

Energy Storage and the Clean Power Plan

NARUC Winter Meetings
February 17, 2015



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Association

www.energystorage.org

Our Members



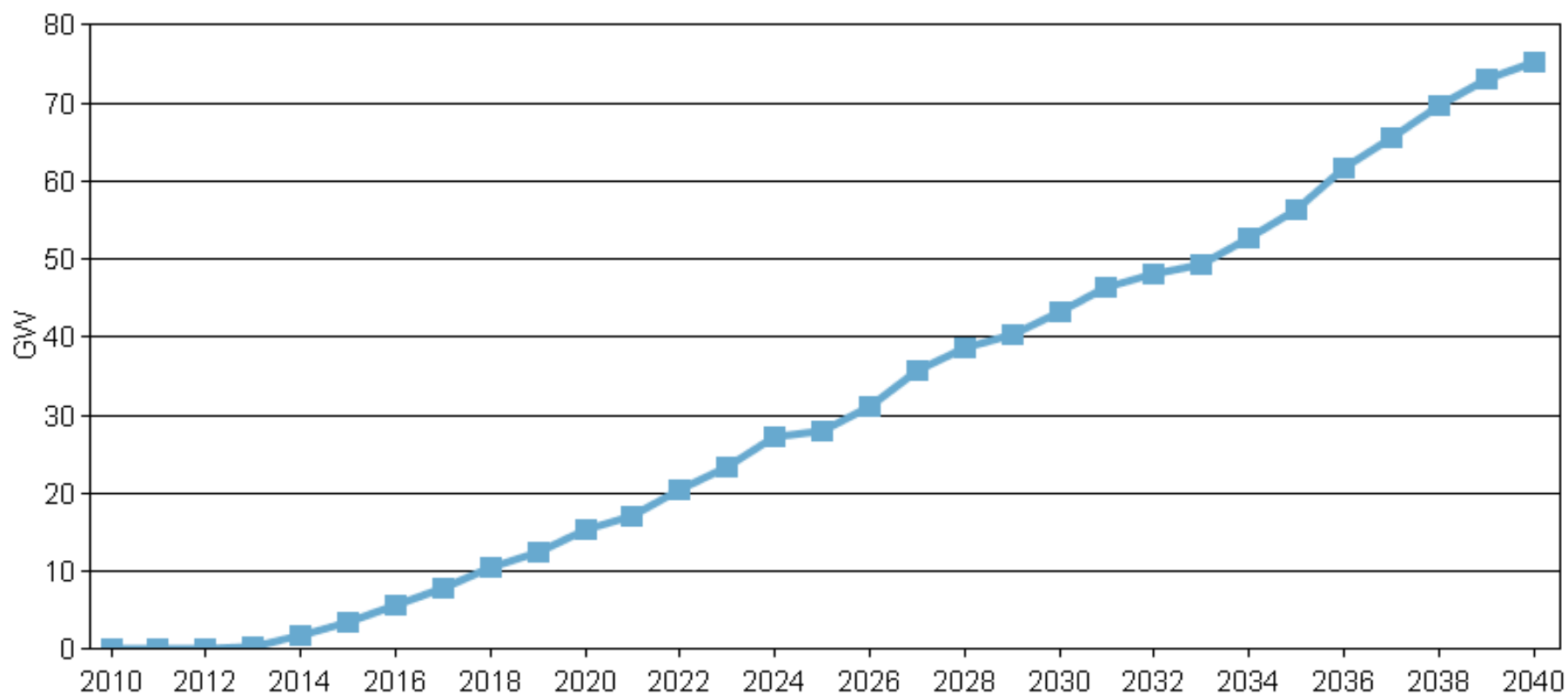
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Trajectory of the Industry

According to market research firm IHS, energy storage growth will “explode” from .34 GW in 2012-2013 to 6 GW by 2017 and over 40 GW by 2022.

