



"STATE OF RENEWABLE ENERGY 2006"

Presented to:

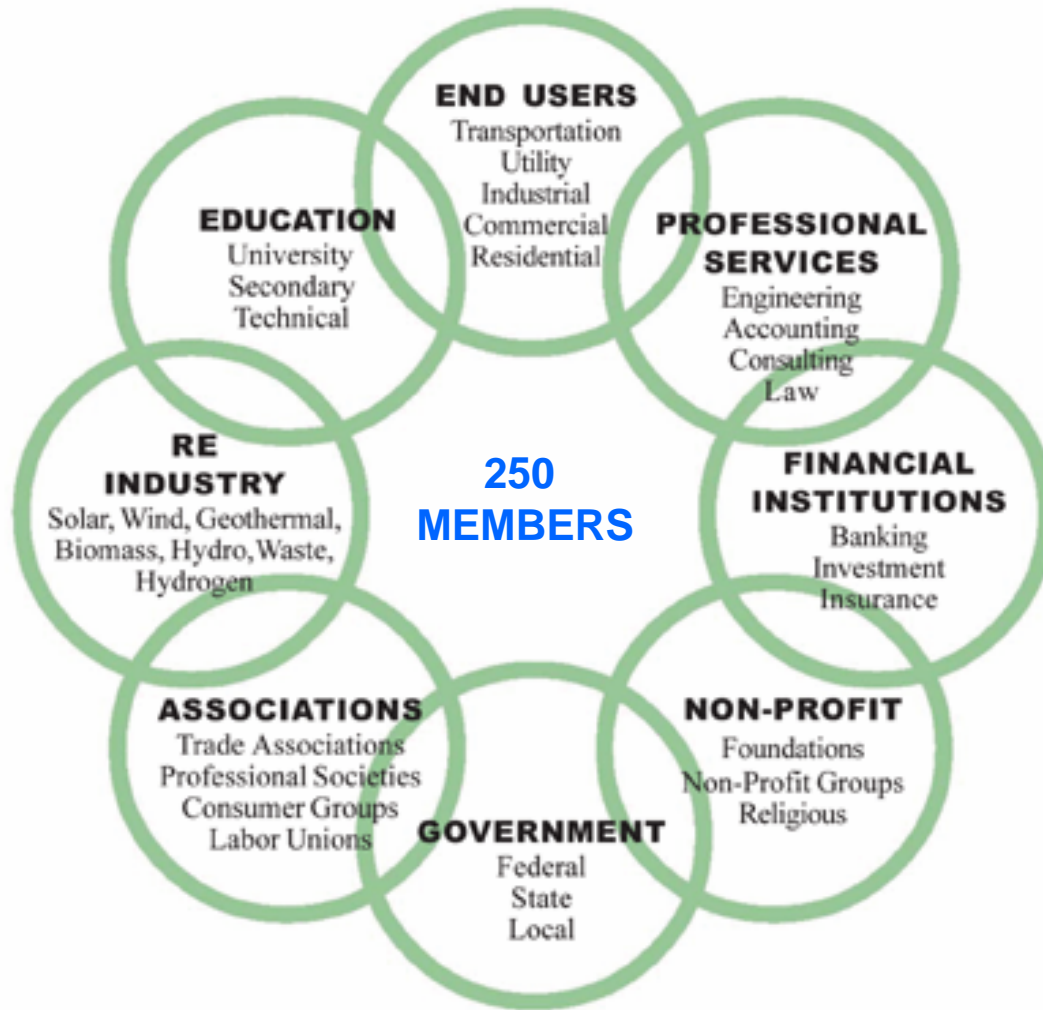
**State of the Energy Industry
US Energy Association**

January 17, 2006

Michael Eckhart, President
American Council On Renewable Energy
www.acore.org



American Council On Renewable Energy



TRADE



FINANCE



POLICY



2005 in Review

- Industry grew 25% to \$30 Billion in sales
- International policy moved ahead:
 - Kyoto Protocol went into effect
 - China passed Renewable Energy Law
 - Germany confirmed its RE Law
- US policy advanced:
 - Energy Policy Act 2005 with RE Incentives
 - WGA completed its regional energy plan



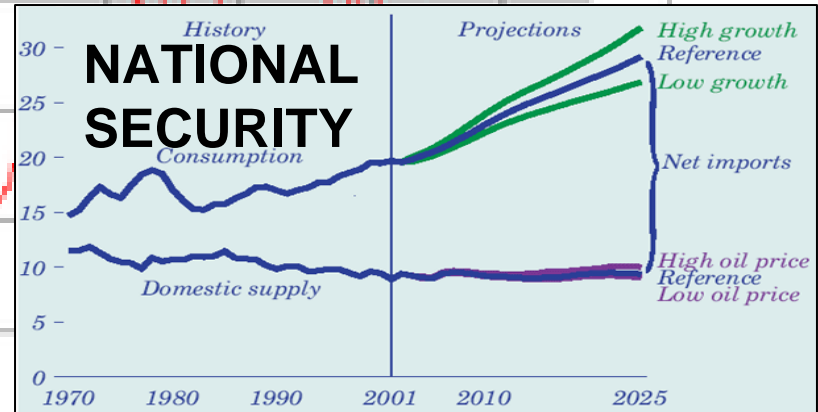
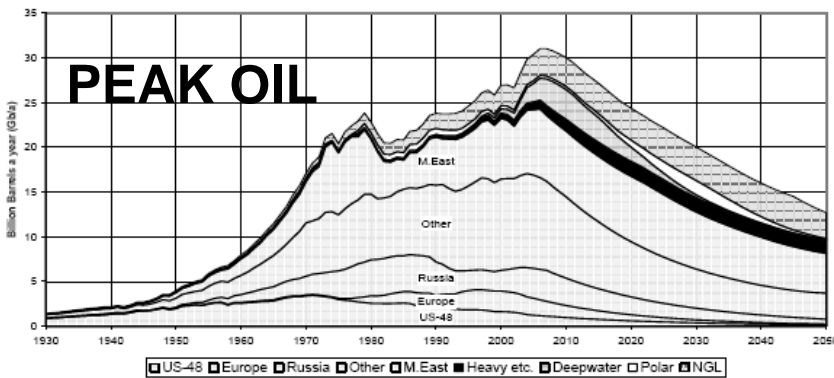
World and US Oil Dilemma

End of an Era ... Beginning of an Era

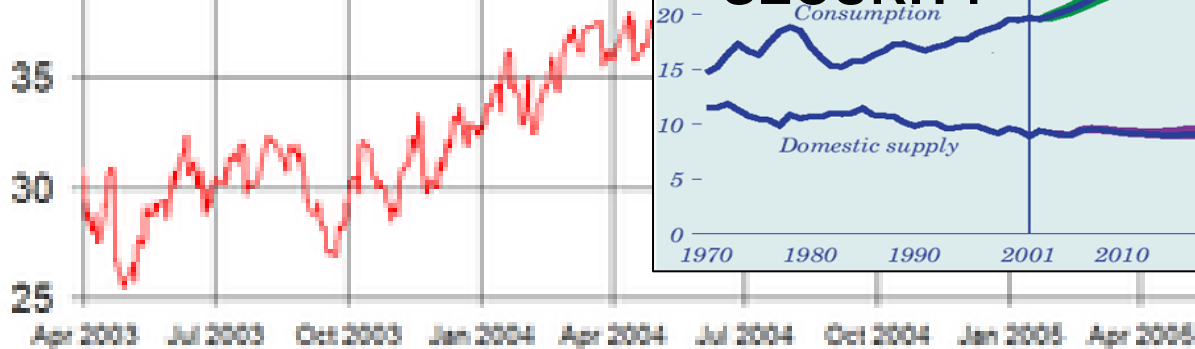
Oil Prices, 2003-2005

NYMEX Light Sweet

60



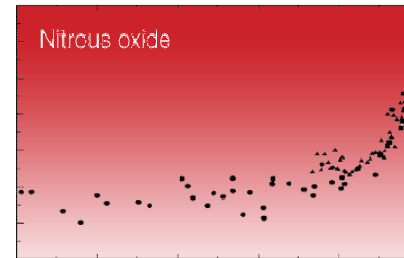
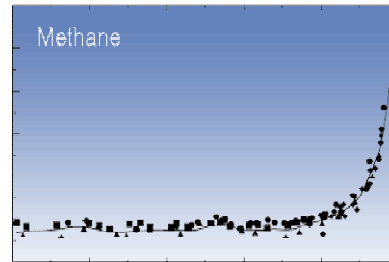
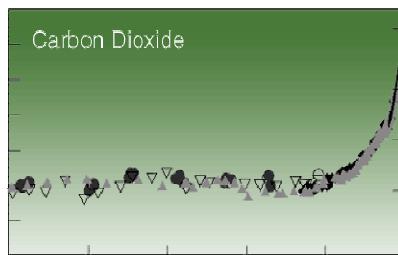
40



