



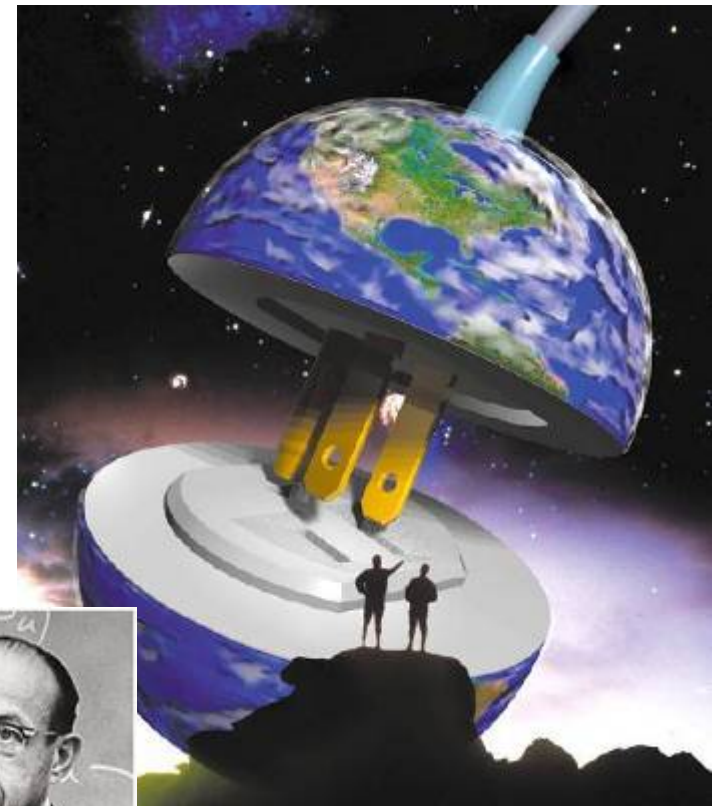
Solar Thermal Hybrid Demonstration Projects

Bryan Hannegan
Vice President, Environment & Renewables

Western Business Roundtable
January 5, 2010

About EPRI ...

- Founded in 1973
- Independent, nonprofit center for public interest energy and environmental research
- 450+ collaborative participants in more than 40 countries
 - EPRI members generate more than 90% of U.S electricity
- Major offices in Palo Alto, CA; Charlotte, NC; Knoxville, TN
 - Laboratories in Knoxville, Charlotte and Lenox, MA



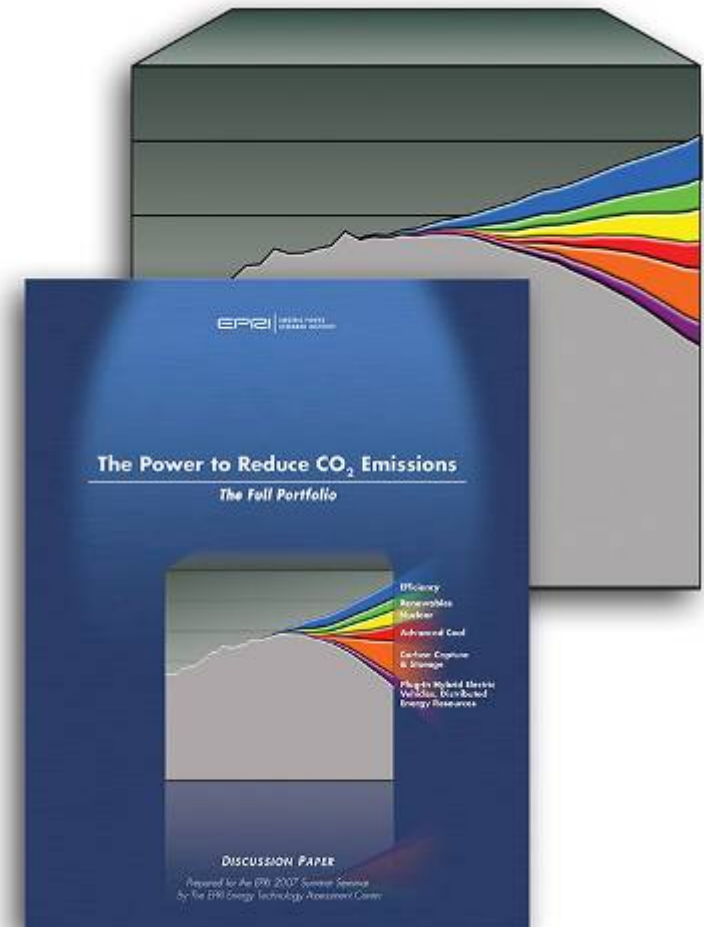
**EPRI's Founder
Chauncey Starr**

Prism / MERGE Analysis...

