

**DOCKET**

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# A123Systems, Smart Storage as Renewable Resource Enabler

**California Energy Commission Staff Workshop:  
Energy Storage Technologies and Policies Needed to Support  
California's Renewable Portfolio Standard (RPS) Goals of 2020**

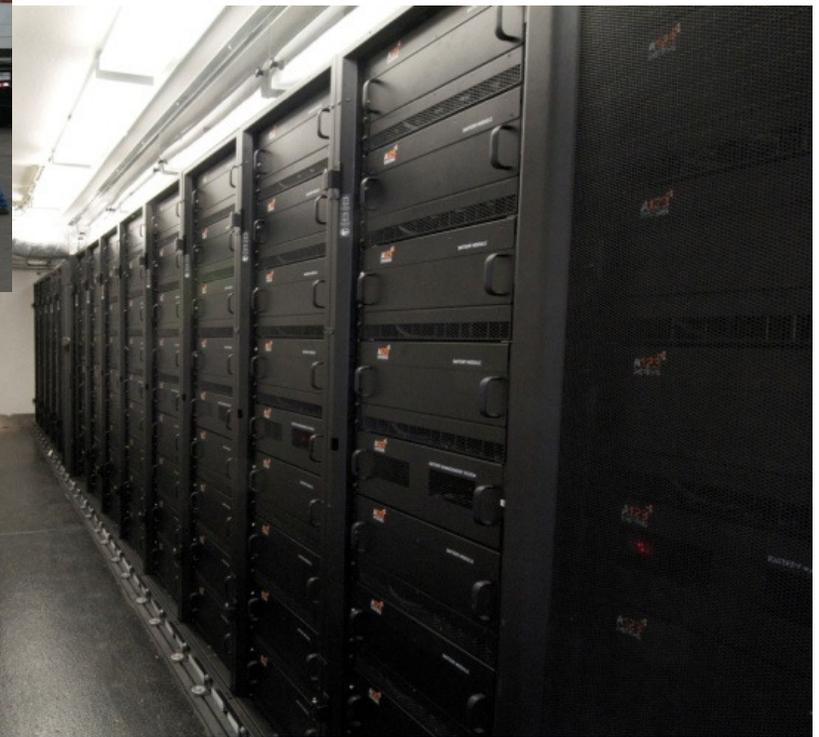
Charlie Vartanian

April 2, 2009

# Storage



# Grid Stabilization System



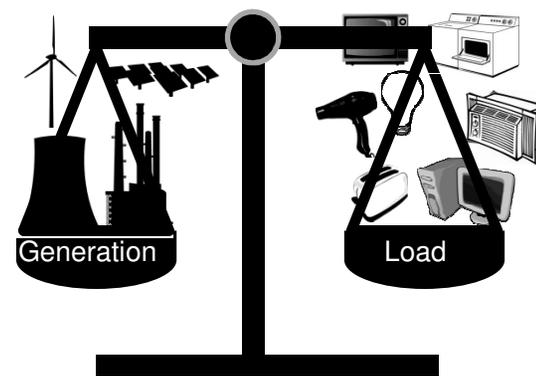
# Background: Meeting One Fundamental Grid Challenge

# Energy storage fundamentally decouples supply and demand – Renewables Relevant

This balancing of generation to track **variable load** must be done nearly instantaneously.

The ability to store or discharge electricity instantaneously changes the equation.

