

California Energy Commission IEPR Lead Commissioner Workshop



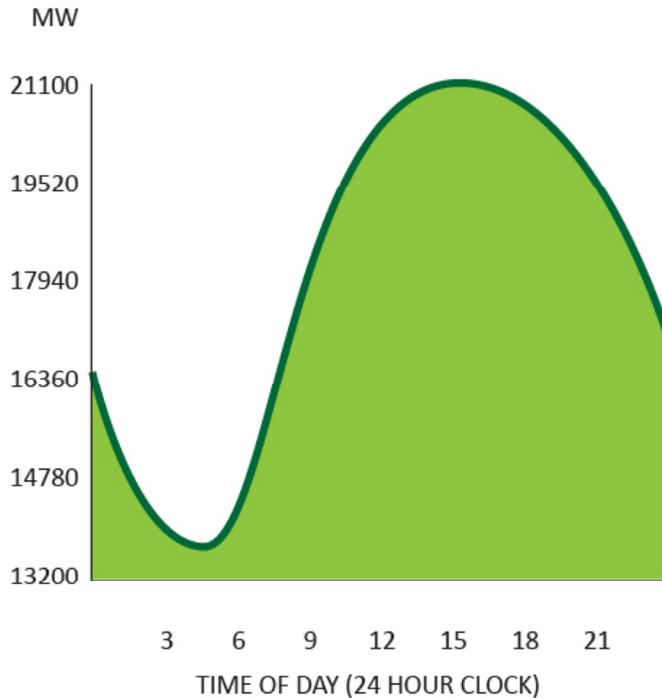
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Smart Grid Solutions That Pay
June 11, 2012

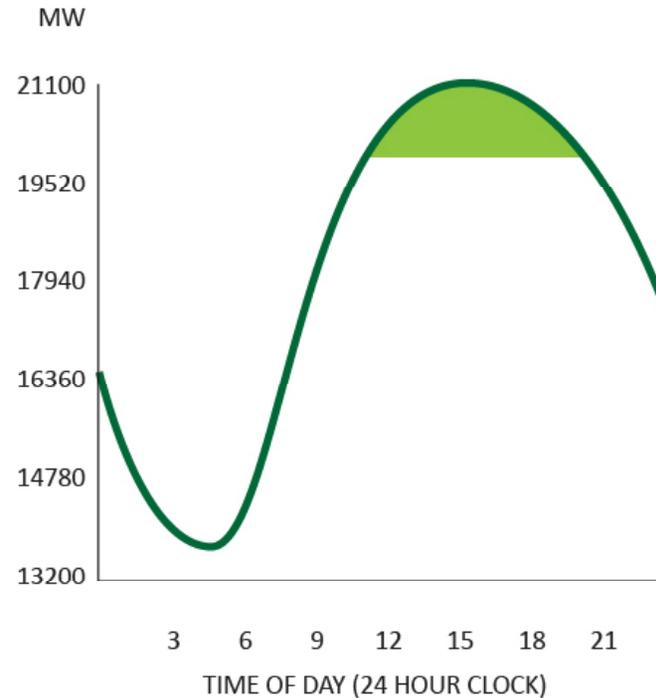


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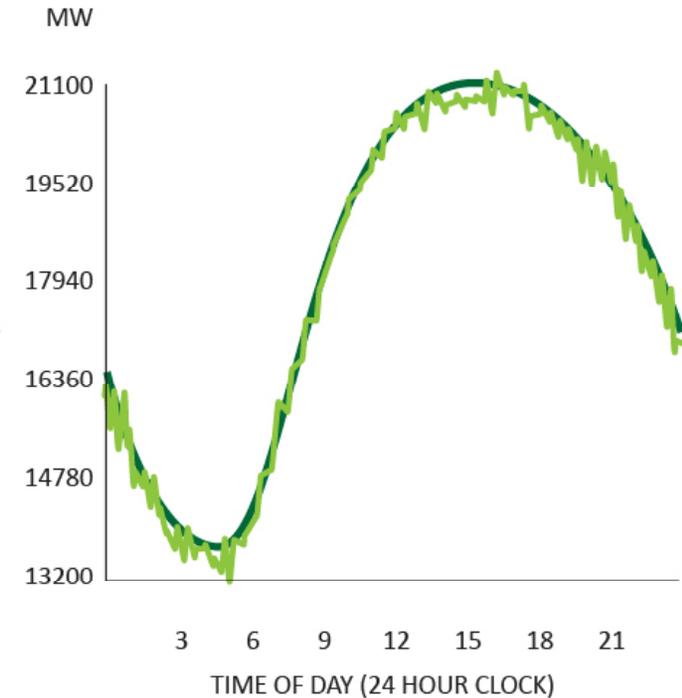
Energy, Capacity & Flexibility



