



Experiences from Utility Program Using OpenADR Systems

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Program Experiences

- Austin Energy's C&I Load Cooperative Program
- NV Energy's PowerShift Program

Austin Energy's Load Cooperative Program

Load Cooperative Program Overview

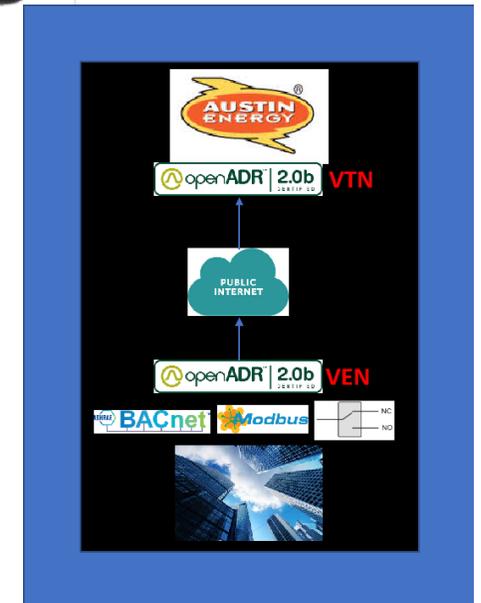
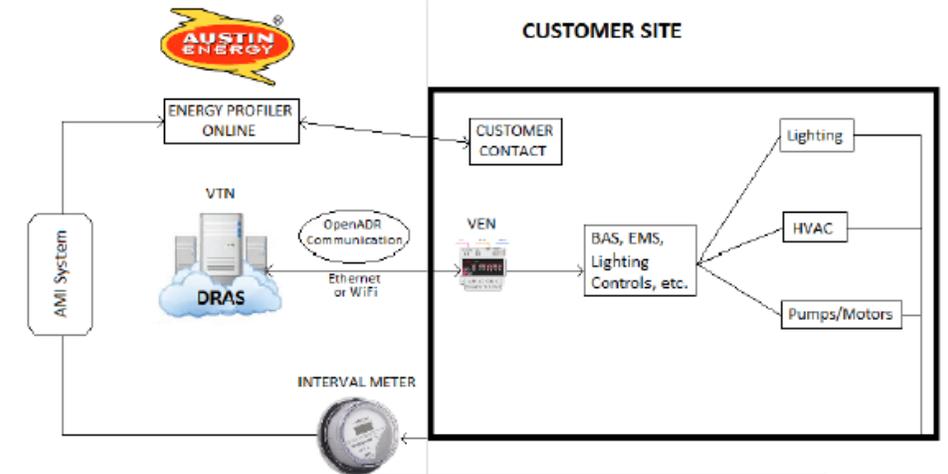
- Load Cooperative Program: offered to all C&I customers with demand charges
- Utilizes Automated Demand Response (ADR) plus manual and semi-automated methods.
- Fully voluntary program with no capacity commitment
 - Pay for performance only (\$/kWh)
 - No implications for non-participation or partial event participation
- AE does not provide incentives for ADR enablement.

Program Characteristics

Features	Description
Event trigger	AE system peak
Effective Months	June through September
DR event window	4 p.m. to 8 p.m. (excluding weekends or holidays)
Notification	1-hour by email
Max. event duration	3 hours
Frequency	Three consecutive days max.
Max. number of events	15
Incentives	\$1.45/kWh for energy reduced during event

Automated Demand Response (ADR)

- EPRI DRAS hosted on Amazon Web Services
- Customers provided a ADR Program Technical Guide; lists tested VENs.
- EPO customer portal to view usage
- Customers responsible for curtailment plans/strategies
- No customer incentives for ADR enablement
- AE's third-party DR consultant: helps with site assessments and develops performance scorecards.



Source: Automated Demand Response Technical Guide, Austin Energy.

OpenADR Requirements in Building Codes

OpenADR Requirements in City of Austin building codes (starting late 2016) for newly constructed buildings or facilities.

