

PowerDirect® Automated Demand Response Pilot Program and Demand Response Overview

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Powering forward. Together.



What is Demand Response?

- Demand Response is a change in customer electrical load in response to a price signal, load reduction (or increase) signal, incentive, or request (voluntary action)
- Two types of Demand Response
 - Behavioral
 - Dispatchable
- Two ways to create demand response in customer facilities
 - Manual actions
 - Automated actions

What is Automated Demand Response?

- Automated Demand Response (AutoDR) is based on OpenADR, an open standards communications infrastructure
- AutoDR interfaces with energy control systems to manage and curtail pre-determined loads automatically and in real-time, in response to price, system resource needs, and reliability triggers

Key Attributes of the New DR

- Today's demand response platform is integrated into many of SMUD current business systems
- Today's automated demand response capability is integrated into customer systems

Please note that SMUD does not endorse any particular product or manufacturer. The following are provided as examples of AutoDR client technology.

PowerDirect® AutoDR Pilot Program

Program Design Goals

- Provide a reliable, predictable and sustainable load reduction
- Offer ease of compliance
- Encourage maximum performance
- Provide customer choice with four program options to meet customer and SMUD business needs

Basis for the PowerDirect® AutoDR program

- Economic – Considered along with SMUD supply-side resources
- Reliability – Planned as required into the SMUD resource portfolio

Program Features

- Designed to accommodate shorter, more frequent dispatch in addition to longer duration events up to four hours
- Automated notification, dispatch, and settlement
- Voluntary customer participation
- Performance bands for capacity-contract based programs

Program Elements

Features

- Customer choice with four program options
- Automated notification, dispatch, and settlement
- Voluntary customer participation
- Performance bands for contract-based programs
- No penalties or liquidated damages for underperformance
- Payment based on capacity and performance

Incentives

- Technology Incentive of up to \$125/kW of enabled AutoDR or 100% of AutoDR project cost
 - \$50/kW at project completion
 - \$75/kW at testing and verification of demand reduction
 - Work must be complete and tested by May 31st, 2014.(Extensions may be considered)
- Technical Assistance provided by SMUD at no charge to customer
 - Services may include:
 - 1) Technical assessment
 - 2) Technical Coordination
 - 3) Customer Set-up and Training
- Energy Information System provided to participants
 - Energy Profiler Online

Dispatch Criteria

2014 Pilot Program

- Planned for customers to participate in at least 12 events, varying in notification from day of, to day ahead, and 1 to 4 hours in duration. Short duration events will also be tested more frequently than 1/day.

Availability

- Weekdays, June – September, 2 pm – 6 pm

Event Notification and Duration

- Event Duration: 30 minutes to 4 hours - 1 hour minimum event duration for 2013 pilot program
- Day-of and Day-Ahead
 - Day-of Notification: Minimum of 30 minutes to 2 hours

Frequency of use

- Plan for a minimum of 8 to 12 dispatches per season
- Maximum number of dispatches per season for event durations of over 2 hours is 12, as determined by program option. (Exception is the Voluntary Load Reduction Program option.)
- Limited to a maximum of 3 consecutive days of event durations over two hours in a 14 day period
- No limit on consecutive day dispatches of 2 hours or less in duration

Program Description

Firm Load Reduction Program

- Firm minimum load level (FLL) commitment – 50 kW minimum load reduction, 2 consecutive hour duration
- Baseline for performance and payment
- Capacity + energy payment
 - \$2.30 kW/month, 4 summer months, with a 1 year commitment
 - \$120/MWh for energy reduction from baseline
- Availability: June - September, 2 pm – 6 pm
- Performance: No penalties or liquidated damages. Must perform to at least FLL each hour for energy payment.
- Opt-out: 1 opt-out forfeits the capacity payment for the month it occurs. 2 opt-outs at any time forfeits the capacity payment for the year

Program Description

Minimum Dependable Load Reduction (MinDLR) Program

- Minimum load reduction commitment – 50 kW minimum load reduction, 2 hour consecutive duration
- Baseline for performance and payment
- Capacity + energy payment
 - \$2.30 kW/month, 4 summer months, with a 1 year commitment
 - \$120/MWh for energy reduction from baseline
- Availability: June - September, 2 pm – 6 pm
- Performance: No penalties or liquidated damages. Must perform at 50% to 150% of MinDLR each hour for payment.
- Opt-out: 1 opt-out forfeits the capacity payment for the month it occurs. 2 opt-outs at any time forfeits the capacity payment for the year

