

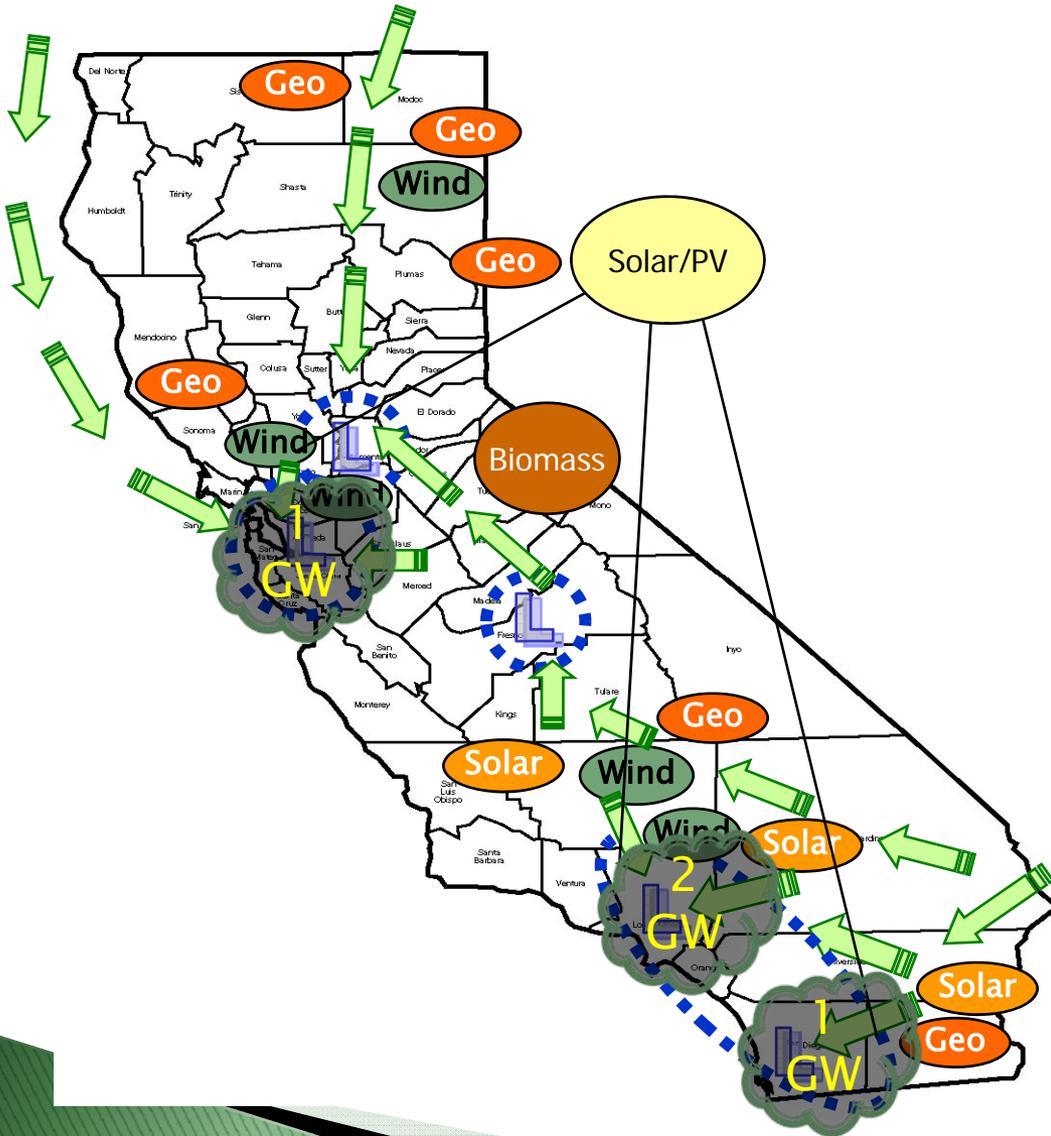
California 2020 Vision: GigaWatts of Clean, Fast and Deep Electric Storage

California Energy Commission
Staff Workshop

Energy Storage Technologies and Policies Needed to Support
California's Renewable Portfolio Standard (RPS) Goals of 2020
April 2, 2009 - 10:00am

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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