</table>
Summary of Findings

• In the event of not monetizing a benefit, that does not mean the benefit has no monetary value
• The business case
  – Depends on goals of the project, scale and dimension, and technological features
• The type of test used: UTC, TRC, or SCT
• Variance in the inclusion of stranded cost, time-varying-rates, conservation voltage reduction, customer education
• Impact of not using Recovery Act of 2009 funds
New NEEP Resource

- Insight into utility trends regarding AMI deployment costs and benefits within the Northeast and Mid-Atlantic

- The report reviews the costs and benefits evaluated in both retrospective and prospective AMI deployment proposals, highlighting any outlying factors.
Recent Research

- How do we characterize common practice regionally? Nationally?
- For what programs and types of impacts are NEIs commonly provided?
- How and when are evidence-based versus other approaches used to estimate NEIs?
- What are some of the pros and cons of states’ current practices?

Thank you!

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