No Time to Lose:

How U.S. States Will Answer the Energy & Climate Challenges of the 21st Century

Briefing for Minnesota Policy Makers

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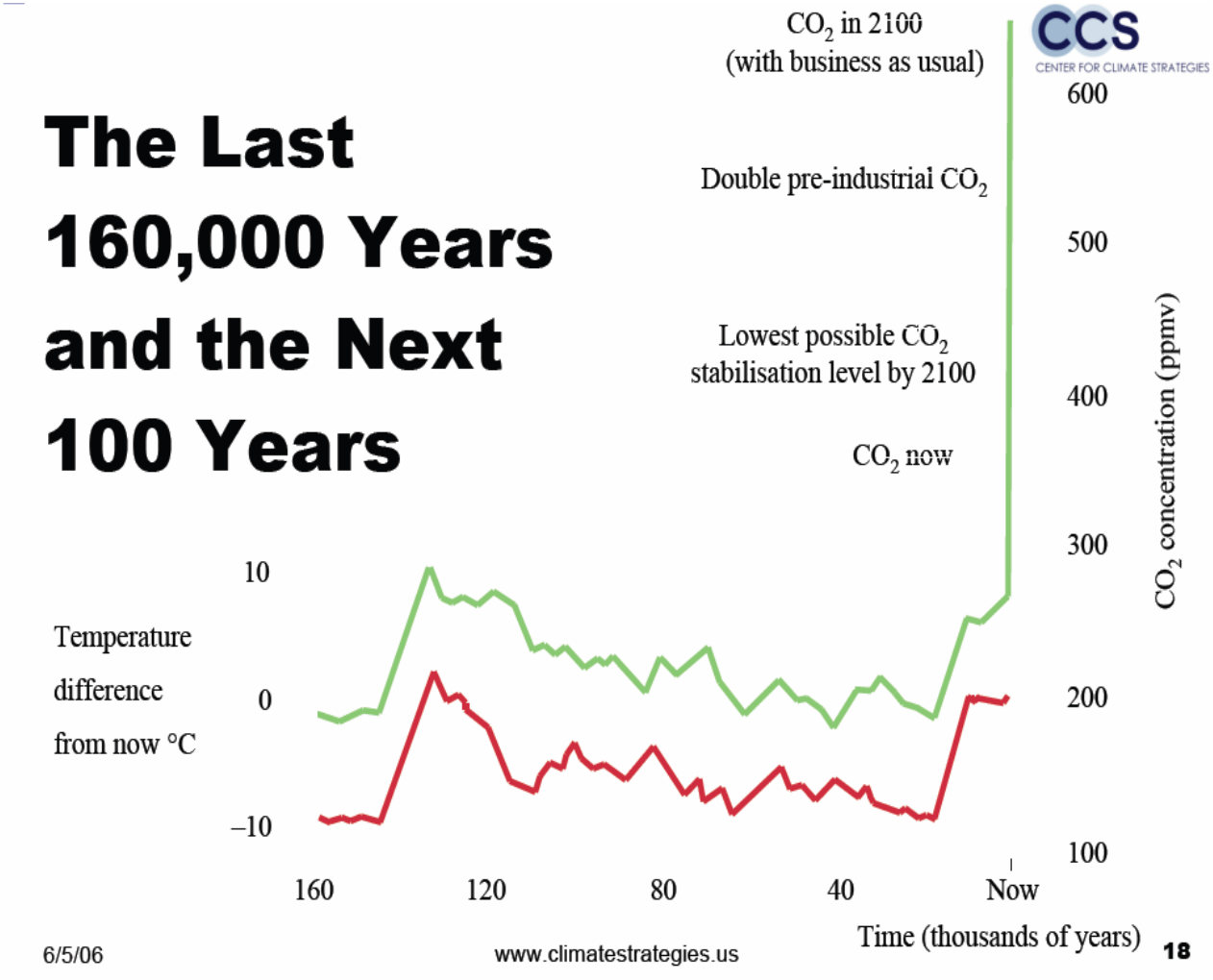
No Time to Lose

