



Global Energy Outlook

AABE

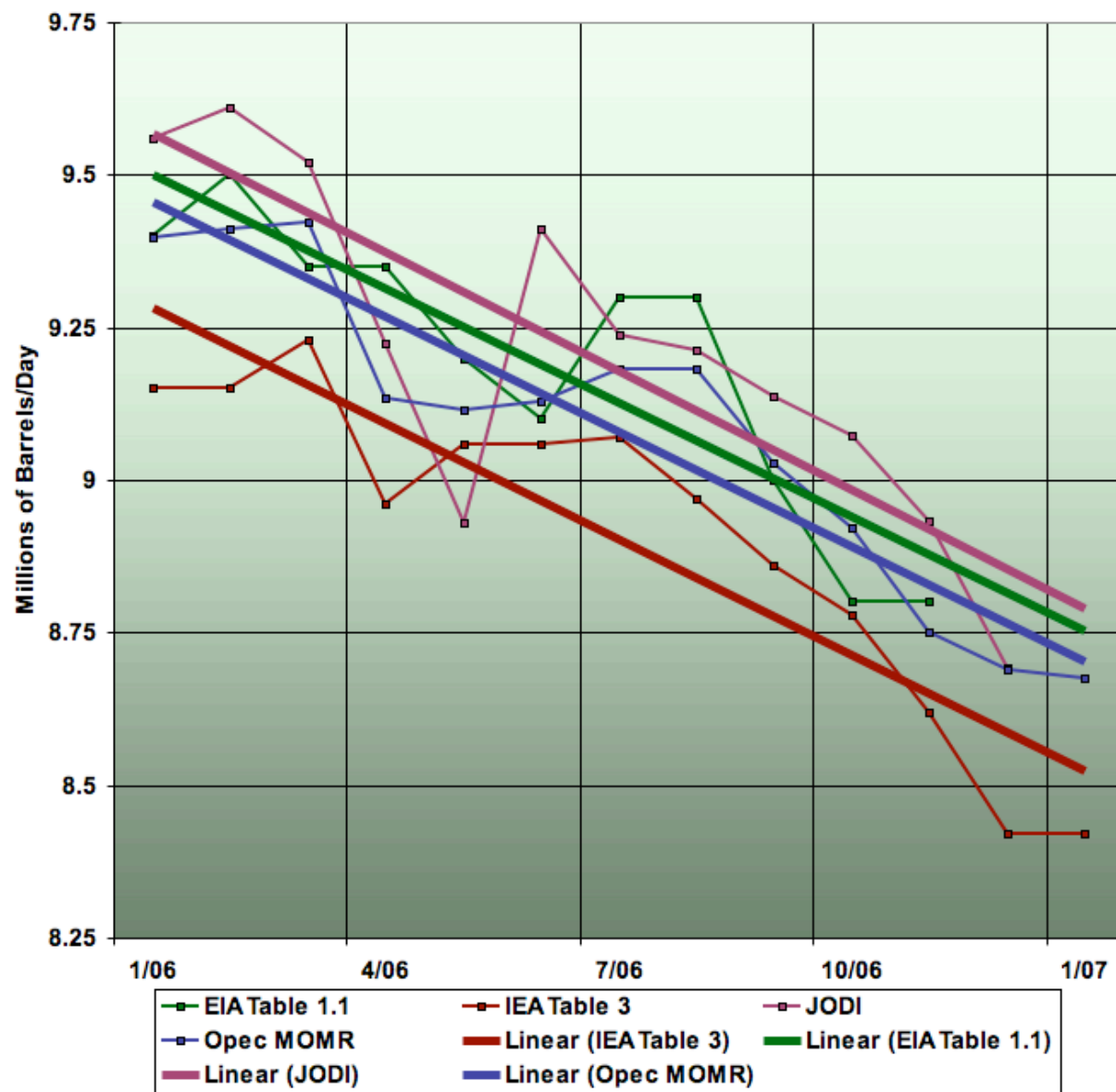
Back to the Past/Shaping the Future

30 Years

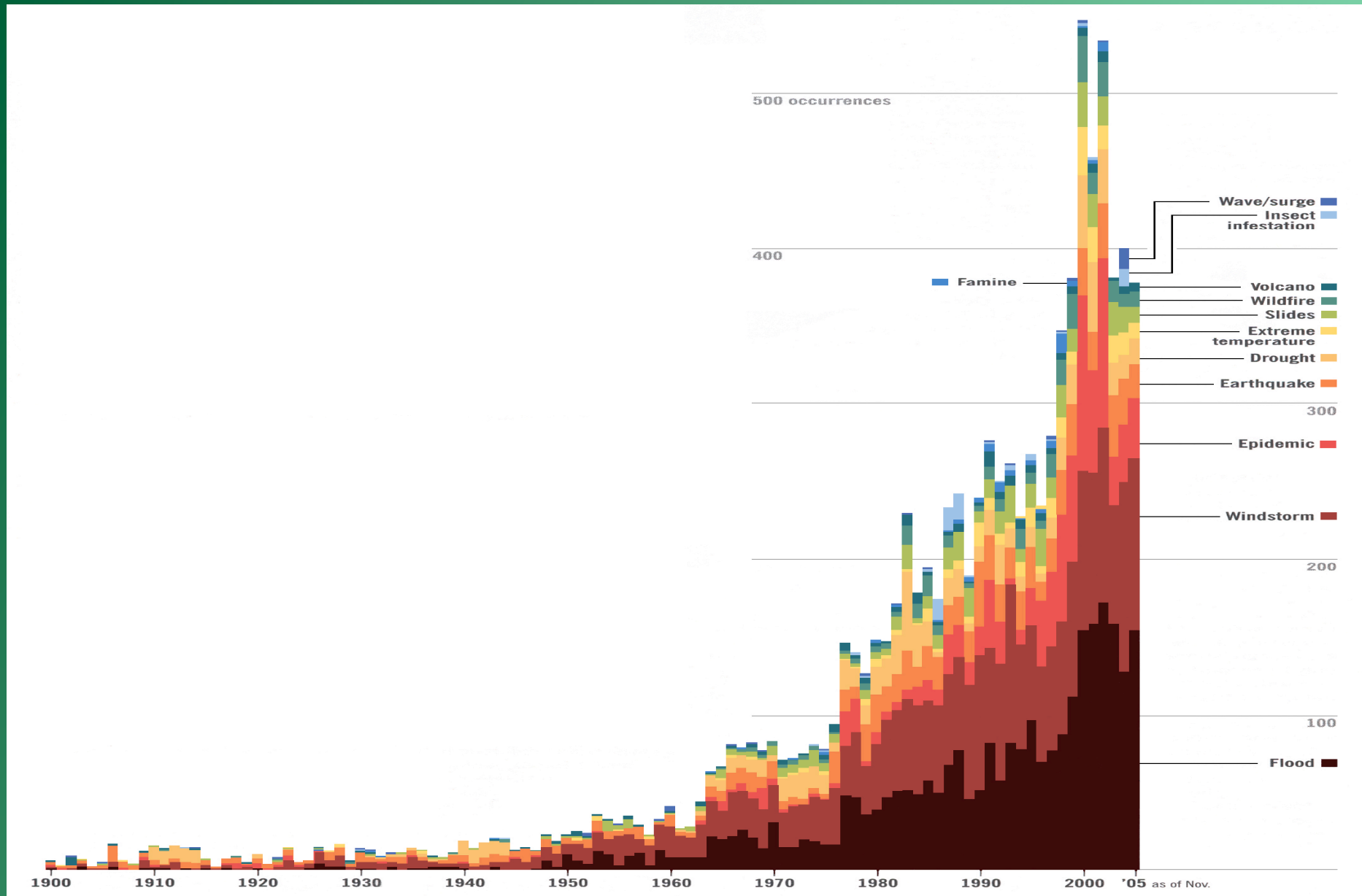


*Jon Wellinghoff, Commissioner
Federal Energy Regulatory Commission
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April 11, 2007*

