

California 2020 Vision: GigaWatts of Clean, Fast and Deep Electric Storage

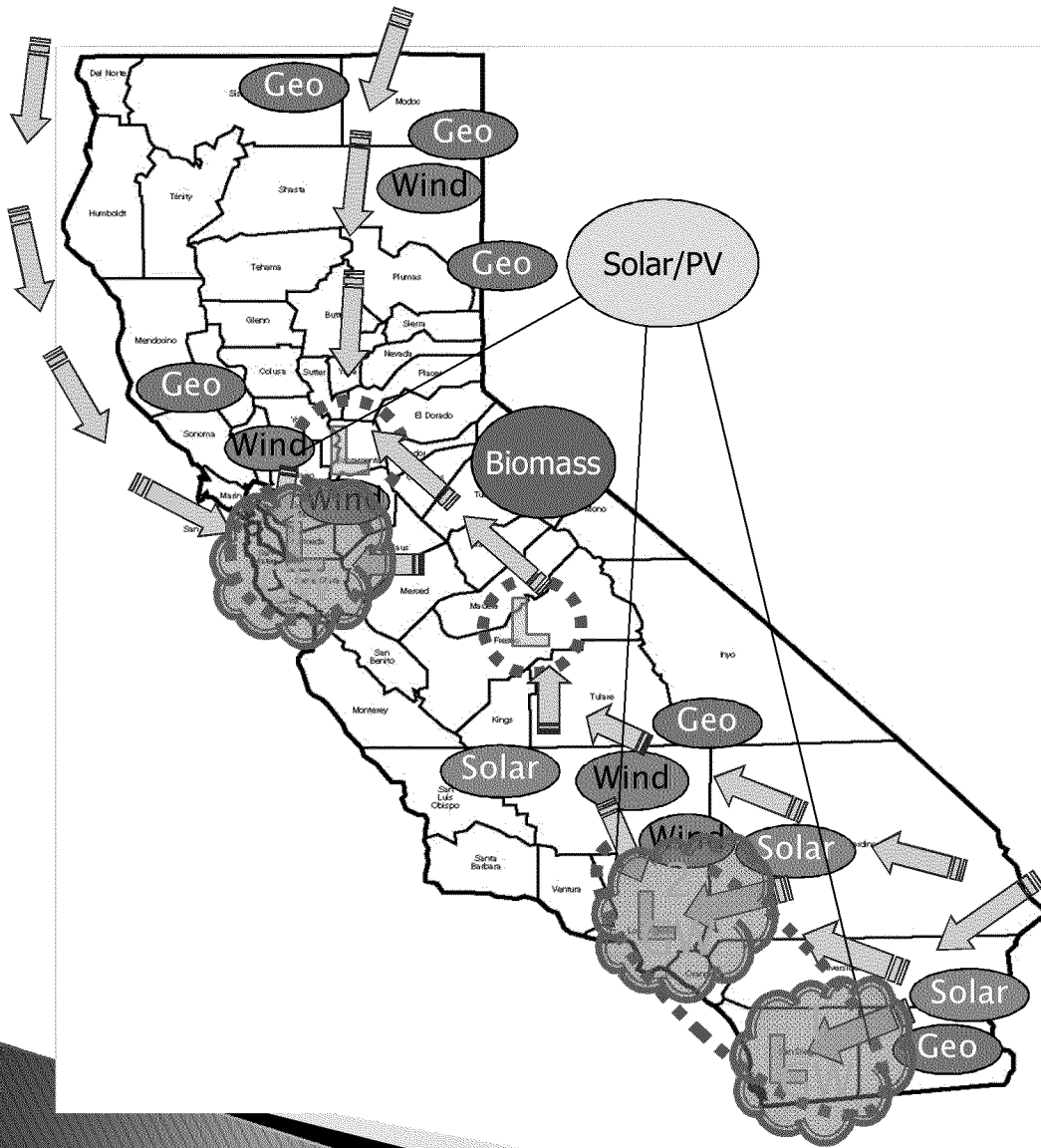
California Energy Commission
Staff Workshop

Energy Storage Technologies and Policies Needed to Support
California's Renewable Portfolio Standard (RPS) Goals of 2020
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How Much Storage is Needed in CA?



California 2020 Vision (33% Renewables)

Storage Target (conservative):
5% Peak = 4 GW

Storage Attributes:
No Emissions, Water, Noise

Displaces 4 GW Transmission &
Distribution

Provides 4 GW RA Capacity

Provides 8 GW Dispatchable Ramping,
Load Following, and Regulation

Provides 4 GW Over Generation
Protection

Provides 4 GW Voltage Support

Need to refocus CA Transmission,
Distribution and Generation Planning.

Storage vs. Fossil Dispatchability

- ▶ Nameplate Capacity – 1 GW
- ▶ Capacity Range 2 GW vs. 1GW
- ▶ Spinning Range 2 GW vs. 0.5 GW -- 4x
- ▶ Storage is much faster – worth -- 2x

- ▶ Storage is 8 times more effective than fossil in providing dispatchability.

- ▶ Competition is storage on storage
 - ▶ Fossil often cannot be sited close to load.
 - ▶ New transmission to urban areas is difficult.

California Electricity Storage Policy Agenda

- 1) Establish a portfolio standard (SPS) of 5% of peak load by 2020 for electric storage that is
 - ▶ Clean (no GHG emissions)
 - ▶ Fast (less than 1 second response from full charge to full discharge), and
 - ▶ Deep (greater than 4–6 hrs of storage)
 - ▶ Located close to load
- 2) Require IOU solicitations for storage services

PPAs