Presented by Terry Tamminen

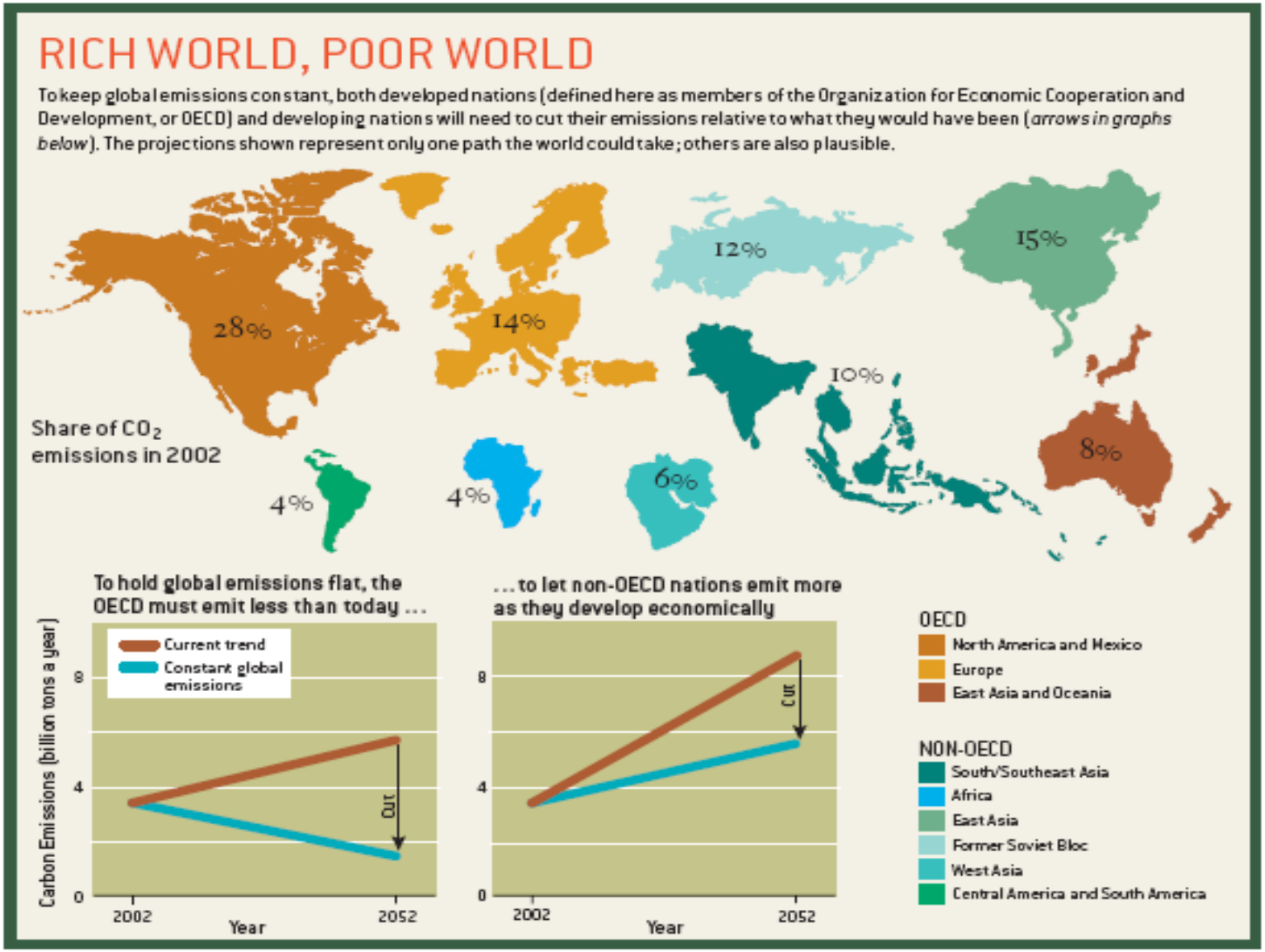
- Former Secretary of the California EPA
- Environmental and Energy Advisor to world leaders, including California Governor Arnold Schwarzenegger
- Senior Advisor to the non-profit Center for Climate Strategies and New America Foundation
- Author of ”Lives Per Gallon: The True Cost of Our Oil Addiction”
- Assisting several states, provinces, nations with development of climate action plans and cleantech economic development

Quick Start Guide: A brief summary of the climate change challenge

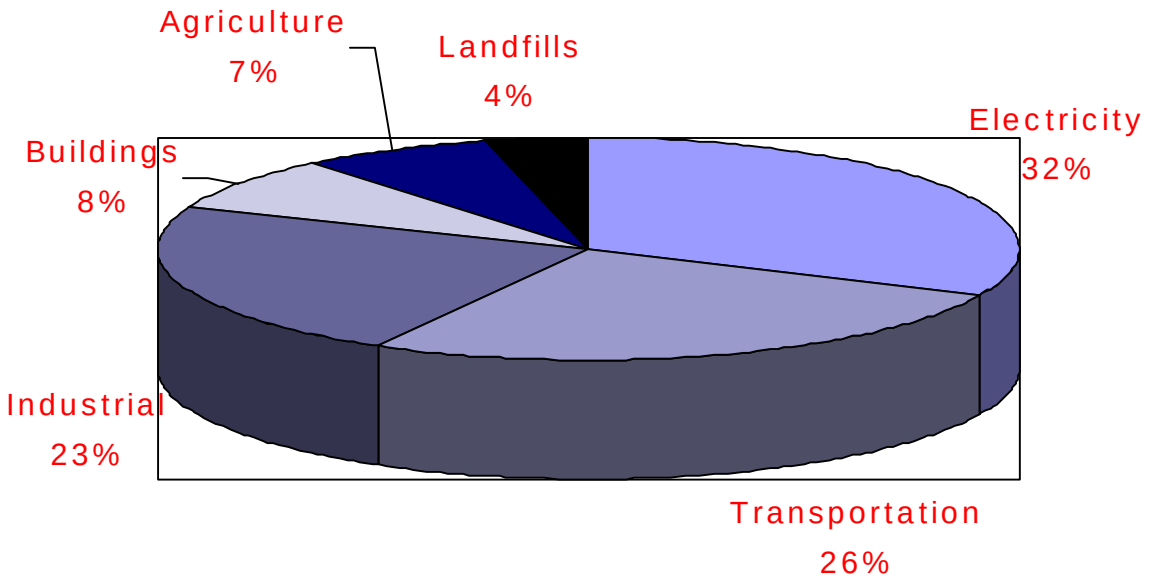
- No debate: 500,000 years of CO2 at +/- 280 ppm has increased to 390 ppm in the past 100 years



