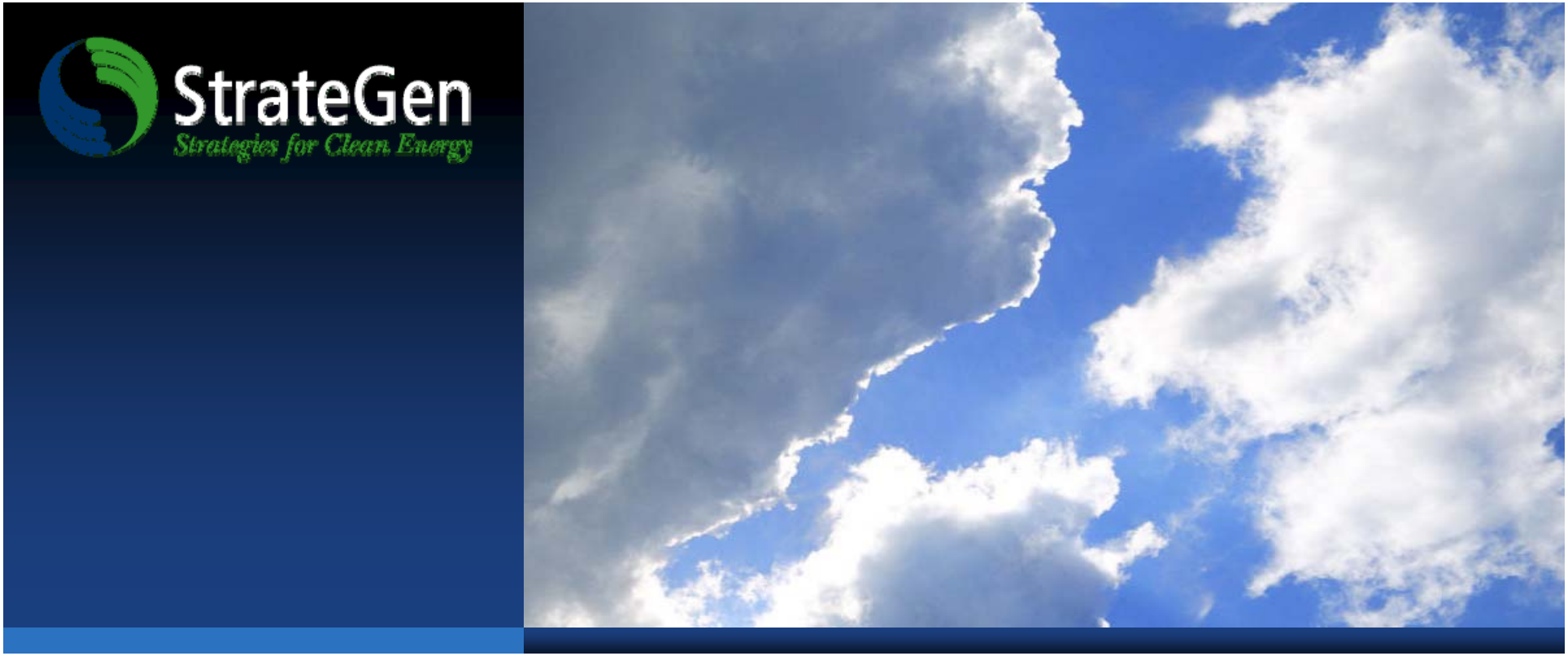

CA Energy Storage Alliance Comments: "Energy Storage Technologies and Policies Needed to Support CA's RPS Goals of 2020"

Janice Lin
Managing Partner, StrateGen Consulting
Co-Founder, California Energy Storage Alliance (CESA)
jlin@strategen.com

California Energy Storage Alliance (CESA)

Our Goal: **Expand the role of storage technology to promote the growth of renewable energy and create a more stable, secure electric system**

- CA-focused advocacy group representing energy storage stakeholders
- Focus on storage coupled with renewable energy integrated into the smart grid
- Immediate work is on distributed applications of energy storage
- Current priorities/activities include:
  - » CPUC
    - SGIP AES implementation
    - DG (DER) cost benefit methodology
    - Smart Grid OIR
  - » Storage legislation - AB 44

Distributed Applications for Storage

Distributed applications offer the potential to capture the greatest number of value streams, and are well suited for commercially available technologies

