Carbon Cap & Trade

Consequences to the American Economy

Climate Science is Uncertain

Water Vapor (H_20) most abundant and dominate GHG

Far exceeds total combined effect of increase in all GHGs including CO_2

Climate Models Do Not Reflect Past / Cannot Predict Future

Cannot even model clouds (water vapor) – the largest greenhouse gas

Ice Core Data shows CO_2 lags temp. by 200-1000 Years

CO_2 increased 100's of years after warming of last three de-glaciations

Uncertainty of Human Contribution to Warming Earth

The globe is warming – scientists cannot agree on cause w/ certainty

Sources: NASA JPL California Institute of Technology, Hubertus Fischer et.al *Science* Vol. 283. no. 5408, pp/ 1712-1714

The Facts on CO_2

- CO_2 occurs naturally
  - **Also naturally occurring: Water Vapor (H_2O), Methane (CH_4), Nitrous Oxide (N_2O), and Ozone (O_3)**

- CO_2 is a nutrient and an indispensable part of life, not a pollutant

- Current CO_2 levels are around 380 ppm; in the past, CO_2 levels have exceeded 1,000 ppm

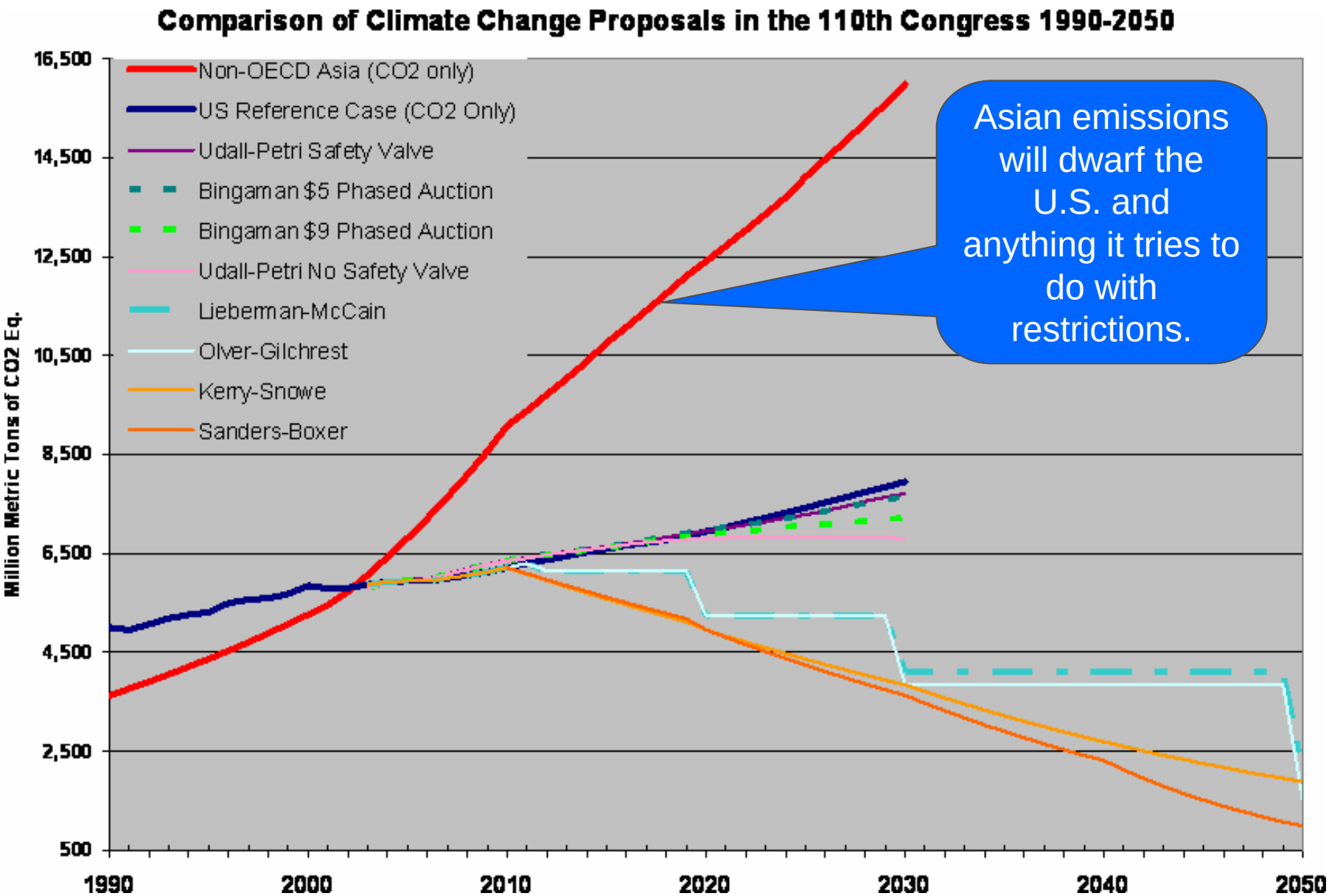
Source: EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005; Berner, R.A., and Z. Kothavala, 2001: GEOCARB III: A revised model of atmospheric CO2 over phanerozoic time. *American Journal of Science,* 301(2), 182-204