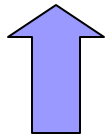
U.S. = 5% of world population, but 28% of world GHGs (Scientific American, Sept. 2006)



U.S. CO2 Emissions Sources: Drives Future Energy Choices



What reductions are needed and why?

- 30% reduction by 2020 (1990 levels)
- 80% below 1990 levels by 2050
- Climate “stabilization”
  - 500 PPM CO2e in the atmosphere
  - No more than 2^{O}C average temperature 
  - Latest IPCC report shows we may be closer to the tipping point than previously known

The Benefit of Climate Solutions

- In California by 2020 the implementation of the state's Climate Action Plan will result in a net increase of…
  - 83,000 new jobs
  - $4 billion annual income
- A comparable investment in low-carbon, energy-efficiency nationwide…
  - 1.4 million new jobs by 2025 in the U.S.
  - Average saving of $1275/year per U.S. household

(Redefining Progress 2004; CA Climate Action Plan 2005)

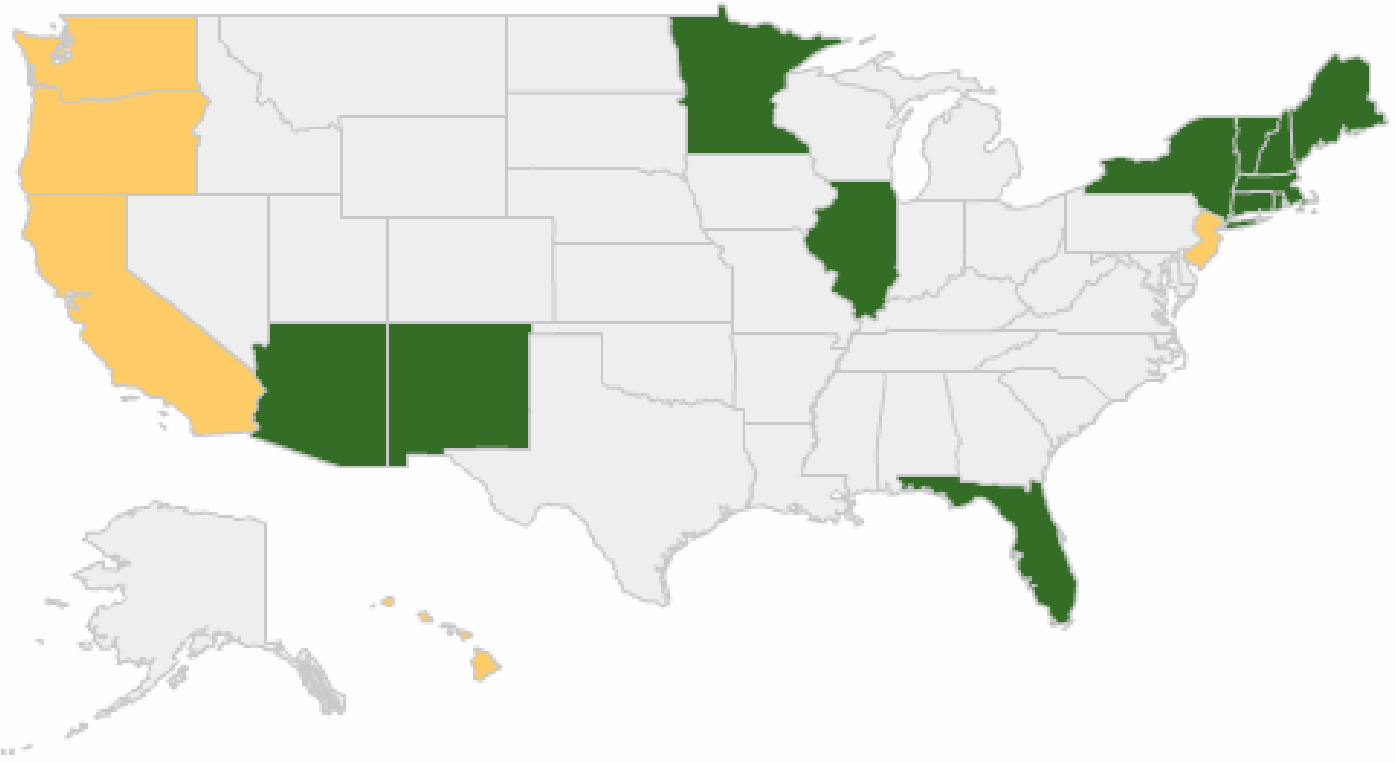
The True Cost of Our Oil Addiction

(and the numbers on coal are equally grim…)

- Fully-laden cost of a gallon of gasoline: $10
- Subsidies and tax breaks to petroleum industry: $113 billion/year
- Health care cost related to petroleum air pollution: $672 billion/year
- Americans who die early from petroleum air pollition: 100,000
- Americans who suffer asthma and other respiratory disease: 6.5 million annually
- Cost to our children: every year of living near a busy urban freeway steals 1% of their lung capacity

U.S. States with Greenhouse Gas Emissions Targets

States in gold have codified one or more targets in state law;
states in green have declared targets via executive order or other means.



