



FY06 DOE Energy Storage Program
PEER REVIEW

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ESS Program Makeup

ESS Base Program

- CEC/DOE Data Acquisition and Project Support
- NYSERDA/DOE Data Acquisition and Project Support
- Boeing Superconducting Flywheel
- ACONF Coast Guard Project
- HybSim Hybrid Storage Model Development





ESS Program Makeup (cont.)

Congressionally-Directed Programs

- University of Missouri-Rolla – Grid Modernization
- Iowa Stored Energy Project
- EEI - BiPolar Ni-MH Battery Development
- Sprint - Storage for Telecommunications Apps.
- Emerson – Network Power
- Beacon Power – Frequency Regulation Plant Design
- Mead Westvaco - Research on Lead-Carbon Asymmetric Super capacitors (FY05)





ESS Program Makeup cont.

SBIR

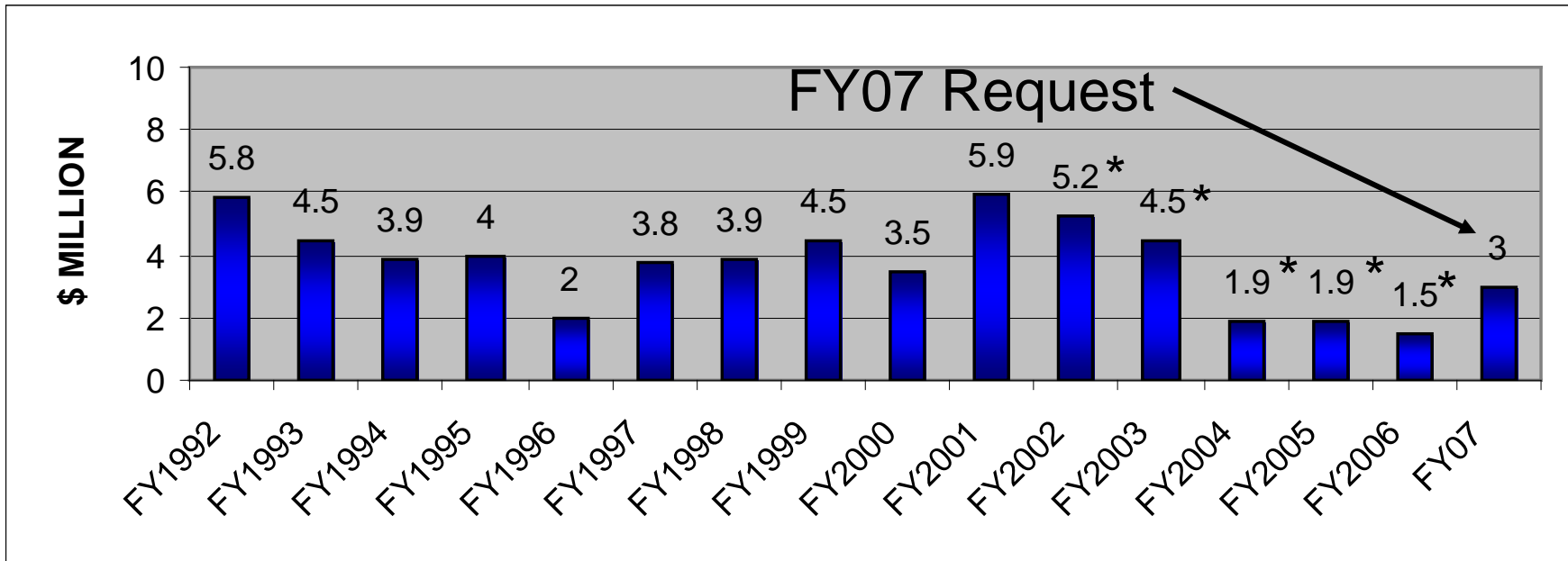
- Aegis Technology - PII
- Arkansas Power Electronic International - PII
- Airak -PII
- Rhinehart Motions - PII
- NEI Corporation - PII
- Peregrine Power -PI
- SatCon – PI

