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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**

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Storage



Grid Stabilization System



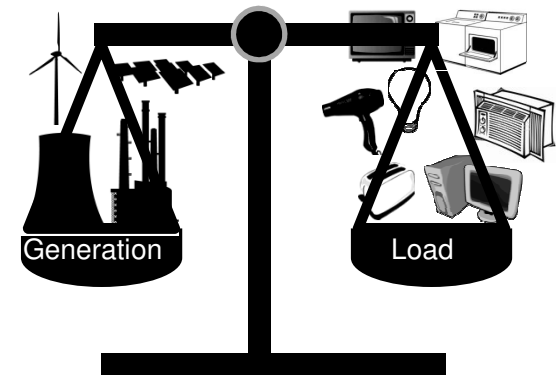
Background: Meeting One Fundamental Grid Challenge

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

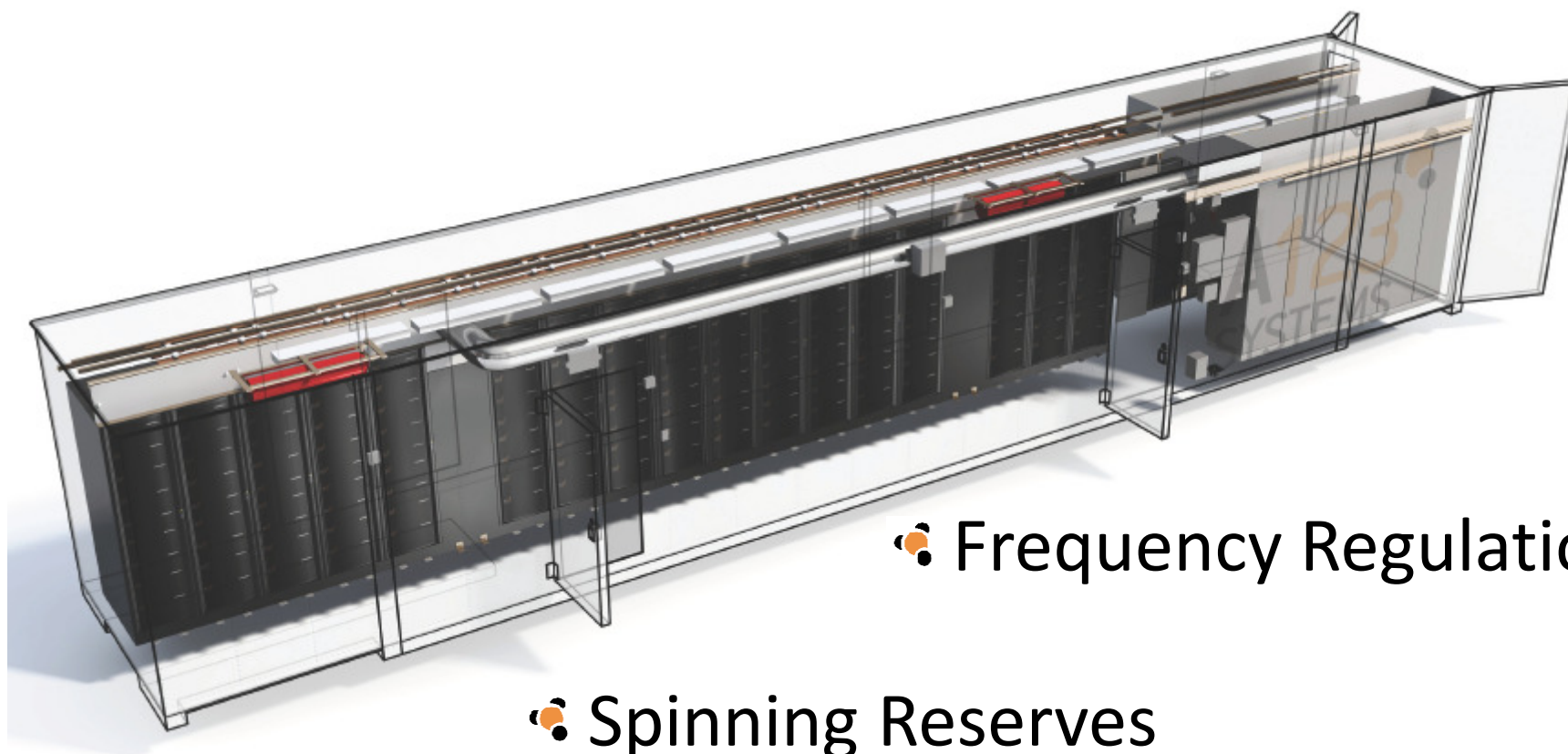


Supply \neq Demand
(at least for short period of time)