Energy

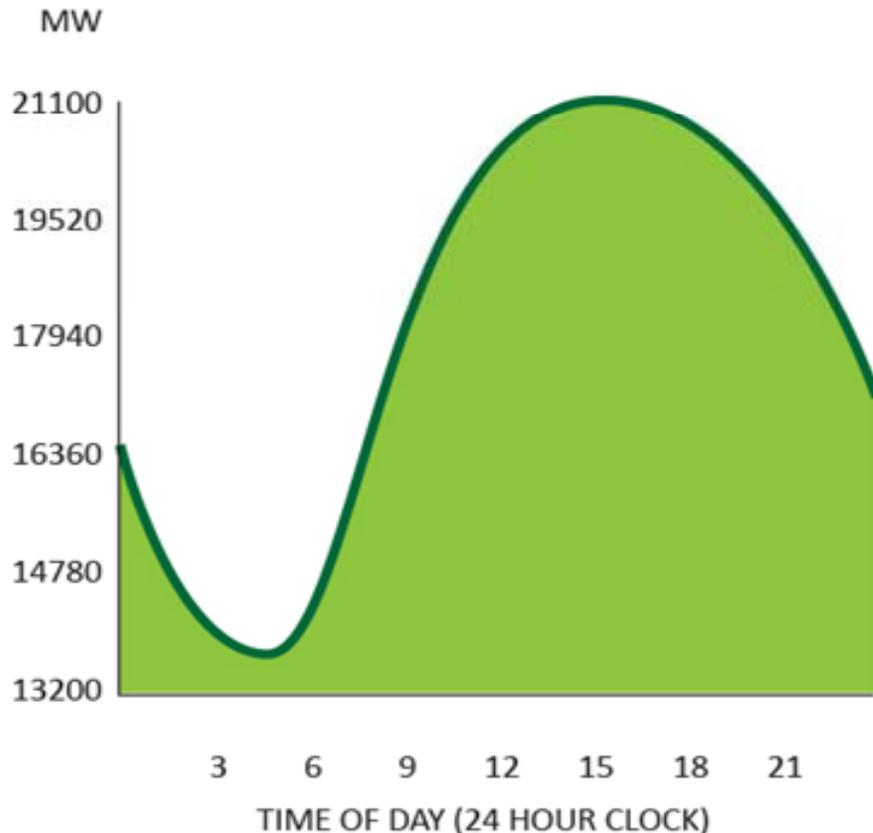


Capacity



Flexibility

Energy



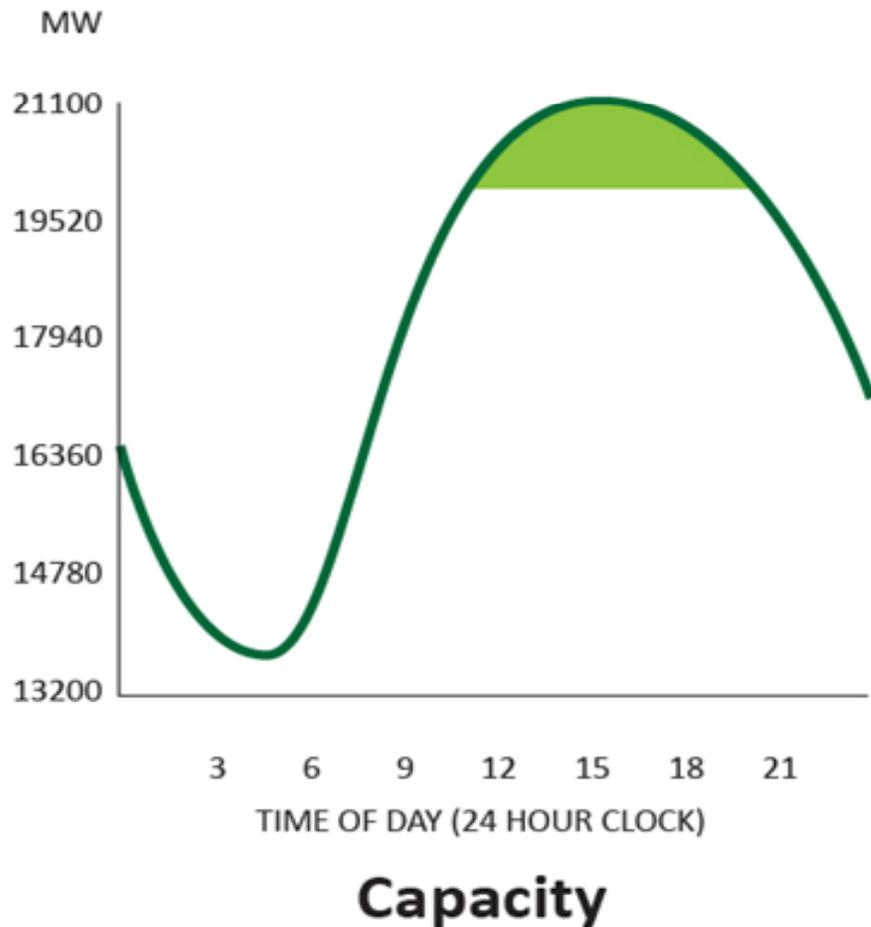
Energy

Loads can participate in some energy markets.

Opportunity is limited to behind-the-meter generation or to loads capable of shifting hourly consumption within a day.

Energy market is worth \$207 Billion annually in North America, there are limited opportunities for loads to participate.