Customer	+	Utility	+	System Operator	+	Society
• Reduced energy and demand costs • Emergency back up • Demand response • Improved reliability		• Load leveling • T&D relief / deferral • Improved power quality • Reduce peak gen. and spinning reserve needs		• Ancillary services • Grid integration		• More renewables • Fewer emissions • Healthier climate • More jobs • Improved grid reliability and security

Furthermore…

- » *Many commercially available solutions are small-scale (<5MW) – and are best suited for distributed applications*
- » *Smaller systems open up many business models (besides simply utility owned)*
- » *Storage + renewables = "dispatchable renewables"*

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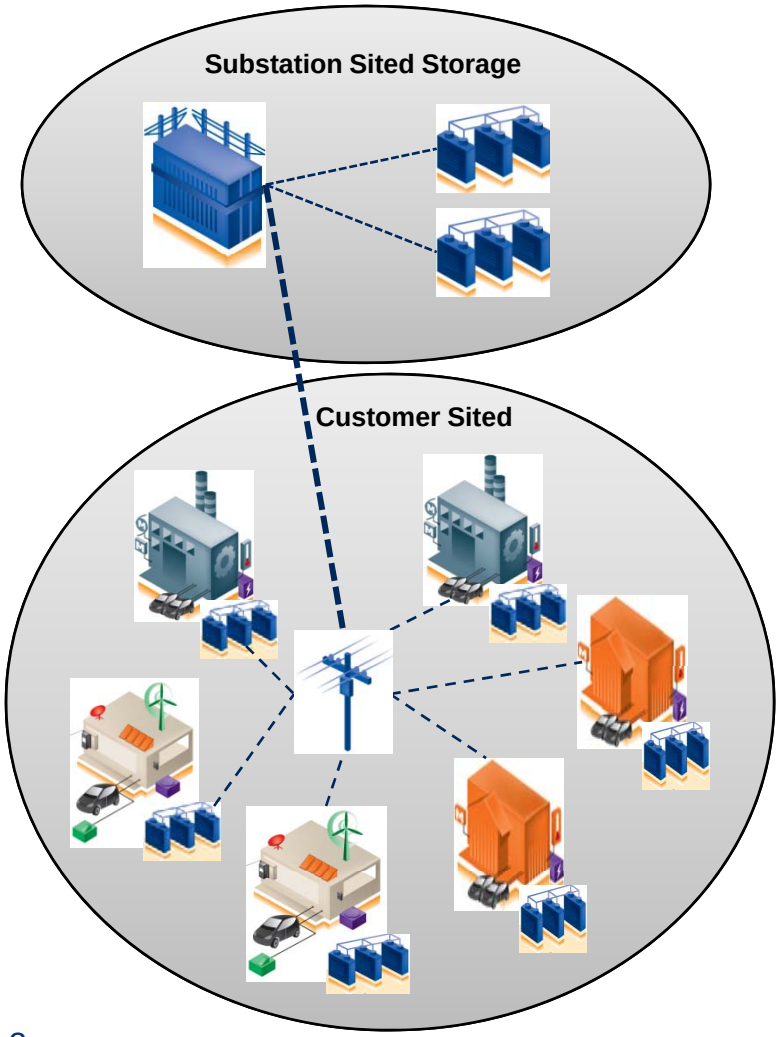
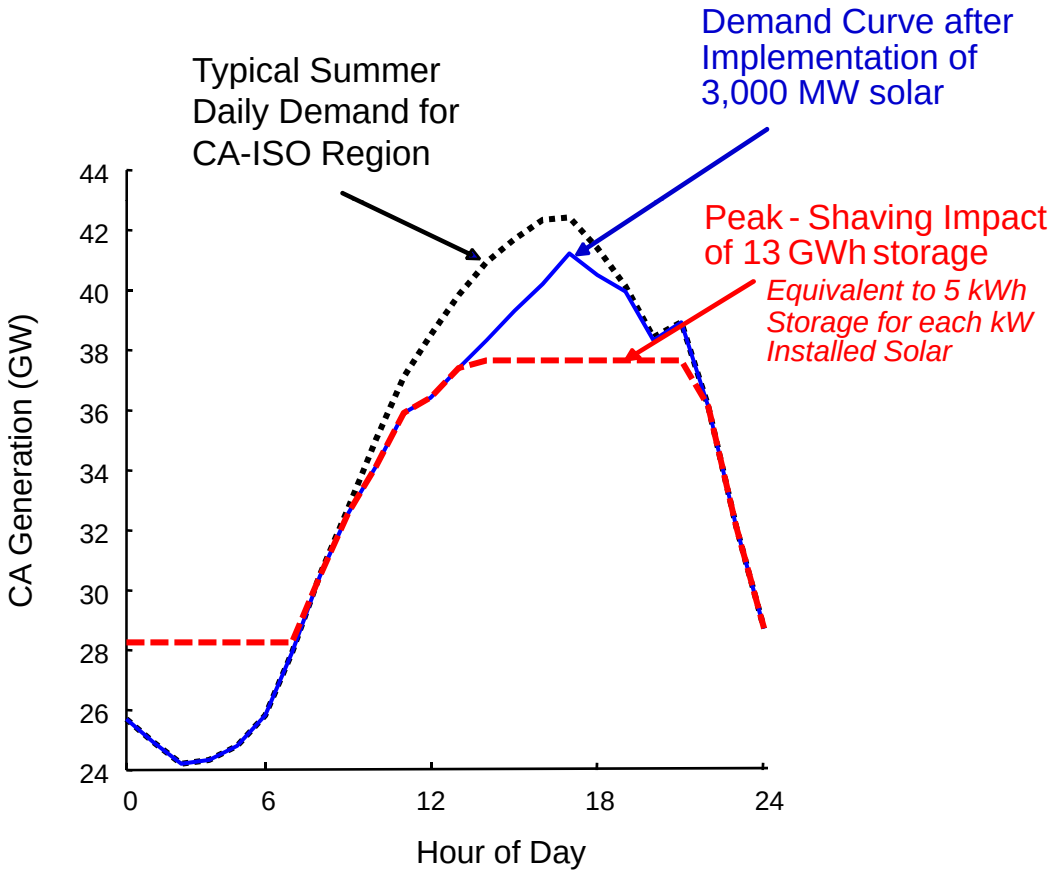
Distributed Applications Are Utility Scale