Decline Saudi Oil Production



Worldwide Disasters 1900-2005



Total System Efficiency

60 Units

Lost Through Inefficient Generation and Waste Heat



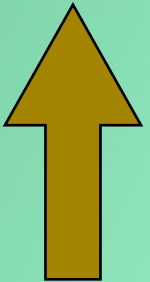
10 Units

Lost Through Transmission and Distribution on Peak



10 Units

Wasted Through Inefficient Grounding



100 Units >>

Energy Within Fossil Fuel



40 Units >>

Of Energy Fed to National Grid



30 Units

Of Energy Supplied

Planning Order as Energy Policy

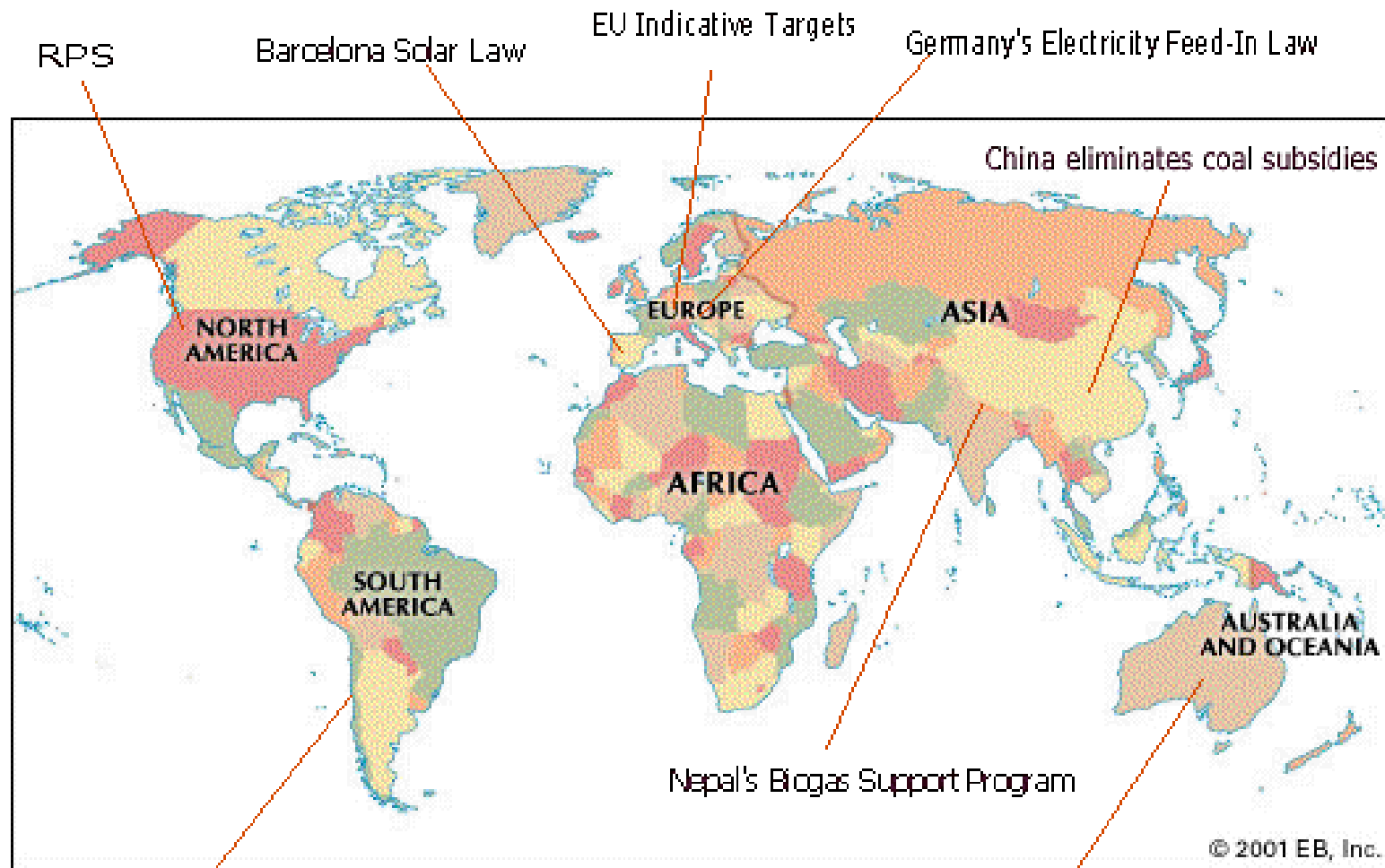
★ Distributed Resources as “First Fuel”