Capacity



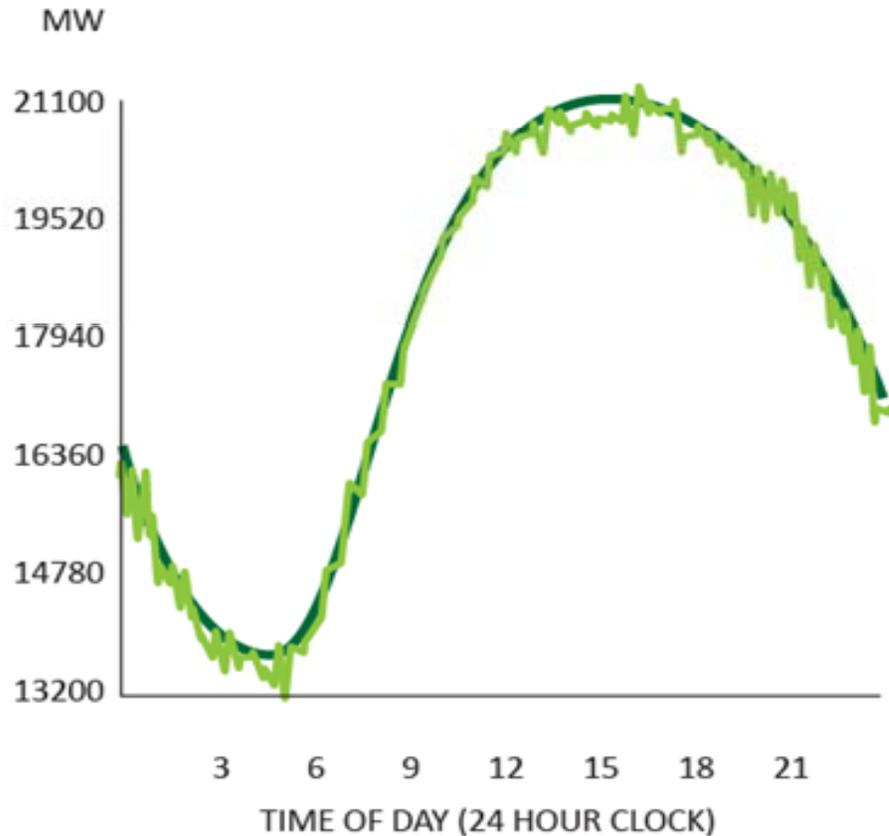
Loads can participate in some capacity markets (PJM) or through DR programs

Most useful in capacity constrained markets

Though paid for the availability, very seldom is the load curtailed.

Opportunity for loads is roughly 1% of the electricity market.

Flexibility



Flexibility

Flexibility is the really big opportunity.

