PG&E AutoDR Program

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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

Technology Category	Incentive Rate ($/dispatchable kW)
Automated Demand Response	$200
Advanced Technology HVAC	$350
Advanced Technology Lighting	$400

- Incentives paid based on calculated kW peak load reduction
  - 1st Payment: 60% after equipment is installed, inspected and tested
  - 2nd 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

Customer Type	Project Type	2.0A or 2.0B Profile	MW	Incentive	Project Status
Industrial	Water Pumping	2.0A	9.25	$1,850,000	In Progress
Retail	HVAC and Lights	2.0A	4.287	$ 823,800	In Progress
Retail	HVAC	2.0A	2.003	$ 701,050	Installed
Agriculture	Water Pumping	2.0B	2	$ 400,000	In Progress
Agriculture	Water Pumping	2.0A	0.997	$ 199,400	Installed
Agriculture	Water Pumping	2.0B	0.449	$ 89,800	In Progress
Retail	HVAC	2.0B	0.250	$ 50,000	In Progress
Commercial	HVAC	2.0A	0.2194	$ 77,350	In Progress
Agriculture	Manufacturing	2.0A	0.21	$ 42,000	In Progress
Agriculture	Water Pumping	2.0A	0.191	$ 38,200	Installed
Retail	HVAC	2.0A	0.163	$ 57,050	In Progress

Program Website

For up-to-date program information visit: www.pge-adr.com

ADR Automated Demand Response Program

A program of: Pacific Gas and Electric Company

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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

Technology Category	Incentive Rate *($ per kW of load shed)*
Semi-Automated Demand Response	$125
Automated Demand Response	$200
Advanced Technology HVAC/R	$350
Advanced Technology Lighting	$400

ADR encourages customers to expand their energy management capabilities by participating in DR programs using automated electric controls and management strategies.

ACHIEVEMENTS

65 MW Peak Load Reduction Goal

18.35 MW

7 MW Advanced Technology Goal

2.84 MW

INCENTIVES AVAILABLE

Peak Day Pricing Plan

$4,667,333 available

Aggregator Managed Portfolio

$1,010,771 available

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

	Initial Customer Cost	Annual Scheduling Cost Savings	PDP Annual Avoided Cost	Total Annual Cost Savings	Payback (months)
Based on 1,620 kW pre-season DR estimate	$60,000	$102,438	$80,674	$183,112	3.9

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

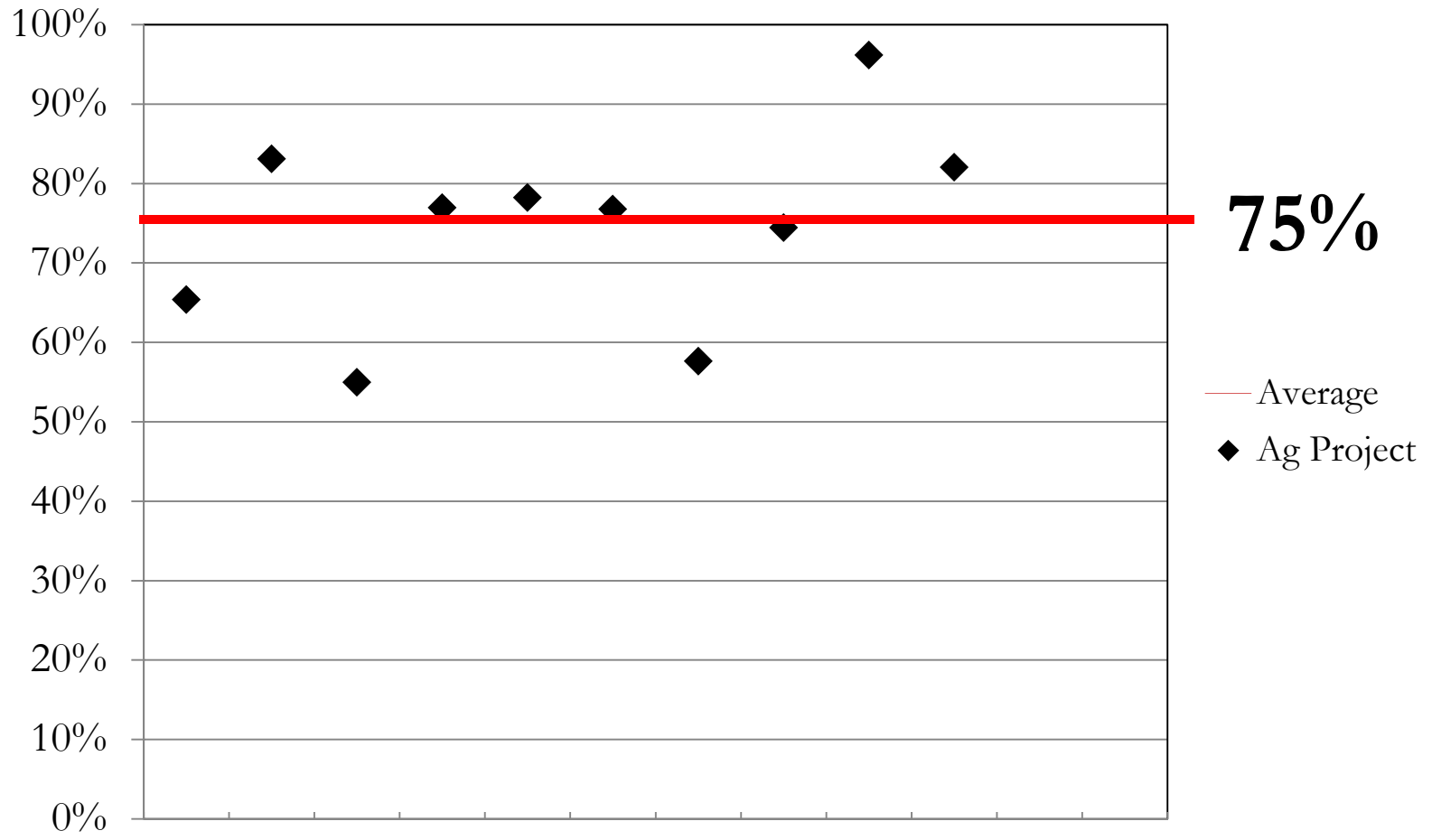
- Project Motivation
  - Reduce labor during DR events
  - Additional revenue for the farmer
  - Increased controls to manage electricity and water costs
  - Reduced costs through central tool to monitor irrigation information and automate pump operations year round

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



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

OpenADR 2.0 link

Aggregator/
Vendor

OpenADR 2.0 link

Commercial or Residential

ISO or Utility

OpenADR 2.0 link

Commercial or Residential

Thank you

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