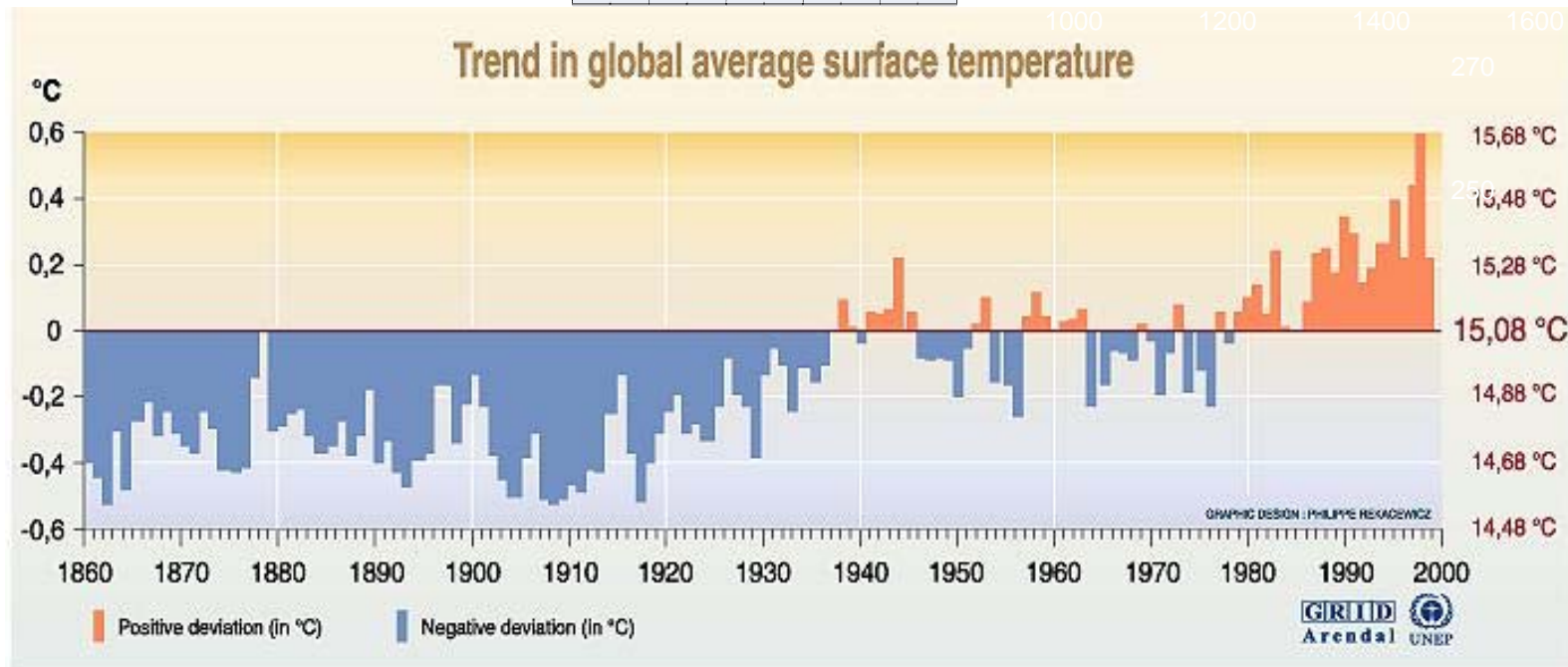
Climate Change

End of an Era ... Beginning of an Era

Changes in Atmospheric Concentrations - 1000 Year History

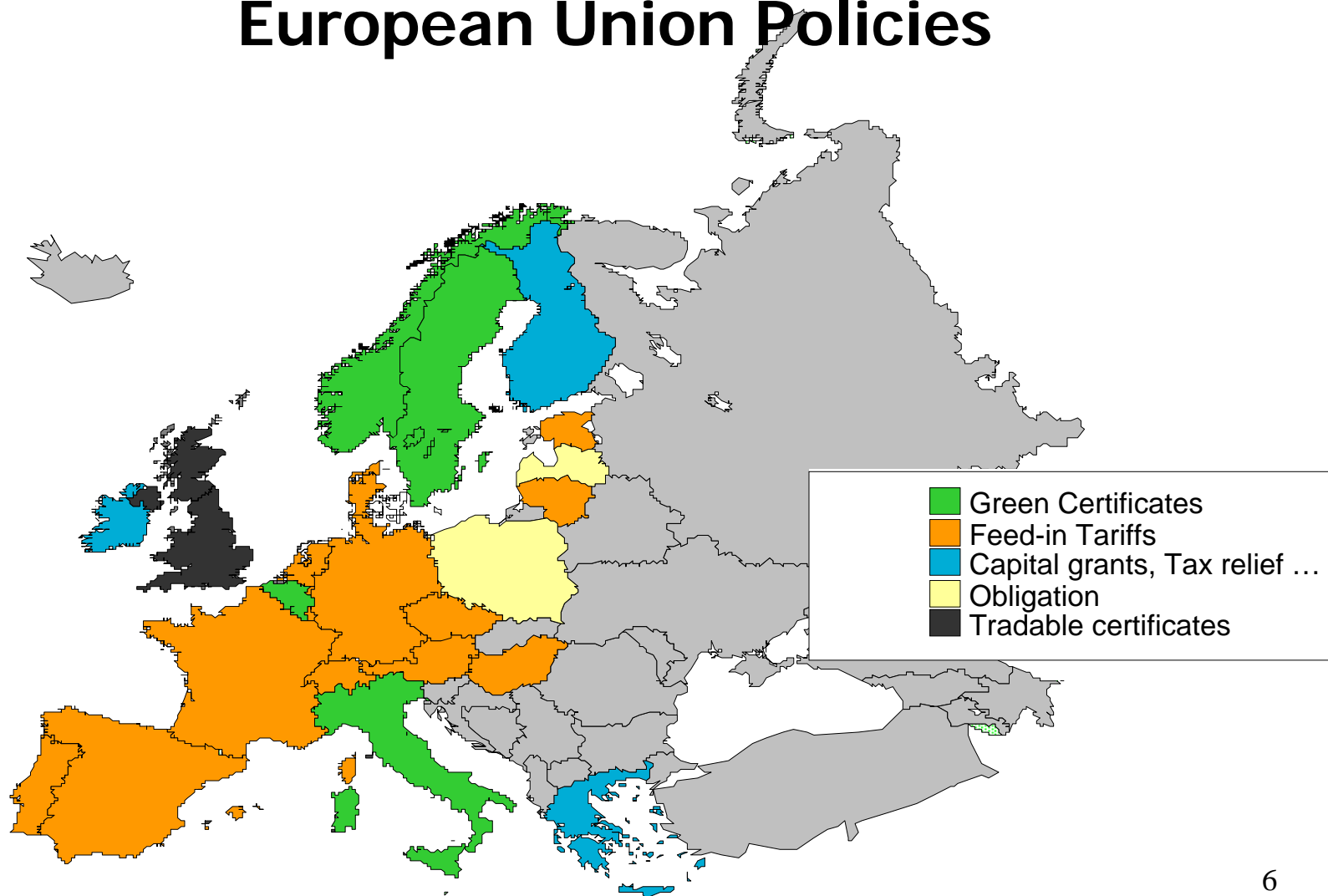


Source:
NREL



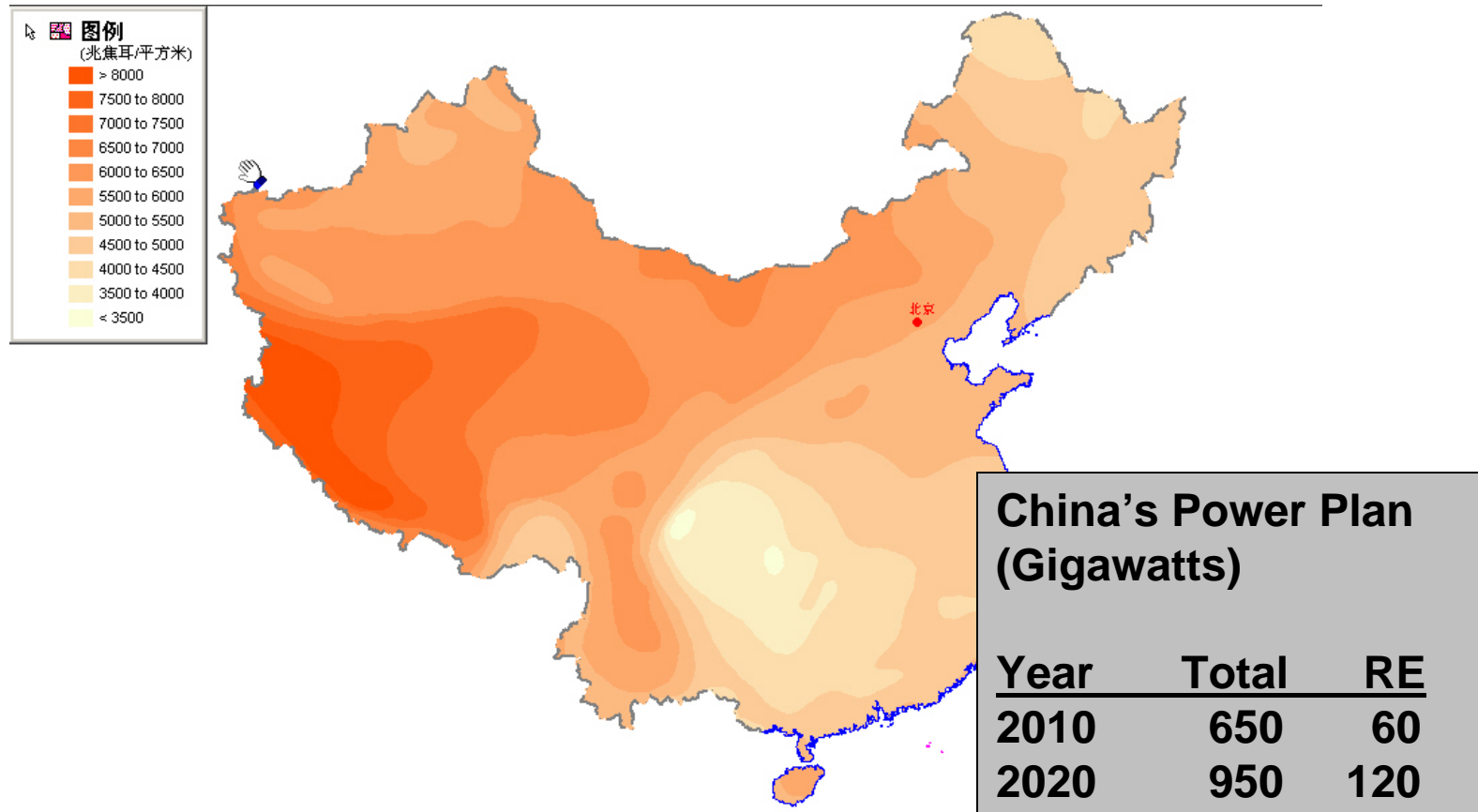
Sources: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.

Early Leadership for Renewable Energy European Union Policies



China