Adding **variable supply** creates expanded opportunity for Storage

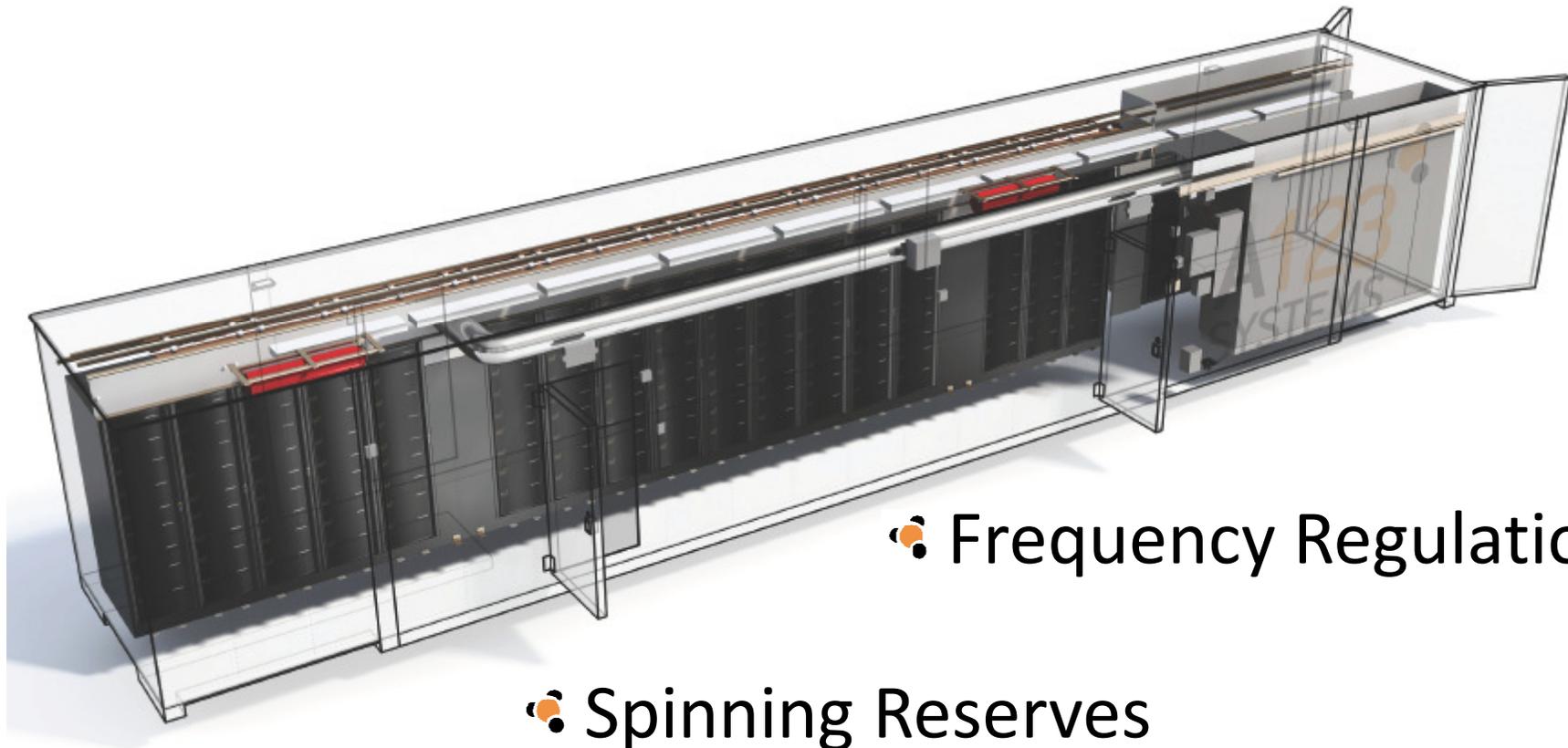


Supply  $\neq$  Demand  
(at least for short period of time)

