# PDR Energy Baseline Alternative

**Proposal for Discussion**
**October 27, 2015**

# Update Since Last Meeting

- Since the October 12$^{th}$ Working Group Meeting Stem, Solar City, AMS and CESA have had over a half-dozen meetings to discuss adjustments to the CAISO's proposed methods for estimating generation output used for retial purposes.

- We concluded that the CAISO's proposed option titled "using a baseline" that calculates a $Gt_{adjusted}$ value is the most viable option if we must move forward quickly.

- Similar to the CAISO's $Gt_{adjusted}$ construct, we propose establishing a "typical-usage level" ($G_{TYPICAL}$) based on electric output using (G) metered quantities during non-dispatch days.

- We recommend moving forward with a $Gt_{adjusted}$ calculation, while also continuing to discuss broader issues around dual-use in Phase II of the CAISO's ESDER Initiative.

# Background | Why do we need a change?

- In its recent Local Capacity Resource Procurement, SCE signed PPAs for 135 of Demand Response Energy Storage (DRES) Resources - 85 MW with Stem, 50 MW with AMS.

- Projects are being installed now, with testing occurring in the second half of 2015 and commercial operation dates of 10/1/2016.

- AMS contracts require use of an energy baseline unless there is a CAISO approved alternative.

- Resources are designed to be dispatched often, making use of the PDR baseline / collecting 10 days of accurate load data on non-event days could be challenging during certain times of the year.

# Alternative Baseline| Use Case

- **Location:** Behind-the-Meter C&I installation

- **Product:** Load drop to an IOU ~100 times a year using DR and/or battery storage

- **Value Streams:**

  - **Wholesale:** Contractual dispatches by IOU

  - **Retail:** Energy arbitrage, demand charge management, retail demand response programs

# Alternative Baseline| Proposal Overview

*Use the battery meter to directly measure/settle contractual dispatches; with an adjustment calculating out typical retail use.*

- Similar to the CAISO's $Gt_{adjusted}$ construct, establish a "typical-usage level" ($G_{TYPICAL}$) based on electric output using (G) metered quantities during non-dispatch days.

- Days would be selected by conducting a look back of comparable, non-dispatch days (similar to the CAISO's existing 10-in-10 in 45 baseline methodology for loads).

- **Scenario A:** Similar to the PDR baseline methodology, the first 10 non-event similar day-type days are selected. A non-event day is a day in which no hour contains a PDR dispatch. A profile is created by averaging 5-minute data to the hour and then over the 10 days. Performance (P) during each interval (t) during the PDR call is therefore: $P = -(G - G_{TYPICAL})$.

- **Scenario B:** If 10 non-event days cannot be found within a look-back window, then the resource is deemed to be a full-time market participant and $G_{TYPICAL} = 0$ and the resource receives credit for the full generation value during the event duration (standard proposed PDR rules for MGO).

# MGO Hour-Specific Adjustment Method

*Average of 10 non-event days over past 45 days*
*Sept 22, 2014 Dispatch, 10 Prior Workdays for Adjustment Calculation*