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

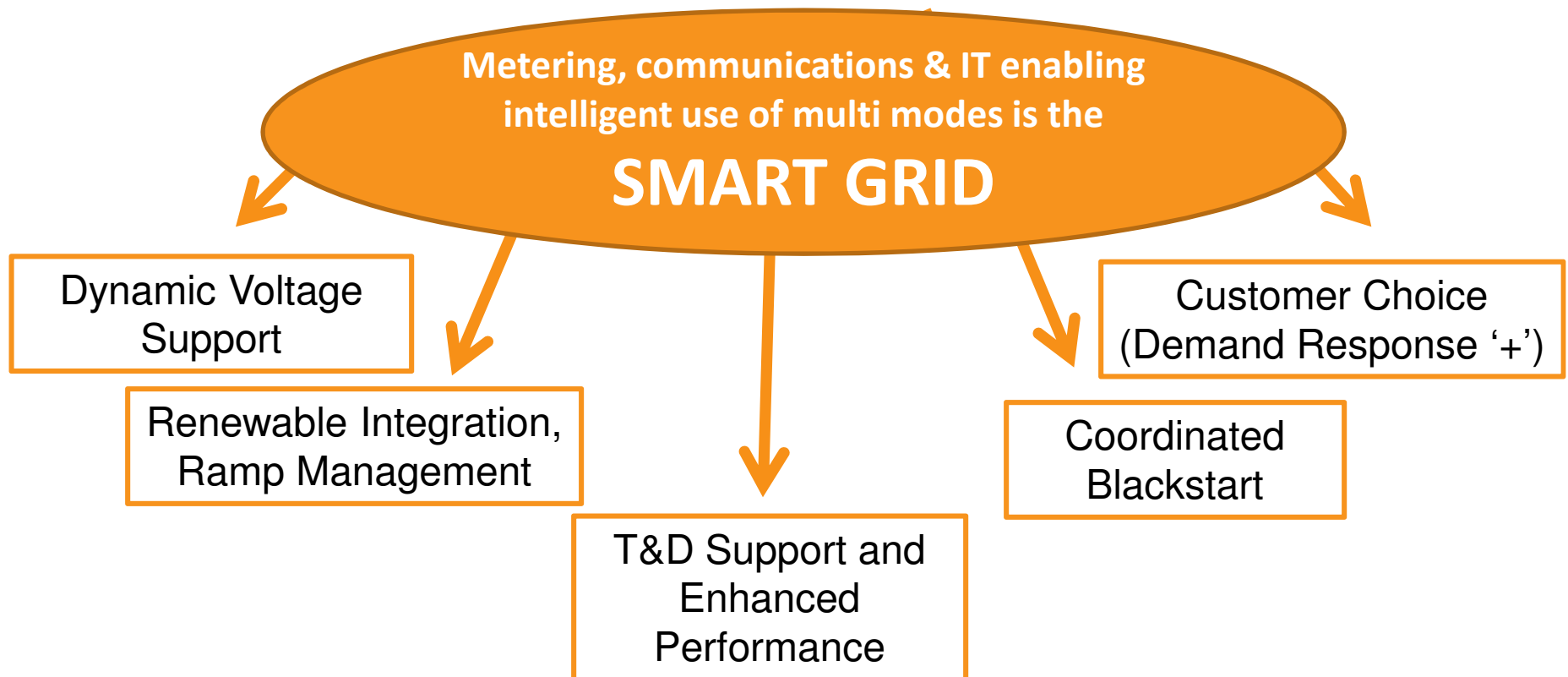
❖ Spinning Reserves

TOMORROW, Our Smart Grid Vision