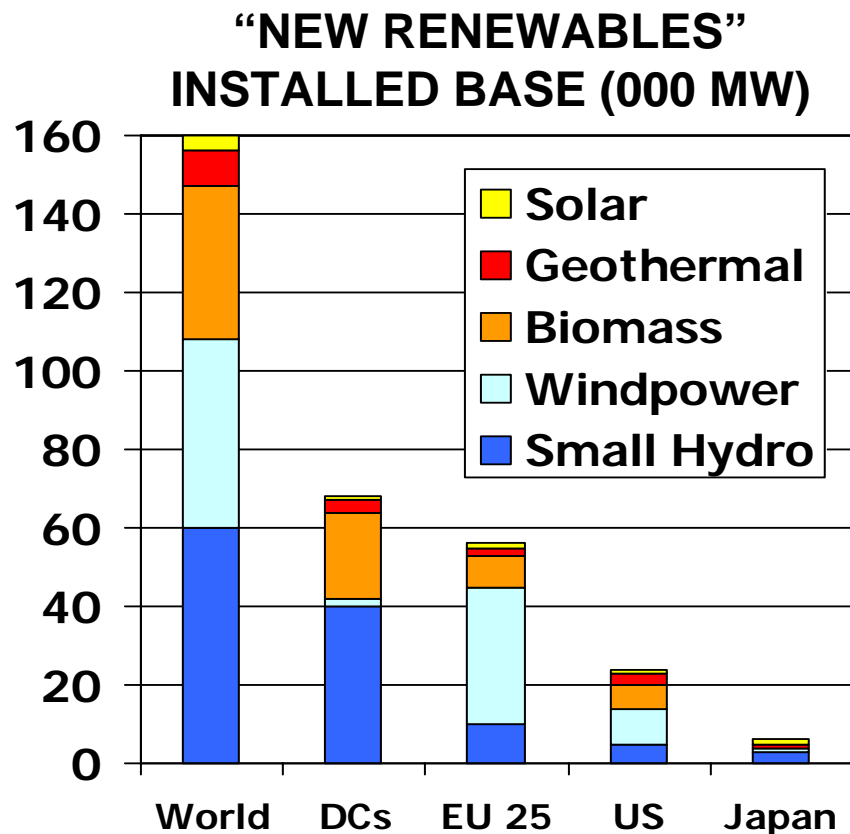
New Renewable Energy Law Effective 1-1-2006





State of the Global RE Market

160,000 MW Installed Growing at 25 GW/Year



Plus:

720,000 MW Large Hydro

220,000 MW (th) Biomass Heating

28,000 MW (th) Geothermal Heating

77,000 MW (th) Solar Heating

1,000 MW of off-grid solar PV systems

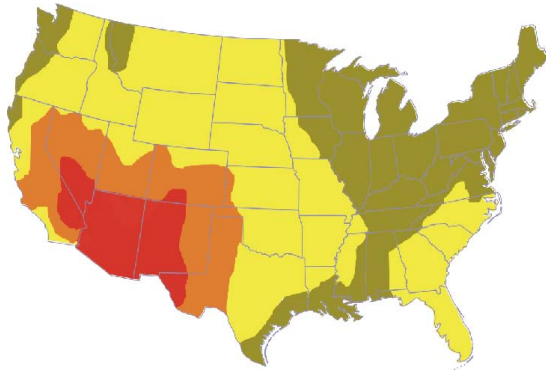
Source: Renewables 2005: Global Status Report