States with Completed Climate Action Plans

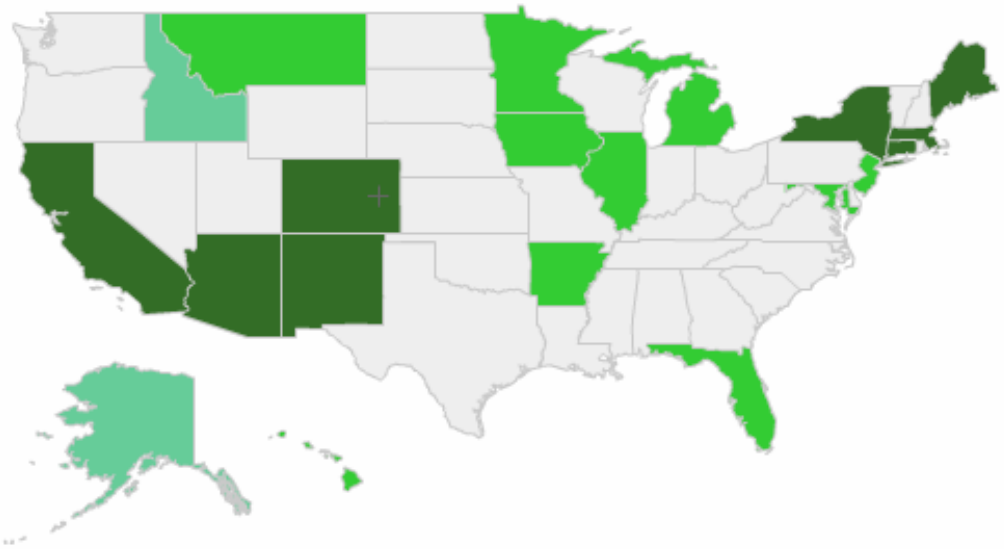
Arizona (August 2006), California (December 2005), Colorado (November, 2007), Connecticut (December 2003), Maine (November 2004), Massachusetts (2003), New Mexico (2006), New York (2003), Oregon (December, 2004), Rhode Island (2002)

States with Plans Underway

Arkansas, Florida, Hawaii, Illinois, Maryland, Michigan, Minnesota, Montana, New Jersey, North Carolina, Pennsylvania, South Carolina, Vermont, Washington, Wisconsin

States with Assessments Underway

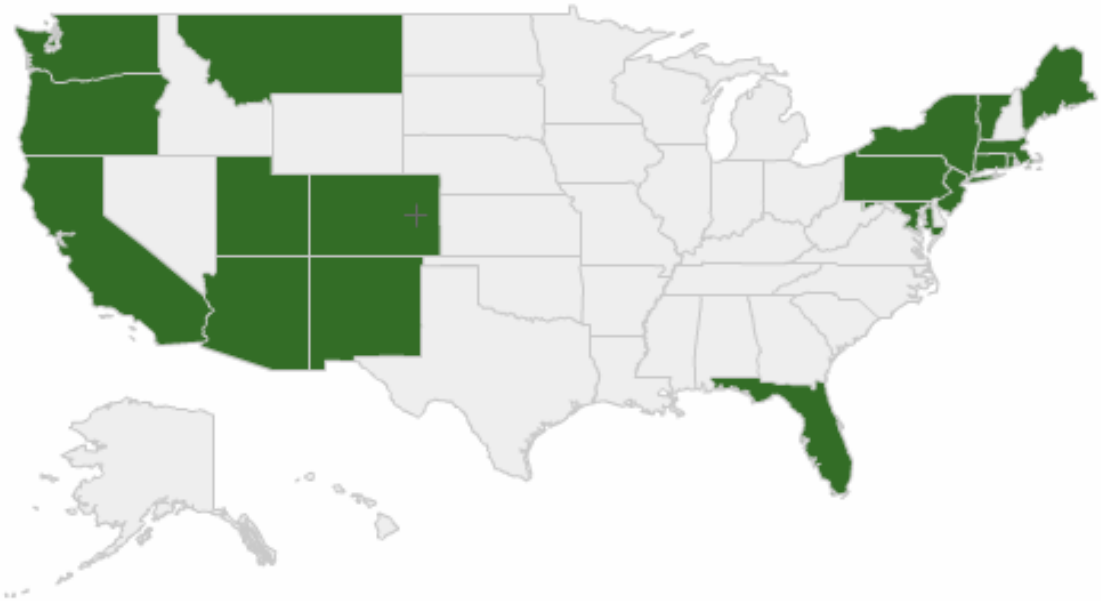
Alaska, Idaho, Iowa, Kansas, New Hampshire, Utah, Wyoming