Putting CO_2 in Perspective

- Water vapor (H_20) is present in the atmosphere in concentrations of 3-4% whereas Carbon Dioxide (CO_2) is at 0.0386%
  - **This would put the entire increase in CO_2 since before the industrial revolution at .0091%**

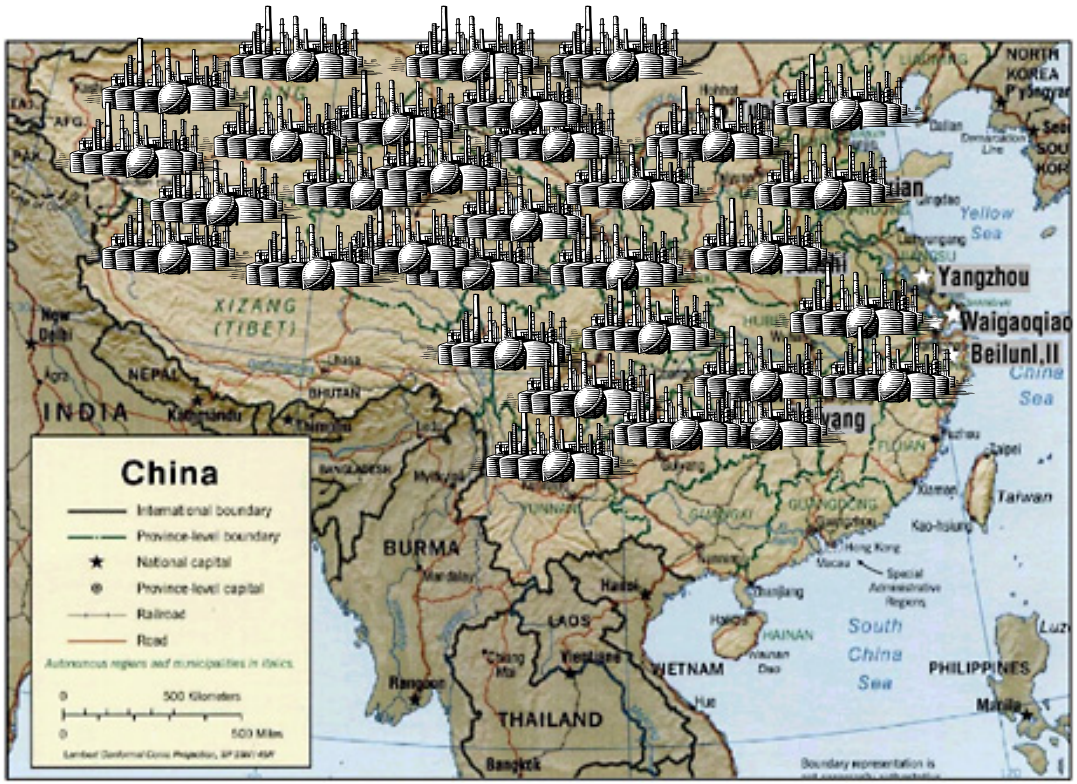
Source:http://www.netl.doe.gov/KeyIssues/climate_change3.html

Carbon Emissions Global Issue



Sources: EIA (*International Energy Outlook 2006, Annual Energy Outlook 2007,* analysis of various bills) and legislative proposals.