**Performance with 10-day Adjustment on MGO**
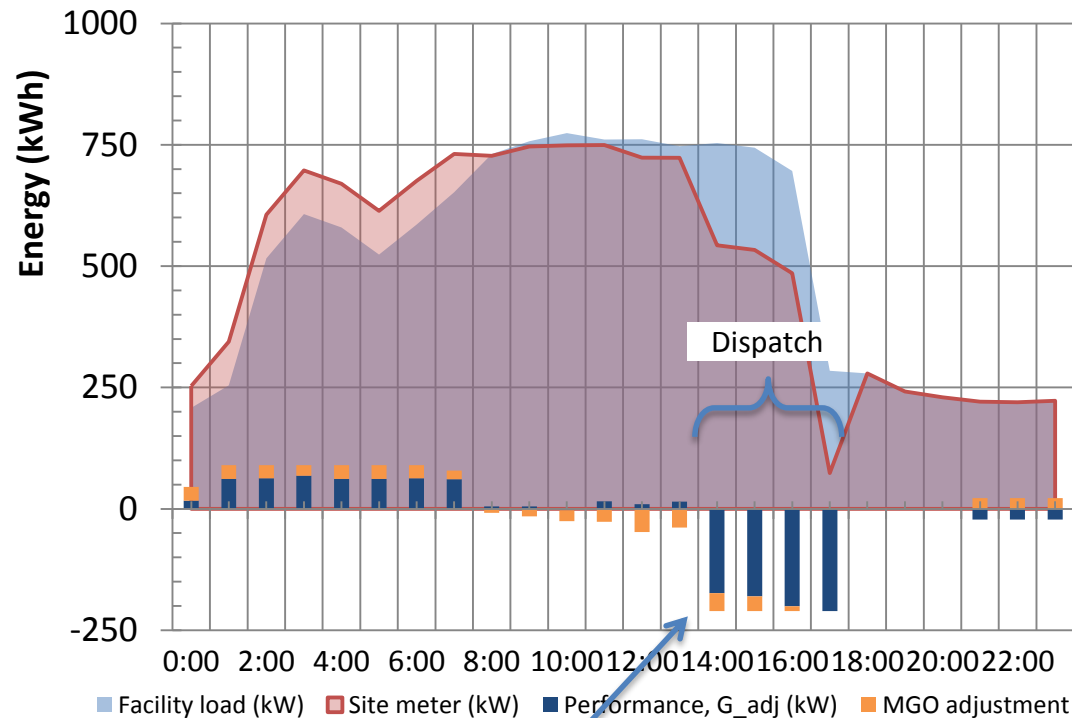


18% adjustment

# Measurements at HE 15:00 in kW

| Meter | 9/8 | 9/9 | 9/10 | 9/11 | 9/12 |
|-------|------|------|------|------|------|
| N | 723 kW | 723 kW | 723 kW | 719 kW | 723 kW |
| G | -28 kW | -28 kW | -15 kW | -8 kW | -27 kW |
| L | 751 kW | 751 kW | 738 kW | 727 kW | 751 kW |

| Meter | 9/15 | 9/16 | 9/17 | 9/18 | 9/19 |
|-------|------|------|------|------|------|
| N | 723 kW | 723 kW | 723 kW | 723 kW | 723 kW |
| G | -127 kW | -66 kW | -50 kW | -21 kW | 0 kW |
| L | 851 kW | 789 kW | 773 kW | 743 kW | 700 kW |

| Meter | Dispatch Day: 9/22 |
|-------|--------------------|
| N | 543 kW |
| G | -211 kW |
| G_typical | -37 kW |
| L | 754 kW |
| P = -(G - G_typical) | 174 kW |

METER CONFIGURATION **B**
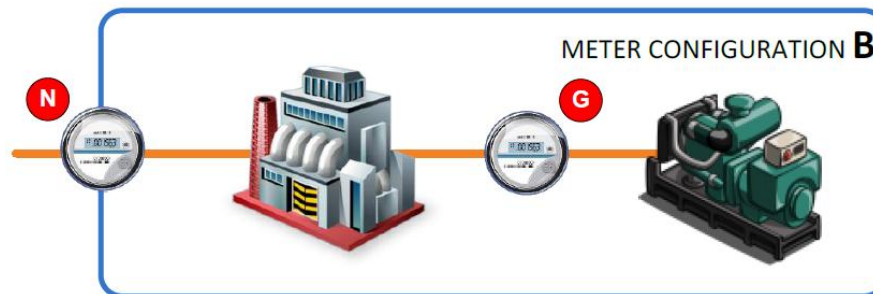
# Alternative Baseline | Likely Dispatch

## Net Benefits Test Prices ($/MWh) and Workdays with LMP Above On Peak Price

| | Oct-14 | Nov-14 | Dec-14 | Jan-15 | Feb-15 | Mar-15 | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| on peak | 36.49 | 34.93 | 79.92 | 56.98 | 51.73 | 34.31 | 34.52 | 33.48 | 36.95 | 32.02 | 35.29 | 38.3 |
| off peak | 37.22 | 35.52 | 71.53 | 57.54 | 54.06 | 35.4 | 34.79 | 33.97 | 37.59 | 32.4 | 36.04 | 39.15 |
| Dispatch Days | 23 | 20 | 0 | 0 | 0 | 21 | 22 | 11 | | | | |

| | Oct-13 | Nov-13 | Dec-13 | Jan-14 | Feb-14 | Mar-14 | Apr-14 | May-14 | Jun-14 | Jul-14 | Aug-14 | Sep-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| on peak | 52.4 | 50.15 | 42.8 | 56.63 | 65.57 | 79.43 | 71.51 | 65.35 | 56.08 | 55.57 | 62.97 | 58.45 |
| off peak | 56.16 | 51.62 | 43.54 | 57.42 | 66.23 | 80.26 | 72.79 | 67.86 | 61.95 | 64.09 | 64.38 | 64.21 |
| Dispatch Days | 1 | 4 | 22 | 8 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

| | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| on peak | 31.87 | 39.44 | 40.53 | 37.25 | 37.18 | 38.05 | 41.63 | 45.93 | 48.6 | 47.79 | 44.64 | 41.35 |
| off peak | 32.13 | 39.38 | 41.14 | 38.06 | 37.98 | 39.23 | 42.66 | 48.21 | 49.9 | 51.46 | 48.22 | 42.19 |
| Dispatch Days | 23 | 15 | 12 | 23 | 20 | 21 | 22 | 13 | 6 | 8 | 9 | 16 |

