Agenda

- ADR Program Overview
- 2013-2014 Incentives
- 2.0A and 2.0B projects
- Case Studies
- OpenADR 2.0 impacts on project design
ADR Program Team

• Core Program management
  • Fred Yoo, PG&E

• Program Implementers

• Technical Advisor

• DRAS Administrator
AutoDR Program

- Pays incentive to help install controls that enable automation
- Incentives range from $200 to $400
- Pays up to 100% of the project cost
- Incentive is paid in two installments
- Provides technical assistance
Eligibility

- PG&E interval meter installed at the site
- Have an existing Utility service account with at least 12 months of billing and usage history
- Either already enrolled in one of qualifying DR programs or eligible to enroll
- Client must be 2.0 A or B certified
## Incentive Structure

<table>
<thead>
<tr>
<th>Technology Category</th>
<th>Incentive Rate ($/dispatchable kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated Demand Response</td>
<td>$200</td>
</tr>
<tr>
<td>Advanced Technology HVAC</td>
<td>$350</td>
</tr>
<tr>
<td>Advanced Technology Lighting</td>
<td>$400</td>
</tr>
</tbody>
</table>

- Incentives paid based on calculated kW peak load reduction
  - 1\(^{st}\) Payment: 60% after equipment is installed, inspected and tested
  - 2\(^{nd}\) Payment: up to 40% depending on event day performance relative to paid kW load reduction, after full DR season
Incentives Remaining for 2014

Total remaining incentives: $9,741,621

Note: Projects must be installed by October 31, 2014 to receive 2013-2014 incentives
### 2.0A or 2.0B Projects

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Project Type</th>
<th>2.0A or 2.0B Profile</th>
<th>MW</th>
<th>Incentive</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>Water Pumping</td>
<td>2.0A</td>
<td>9.25</td>
<td>$1,850,000</td>
<td>In Progress</td>
</tr>
<tr>
<td>Retail</td>
<td>HVAC and Lights</td>
<td>2.0A</td>
<td>4.287</td>
<td>$823,800</td>
<td>In Progress</td>
</tr>
<tr>
<td>Retail</td>
<td>HVAC</td>
<td>2.0A</td>
<td>2.003</td>
<td>$701,050</td>
<td>Installed</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Water Pumping</td>
<td>2.0B</td>
<td>2</td>
<td>$400,000</td>
<td>In Progress</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Water Pumping</td>
<td>2.0A</td>
<td>0.997</td>
<td>$199,400</td>
<td>Installed</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Water Pumping</td>
<td>2.0B</td>
<td>0.449</td>
<td>$89,800</td>
<td>In Progress</td>
</tr>
<tr>
<td>Retail</td>
<td>HVAC</td>
<td>2.0B</td>
<td>0.250</td>
<td>$50,000</td>
<td>In Progress</td>
</tr>
<tr>
<td>Commercial</td>
<td>HVAC</td>
<td>2.0A</td>
<td>0.2194</td>
<td>$77,350</td>
<td>In Progress</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Manufacturing</td>
<td>2.0A</td>
<td>0.21</td>
<td>$42,000</td>
<td>In Progress</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Water Pumping</td>
<td>2.0A</td>
<td>0.191</td>
<td>$38,200</td>
<td>Installed</td>
</tr>
<tr>
<td>Retail</td>
<td>HVAC</td>
<td>2.0A</td>
<td>0.163</td>
<td>$57,050</td>
<td>In Progress</td>
</tr>
</tbody>
</table>
The ADR Incentive Program makes it easy for customers to participate successfully in Demand Response Events.

The Automated Demand Response (ADR) Program provides incentives and technical assistance for customers investing in energy management controls that also enable demand response (DR).