In early 2006 California took an additional step in reducing reducing GHG emissions in the transportation sector by establishing a Low-Carbon Fuel Standard (LCFS) by Executive Order. This first-in-the-world GHG standard for transportation fuels is intended to spark research in alternatives to oil and reduce GHG emissions. The Executive Order sets the goal to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020

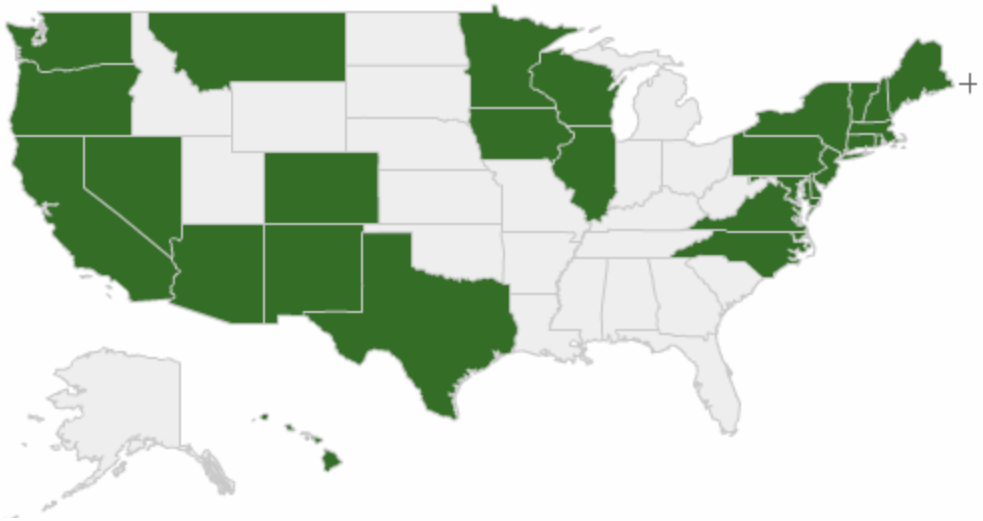
**According to the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2004 (published in 2006 by the US EPA)*

States Adopting California Vehicle Emission Standards



US States with Renewable Portfolio Standards

The following gives a summary of states with an RPS. Percentages refer to a portion of electricity sales and megawatts (MW) to absolute capacity requirements. Most of these standards phase in over years, and the date refers to when the full requirement takes effect.



Arizona: 15% by 2025

California: 20% by 2010 (Goal of 33% by 2020)

Colorado: 20% by 2020

Connecticut: 27% by 2020

Delaware: 20% by 2019*

Hawaii: 20% by 2020

Illinois: 25% by 2025

Iowa: 105MW

Maine: 30% by 2000; 10% new resources by 2017

Maryland: 7.5% by 2022; 2% solar by 2022

Massachusetts: 4% new by 2009

Minnesota: 25 % by 2025**

Missouri: 11% by 2020 (voluntary)