# Additional Slides
# (If Needed)

# Most Recent 10 Days without Dispatch

*February 17-28, 2014: one week has 4 days of peak shaving*
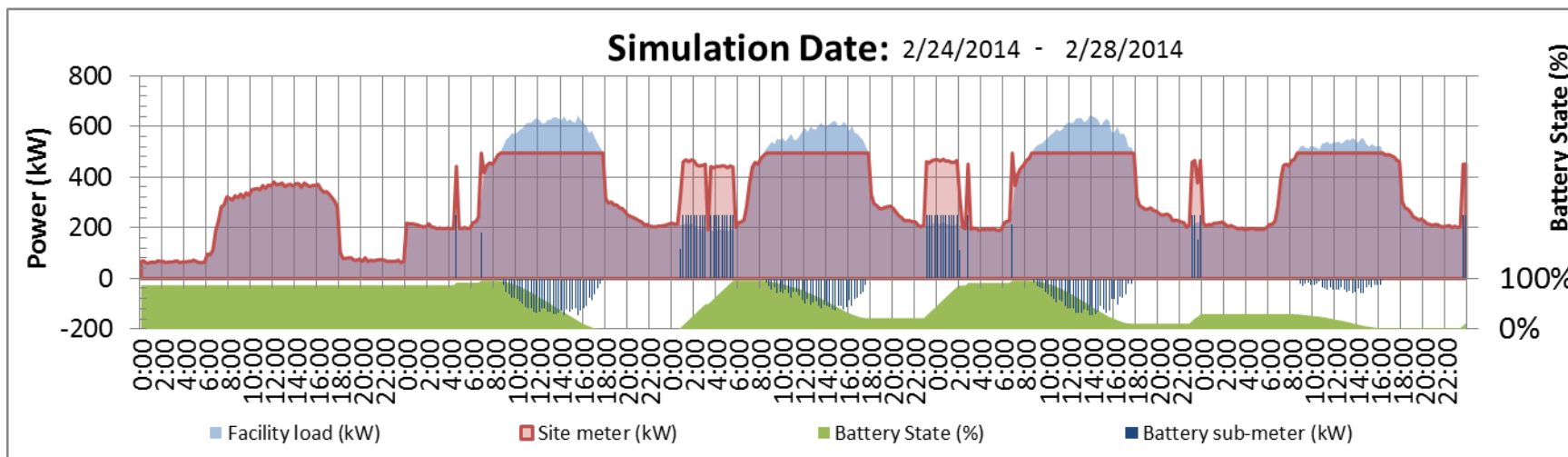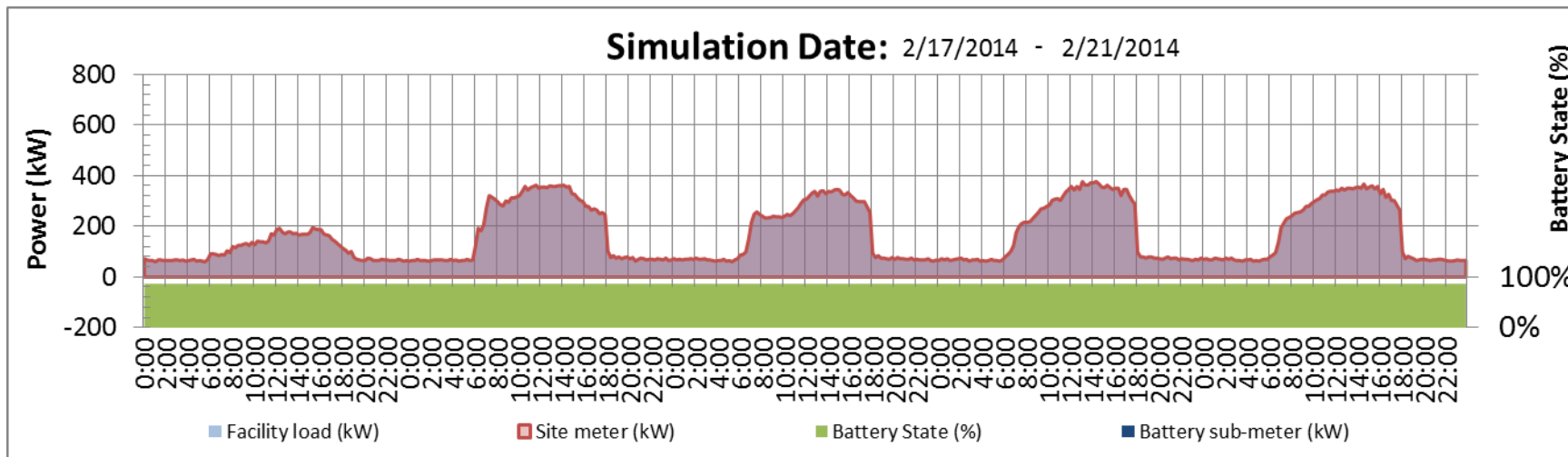
# Two Previous Weeks: No Peak Shaving



Simulation Date: 2/3/2014 - 2/7/2014

Facility load (kW) | Site meter (kW) | Battery State (%) | Battery sub-meter (kW)

Simulation Date: 2/10/2014 - 2/14/2014

Facility load (kW) | Site meter (kW) | Battery State (%) | Battery sub-meter (kW)