

Lessons Learned from the Trenches: Enhancements to California Utility AutoDR Programs



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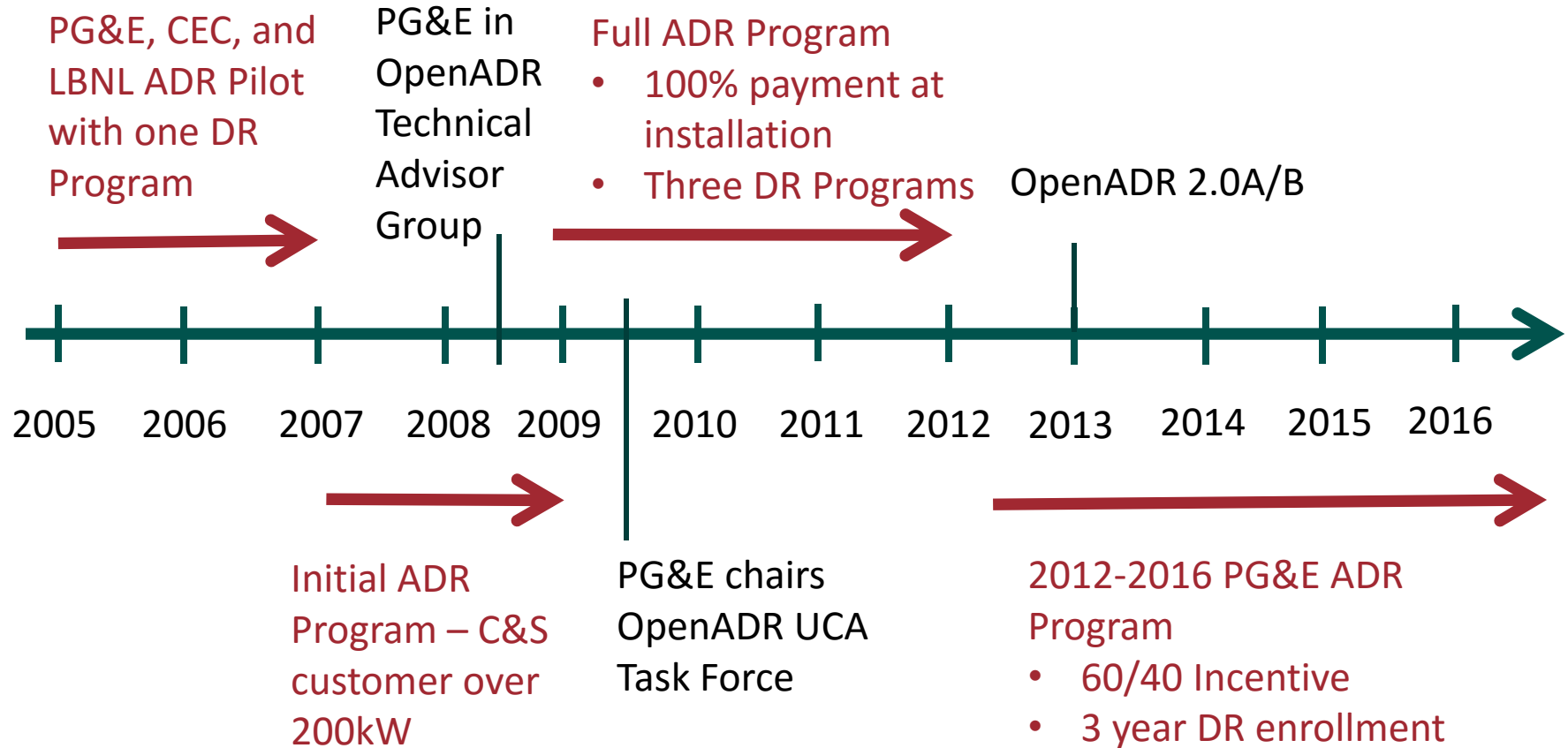
PLMA Spring 2016 Conference, San Francisco, CA

Pacific Gas and Electric Company (PG&E)