Small distributed systems can have a grid-scale impact





Source: EPRI

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Benefits of Storage – Renewable Integration

"Enabling technologies such as fuel switching in 'smart' appliances, dispatch-able load from plug-in hybrid or other electric vehicles, or stationary energy storage would be required to enable very high levels of PV contribution (>20%) to the electric power system".

- NREL Denholm & Margolis, April 2006

"When PV penetration reaches sufficiently high levels (e.g., 5 to 20% of total generation), the intermittent nature of PV can begin to have noticeable, negative effects on the entire grid" [requiring storage]

- US DOE, SEGIS-ES, July 2008

"Storage will need to be part of our portfolio if going to 15 to 20 percent wind at a national level, otherwise it won't be efficient at a lower level and it won't get us where we want to go environmentally"

- Electric Power Research Institute, March 2009

What is Stopping Storage Today?

Energy policy that supports energy storage will also support CA's RPS, peak load reduction and national smart grid policy

Current Barriers

- Cost / Economics
  - Many systems have not yet achieved scale economies
- Technology
  - Many solutions; all with tradeoffs
  - First demonstrations of new applications are difficult to implement
- Regulatory/Policy
  - Difficult to aggregate complete value streams provided by storage
  - Perception that storage is just a 'utility solution'
  - Tariff design that does not reflect true cost of producing and delivering power on peak
  - Integration of storage into various aspects of policy making

Recommendations

- Incentives
  - 'Fully implement' SGIP (standalone, w/ solar)
  - Increased rate of return for utility owned storage
- Policies that encourage integration of storage, smart grid, DR, EE and RE under multiple business/ownership models
  - Tariff design that encourages load shifting
  - Clarification of net metering + with storage
  - Increase cap on FiT (w/ storage)
  - 3:1 RPS multiplier for RE delivered on peak
  - Peak reduction std for state energy purchases
- RD&D funding
  - Support CA storage proposals for ARRA
  - Accelerate deployment of integrated demonstration projects
  - Energy Storage Center of Excellence

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End of Presentation

Janice Lin
Managing Partner, StrateGen Consulting
Co-Founder, California Energy Storage Alliance (CESA)
jlin@strategen.com