**INCENTIVES**

<table>
<thead>
<tr>
<th>Technology Category</th>
<th>Incentive Rate ($ per kW of load shed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-Automated Demand Response</td>
<td>$125</td>
</tr>
<tr>
<td>Automated Demand Response</td>
<td>$200</td>
</tr>
<tr>
<td>Advanced Technology HVAC/R</td>
<td>$350</td>
</tr>
<tr>
<td>Advanced Technology Lighting</td>
<td>$400</td>
</tr>
</tbody>
</table>

ADR encourages customers to expand their energy management capabilities by participating in DR programs using automated electric controls and management strategies.
PG&E ADR PROGRAM: CASE STUDIES
CASE STUDY 1:

Retail Package HVAC Cycling

- Large Retail Chain
  - 30 stores throughout Northern California
  - On-site facility staff not available to perform DR

- kW Curtailment Strategy
  - 420 Roof-top HVAC units (RTUs) controlled
    - RTU fans remain on 100%
    - Compressors cycle on/off at 50% of baseline duty cycle
  - Curtailment kW is 20 – 30% of on-peak average
    - According to the CA Commercial End-Use Survey, cooling alone represents 52% of Retail on-peak load
CASE STUDY 1:
Retail Package HVAC Cycling

- PG&E Integrated Demand-Side Management (IDSM) installation incentives
  - IDSM = ADR plus Energy Efficiency (EE)
  - AutoDR enabling technology incentives: $567,000
    - 1,620 kW curtailment at **$350 per kW**
  - PG&E Commercial Catalog Rebates for Plug Load Sensors
    - Received rebates as part of separate retrofit project; qualified these 30 store for IDSM ADR funding

- Combined incentives are 90% of project cost
  - Cost to customer is about $60,000.
CASE STUDY 1:
Retail Package HVAC Cycling

- Ongoing DR program Benefits
  - Depend on the DR program enrollment:
    - AMP and CBP payments are based on the aggregator-customer bilateral contract
    - DBP payments are $0.50 per kWh
    - PDP benefit is avoidance of $1.20 per kWh event rate ($1.04 / kWh higher than typical on-peak kWh)
  - For the purposes of this case study, we’ll use the $1.04 PDP avoided cost figure.
- Ongoing EE benefits: $102,000 in annual kWh savings from improved RTU scheduling
## CASE STUDY 1:
### Retail Package HVAC Cycling

### Pre-Installation Project Financials

<table>
<thead>
<tr>
<th></th>
<th>Initial Customer Cost</th>
<th>Annual Scheduling Cost Savings</th>
<th>PDP Annual Avoided Cost</th>
<th>Total Annual Cost Savings</th>
<th>Payback (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on 1,620 kW pre-season DR estimate</td>
<td>$60,000</td>
<td>$102,438</td>
<td>$80,674</td>
<td>$183,112</td>
<td>3.9</td>
</tr>
</tbody>
</table>
CASE STUDY 1:
Retail Package HVAC Cycling

- Operational Success in DR events
  - ADR curtailment has been 18% above estimates to-date
  - extra $14,000 in annual cost savings
CASE STUDY 2:
Agricultural Water Pumping

- Auto-DR Measure
  - Turn off agricultural lift pumps
- Eligible equipment costs
  - Remote pump start/Auto-restart/Stop Control
  - Pumpsite Automation Controller (PAC)
CASE STUDY 2: Agricultural Water Pumping

- Project Motivation
  - Reduce labor during DR events
  - Additional revenue for the farmer
  - Increased controls to manage electricity and water costs
  - Reduced costs through central tool to monitor irrigation information and automate pump operations year round
CASE STUDY 2:

Agricultural Water Pumping

- 10 Projects
- 5.15 MW Approved
- $1,030,000 incentive dollars reserved
- The average project load curtailment is 350 kW and $70,000 in ADR incentives
Percentage of Project Cost Covered by ADR Incentive

- Average: 75%

- Ag Project: Various percentages ranging from 0% to 100%
OPENADR 2.0 IMPACTS ON PROJECT DESIGN
Simplified Measure Qualification

- Technology vendors have clear guidelines on communication standard between utility and client
- OpenADR creates the technical communication guidelines
- OpenADR creates the testing framework
- Utility knows each client will meet minimum communication expectations
- Vendors know their equipment is eligible for a variety of programs across the country
Stranded Asset

ISO or Utility

Aggregator/Vendor

Commercial or Residential

OpenADR 2.0 link

ISO or Utility

Commercial or Residential

OpenADR 2.0 link
Thank you

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