

SMART GRID AND ENERGY STORAGE

- ◆ Challenge: If the Florida SUS was to develop a major proposal (e.g., HUB, STC, ERC), what would be the technical problem statement/vision and title?
 - What would be the benefit to Florida (e.g. increased energy independence, job creation, economic development).

- ◆ Technical Problem: Desire to integrate the Smart Grid and Energy Storage to achieve maximum efficiency in energy used by consumers compared with energy produced (centrally and locally near distributed storage)
 - Must integrate science, engineering, technology, sociology, economics, politics, government (local, state, federal)

- ◆ Title: Integration of the Smart Grid With Distributed Storage for Maximally Efficient Energy Use—Coordinating Science, Engineering, Technology, Sociology, Economics, Politics, and Government Policy (Funding) and Regulation

- ◆ Distributed energy production and hierarchical energy storage—residence, community, town, county, etc., to drastically reduce transmission losses and to provide smart grid mediated balance between production, storage, and use

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- ◆ What is the role of power companies—must be economically viable for business, government, and public
- ◆ How to get consumers to cooperate—residential storage, solar, wind, community biomass
- ◆ Grid mediated control of residential and community assets—privacy issues
- ◆ Smart appliances with grid mediated control
- ◆ Buildings as active and passive smart grid elements—thermal energy storage, smart grid mediated HVAC control, possible use of gravity for energy storage in tall buildings
- ◆ Must use artificial intelligence to optimize production, storage, transmission, usage—the grid must learn
- ◆ The grid must defend itself—cyber security