Smart Building Technologies and the Policies That Support Them

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And Market Development
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How do Utilities and Policy Support Energy Efficiency?

- 26 states now have requirements for utilities to attain EE as a resource
- Significant DSM ramp up in 2000s, driven by policymakers
- EE increasingly seen as resource, required and incentivized by states
- More utilities embracing EE DSM programs for customer satisfaction
Supply-Side vs. Demand-Side Resources

**SUPPLY**
- Large baseload plants (e.g., coal, nuclear, NGCC)
- Peaker plants (e.g., natural gas CT)
- Bilateral contracts and organized markets

**DEMAND**
- Control quantity of energy used at specific times
- Several kinds, numerous benefits
- Increasingly able to participate in markets

“Behind the meter/fence”
Smart Buildings Can Help Solve Grid Problems

The Duck Curve
Utility Execs Agree: Current models aren’t working

Figure 19: The future for current market models

<table>
<thead>
<tr>
<th>Current market models will serve us well into the future</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>64%</td>
<td>18%</td>
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<tr>
<th>Current market models are already broken and the need for change is already urgent</th>
<th>Disagree</th>
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<th>Agree</th>
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<tr>
<td></td>
<td>29%</td>
<td>27%</td>
<td>44%</td>
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<tr>
<th>Current market models won’t be sustainable and the need for change is becoming urgent</th>
<th>Disagree</th>
<th>Neutral</th>
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<td></td>
<td>16%</td>
<td>14%</td>
<td>70%</td>
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Rated on a scale of 1–5, where 1 = fully disagree; 2 = partially disagree; 3 = neither agree nor disagree; 4 = partially agree; 5 = fully agree.
Source: 14th PwC Global Power & Utilities Survey

70% say current market models won’t be sustainable and the need for change is becoming urgent.
What are DERs?
Distributed Energy Resources (can be defined various ways) generally includes:
- Distributed generation (DG) like solar rooftop panels, combined heat and power (CHP)
- EE
- Demand Response
- Storage

Source: Peter Kind, *Disruptive Challenges* (2013)
Toward A Focus on the Customer

- Think back to beginnings of utilities’ history: it was all about assets and commodities.
- Today, that is changing rapidly and moving toward value and services—but while the pace of change is quick, it’s only just begun.
- Many states are taking concrete steps to compensate and incentivize utilities to focus on value and services.

Source: Lawrence Berkeley National Lab
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Thank you