



WESTCARB Annual Business Meeting

CCS and Energy Policy Development in California

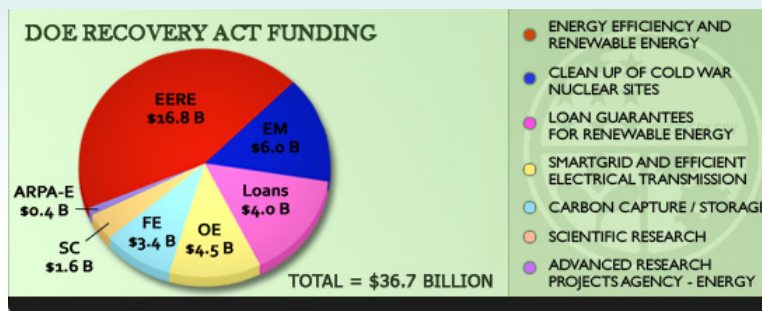
Martha Krebs, Ph.D.
Science Advisor to the PIER Program
University of California at Davis
mkrebs@ucdavis.edu

Scottsdale, AZ
September 15–17, 2009



National Context - 2009

- Financial Meltdown
- A New President
- American Recovery and Reinvestment Act (ARRA) has a strong focus on Clean Technologies – DOE, DOT, EPA, DOL
- Greenhouse Gas Reduction Legislation



California Context - 2009



- Financial Meltdown
- Leveraging ARRA for Energy in California
 - State Energy Program, Efficiency Block Grants, Weatherization, Energy Star
 - Transportation Electrification, Clean Cities, Biofuels
 - Smart Grid
 - Geothermal
 - CCS
- AB 32 Implementation – GHG Reduction Targets for 2020; CCS in the Picture but longer term opportunity, Low Carbon Fuels Standard
- Legislature Focused on 2030 RPS Goals

CCS in California – Where It Fits

When WESTCARB began

- The Loading Order was firm policy – Efficiency, Renewables, Natural Gas
- No Coal likely in the future of California
- Large Central Valley saline formations, depleted oil & gas reservoirs eligible for Carbon Storage
- Likely targets – Large Industrial sources, refineries

CCS in California – Where It Fits

- Rethinking the Future
- Power Plant Siting at the CEC
 - Operational since 2001: 43 plants; 14.6 GW; all Natural Gas
 - Approvals since 1999
 - Under Construction: 7 projects; 2.0 GW Natural Gas; 50 MW solar
 - Approved and available for Construction: 13 projects; 6.3 GW Natural Gas; 213MW Geothermal
 - Approved but will not be built: 8 projects; 2.5 GW, all Natural Gas
 - Under Review: 30 projects – 13.1 GW
 - 17 projects Natural Gas – 7.6 GW
 - 11 projects Renewables – 4.5 GW
 - 1 Hybrid Natural Gas/Solar – 570 MW, 10% Peak from Solar
 - Hydrogen from Petcoke and Coal: 390 MW



CCS in California – Where It Fits

- National and California GHG Reduction Goals for Electricity Sector may not be met by Renewable Capacity goals
- In California, Natural Gas plants will likely have to contribute to GHG Reductions
- CEC/PUC have been engaged in discussions with NETL and relevant California agencies
 - Develop a carbon capture project design for a natural gas power plant – PG&E and NETL
 - Develop an interagency approach for legislation on critical policy issues: liability and ownership;