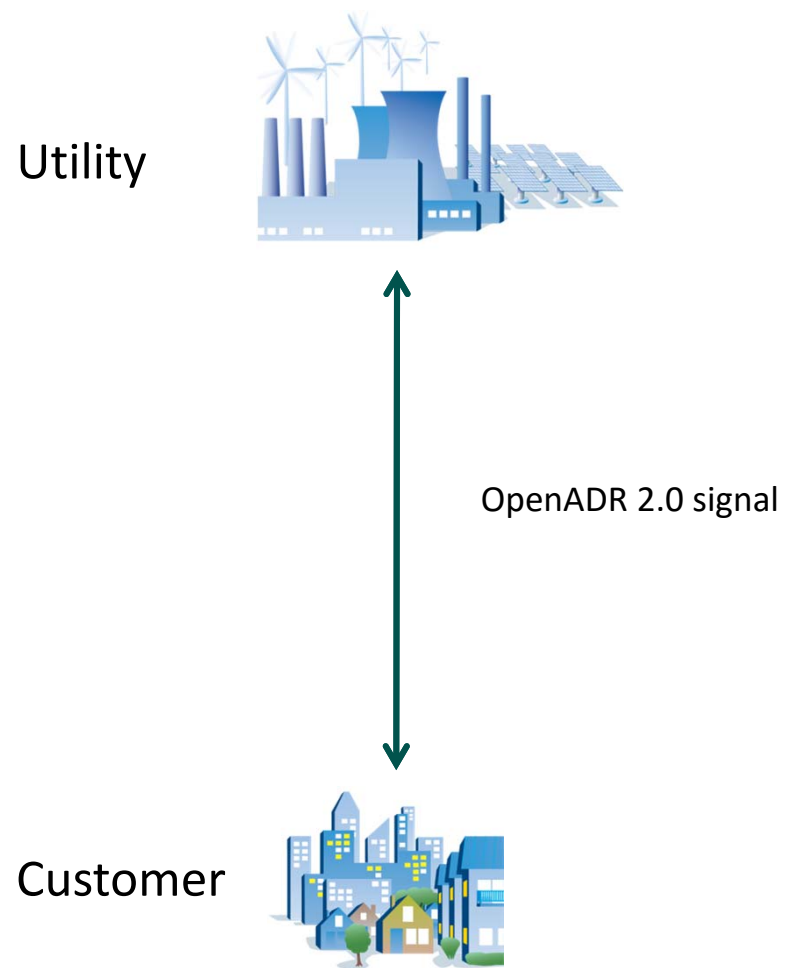
- Incorporated in California in 1905
- Provides natural gas and electric service to about 16 million people
- 70,000 square mile service area
- Around 20,000 employees
- Based in San Francisco