**Total Renewable Energy = 1,206,000 MW Equivalent
for Electricity and Heating Around the World**

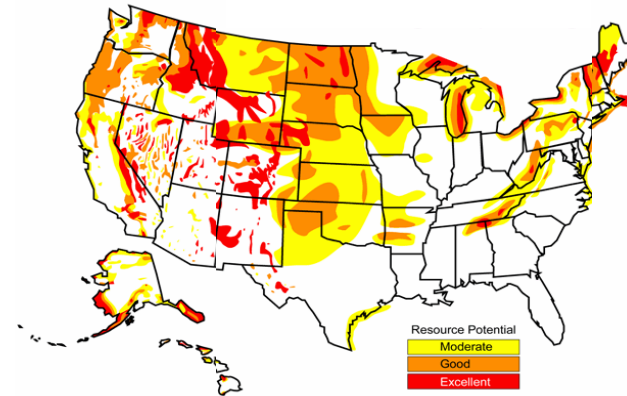
The Challenge of Putting RE into Use

- Regional Resources, Economics, and Politics -

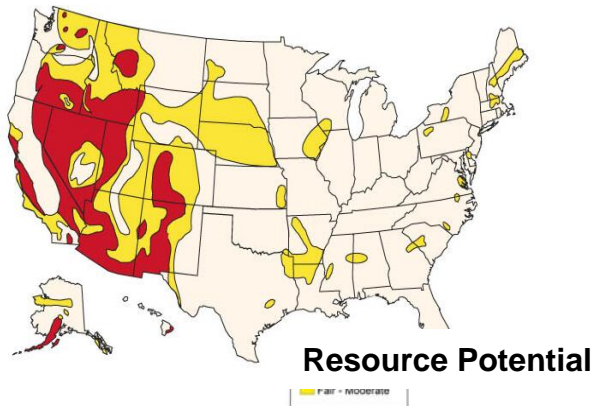
SOLAR ENERGY



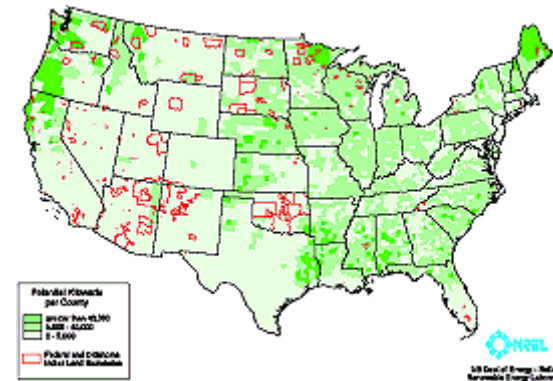
WIND POWER



GEO THERMAL

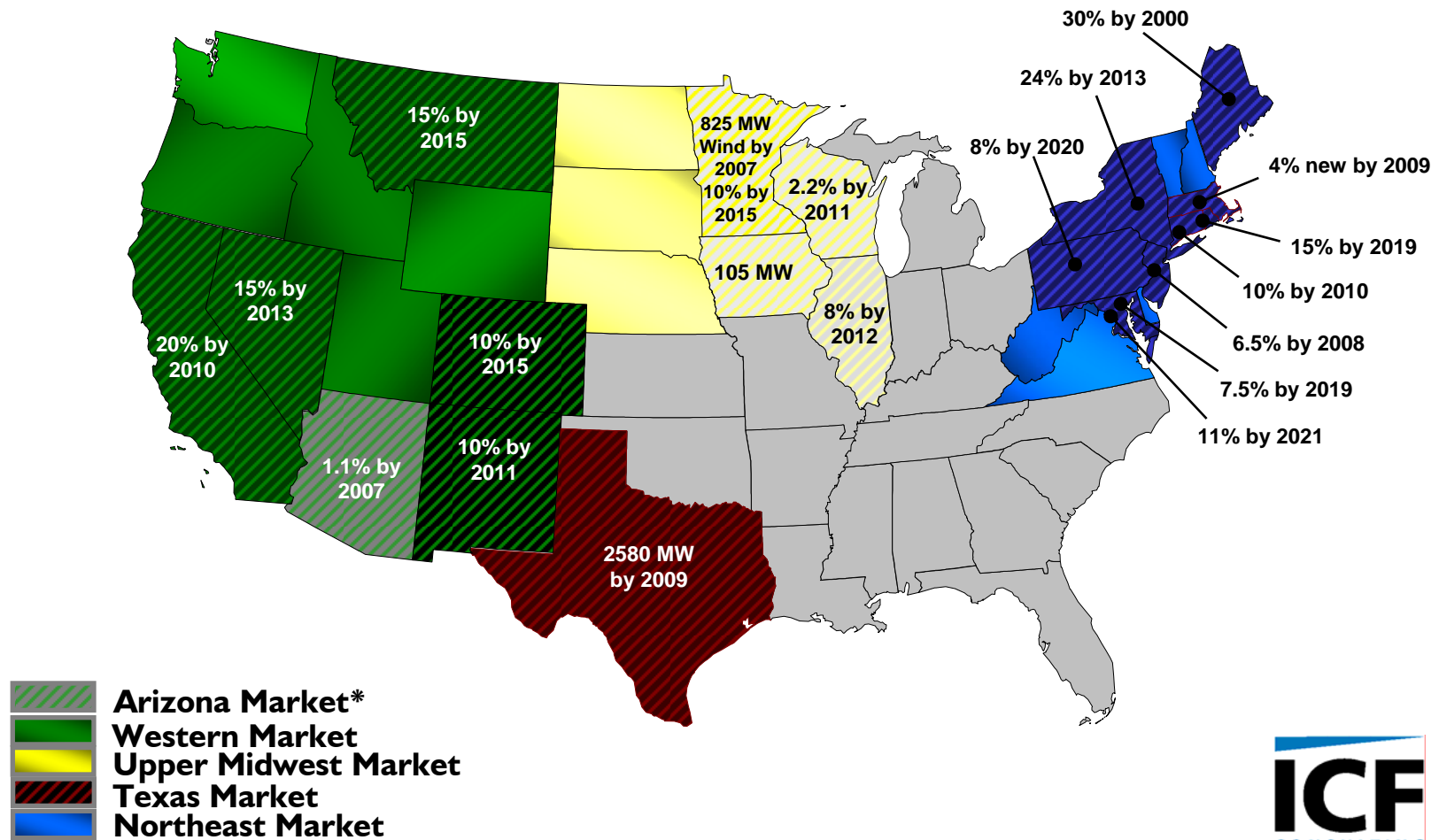


BIOMASS





US Renewable Energy Markets



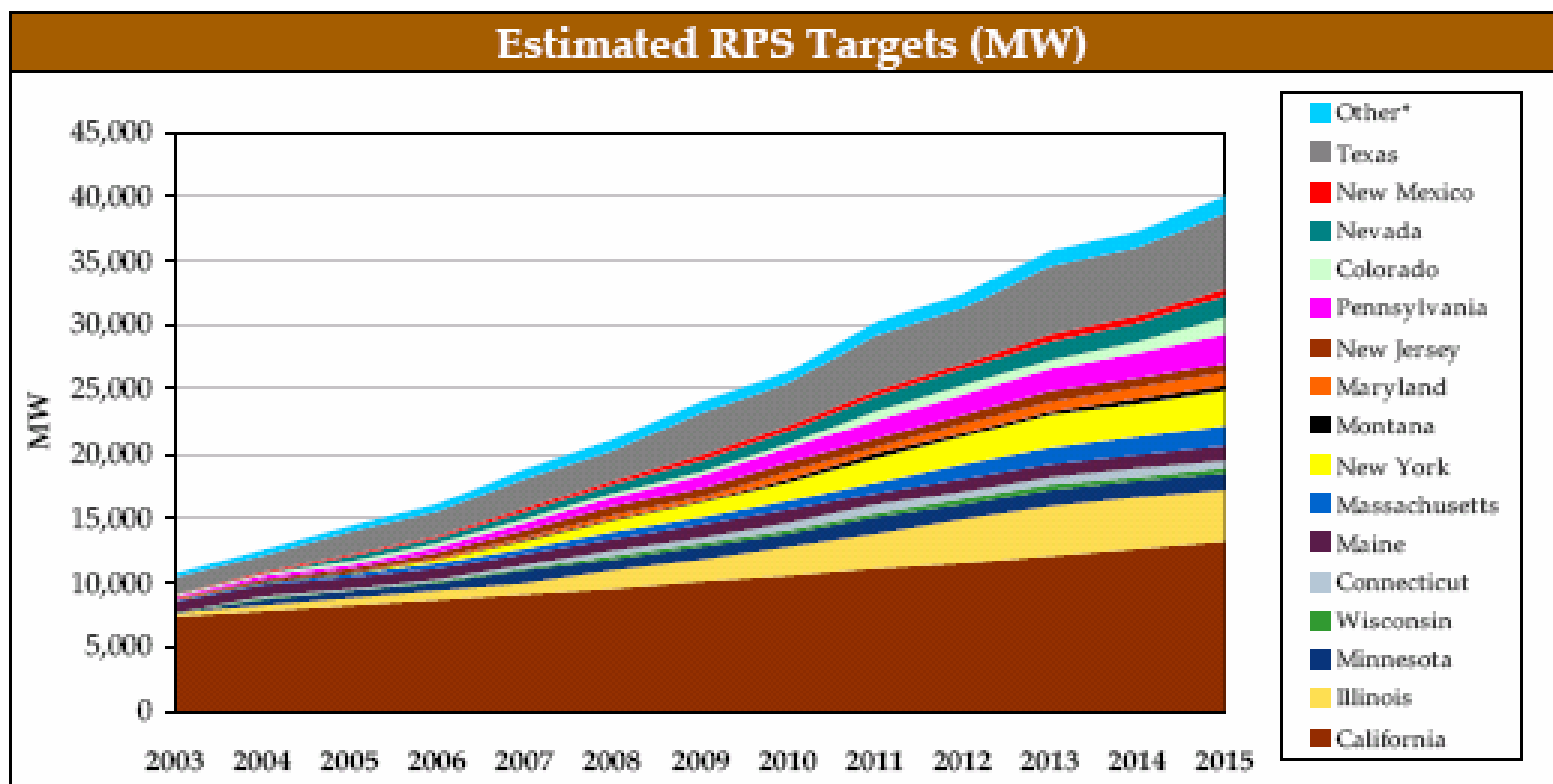
*Arizona may export but not import RECs to/from other states.





Projected Impact of RPS Compliance

- From 10 GW in 2003 to 40 GW in 2015 -



Source: Navigant Consulting, Inc, September 2005