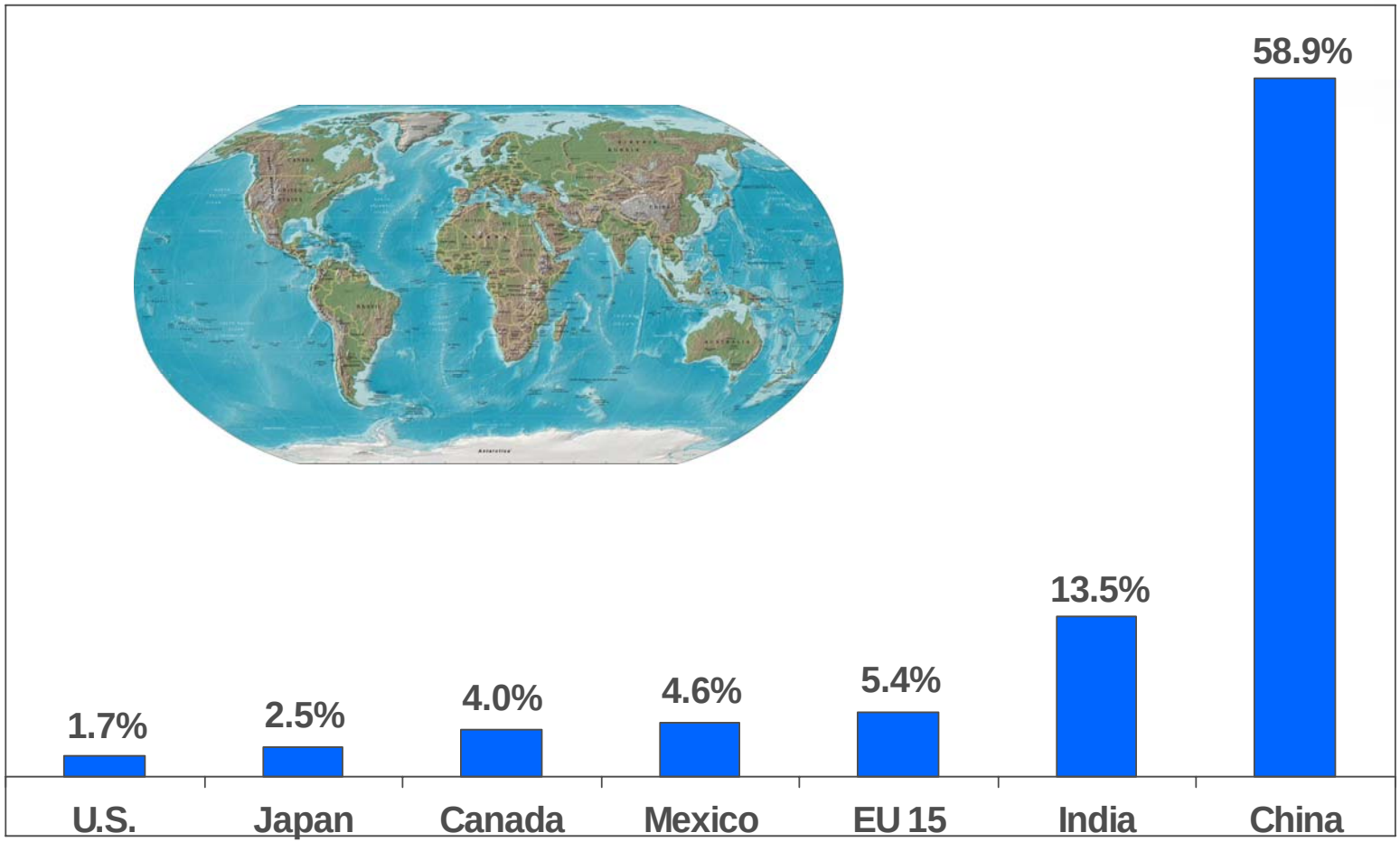
"Every ten days, China fires up a coal-fueled generating plant big enough to power San Diego. China will construct 2200 new coal plants by 2030." – George Will



In under two years, China will add the total generating capacity of Texas.

