



# **Integrated Energy Policy Report Workshop**

**on**

## ***Energy Storage Technologies and Policies Needed to Support California's Renewable Generation Standard (RPS) Goals of 2020***

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# Objective of Workshop



- Support the development of the 2009 Integrated Energy Policy Report (IEPR)
- Discuss how energy storage technologies can impact the integration renewables in California
- Discuss from the utility/grid perspective and from the vendor/manufacturer perspective why energy storage is not being deployed in greater numbers in California
- Discuss from the utility/grid perspective and vendor/manufacturer perspective what can be done to encourage greater deployment of energy storage in California
- Discuss energy storage demonstration and R&D opportunities

# Workshop Questions



- What barriers and/or obstacles have prevented large, utility scale electricity energy storage systems from being installed in California and the nation?
- How does energy storage affect the ramping and regulation of renewable energy sources?
- What value does a large scale electric energy storage system provide the integration of large amounts of renewable resources as compared to other backup or intermittency support alternatives?
- Where should large, utility scale electric energy storage systems be deployed to have the greatest beneficial impact on meeting the RPS goals of 2020?
- What is the cost of ownership of electrical storage systems, what benefits will be accrued, and how will they be distributed?

# Workshop Questions



- What are the challenges and solutions to having the costs associated with energy storage systems be recouped from those who benefit from the technology when the benefits are expected to be provided to multiple beneficiaries?
- What actions are being taken by the electric energy storage industry to bring down the overall costs of large, utility scale electric energy storage systems?
- What incentive programs or other economic stimulus alternatives can be proposed that will encourage the deployment and fielding of more large, utility scale electric energy storage systems in California?
- What research is needed on energy storage in order for the California Grid to be capable of supporting the RPS goal of 33 percent renewables by 2020?

# Energy Storage Technologies



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# Energy Storage Technologies



- **Pumped Hydro**
- **Compressed Air Energy Storage (CAES)**
- **Flywheels**
- **Batteries**
- **Super-Capacitors (SuperCaps)**
- **Superconducting Magnetics**
- **Thermal Storage**
- **Fuel Cells (reversible)**
- **Hydrogen Storage**

# Written Comments



- **Submit Comments by 5PM April 16, 2009**
- **Please include the docket number 09-IEP-1G and indicate "2009 IEPR - Energy Storage Technologies" in the subject line or first paragraph of your comments.**
- **Please hand deliver or mail an original to:**

**California Energy Commission  
Dockets Office, MS-4  
Re: Docket No. 09-IEP-1G  
516 Ninth Street  
Sacramento, CA 95814-5512**