# ONE SOLUTION, TODAY

## MW-Scale Grid Stabilization System (GSS) In Service Today

# A123's Existing GSS Implementation, our Hybrid-Ancillary Power Unit (Hybrid-APU)



• Frequency Regulation

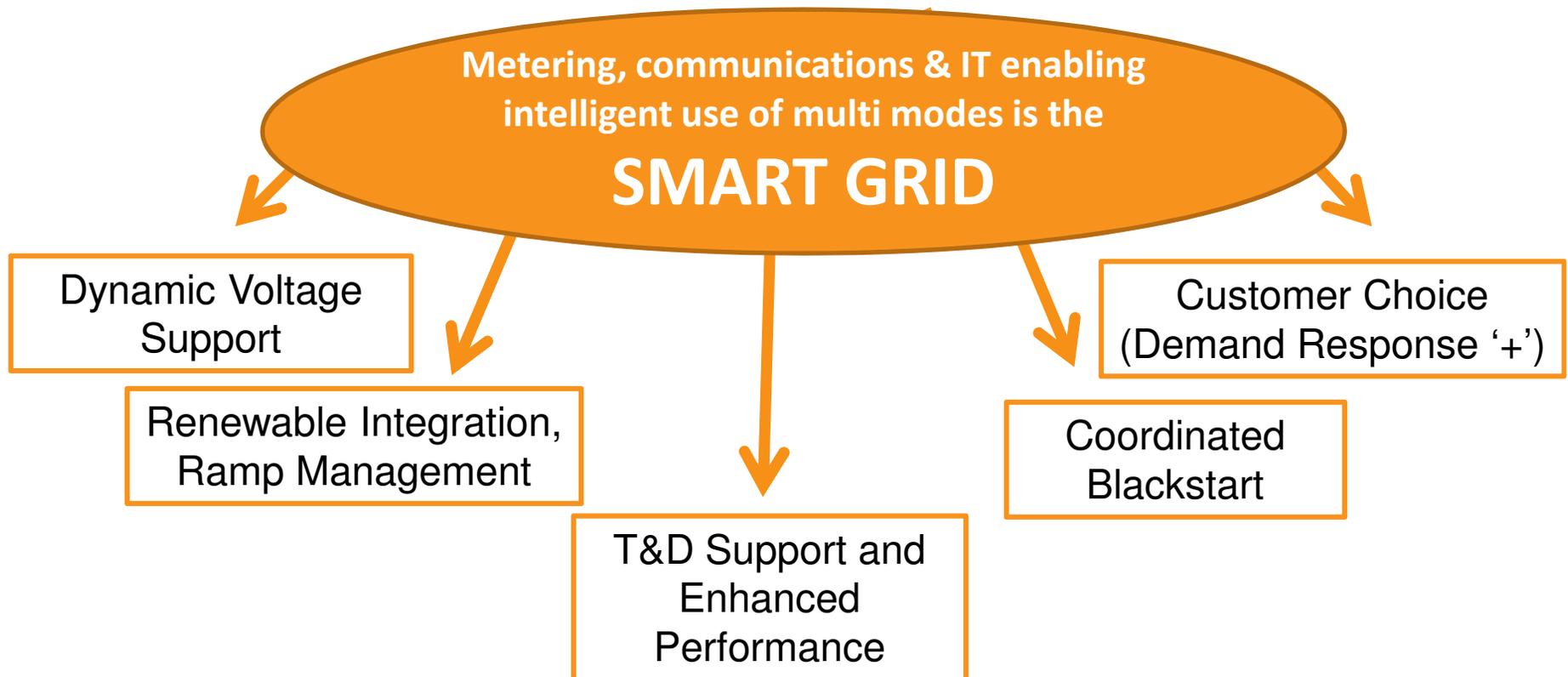
• Spinning Reserves

# TOMORROW, Our Smart Grid Vision

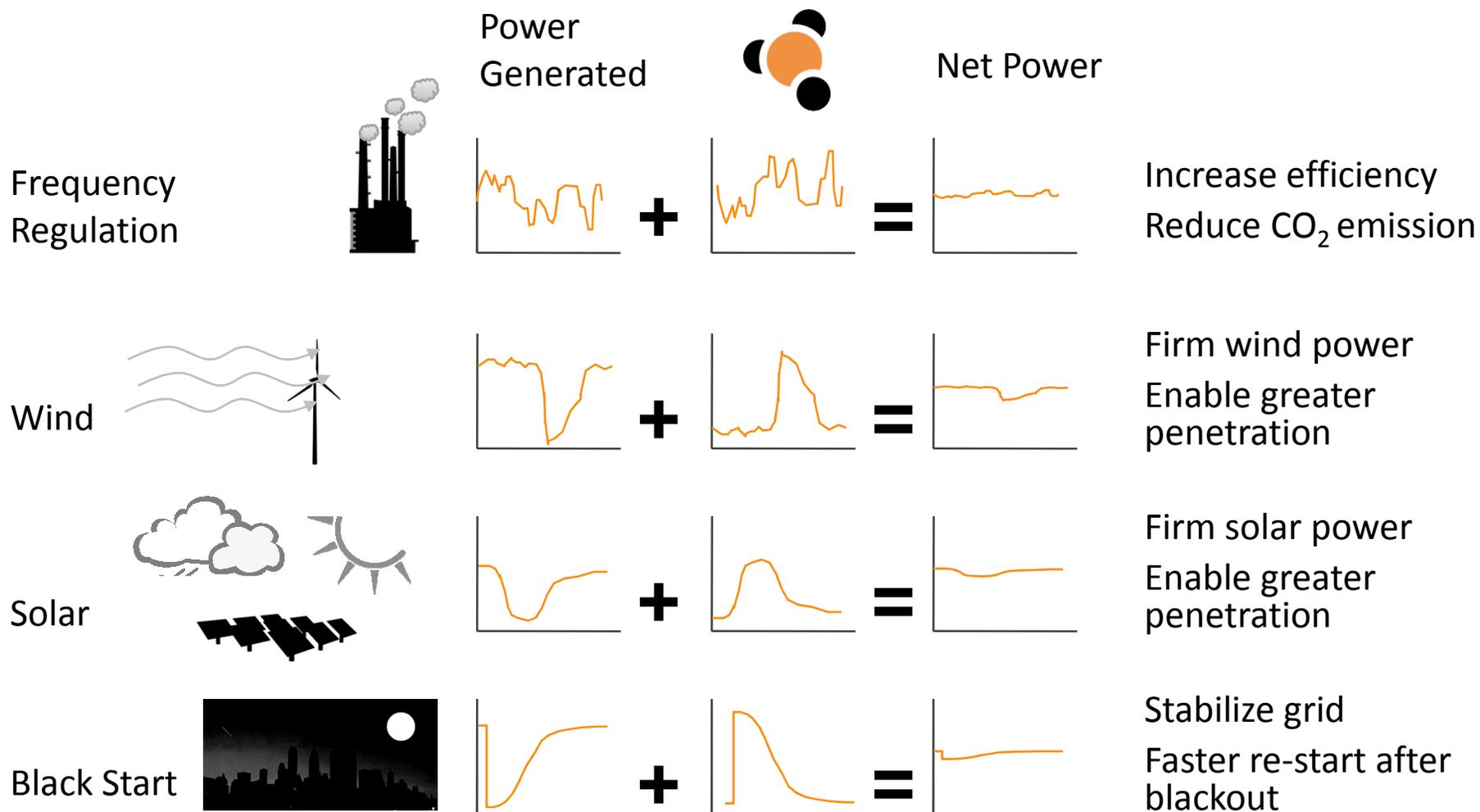
# Single Mode → Multi Mode → Smart Grid

**Today**, GSS for  
Frequency Regulation

**Next**, extend GSS functionality (speed, control) to deliver  
additional operating modes of value



# Benefits: Multi Mode A123 GSS + Smart Grid



# Ultimate Impacts - The Big Picture



- Global Carbon Reduction
- Expand U.S. Renewable Resources
- Contribute to U.S. Economic Health
  - Create green collar jobs
  - Reestablish U.S. as technology exporter
- Reduce U.S. Reliance on Foreign Oil
  - Electrify transportation
- Decrease U.S. Cost of Utility Disruptions

# Getting To The Smart Green Vision



- ❖ U.S. Energy Independence and Security Act (EISA) 2007 defines characteristics:
  - ❖ Digital information and controls
  - ❖ Deployment and integration of distributed resources (includes Storage) and generation, including renewables
  - ❖ Smart technologies for metering, grid communications and distribution automation
  - ❖ Advanced storage and peak-shaving technologies, including PHEVs and thermal-storage A/C
  - ❖ Develop standards for communication and interoperability of appliances and equipment connected to the grid, including grid infrastructure
  - ❖ Identify and lower barriers to adoption of smart grid technologies, practices and services
- ❖ These characteristics are relevant to meeting high penetration renewable targets
- ❖ U.S. 2009 Stimulus Bill provides funding for EISA 2007 Smart Grid programs. Accelerate getting technically available solutions in the field!

# Call to Action

- ❖ **Fund development** and demo ASAP, using Stimulus
- ❖ **Demonstrate use of existing** advanced technology *for emerging* and advanced Smart Grid applications
- ❖ **Model and quantify impacts** of new technologies in context of traditional grid planning to increase industry-level awareness and comfort with new grid-supportive technologies
  - ❖ Extend modeling to interdependent systems to quantify the larger societal benefits feasible with a smarter, cleaner, more efficient grid
- ❖ **Industry, Academic, and Government collaboration** to surface best ideas and practices. We have a once-in-a-century opportunity to revamp the most capital intensive and critical infrastructure that we have and depend on; the electric grid
- ❖ **Lower barriers** to commercial entry and sustained success through consistent standards and level/fair market access

# Thank You

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