Montana: 15% by 2015

Nevada: 20% by 2015

New Hampshire: 25% by 2025

New Jersey: 22.5% by 2021

New Mexico: 20% by 2020

New York: 25% by 2013

North Carolina: 12.5% by 2021

Oregon: 25% by 2025

Pennsylvania: 18% by 2020

Rhode Island: 16% by 2020

Texas: 5,800 MW by 2015

Vermont: Equal to load growth '05-2012

Virginia: 12% of '07 sales by 2022

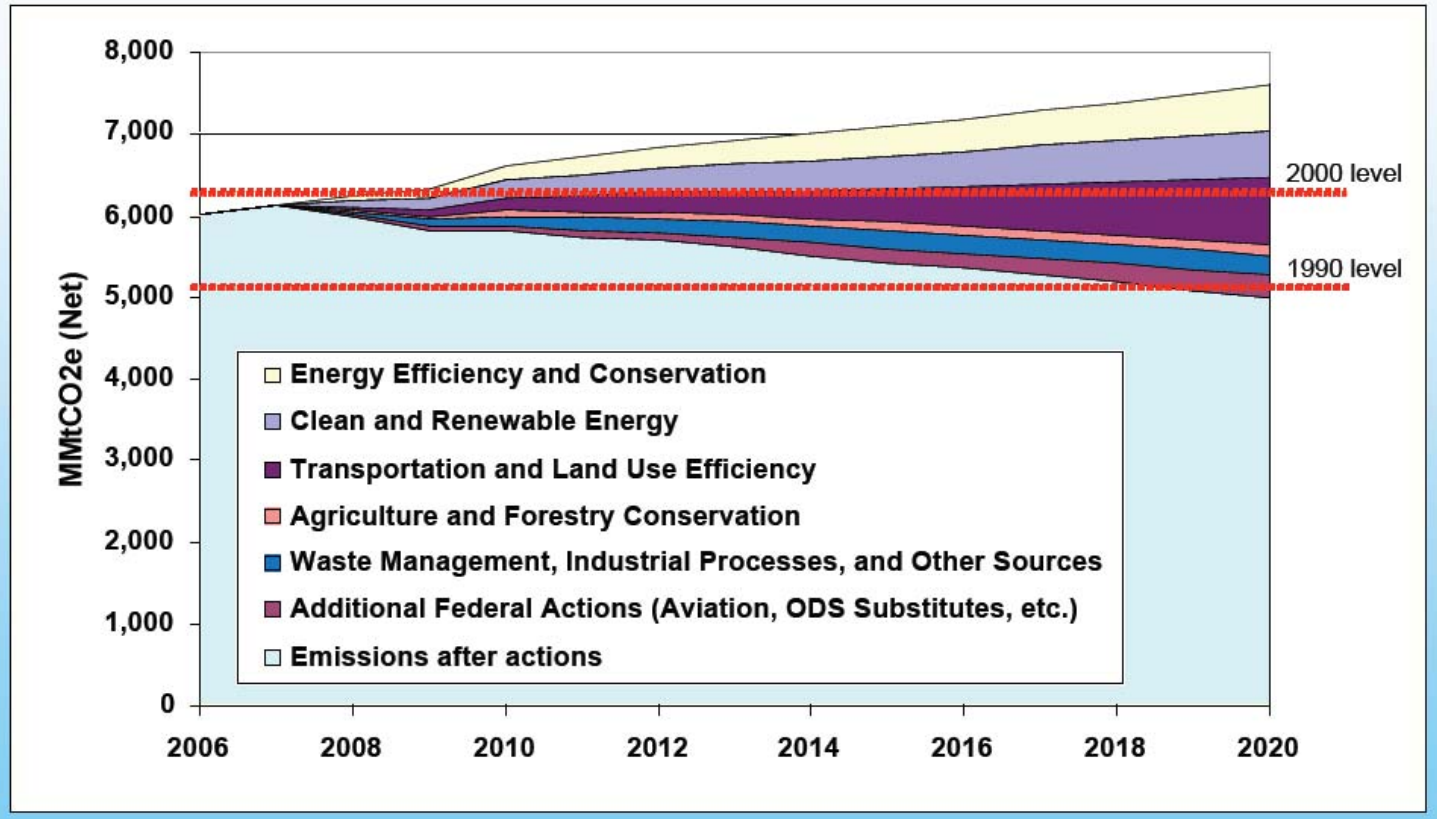
Washington: 15% by 2020

Washington D.C.: 11% by 2022

Wisconsin: 10% by 2015

How Leadership States Are Doing It

(States' "wedges" scaled to national GHG emissions)