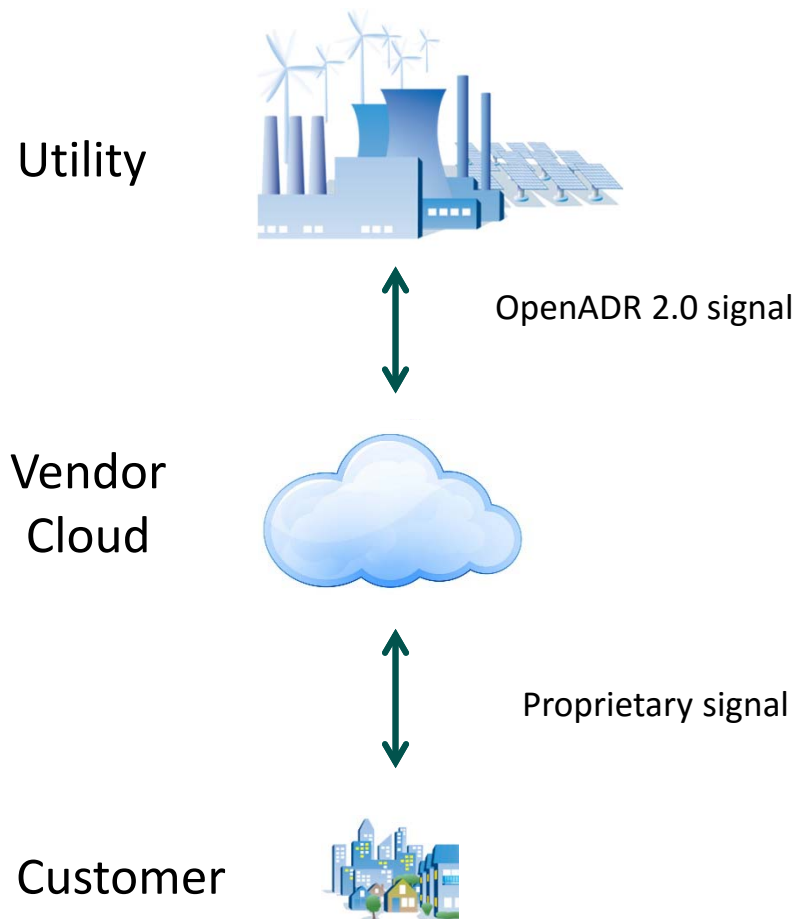
History of PG&E ADR Program



Stranded Asset Management




Stranded Asset Management



OpenADR 2.0 Implementation

- Standard protocol is helpful
- Document unique characteristics of protocol implementation




PG&E AUTOMATED DEMAND RESPONSE PROGRAM

To participate in PG&E's Automated Demand Response (ADR) Program, you will need to acquire an OpenADR 2.0A or 2.0B-Certified Virtual End Node (VEN) device. A list of OpenADR-Certified products is available at the OpenADR Alliance website: <http://products.openadr.org>.

The VEN device can connect to the PG&E Demand Response Automation Server (DRAS) to receive and respond to Demand Response event information. The VEN acts as a gateway between PG&E and a facility or equipment control system (sometimes the VEN and the control system are one and the same). The VEN will poll the PG&E DRAS for event information and communicate that information to the customer control system:

DRAS Connection Guide



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graph LR; PG&E[PG&E Demand Response Automation Server] <--> VEN[OpenADR Virtual End Node (VEN) Client Device]; VEN --> CCS[Customer Control System];
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Figure 1: OpenADR communication chain

VEN setup involves four steps:

1. **Connect the VEN to the customer control system.** All VENs are different – some may connect using dry contacts, while others may be software-based solutions. Follow the manufacturer's instructions to

Communication Suggestions

- Develop a touch point with the customer
 - Strengthen utility-customer relationship
- Utilize a dynamic form to prevent reoccurrence of issues



Storage & Renewables		
Snapback Concerns		
Locational Dispatch		
VEN Information		
Measure Persistence	Where is the VEN physically located?	Site & who owns it?
	Will ADR Signal pass from DRAS Direct to VEN?	Yes/no

Communicate, communicate, communicate

- Multiple parties are continuously interacting:
Utility Program Manager,
M&V Auditor, Customer, Vendor
- Confusion can easily ensue



- **Ensure communications paths and workflows are understood in advance:**
 - Documentation submission, review, approval, & revision processes
 - Tracking progress of incentive applications
- **Need absolute clarity of M&V rules:**
 - Seasonal baseline methodologies
 - Different methods per building type
 - On-site testing procedures, equipment requirements
 - Detailed documentation with specific examples
- Once volume of applications warrants, use web-based library to track workflow of form submissions, reviews, approvals, & payments

Need Clarity of DR Program Implementations

- Customers & Vendors need to know exactly what to expect
- Non-specific, implied DR server interaction details leads to confusion w.r.t. timing & interpretation of DR messages
- **Use OpenADR's DR Program Guide as a starting point**
- “Cookbook” of DR program templates:
 - Critical Peak Pricing
 - Capacity Bidding Program
 - Thermostat Direct Load Control
 - Fast DR / Ancillary Services
 - Residential EV Charging
 - Public Station EV Charging
 - Dist. Energy Resources



Questions?