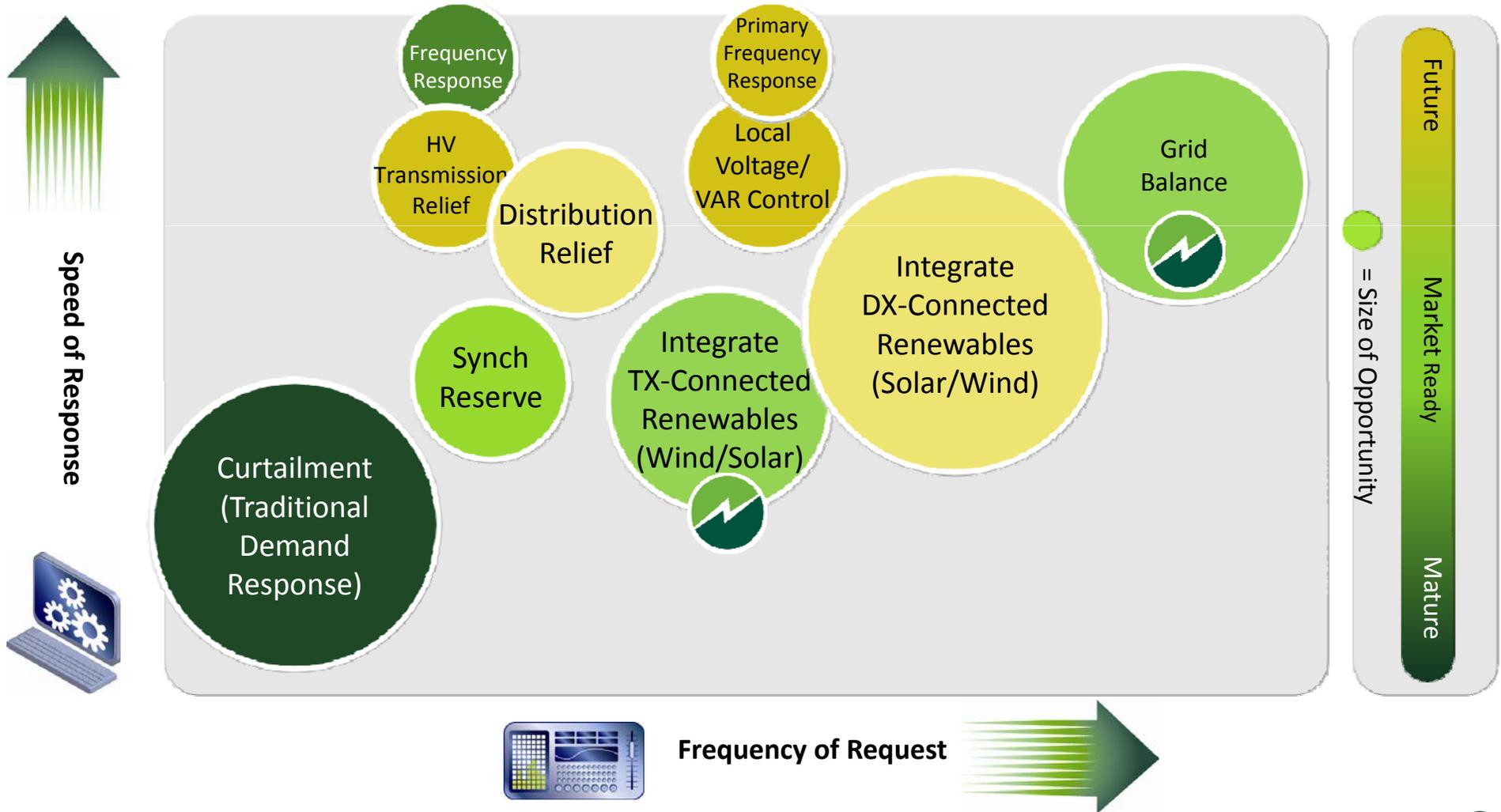
Different than capacity because it is about capturing flexibility in how power is used.

Flexibility is *always* required in the power system and the need is growing as we introduce more renewables and retire flexible assets

Estimated to be worth 3% of the electricity market.

Getting *Flexibility* from Loads

Market Maturity for demand side assets to participant



ENBALA Key Milestones

Using Aggregated Loads for Regulation since Nov 2011
Significant rules changes;
lots more loads being connected now



Powershift (NB Power) using loads to integrate wind into their power system



DoE looking to encourage load participation in ancillary services
ENBALA engaged by ORNL to assess load capabilities

NYISO in the process of changing rules too!

ERCOT is our next ISO target
Rules changes underway – projected for fall 2012

Both OPA & IESO actively looking at ways to integrate load more deeply into power system (ramp products?)