Source: ERCOT

Trends in CO_2 Emissions
from Fossil Fuel Combustion: 2000-2004



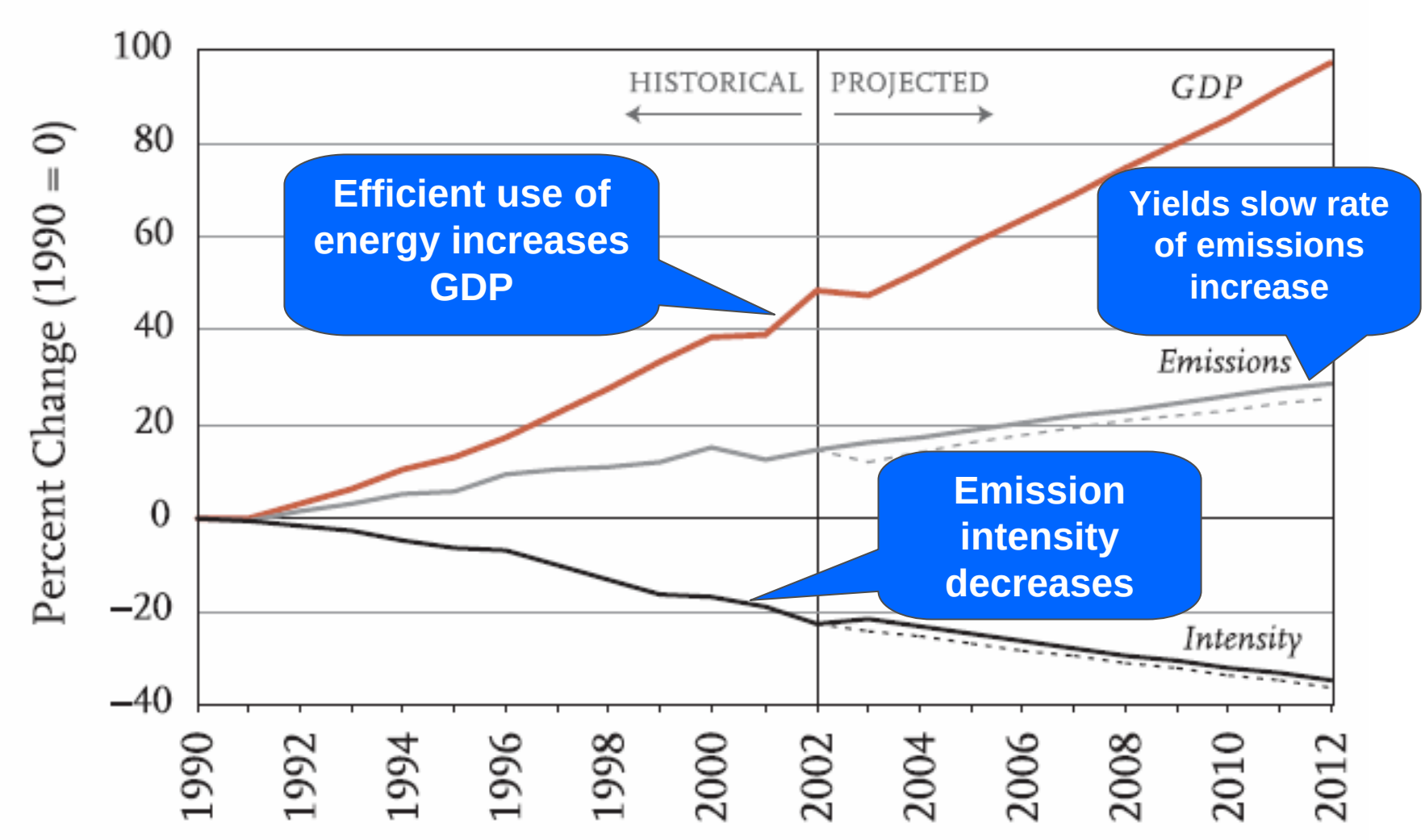
Source: IEA, CO2 Emissions from Fuel Combustion, 2006

Al Gore's Stabilization Suggestions	Energy Policy Act Already Addressing Issues (75 Democrats supported passage)
More efficient heating and cooling systems, lighting, appliances, and electronic equipment	Titles 1, 9, & 13
End-use efficiency (design buildings and businesses to use far less energy than they currently do)	Titles 1, 9, & 13
Increase vehicle efficiency (cars that run on less gas, and more hybrid and fuel-cell cars)	Titles 7, 8, 9, 13, & 15
Making other changes in transport efficiency (better mass transit systems and heavy trucks that use less fuel)	Titles 7 & 9
Increase renewable energy (wind, solar and biofuels)	Titles 2, 7, 8, 9, 12, 13, 15, 16, 17, & 18
Capture and store carbon from power plants and factories	Titles 4, 9, & 17

Source: "An Inconvenient Truth," Al Gore

U.S. Historical and Future Trends:

GHGs, GDP, and Intensity



NOTE: Dashed lines show Bush Administration target projections.

Source: WRI (based on U.S. government projections and Bush Administration statements.)

Setting Standards for Legislation

- No loss in American GDP
- No definition of CO_2 as pollutant
- Base results on reducing emissions intensity rather than carbon caps
- Provide upfront Cost/Benefit analysis for deployment
- Must establish real societal benefits
  - **i.e. increased energy security**

Reality Test for Legislative Debate

- ✓ Will Americans have abundant and affordable electricity?
- ✓ Will we be able to produce our electricity domestically or be reliant on foreign sources?
- ✓ Will controls have measurable benefits on the environment and improve the quality of life for future generations?
- ✓ Will controls push industry to transfer American jobs overseas?

Solutions at Hand:

Actions that protect the American economy, preserve our ability to grow

Short-term

- Provide funds to retrofit older coal plants as authorized in Energy Policy Act
- Accelerate new nuclear rules
- Accelerate FutureGen demonstration project
- CAFE Increase?
- Carbon offset incentive?
  - Tax-credit? If so, have auditing mechanism in place to verify

Long-term

- Promote domestic fuel diversity
  - Hydro, Solar, Wind, Clean Coal, Natural Gas, Nuclear, clean diesel, etc.
- Research and develop carbon sequestration technology
- Advance Coal-To-Liquid initiative
- Promote Hydrogen economy
- Develop workable enforcement framework for international partnerships