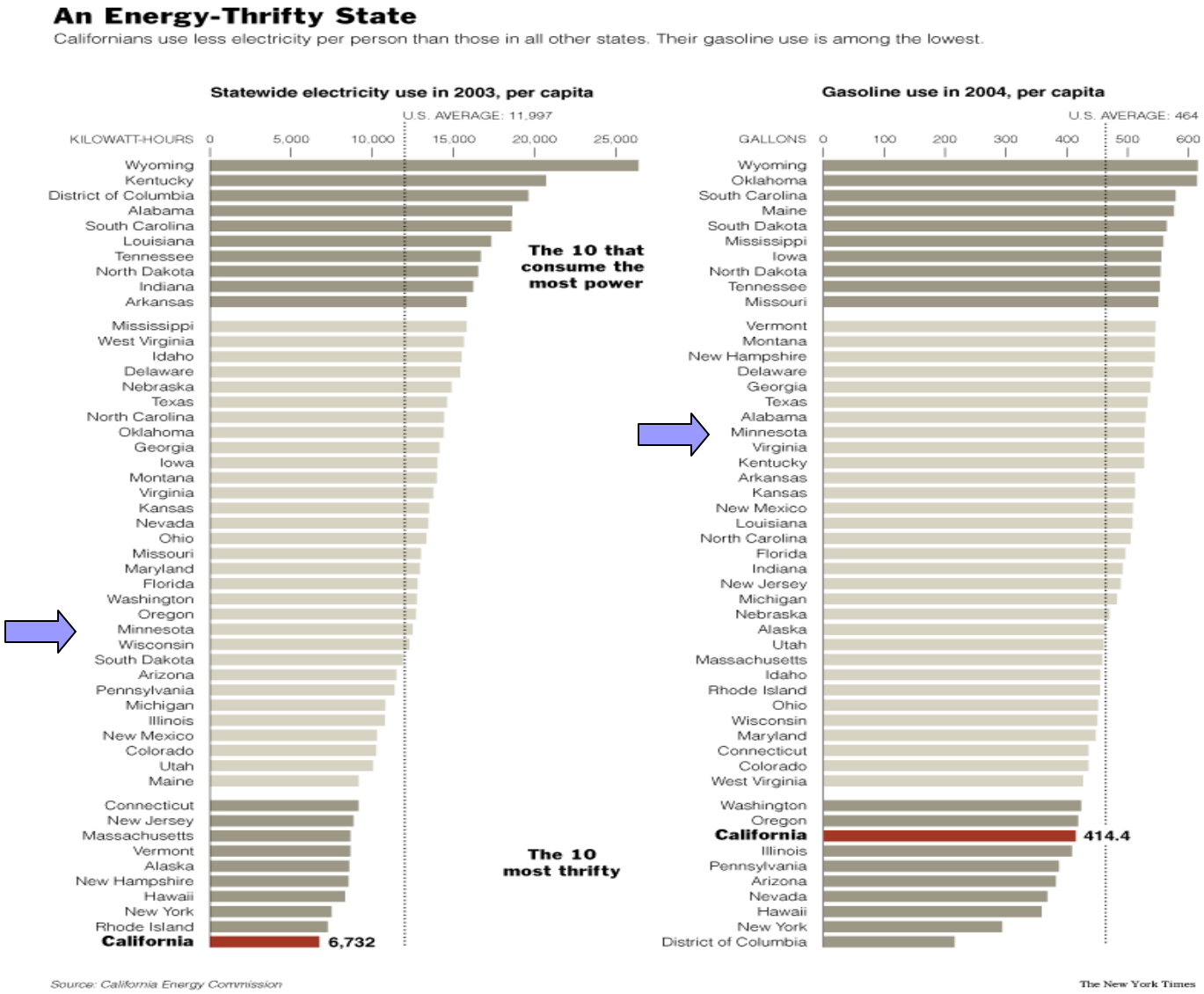
Three Keys to Winning

- Energy Efficiency & Conservation (avoid the tipping point while waiting for long-term solutions to take effect)
- Clean & Renewable Fuels (to replace fossil fuels permanently/completely)
- Global Carbon Marketing (to engage business and developing economies like China/India)

Energy Efficiency & Conservation

- Energy efficiency programs, “public goods charge” funds, and mandates
- Building codes and incentives
- Appliance standards
- Green building programs and lead-by example activities
- Pricing strategies – decoupled rates
- The California “Loading Order”
- Smart meters & smarter grids = time variant pricing, demand management & reduction

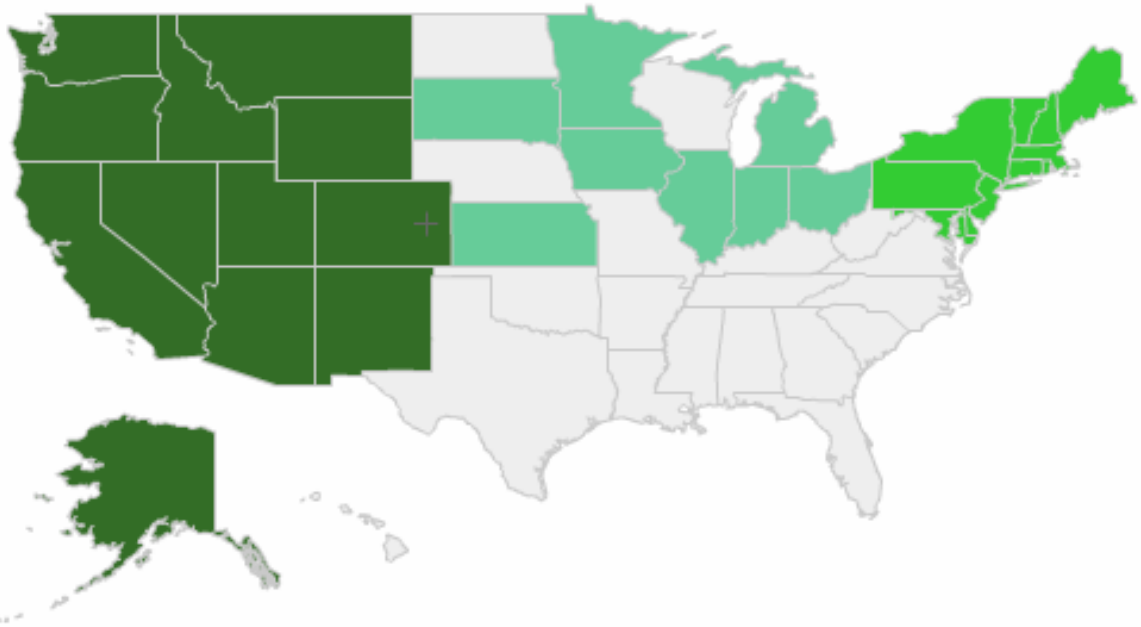
Minnesota: An energy-efficient state?