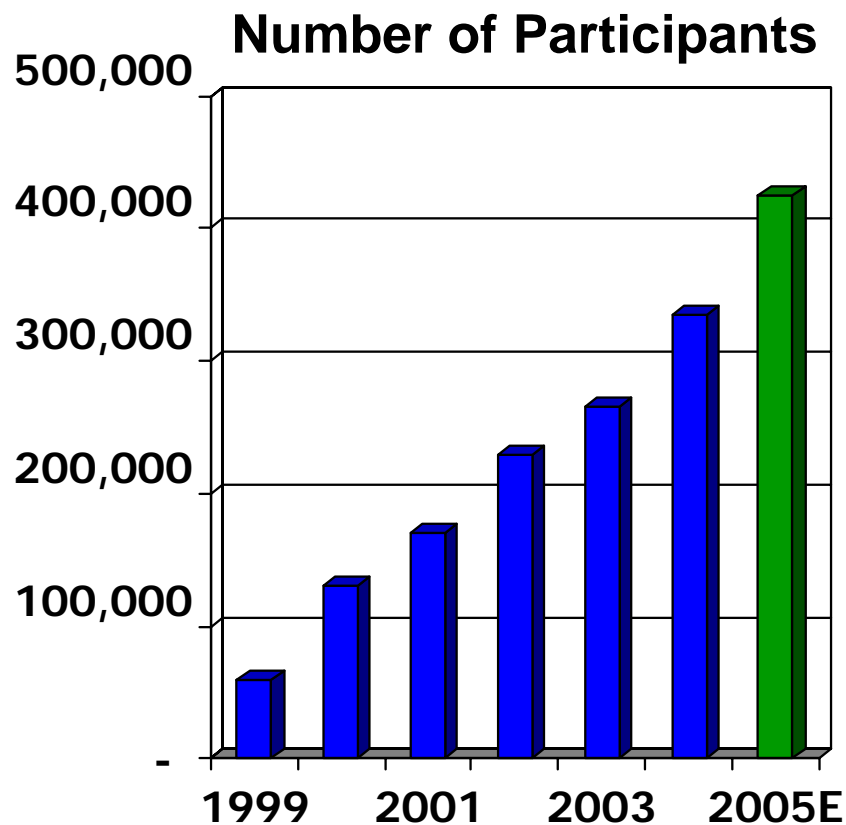
* Hawaii, Iowa, Rhode Island, Vermont, Delaware, Washington D.C. and Arizona.



Green Power Marketing

Utility Green Pricing Programs

Growing at a Steady 40% CAGR



Source; Lori Bird, NREL 2005

Top 10 Green Pricing Programs:

- Austin Energy
- Portland General Electric
- PacifiCorp
- Sacramento
- Xcel Energy
- National Grid
- LADWP
- OG&E Electric
- Puget Sound
- We Energies

+700 MW of RE Capacity Added to Support Green Pricing Programs

RE Finance is Entering the Mainstream

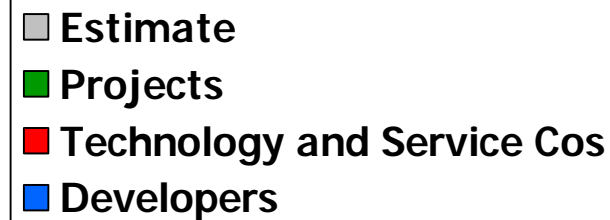
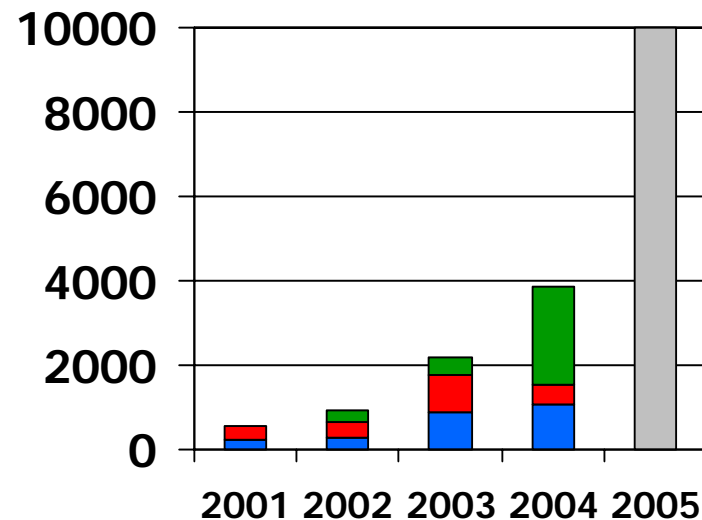


ACORE's RE Finance Forum 2005

Major IPOs in 2005:

- Q-Cells Germany
- SunPower USA
- Suntech Taiwan
- Suzlon India

Renewable Energy Global M&A Activity - \$ Millions

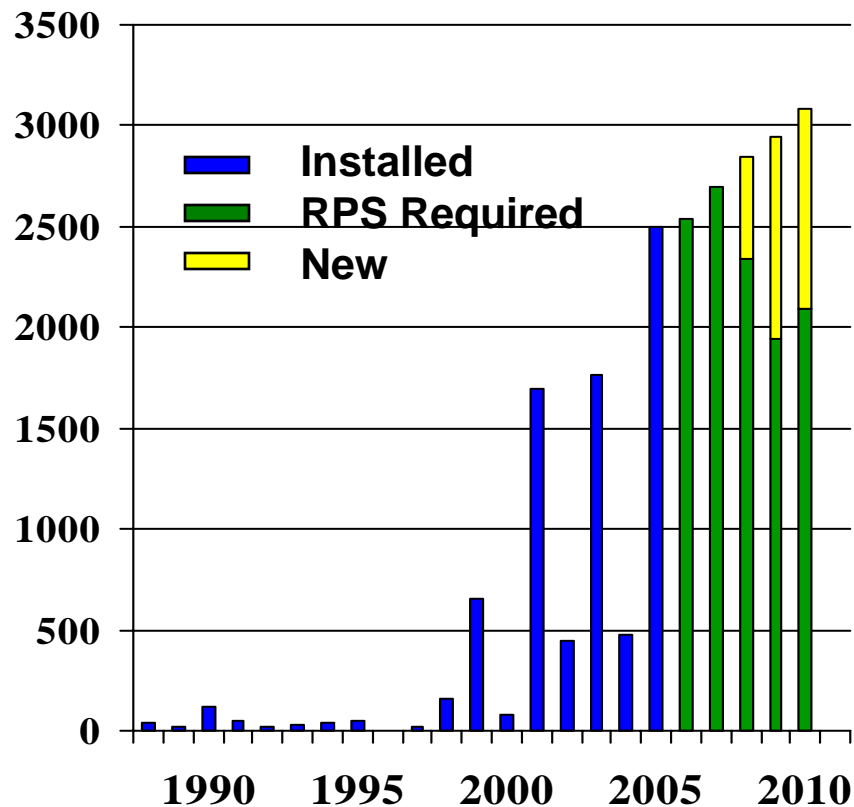




Wholesale Power Generation

US Wind Power

US Wind Power Installations (MW/Year)



Sources: AWEA, GE Wind, and ACORE



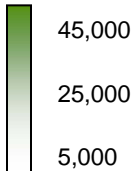
9,700 MW Installed Base 2005
35,000 MW estimated by 2015

Key Issues:

- . Turbine availability
- . RPS extension past 2007
- . Siting and Transmission

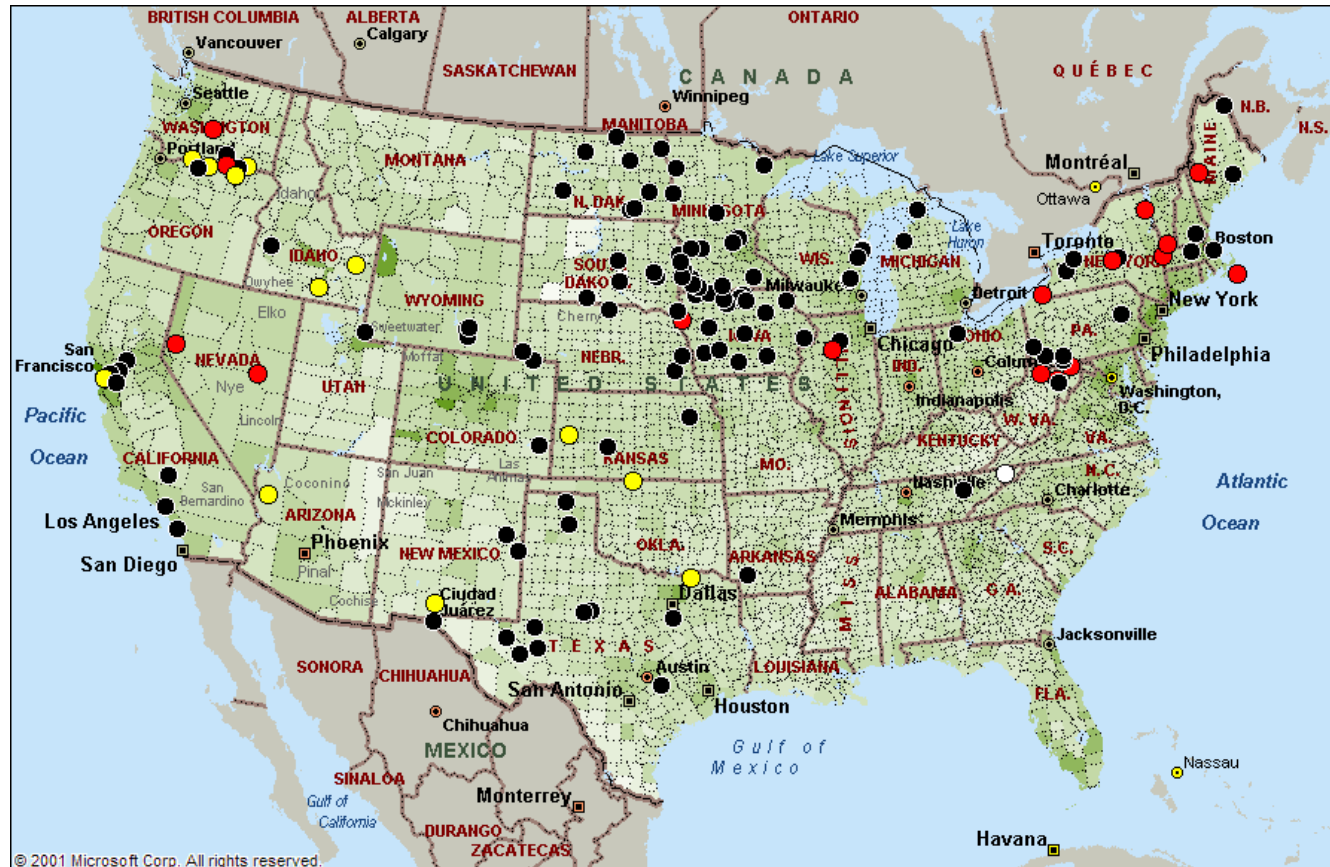
Location of US Windfarms

Per capita income in 1999



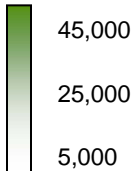
Status

- Completed
- Proposed
- Speculative
- Under development



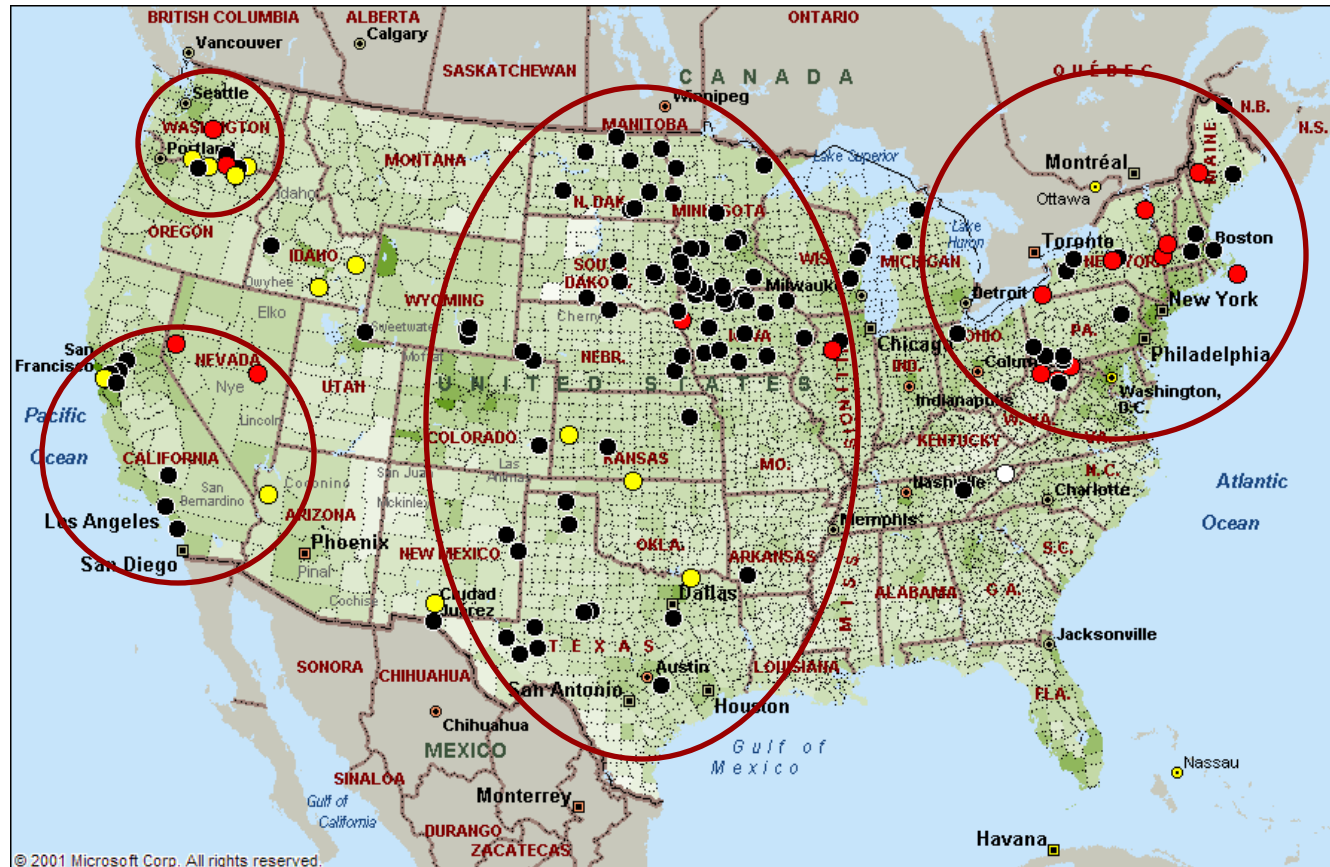
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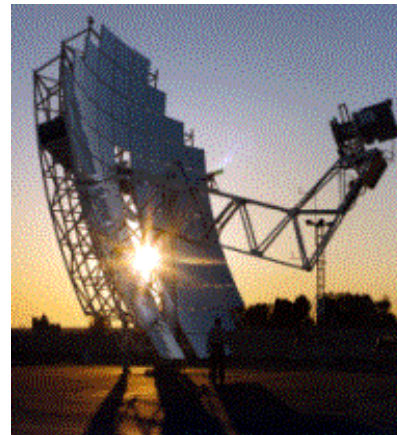