- Energy Efficiency (From Generator to Load)
- Demand Response (Price Induced Change in Use of Energy)
- Distributed Generation (CHP, Recycled Energy)
- Distributed Renewables (Geothermal, Wind, PV, Biomass, LFG, Small Hydro, Wave Power)

★ Central Station Fossil Fuel Generation as “Second Fuel”

- Coal w/Sequestration (Zero CO₂)
- Natural Gas

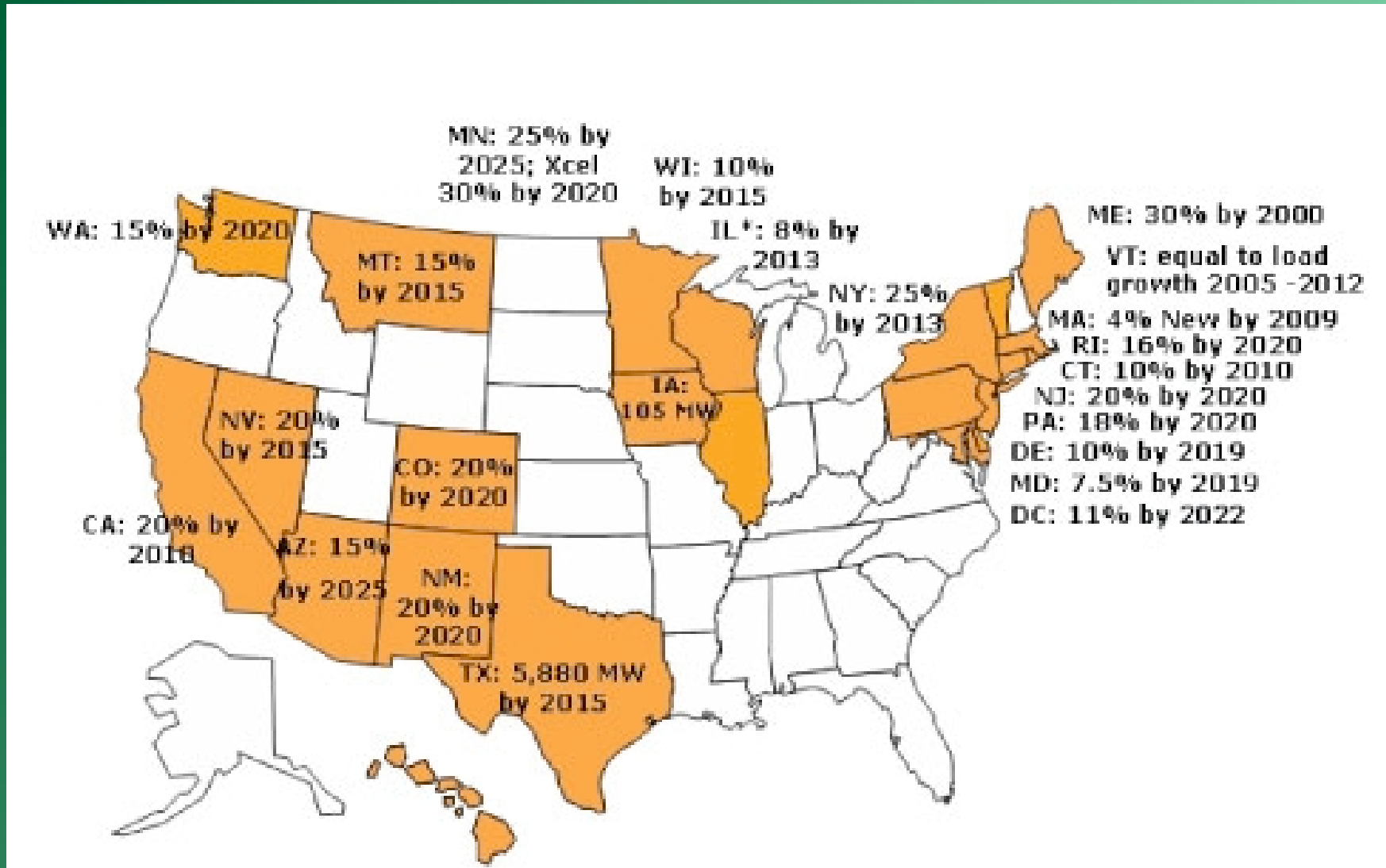
World Policies for Energy Policy Reform



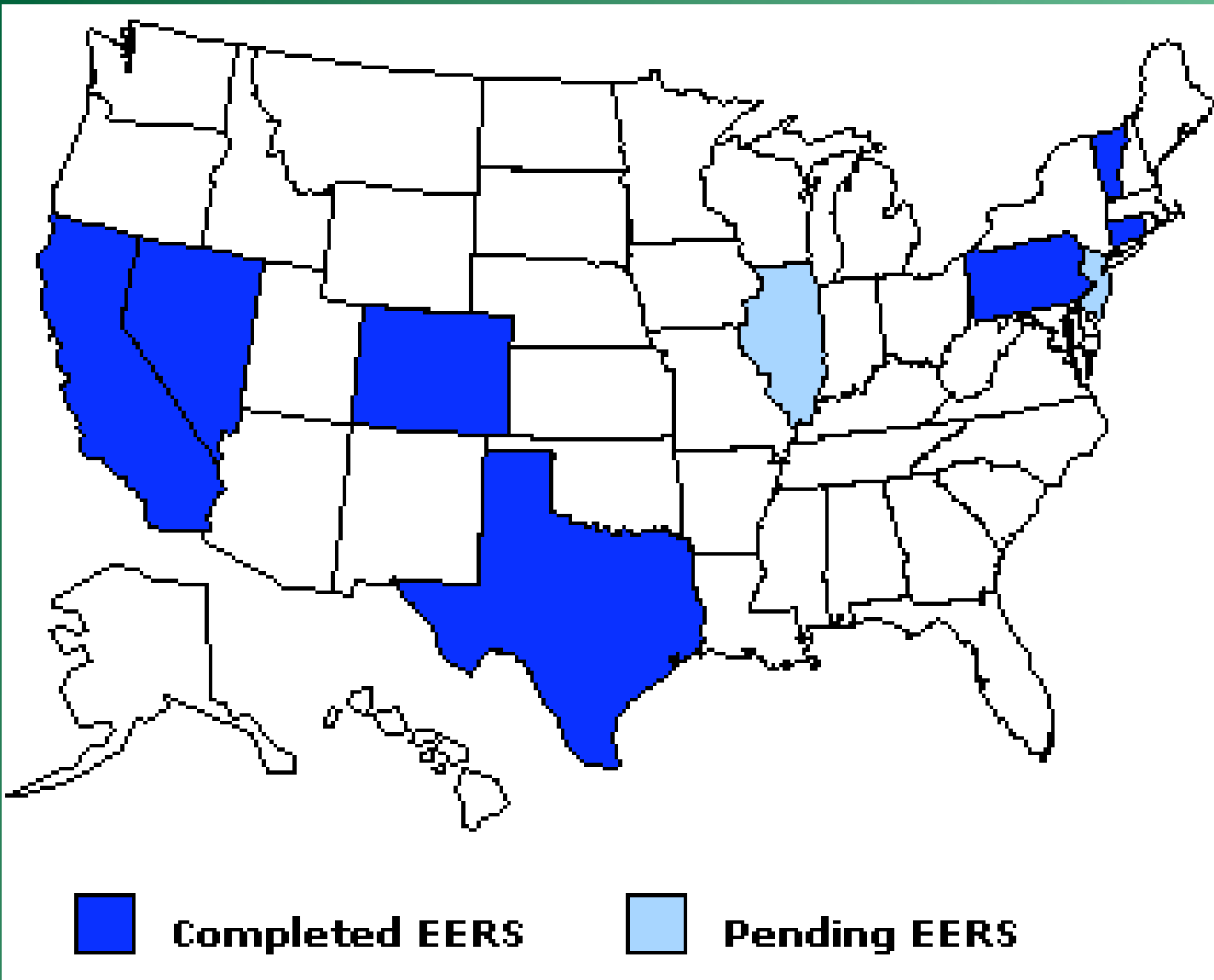
Brazil's inverted electricity tariff

Renewable Energy Equity Fund

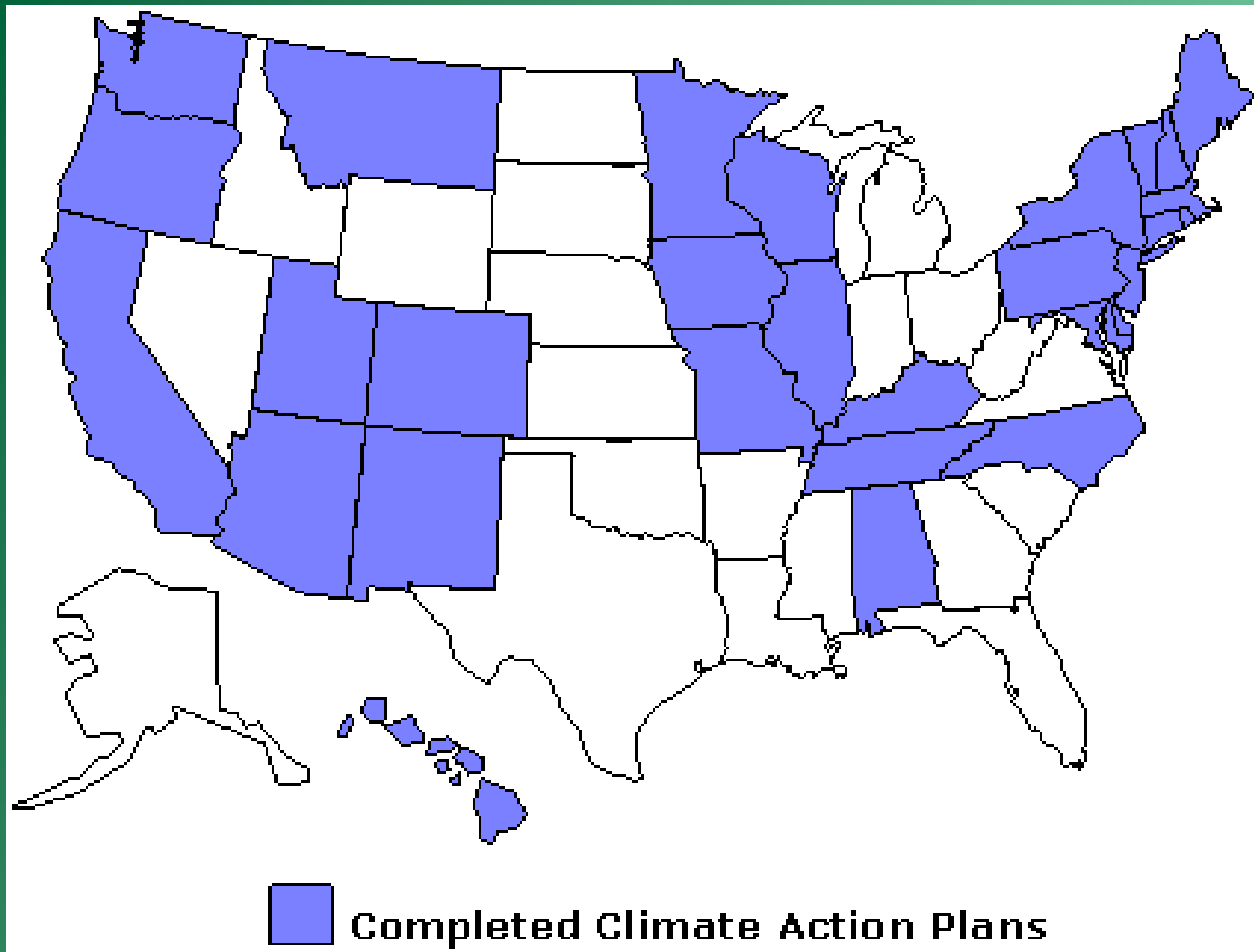
State Renewable Portfolios