Problem: 40 GW peak generation needed in next 15 years

Electricity Capacity : Cumulative Unplanned Additions: Combustion Turbine/Diesel: Reference case



Independent Statistics & Analysis
U.S. Energy Information
Administration



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Policy Opportunity: EPA Clean Power Plan

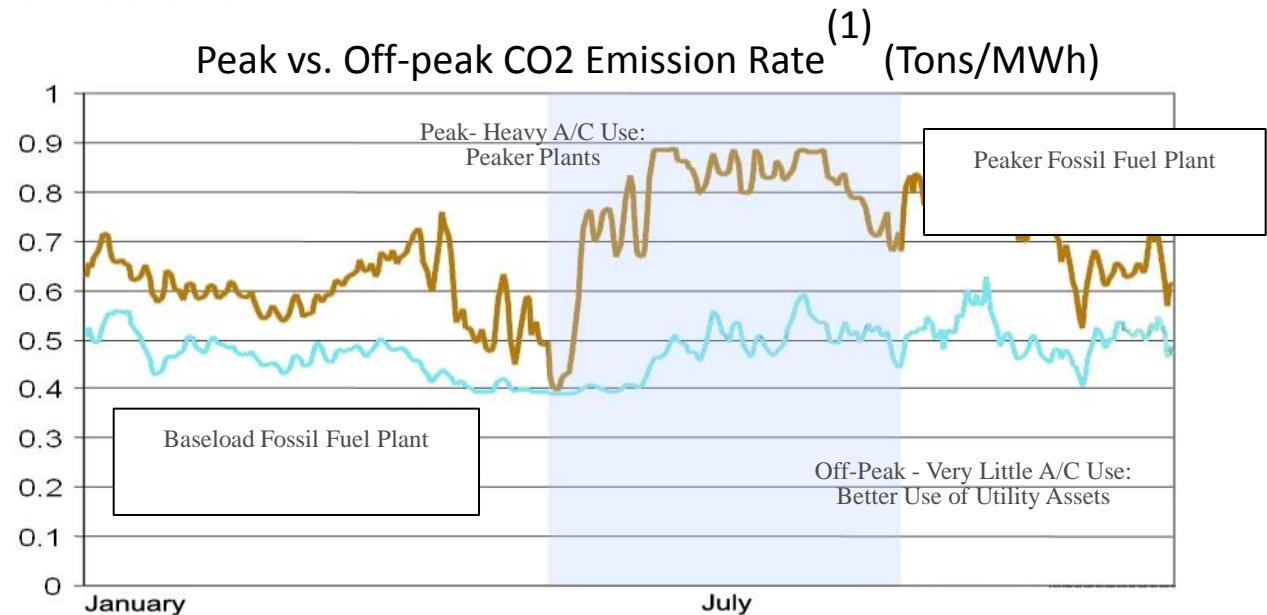
Percent CO₂ / MWh Reduction Shifting
from Peak to Off-Peak:

SCE: 33% reduction

PG&E: 26% reduction

SDG&E: 32% reduction

Also ~56% lower NO_x emissions



Energy Storage and Clean Power Plan

- ☐ Building Block #1: Power Plant Efficiency Improvements
- ☐ Building Block #2: Redispatch
- ☐ Building Block #3: Nuclear and Renewable
- ☐ Building Block #4: Demand Side
- ☐ State Implementation Plans



BB#1: Energy Storage to Increase System Efficiency



BB# 1: Energy Storage for 15% output increase, 10% efficiency increase, 7% GHG reduction