Other Wholesale Power Generation Geothermal, Hydropower, and Solar Thermal-Electric



500 MW contracts



**Solar Dish-
Sterling:
350 MW
Contracts**



Incremental Hydro



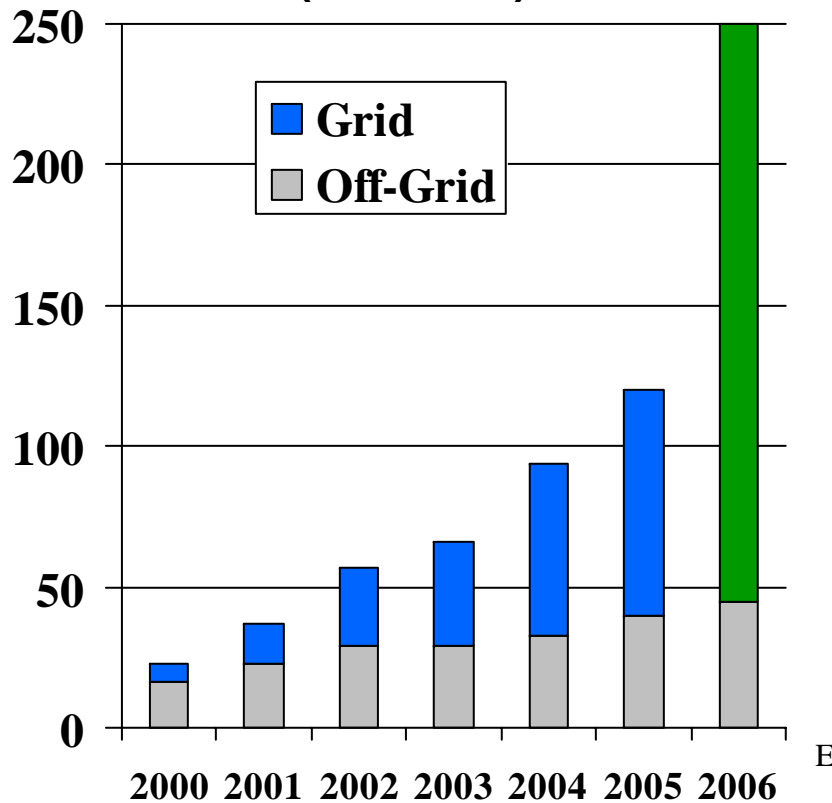
**Solar Trough:
50 MW
Under
Construction**



Distributed Generation Solar PV

\$7 Billion/Year Global Industry

**US Solar PV Installations
(MW/Year)**



Sources: PV News and ACORE



**Approximate 5,000 MW in place
Adding 1,500 MW/year globally**

Key Issues:

- . US 30% tax credit
- . California's \$3.2 B program
- . Silicon shortage
- . Global competition

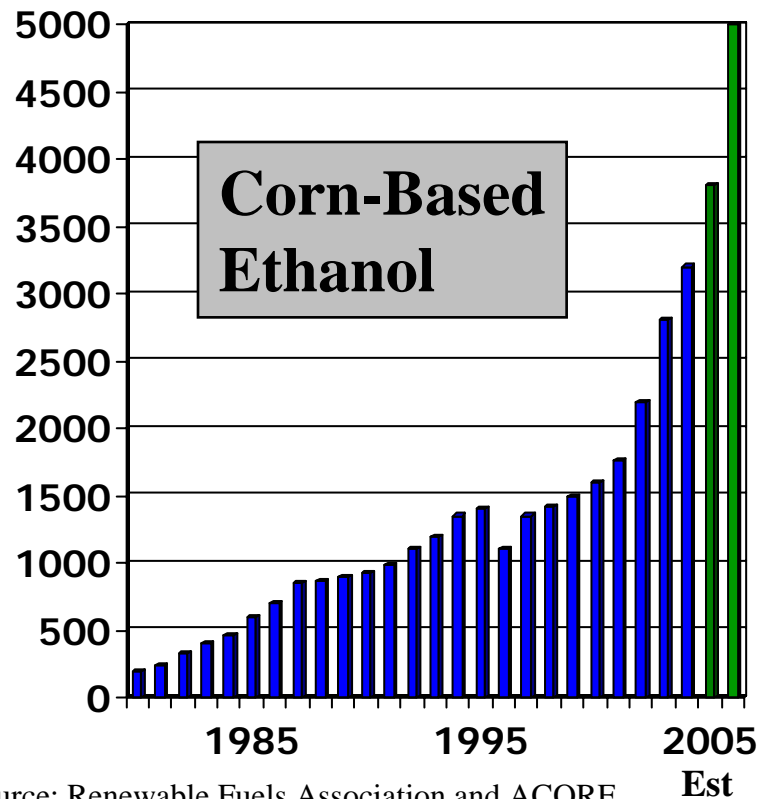


Renewable Fuels

US Ethanol and Biodiesel

Over \$2 Billion Invested in 2005

Million Gallons / Year



- Biofuel options:**
- Corn-based ethanol fuel
 - Cellulosic ethanol fuel
 - Bio-diesel - US and Europe



"Policies for Phase II"