Program Description

Demand Response Peak Pricing Program

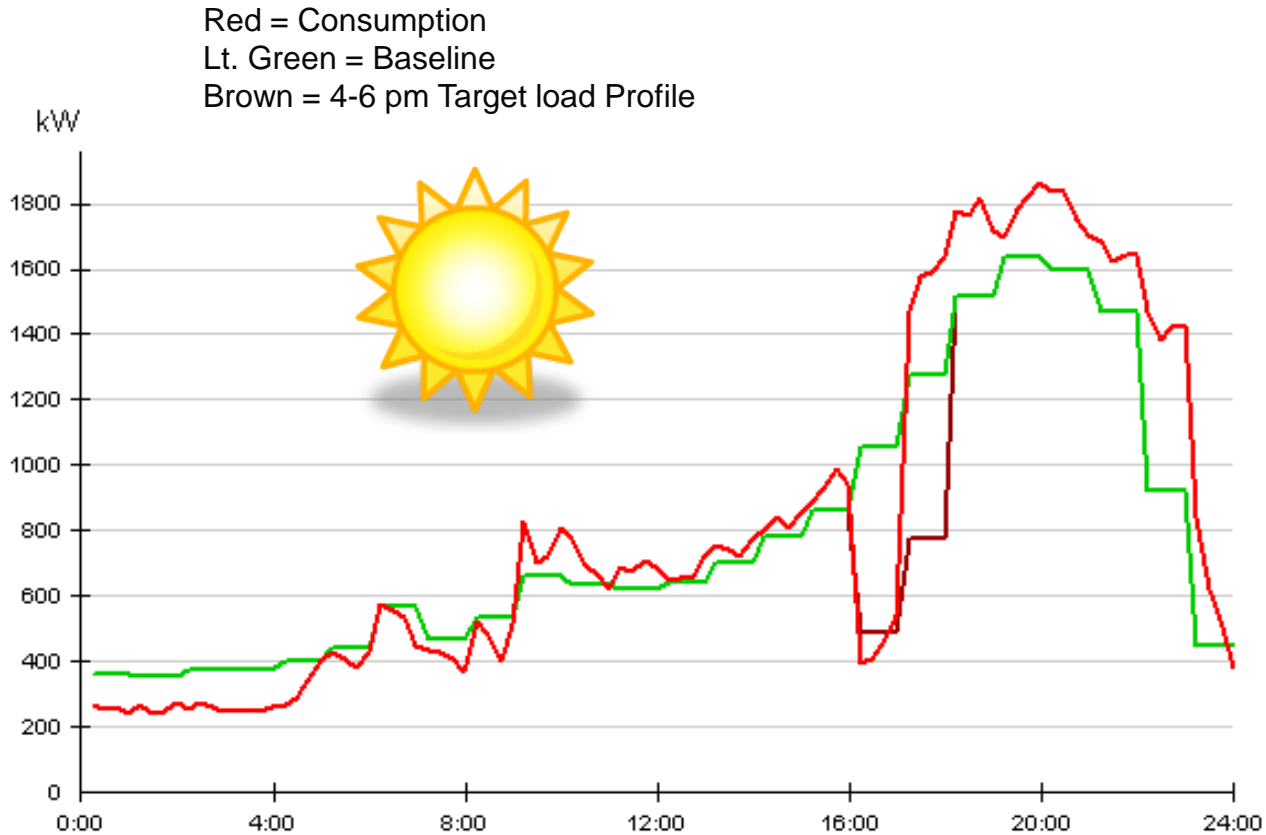
- Proposed tariff structure utilizes a super-peak increment (adder) and a off-peak decrement (discount) applied to the existing TOU rates GS TOU-1, GS TOU-2, and GS TOU-3.
- Peak Pricing based on modeling of customer impacts
 - Super Peak Price Adder: +\$ 0.50 per kWh
 - Off-peak price adjustment: - \$0.02 per kWh
- Customer savings is dependent on avoiding electrical consumption during high price (DRP) event periods and managing their off-peak energy use to maximize the benefits.
- Super peak energy use during DRP event days will be subject to the DRP “adder” and all off peak energy for the calendar month (or billing cycle - TBD) will be subject to the “discount”. Customers receive the off-peak energy discount June - September independent of the number of DRP events called during this period.
- Customer/participants may incur a credit or debit per month (June – September) depending on their energy consumption patterns and response on DRP event days
- Availability: June – September 2 - 6 pm