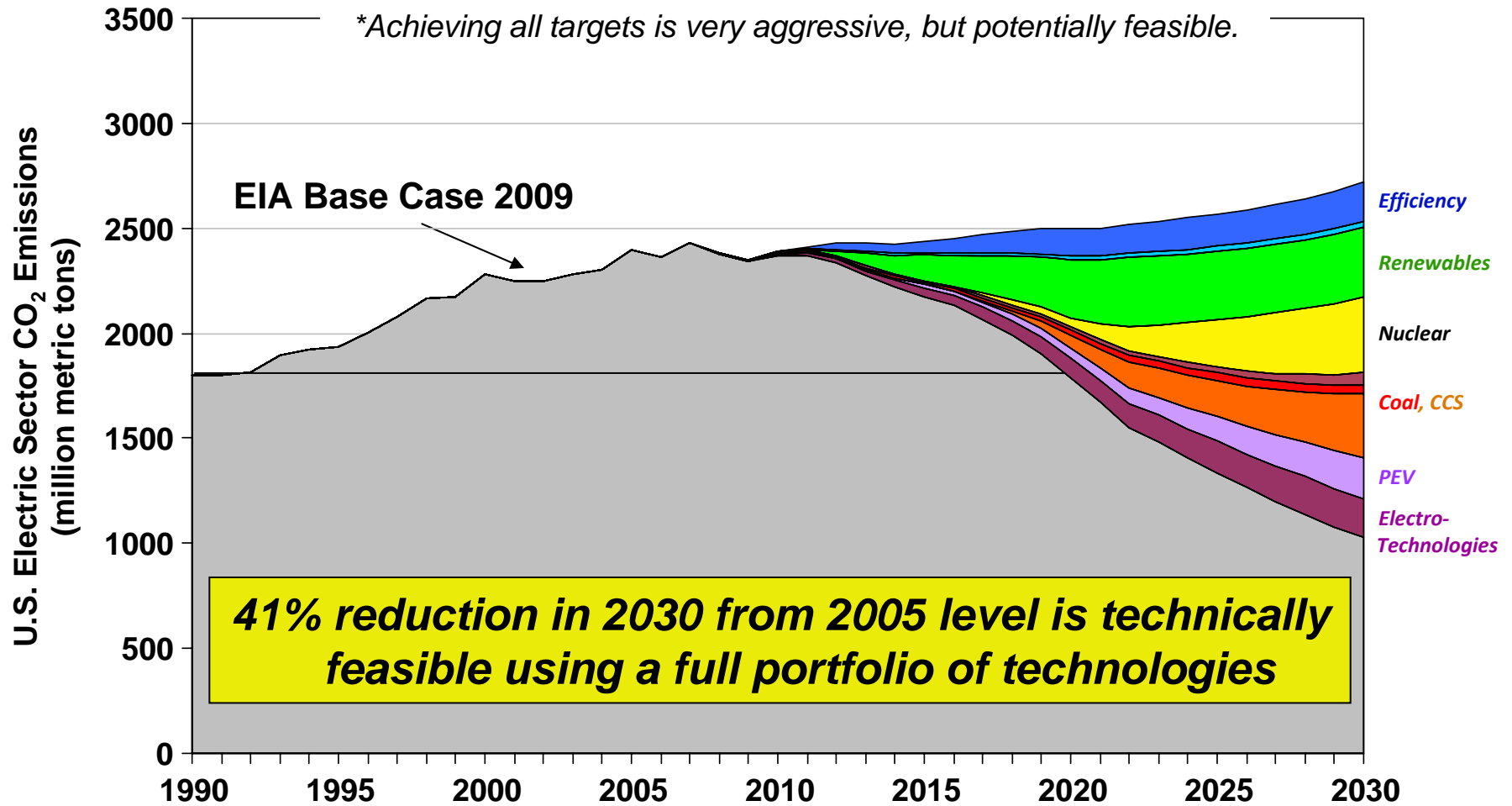
Roadmap for a low-carbon future...

- Detailed analysis of the pathway to reducing CO₂ emissions across the electricity sector
- Provides guidance on the needed generation mix to slow, start and reverse global CO₂ emissions
- Cited in numerous national and international publications

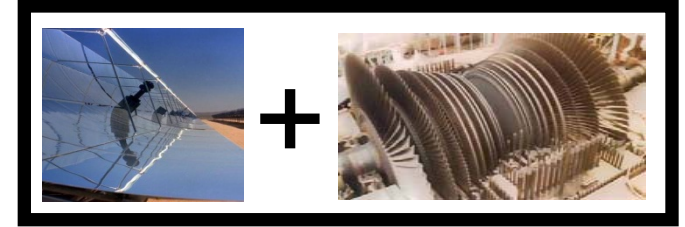
2010 Update In Progress



CO₂ Reductions ... Technical Potential*



Solar Thermal Hybrid Systems



Approach

- Utilize heat from a solar field in a fossil-based power plant
- Applicable to natural gas combined cycle (NGCC) and coal-fired systems
- Solar steam integrated into heat recovery steam generator, main steam supply, feedwater heating, cold reheat, or cogen
- Maximum input depends on available land and existing equipment limitations

Benefits

- Reduce fuel use and offset fuel costs
- Reduce emissions and better utilize plant assets
- Address regulatory pressures
- Achieve higher cycle efficiency and potentially lower cost compared to stand-alone solar
- Earn plant revenues through renewable energy credit markets
- Meet renewable energy targets

Solar Thermal Hybrid Demo Hosts

Solar Thermal Hybrid NGCC Demo: NV Energy



- Host Site: 1102-MW Chuck Lenzie Station, north of Las Vegas, NV
- Solar Field Size: ~95 MW proposed
- Unique Features: One of the largest proposed integrations in the world; superheated steam design boosts solar use efficiency
- Schedule: Plan for authorization to construct in 2011; operation in 2014

Solar Thermal Hybrid Coal Demo: Tri-State



- Host Site: 245-MW Escalante Station located in Prewitt, NM
- Solar Field Size: ~36 MW proposed
- Unique Features: Potentially 1st large-scale solar project for pulverized-coal main steam
- Schedule: Plan for construction start in 2011; operation start in 2014

Photo courtesy of Tri-State Generation and Transmission Association



Together...Shaping the Future of Electricity