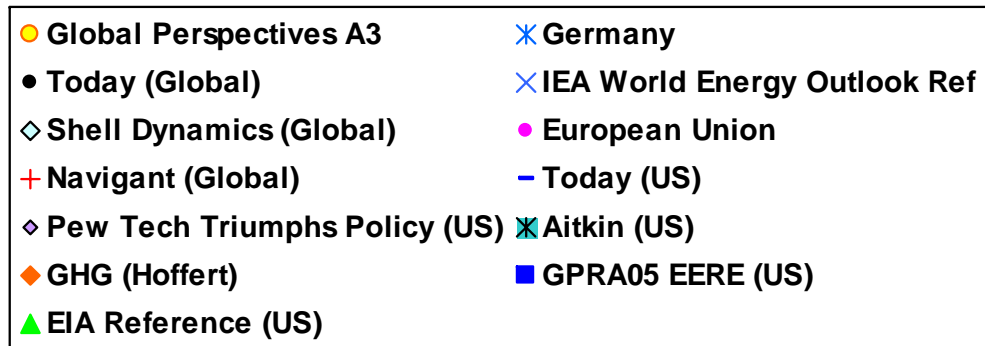
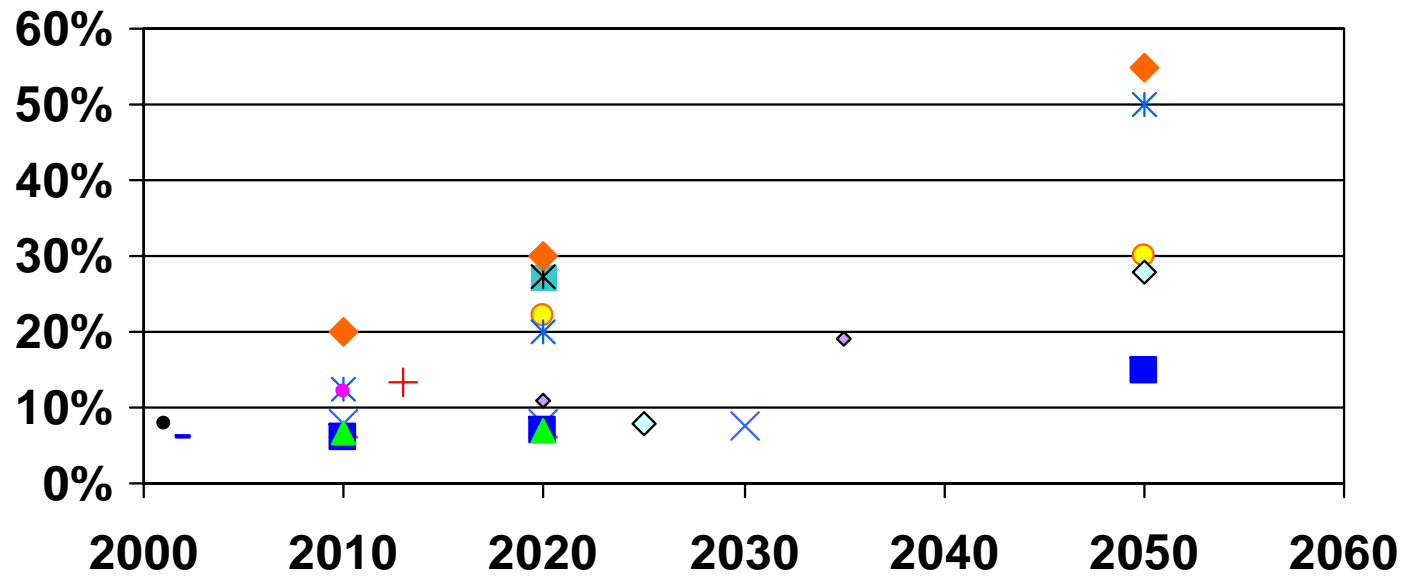
October 17-18, 2005, Cannon Caucus Room, Washington, DC
Co-convened with the RE/EE Caucuses of the US Senate and House





Renewable Energy Targets and Forecasts

% of Total Energy

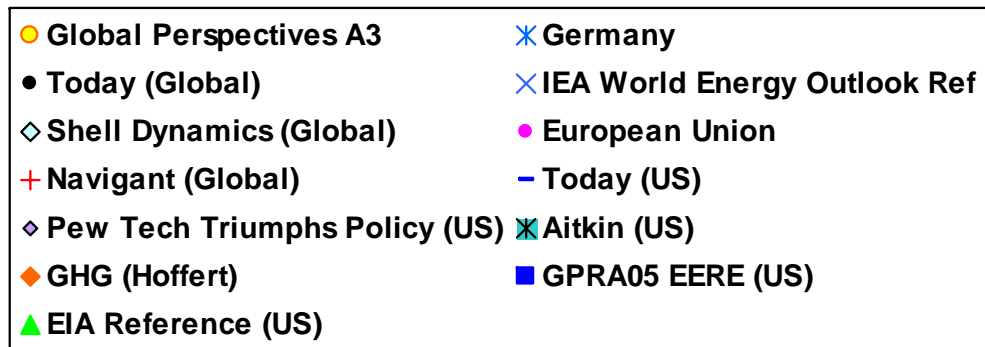
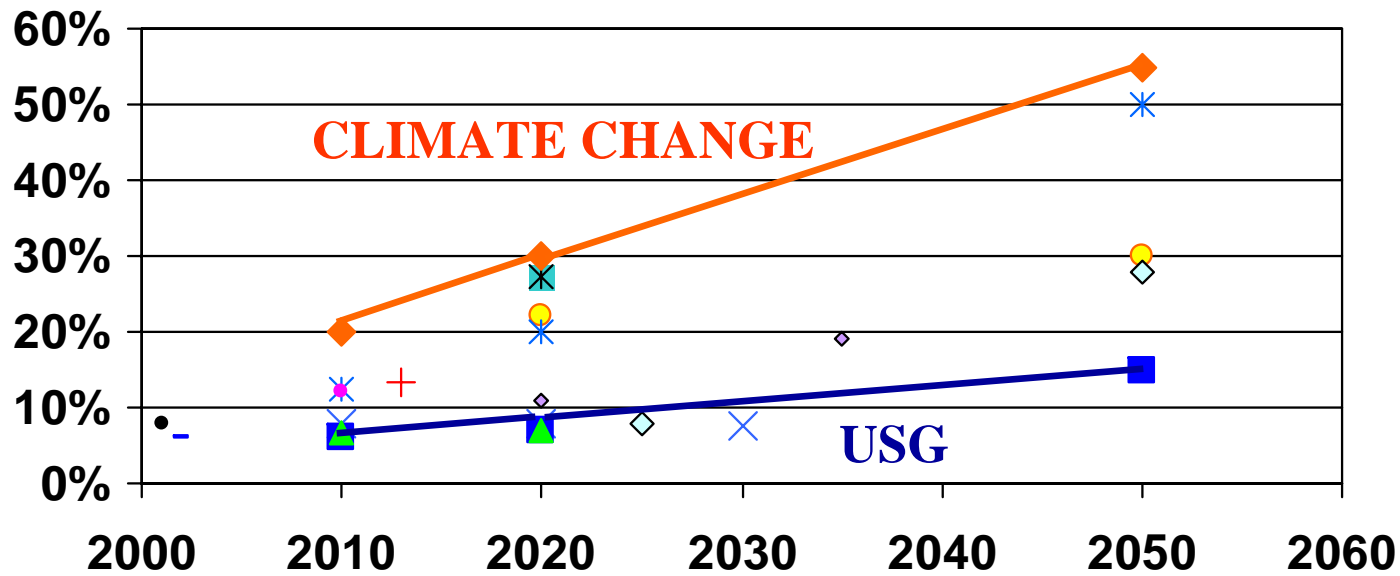


Source:
NREL



Renewable Energy Targets and Forecasts

% of Total Energy

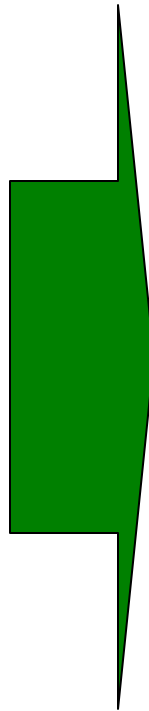


Source:
NREL

“Phase II” of Renewable Energy in America

Phase I: “Development”

- Past 30 Years
- Focus on RD&D
- Develop Technologies:
 - Wind
 - Solar
 - Hydro
 - Geothermal
 - Biomass
 - Biofuels
- “Commercialization”
- Key = Innovative Policy
- Lead: Federal



Phase II: “Utilization”

- Next 30 Years
- Focus on National Needs
- Implement Solutions:
 - Hybrids + Biofuels
 - Solar + Efficiency
 - National REC Trading
 - Transmission
 - Investment
 - Jobs
- “Utilization”
- Key = Stable Policy
- Lead: State / Federal



Summary

1. RE technologies are ready for use
2. Large and growing global market
3. Emerging US market
4. Deployment policy led at the State level
5. Federal incentives -- essential to success
6. US moving to "Phase II"
7. Need for policy stability and commitment



Thank You

www.acore.org

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