Workshop Highlights
Whole Building Performance: How to Make It Work in California

May 14, 2012
Workshop Goal

Clarify the path to implementing whole building approaches in CA

- Where are we now?
- Where do we want to go?
- What proof points are needed?

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<td>State of the Technology</td>
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Why Whole Building Performance Matters

Holistic view of buildings as integrated systems with three different types of savings potential

Sources of Commercial Building Energy Savings

- **Behavioral**
- **Operational**
- **Device**

Why now?

- Aggressive statewide energy savings goals
- Interval meter data availability
- New enabling technologies
- Movement in the industry
- Utility focus on SMB customers
Will It Make Sense to Customers?

- The Whole Building concept aligns with how customers see their buildings, but education is needed.
- Customers look for:
  - Clear recommendations
  - Simple incentive process
  - Quick service & response
  - Minimal hassle
  - Strong economics
  - Real, observable savings
  - Recognition for good work
- Customers could be leery of performance-based approaches if perceived as risky.
Program Innovation

- We heard from Dave Hewitt of NBI as well as leading program managers and implementers about how whole building approaches are their program designs and savings methodologies.

<table>
<thead>
<tr>
<th>Programs Name (Type)</th>
<th>Technology Application</th>
<th>Savings Approach</th>
<th>Incentive Design &amp; Pricing</th>
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<tbody>
<tr>
<td>California (MBCx)</td>
<td>Monitoring Based</td>
<td>Whole building</td>
<td>Customized, up-front</td>
</tr>
<tr>
<td></td>
<td>Commissioning</td>
<td>and systems</td>
<td>payment for 1st year</td>
</tr>
<tr>
<td></td>
<td>(MBCx)</td>
<td></td>
<td>savings</td>
</tr>
<tr>
<td>British Columbia</td>
<td>EIS, BEMs or</td>
<td>Portfolio-level</td>
<td>No monetary incentive, in</td>
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<tr>
<td>(COps)</td>
<td>engineering calcs</td>
<td>whole building</td>
<td>kind only (EIS and consulting)</td>
</tr>
<tr>
<td>New Jersey (P4P)</td>
<td></td>
<td></td>
<td>Performance-based, 50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>paid on actual savings</td>
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CA, NJ and BC all have programs utilizing WBA approaches, but their application is not yet scalable for SMB customers.
Savings Methodology

Four key questions:

- How much savings is needed to use WBA?
- How good to the results need to be?
- How long should the monitoring period be?
- How to demonstrate attribution and persistence?

Interval meter data could enable mass deployment of WBA, but a number of M&V questions have yet to be answered.
The Title 24 True Up Issue

How to calculate code min from whole building data?

CPUC policy ties baselines to building code, but there is no practical means for doing so at a whole building level.
The Role of Analytics & Controls

• Building Analytics
  • Provide RCx practitioners and customers with high resolution view of their energy usage
  • Anomaly detection and fault diagnostics solutions can facilitate continuous commissioning
  • May help RCx practitioners more effectively target and engage customers

• Building Controls
  • Controls can generate operational savings
  • Costs are falling due to wireless technology

Building controls and analytics are important technologies for WBA, but evaluating their performance is a challenge
Key Takeaways

• The value of interval meter data has yet to be fully realized in California
• EIS tools are an important enabling technology, but performance standards are needed
• WBA will require new protocols and tools, but California lacks a formal channel for developing these
• CPUC policy ties baselines to building code, but there is no practical means for doing so at a whole building level
• Performance-based approaches, including WBA, are needed, but finding the right balance between risk and reward will be essential for customer acceptance

There is broad industry support for advancing WBA in California, but acknowledgement of the need for collaboration.