Clean and Renewable Energy

- Renewable portfolio standards, incentives, and purchase programs
- Extending renewables with hydrogen as a storage medium (CA wind at 19% reliability)
- Waste energy capture (combined heat and power) initiatives
- Electric sector carbon policy (cap and trade, generation performance standards)
- Cleaner oil and gas production
- Carbon capture and storage

Regional Carbon Market Initiatives



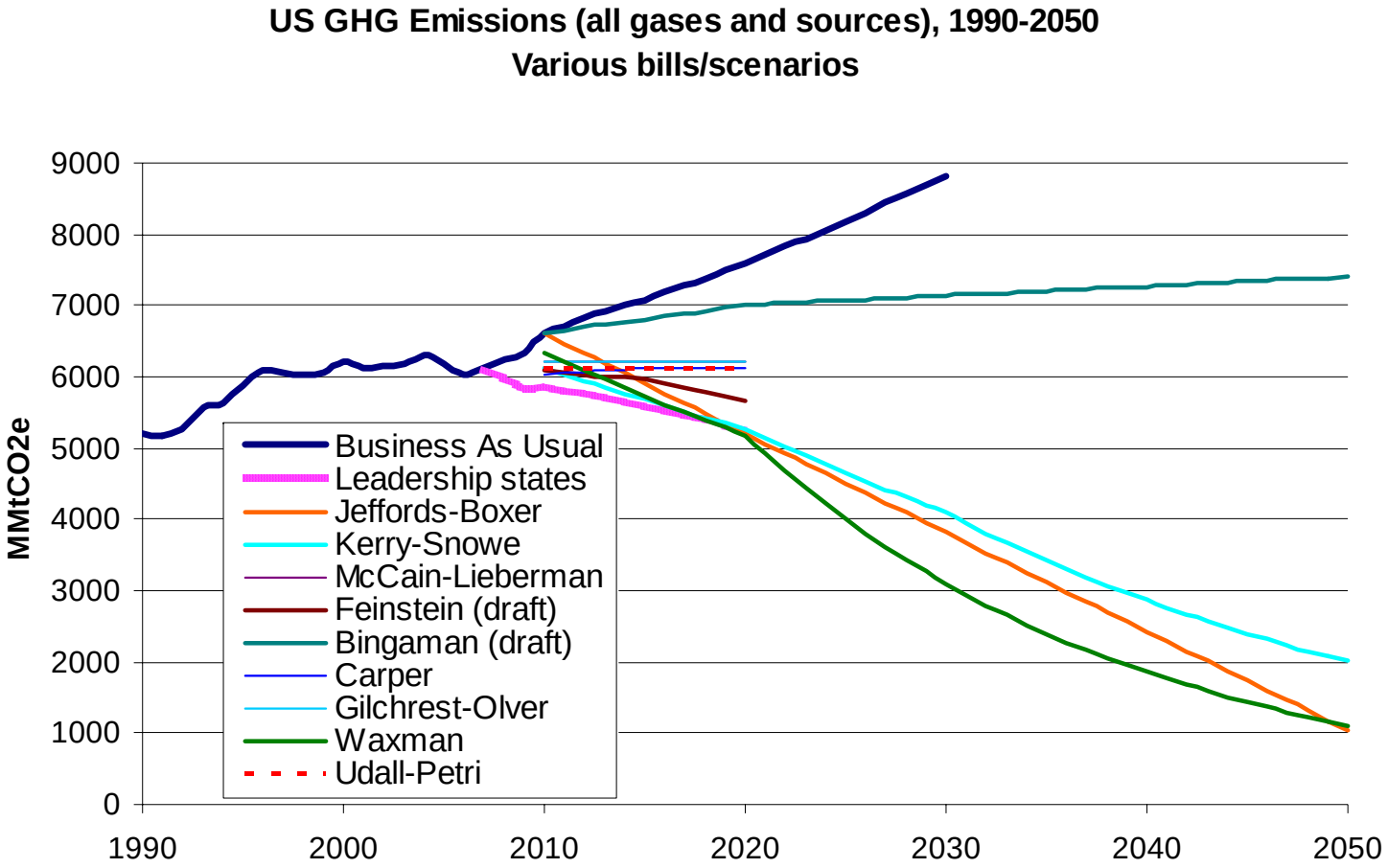
Many of these groups have also agreed to align their market systems with the european trading scheme already underway through the International Carbon Action Partnership (ICAP)
http://www.icapcarbonaction.com/

Western Climate Initiative	Regional Greenhouse Gas Initiative	Midwestern Regional Greenhouse Gas Reduction Accord

Asleep At the Wheel: The Role of the Federal Government

- Congress may not take significant steps for years
- Many proposals do not solve the problem
- Some proposals pre-empt state actions while others delegate GHG reduction measures to states

Business As Usual (BAU) Compared to National Legislation Proposals



Leadership Opportunities for Minnesota

- Midwestern states carbon market
- Link to WCI and RGGI carbon markets
- Link to the European Trading Scheme
- Demonstrate renewable energy projects - - farm waste to energy; wind
- Focus on building heating efficiency

Nature's bequest gives nothing, but doth lend…and so, when Nature calls thee to be gone, what acceptable legacy canst thou leave? *Wm. Shakespeare*

Questions?

Updated maps, links to each state's action plans, legislation, executive orders, and other policies can be found at:

www.newamerica.net/programs/climate

&

www.terrytamminen.com