Program Description

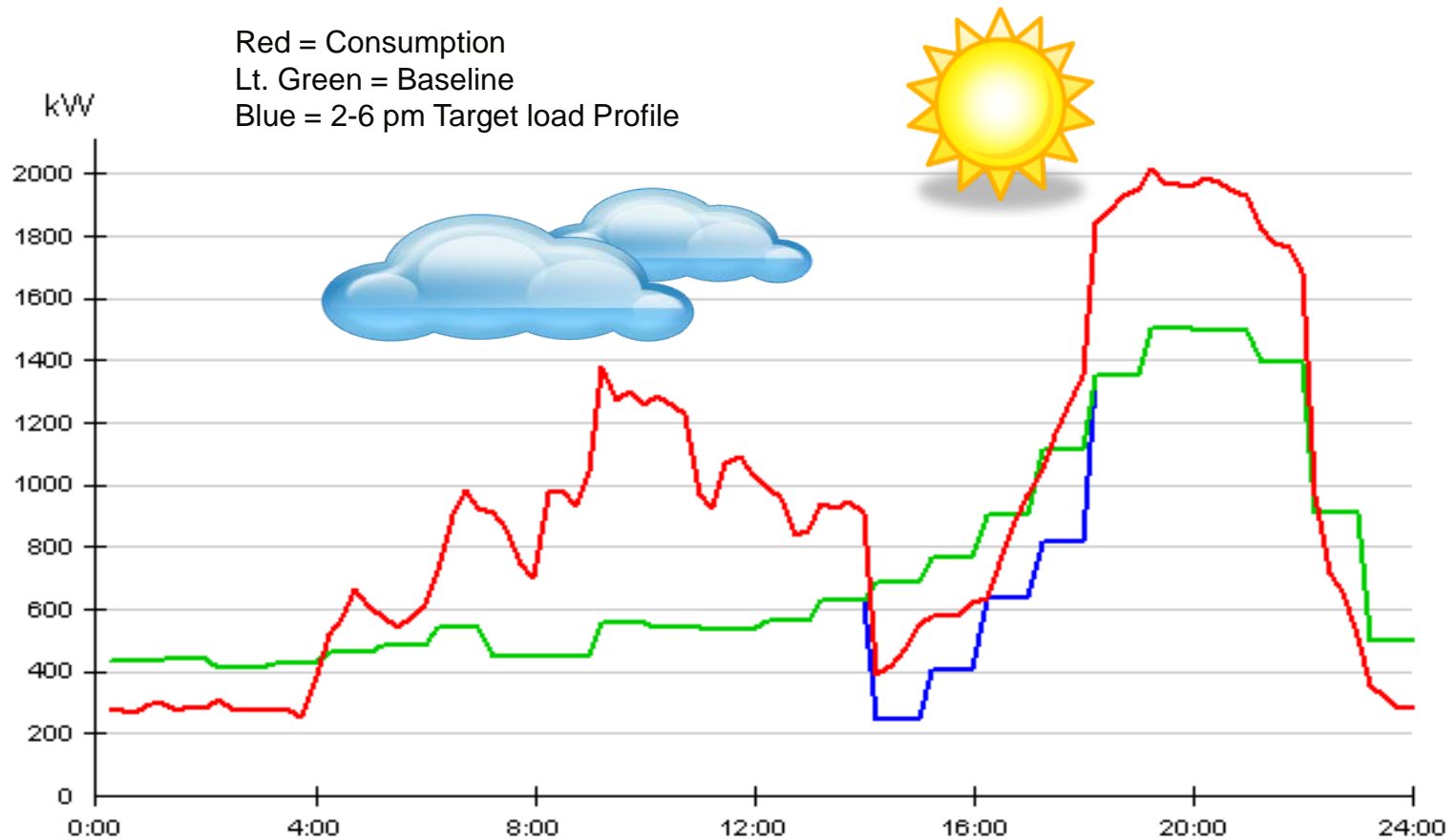
Voluntary Load Reduction Program

- No minimum load reduction commitment
- Baseline for performance and payment
 - Performance and settlement is based hourly energy delivery from the baseline, and is a “pay for what you get” basis where the participant is not contractually bound to a specific energy delivery or capacity reduction target.
- Energy Payment of \$110 MWh
- No capacity payment
- No penalties or liquidated damages
- It is expected that this program option will be the “learning role” and that customers can start in this program and then migrate to other higher value options as they gain experience with AutoDR operations

