American Public Power Association

OpenADR
Powered by...
- for -
Publicly Owned Utilities
(POUs)

Dana Heitner | Harry Moren | Laura Schewel | David Schlosberg
OpenADR & DRAGON

Today’s Objective:
Convince you to join DRAGON, adopt OpenADR
Why Public Utilities?

- Serving 2,000 cities, 45 million people, 70% rural
- Non-profit, can be vertically integrated
- Overseen by council of governors or city councils
- Non-financial motivations - if cities want green, or not, POUs can do it!
- Lower average rates than investor owned utilities
The POU Future Demands Demand Response

**Austin Energy:**
- Emblematic of need for DR:
  - Rising peak load
  - Variable generation resources
  - Expensive spot markets for electricity
  - Hard to site new generation & transmission
- Targeting 700MW (23% of capacity) of demand side management by ‘20

**General POUss:**
- POUss have incentive to save energy
- For smaller utilities, expensive to invest in customized DR systems
Automated Demand Response (ADR) is Better

**FERC Average Residential Critical Peak Impacts by Rate Treatment**

<table>
<thead>
<tr>
<th>Time of Use</th>
<th>Critical Peak Fixed</th>
<th>Critical Peak Variable With Automated Controls</th>
</tr>
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<tbody>
<tr>
<td>Peak Load Reduction</td>
<td>4.1%</td>
<td>12.5%</td>
</tr>
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Automated Demand Response resulted in more and deeper load sheds

Automated Demand Response enables greater breath & depth of load responsiveness
What is OpenADR?

What is it?
• Open source demand response communications protocol
• Communicates between grid operator and building energy management system

What does it enable?
• Automated production of “negawatts” by consumers
• Enhanced grid reliability
• Deferral of infrastructure costs
• Energy use optimization

OpenADR

Generation Load
OpenADR: Flexibility & Momentum

Flexibility
- Empowers your customers
- Signaling flexibility

Momentum
- Controls companies are enabling
- Momentum with standards bodies
- Tested, piloted, in production

(Example OpenADR pilot participants)
OpenADR Will Save You Money

Direct Costs:
• Initial Investment
• Ongoing Maintenance

Indirect Costs:
• Switching Costs
• Avoided Costs
OpenADR & Aggregators

- OpenADR is aggregator-agnostic
- Aggregators can be your friend
- But friends can be expensive

Aggregators Pocket
$5 to $30
For every
$100
of Demand Response
Payments to Aggregators
Service and Support

- Free access to protocol & API
- Library of training modules and videos for utility *
- Flexibility, customer override
- Measurement & verification SDK*
- LEED point integration support*

OpenADR Apps

- DR Dashboard*
- CO₂ Calc*
- Dishwasher Cycle
- Fan Limit
- Light Dimming
- Datacenter HVAC*

* In development
Case Study: OpenADR & Seattle City Light

Lessons Learned:
• Successful program outside CA
• Facility implementation successful with education and planning
• Stakeholder education is essential
• Year-round benefits of ADR
• ADR best in well-tuned buildings
• Affirmed reliability

Event electricity reduction:

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<th></th>
<th>Best</th>
<th>Ave.</th>
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<tbody>
<tr>
<td>Winter</td>
<td>19%</td>
<td>14%</td>
</tr>
<tr>
<td>Summer</td>
<td>28%</td>
<td>16%</td>
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If POUs adopt then you can be the hub that lets our standard spread nationally. APPA has much to gain, the widest reach, and a national presence. Open source standardization of signaling in the grid is critical for our nation’s energy future.
Questions?