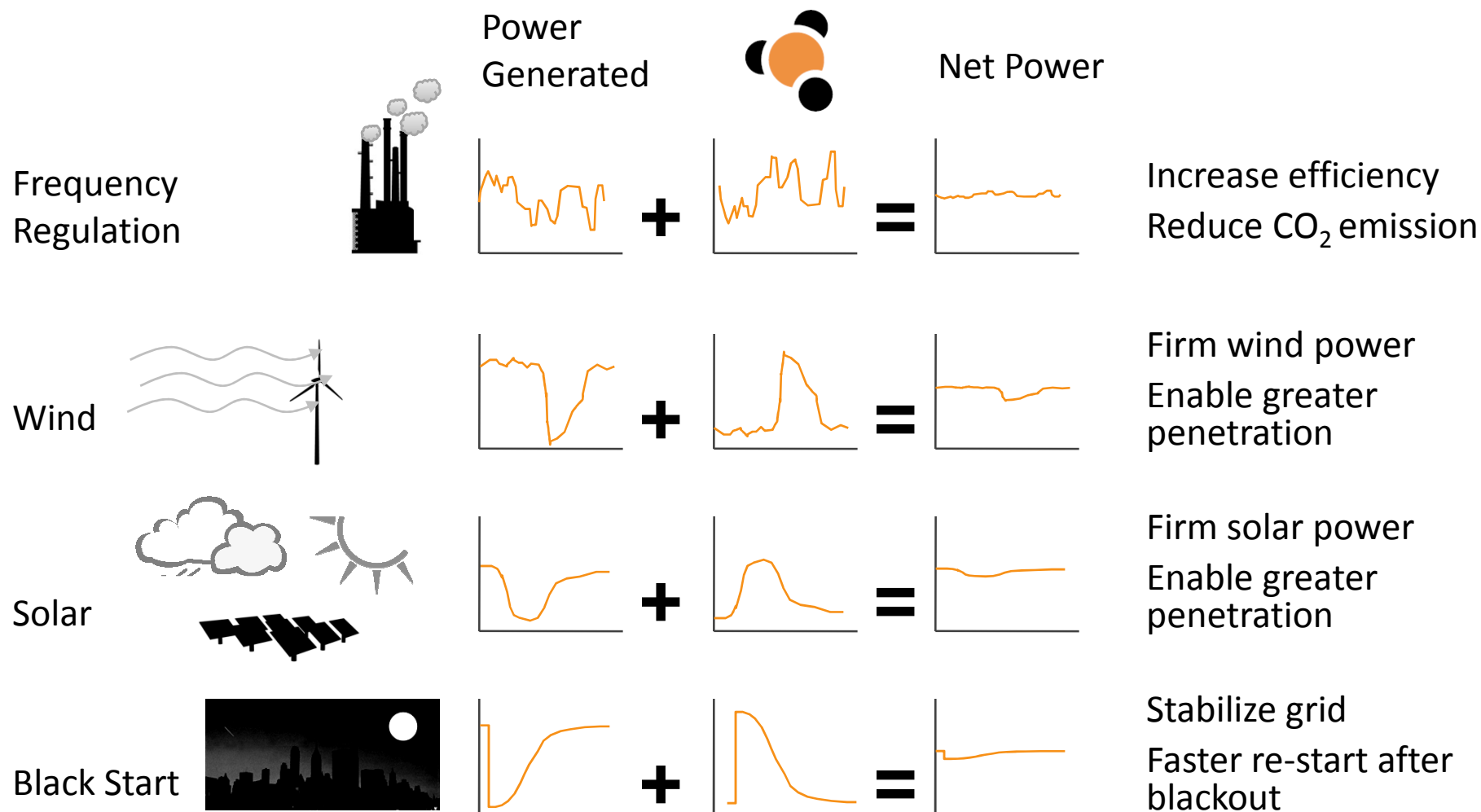
Single Mode → Multi Mode → Smart Grid

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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