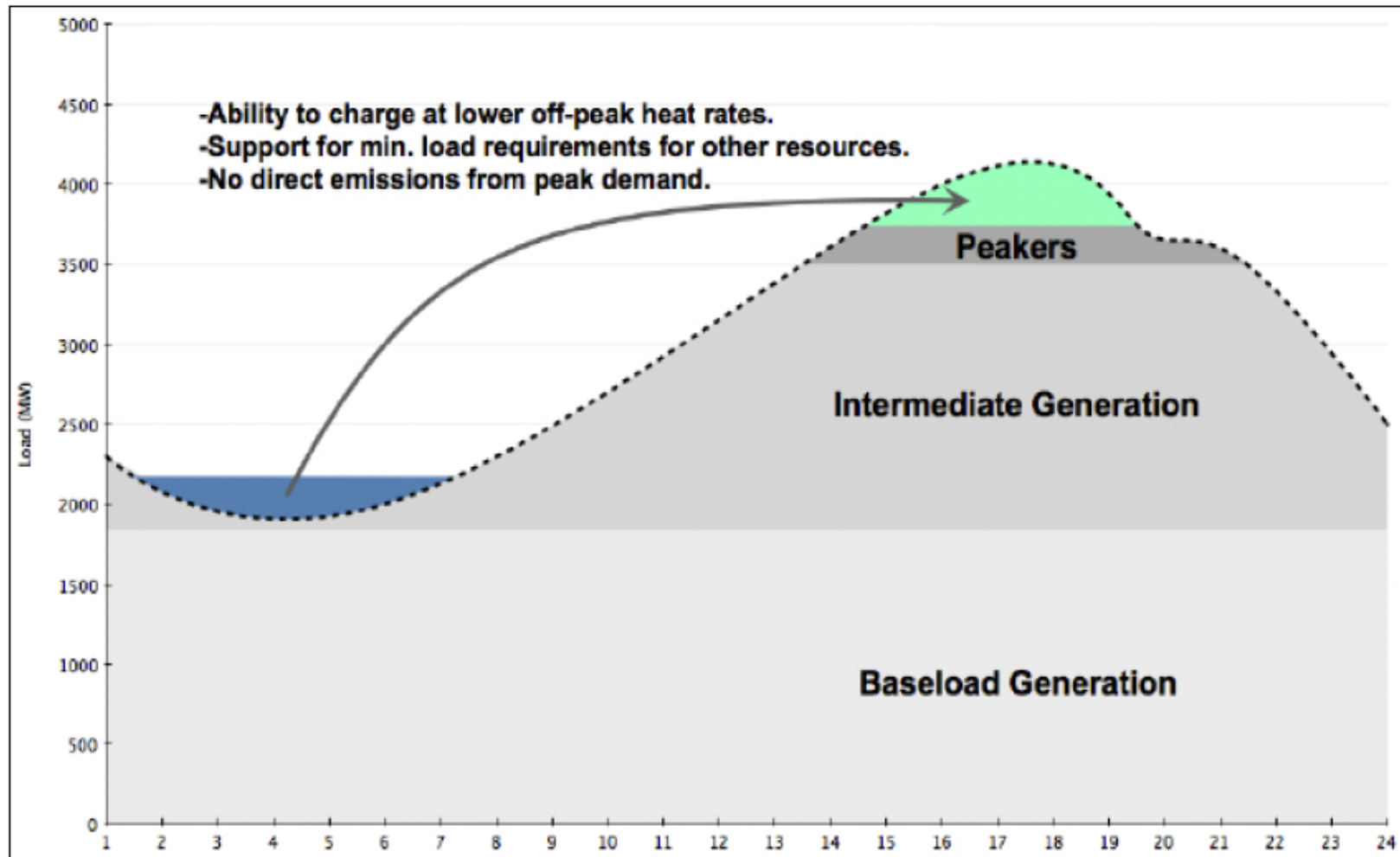


Photo Courtesy Alevo

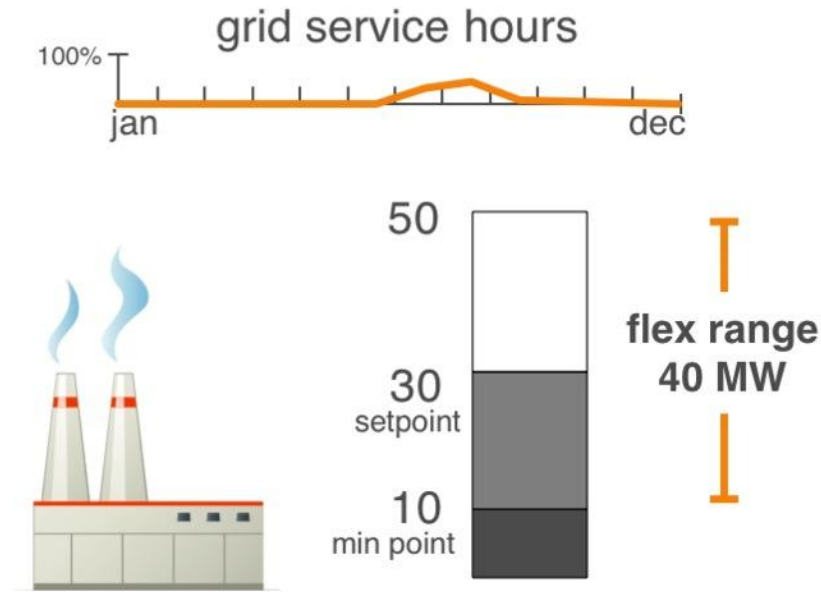


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BB#2: Energy Storage for Peak Shaving



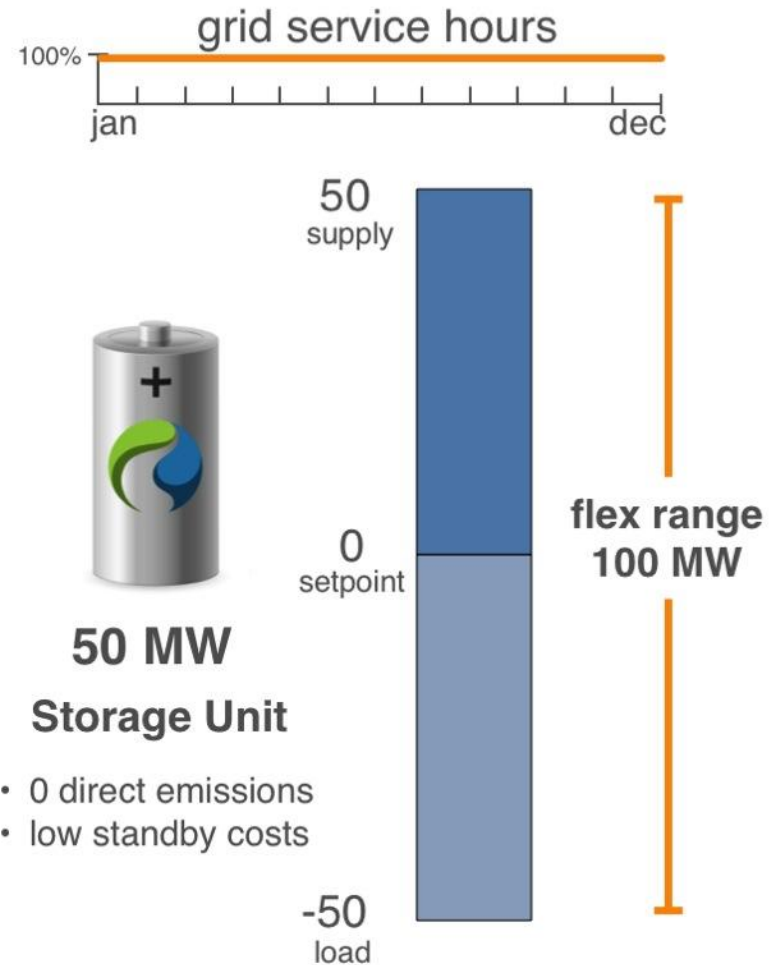
BB#3: Energy Storage as Flexible Resource



50 MW Gas Peaker

- out of merit generation
- significant standby costs
- standby emissions

minutes to dispatch



50 MW Storage Unit

- 0 direct emissions
- low standby costs

seconds to dispatch

BB#2/4 : Energy Storage for Peak Shaving, Reliability, VAR Support



Photo Courtesy S&C Electric



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BB# 2/3/4: Energy Storage for T&D Deferral, Transmission Capacity Relief, Frequency Regulation, Spinning Reserve



Photo Courtesy S&C Electric



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BB# 2/3/4: Energy Storage with microgrid for increased efficiency, reliability



Photo Courtesy Saft



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