Excerpts from the code:

- ***“C403.2.19 Demand response. When Direct Digital Control is utilized, the controls shall have the capability to remotely setup the operating cooling temperature set point in all non-critical zones in response to signals, based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of change for the temperature setup.”***
- ***“C405.2.6 Demand response. For all buildings having central control of a) lighting levels and/or b) the ability to turn on and off individual lamps, the controls shall have the capability to reduce lighting level in response to signals, based on OpenADR 2.0 or higher protocols, from a centralized contact or software point. Controls may be programmed to provide either an automatic or an operator adjustable degree of lighting reduction.”***

Program Experience

- Exponential growth in ADR program over past three years (3 sites to around 65 sites presently enrolled)
- Fulfilled peak reduction target in summer 2018
- Primary contributors: school districts, city-owned buildings, retail
- Attempting to move customers from manual and semi-automated methods to ADR
- Ongoing education and outreach regarding building code requirements
- Scaling up challenges using existing infrastructure (EPRI DRAS; uses SSL)
- Third-party outsourcing possibilities in future
- Future Fast DR considerations (less notification, shorter event duration)

NV Energy's PowerShift Program

Program Characteristics

Features	Description
	Integrated Demand Side Management (IDSM) offer; uses OpenADR.
Effective Months	June through September
DR event window	1-7 p.m.
Notification	Day ahead by phone, text, or email
Event duration	2 hours (typically between 3-5 p.m.)
Frequency	Max. 2 events per week
Max. event hours	30
Participation requirements	Minimum of 75% of events, or 15 events per year.

Thermostats for SMB Customers

- Direct Install Thermostat Program uses Pelican Wireless thermostats
- Customers receive free equipment plus installation
- Facility Requirements
 - Internet access
- Potential targets
 - Office buildings
 - Restaurants/bars
 - Non-profits/religious buildings



Rooftop Packaged HVAC Control

- Control of rooftop packaged units using Encycle's demand-limiting controllers
 - Swarm Energy Management: RTUs networked to share real-time information for synchronization and optimization of operations.
- Facilities requirements for participation:
 - Minimum five rooftop packaged HVAC units (greater than 10 tons each); overall facility average greater than 20-tons.
- Customers receive free equipment plus installation
- Potential targets:
 - Warehouses and distribution centers
 - Big box retail (Walmart, RC Willey)
 - Malls
- Future installs with Encycle's thermostat-based offer.

Encycle's Demand Limiting Controllers



Demand Response Gateway

- Auto-DR enablement with customer-owned equipment/universal gateway (supplied by Universal Devices)
- Sites require >50 kW aggregated load
- Customer incentives:
 - Free universal gateway
 - Setup reimbursement: Up to \$30/kW
- Demand reduction incentive:
 - \$1.95/kW if reduction > 10 kW
 - \$1.75/kW if reduction < 10 kW
- Potential targets:
 - National accounts (Target, Macy's)
 - Medium-sized retail customers with BMS (Walgreens, Chipotle)
 - Large locally-managed accounts (casinos)

Universal Devices Gateway



Program Experiences

- NV Energy has used OpenADR based systems since 2013/2014 (OpenADR 1.0)
- Present setup consists of four components:
 - Production OpenADR 1.0 Server – part of NVE DRMS, in the device manager module; continue to operate this summer to dispatch Encycle devices; revisit migration to OpenADR 2.0 after summer.
 - Test OpenADR 2.0a Server – independent server hosted by NVE’s engineering services contractor; dispatch Target stores and Universal Devices gateway customers this summer; plans to migrate from test server to production server integrated with DRMS after summer.
 - Test OpenADR 2.0b Server - independent server hosted by NVE’s engineering services contractor; expect to use this to test DR dispatch to commercial battery using Universal Devices gateway; plans to migrate to production after testing.
 - Production OpenADR 2.0b Server – new functionality added last year to NVE DRMS; operating this summer to dispatch all Pelican wireless thermostats; server supports Pelican 2.0a VEN.



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