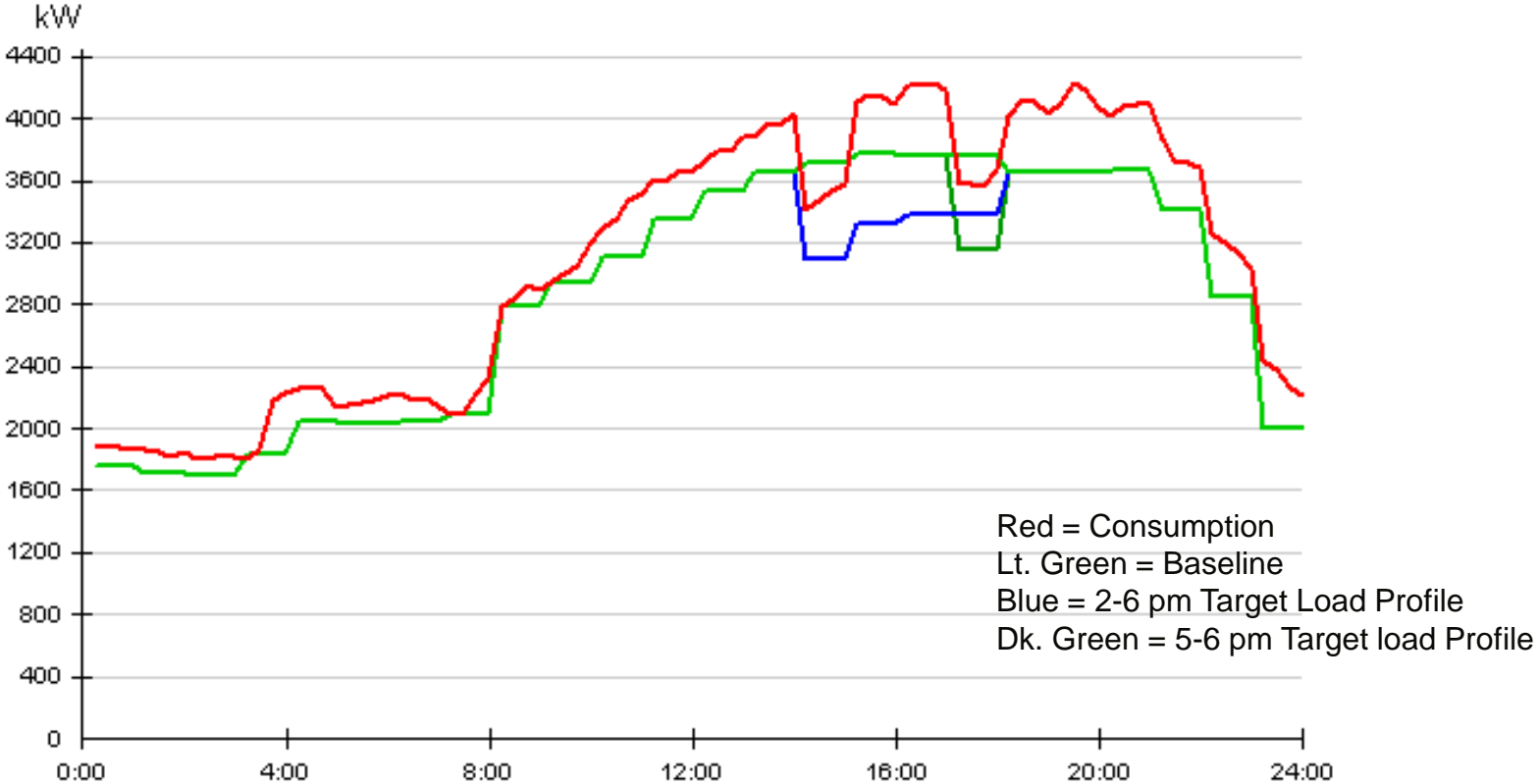
Typical PowerDirect® AutoDR Event Day Load Profile – (Multiple locations with PV)



Not-so-typical PowerDirect® AutoDR Event Day Load Profile – (Multiple locations with PV)



PowerDirect® AutoDR - First Ever 2 Events/1 Day Load Profile – Multiple sites



DR – Meeting Needs and Providing Solutions

Needs

- Resource Adequacy
- Reserves
 - Non-Spin Reserve
 - Spinning Reserves
- Regulation
- Renewable Firming Resource
- Call Options
- Load Reduction
- Location/Substation/Feeder/Transformer Options for load growth, EV and renewable integration
- Transmission/Distribution Investment Alternative
- BANC

Solutions – Menu Approach

- AutoDR
- Pricing: TOU and CPP
- Thermostat Programs
- Direct Load Control
- Weather Independent Solutions
- Storage (Thermal/Electrical/Other)
- Adjustable Customer Load (Up/Down)
- Special Contracts
- Voluntary Emergency Curtailment (VECP)
- BANC Resources

Contact Information

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