



Demand Response (DR) Enabling Technology Development (ETD) Project

Gaymond Yee

DR ETD Project Manager

June 11, 2007



Agenda

9:00 am	DR ETD Project Introduction, <i>Gaymond Yee, CIEE</i>
9:15 am	DR ETD Grant Process, <i>Gaymond Yee, CIEE</i>
9:30 am	DR Business Network, <i>Ali Vojdani, Utility Integration Solutions</i>
10:00 am	Break
10:15 am	<u>UC Berkeley DR Research</u> Energy Management Group, <i>David Auslander</i> MEMS AC Current Sensor for use in DR, <i>Richard White</i> Micro-integration of Devices for Reducing Cost and Adding Functionality, <i>Paul Wright</i>
12:00 pm	Lunch and Poster Session
2:00 pm	PCT for Demand Response in California, <i>Alex Do, UC Berkeley</i>
2:30 pm	Barrier Immune Radio Communications for DR, <i>Girish Ghatiker, LBNL & Ben Fasnfest, LLNL</i>
3:00 pm	Network Agility and Network Services/Management in DR/Sensor Networks, <i>P.A. Subrahmanyam, CyberKnowledge and Sue Mellers & Mubaraq Mishra, BWRC</i>
3:30 pm	Adjourn



Introductions & Acknowledgements

- ◆ **California Energy Commission (CEC)**
 - ◆ **Arthur Rosenfeld** (Commissioner)
 - ◆ **Mike Gravely** (PIER, ESI Team Lead)
 - ◆ **Kristy Chew** (PIER, Contract Manager)

- ◆ **California Institute for Energy and Environment (CIEE)**
 - ◆ **Carl Blumstein** (Director)
 - ◆ **Ron Hofmann** (Consultant, PIER DR Program Advisor)
 - ◆ **Karen Sharp** (Workshop Facilitator)
 - ◆ **Fanta Summers**



Purpose of This Workshop

- ◆ **Introduce DR ETD Project to researchers and private industry that are not familiar to the project**
- ◆ **Present an overview of the Grant proposal submittal, review, and award process**
- ◆ **Present the progress and results of the research projects**



California Institute for Energy and Environment (CIEE)

- ◆ **Unit of the Office of Research, Academic Affairs
Division of the Office of the President, University of
California (UCOP)**
- ◆ **Located at 1333 Broadway, Suite 240 Downtown
Oakland, CA**
- ◆ **Mission: Support public-interest energy and
environmental research in CA**
 - ◆ Planning
 - ◆ Project administration
 - ◆ Technical coordination



DR ETD Project

- ◆ **CEC PIER Funded Project**
 - ◆ Approved June 2002
 - ◆ 1st project (UCB) funded in June 2003.
- ◆ **Purpose of funding is to develop enabling technologies for a state-wide demand responsive electric power delivery system with long-term “10/10” objectives**
 - ◆ 10 times the capabilities and 1/10th the cost
 - ◆ Create disruptive technology
 - ◆ High-risk – but winners will also have high impact
- ◆ **Multi-disciplinary and collaborative research**
- ◆ **Leverage R&D spending by other institutions**



Transitioning to “ETD”

- ◆ **Anticipated timeframe is September-October 2007**
- ◆ **Research will no longer be restricted to Demand Response**
- ◆ **Research will be of ESI’s areas of interest**



Energy System Integration (ESI)

- ◆ **Demand Response** (sensors, communications, and control technologies)
- ◆ **Distributed Energy Resources Systems Integration (DER)** (interconnection standards/technologies and market integration)
- ◆ **Distribution** (more flexible and responsive distribution solutions)
- ◆ **Security** (issues related to California's electric grid)
- ◆ **Strategic and Enabling Technologies** (storage, seismic, tools for market analysis)
- ◆ **Transmission** (enhancement of transmission capabilities)



Enabling Technologies

- ◆ **Wireless communications**
- ◆ **MEMS sensors**
- ◆ **Energy scavenging and storage**
- ◆ **Low-cost packaging**
- ◆ **Real-time operating systems**
- ◆ **Network management**
- ◆ **Systems integration**