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2017 CEC IEPR WORKSHOP



8.07.2017



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Inside SoCal Edison's Groundbreaking 2.2GW Grid **Modernization Plan**



A new model lets distributed solar, energy storage and efficiency stand with power plants a resources.

Jeff St. John November 21, 2014

Two weeks ago, utility Southern California Edison launched a realexperiment in grid-edge economics, one that's going to unfold in

Aging Distribution System Requires Supply-Side DR





Maturing Markets for Battery-Enabled Services to End-Use Customers



off-peak mid-peak on-peak mid-peak . 5000 Power (kW) **Optimized Load** 4000 3000 2000 1000 0 ш harge|Ch: Battery մՈր ш Шинфинг 6:00 8:00 10:00 12:00 14:00 16:00 18:00 20:00 22:00 0:00 2:00 4:00

LOAD SHIFTING/SHAPING

RELIABILITY/POWER QUALITY



EV CHARGING COST CONTROL



Battery Storage – The Killer-App for Demand Side Management

Demand Management

Peak Demand Reduction TOU Load Shifting EV/DER Integration Load Balancing Microgrid Controls Emergency Generation

Energy Efficiency

Monitor-Based Commissioning Strategic Energy Management Solar PV Optimization Power Quality

Market Products

Flexible Capacity Energy Imbalance Ancillary Services

Utility Products

Resource Adequacy Reactive Power Volt/VAR Optimization Conservation Voltage

Integrated Energy Management Systems:

Advanced Energy Information Systems (EIS) Analytic, Diagnostic & Optimization Software On-Site Energy Storage Systems Open ADR – Automated Demand Response

Real Time Energy Consumption Data Analytics, Diagnostics, Efficiency Metrics



(measured in kBtu or GJ) by the total gross floor area of the building. (EnergyStar

Calculation)

one year (measured in lbs of CO2) by the total kWh consumed by the building.

Advanced Microgrid Solutions Proprietary & Confidential 2017

building.

(measured in kWh) by the

total kWh consumed by the

total gross floor area of the

building (measured in \$/SF).

Continuous Portfolio Optimization Utility-Scale Aggregation

Utility-Scale Aggregation

Fully-Dispatchable Load Control Pinpoint Locational Grid Value

Commercial Campus

Universities



Hospital

HYBRID ELECTRIC BUILDINGS®





- Portfolio of 24 commercial buildings
- 250 kW 750 kW/6 hour storage systems
- 25% peak demand reduction
- 10 MW dispatchable capacity to local electric utility
- Zero emissions
- No distribution upgrade







Advanced "Building-to-Grid' Energy Management System

Armada[™] is an integrated technology platform that combines advanced Energy Information Systems (EIS), cloud-based analytic, diagnostic and optimization software, and on-site energy storage systems to deliver fully optimized distributed energy resource management with building-to-grid integration for maximum end-to-end efficiency and maximum revenues.