State Energy Program

- Wyoming



Energy Storage Systems Program Funding



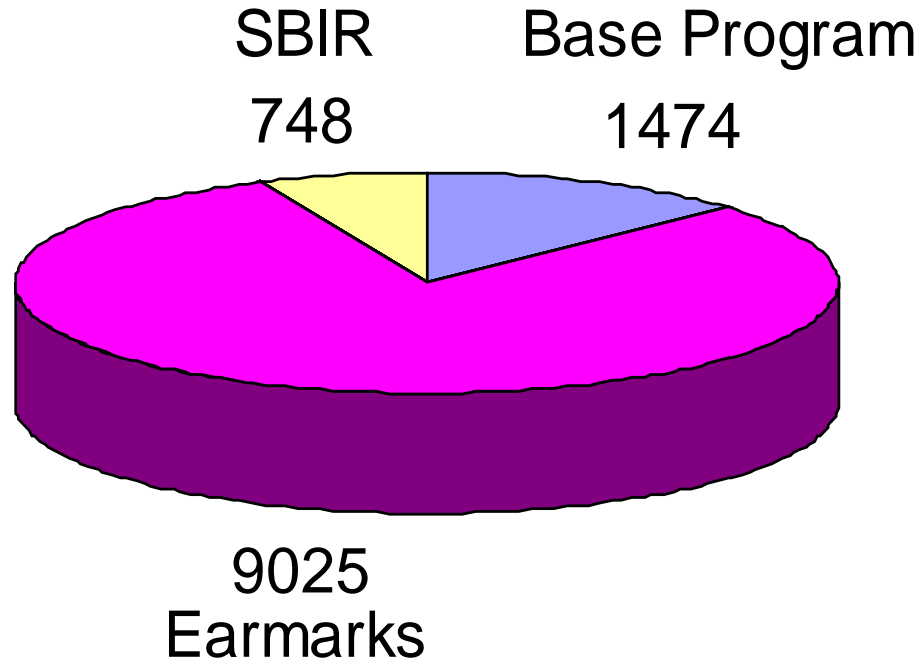
* Earmarks removed





FY06 ESS Funding

\$11,247 K





Summary

- Energy Storage Program still under budget pressure
- Continue our strong working relationship with our partners
- FY07 budget picture is similar to FY06
- FY08 proposed budget includes increase in basic research funding for energy storage and separate budget line for power electronics
- FY08 proposed budget includes new program for Distributed Systems Integration



The ACONF System

Optimizing Off-Grid Hybrid Generation Systems

- **Added circuitry between each string of batteries and the Power Conversion System (PCS)**
- **Hardware and software to control current to & from each string through the added circuitry**
- **String currents controlled on the basis of measured parameters and battery characteristics**

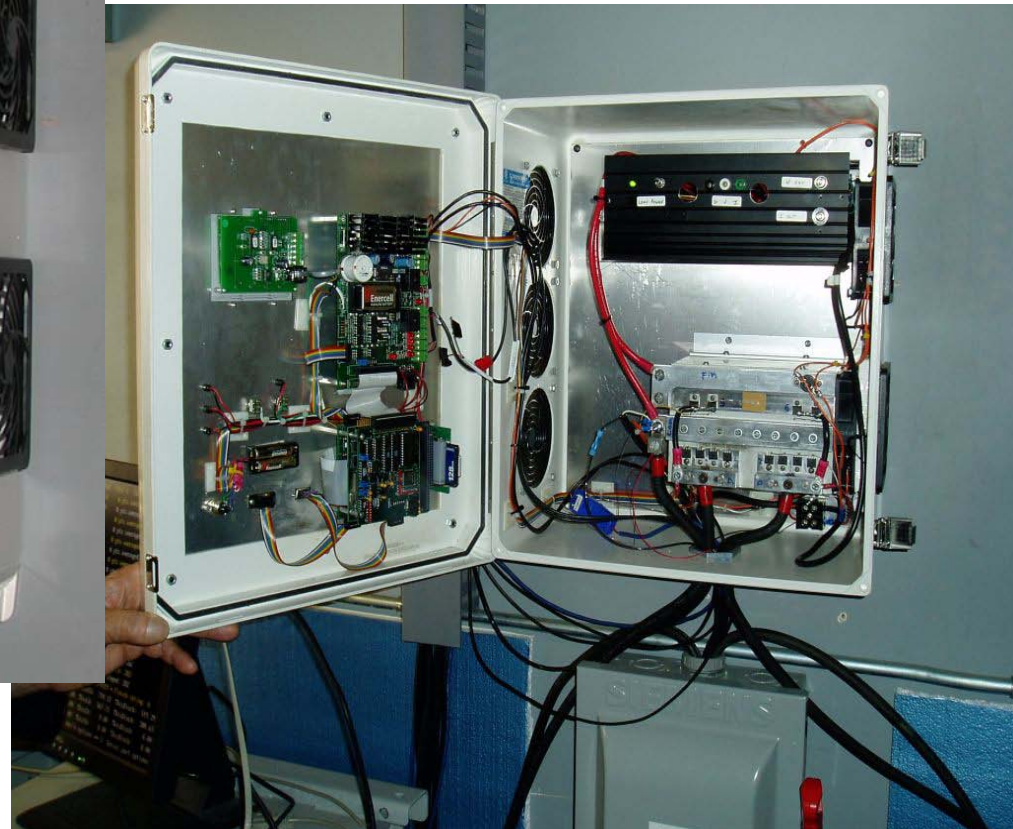


Homeland
Security

U.S. COAST GUARD



ACONF Controller





USCG National Distress System Electric Power System Optimization Project

Project History

- Goal: To Improve System Performance
- Project started in October 2003
- ACONF installed on Duke Island, November, 2005
- One year of data collected; analysis in progress



Results of Test Program to Date

- ACONF field test complete success
- Eliminated Spillage of PV Energy
- Annual Fuel Savings of 25%
- Improved Battery Performance



Future of ACONF Project

- **USCG Has Ordered 9 BETA Units for Field Operations**
- **Final Engineering Hardening in Progress**
- **Complete Drawing Set Developed**
- **Installation Manual to be Published**
- **O&M Manual to be Published**
- **Delivery Projected for Summer 2007**