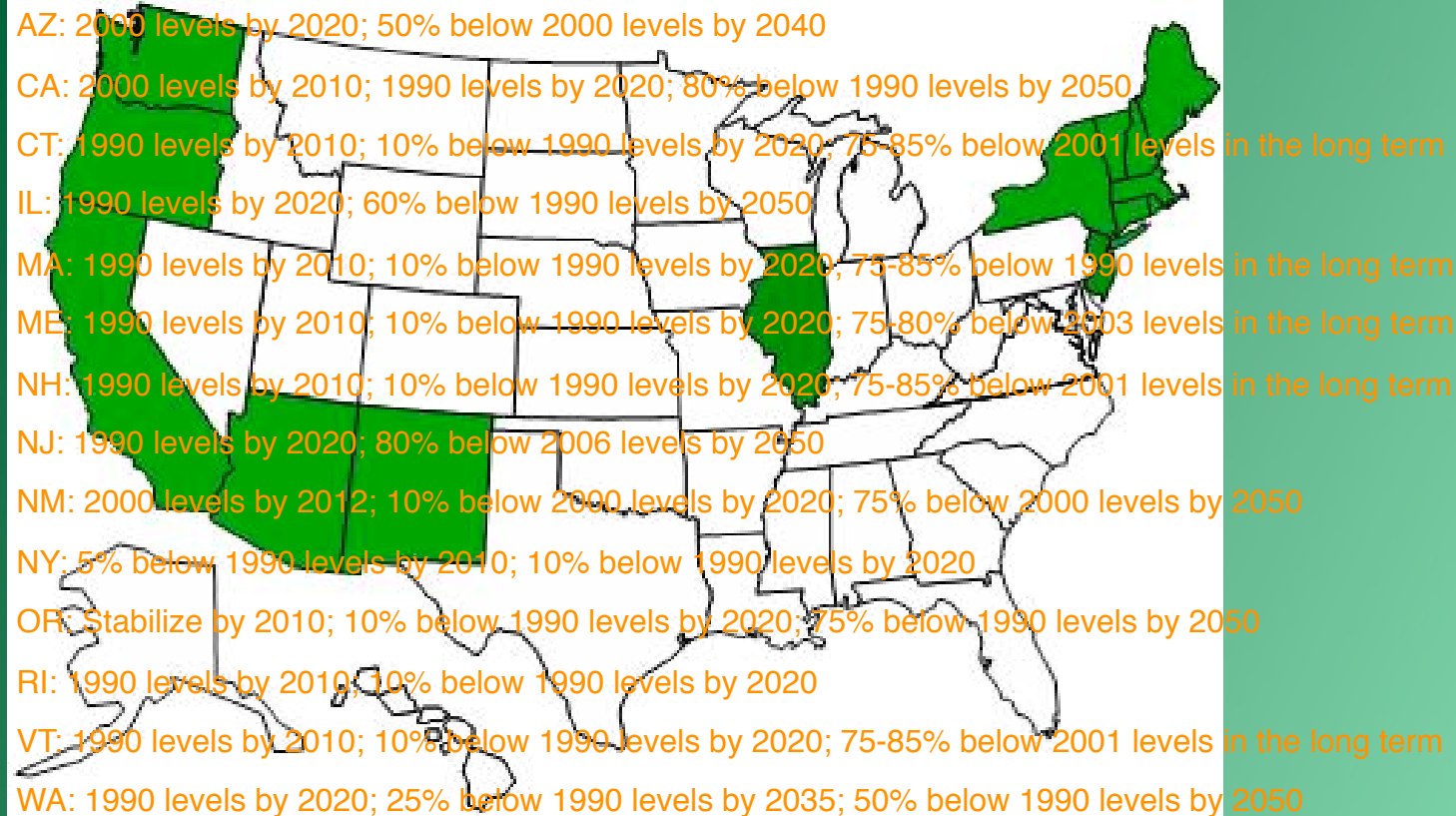
Energy Efficiency Resource Standards



States with Climate Action Plans



GHG Emission Targets



Comparing National GHG Proposed Policies

Comparing the Impact of Various Greenhouse Gas Policies

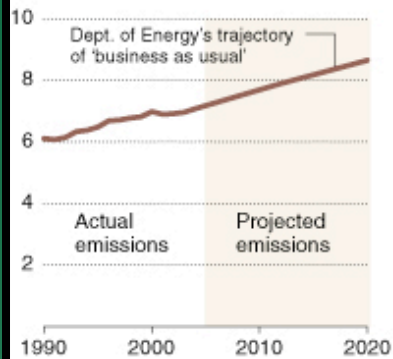
The Bush administration plans to release new projections of greenhouse gas emissions through 2020 in its Climate Action Report to the United Nations. Here is how the administration's projections compare with the World Resource Institute's analysis of three Senate bills announced earlier this year.

CHARTS SHOW UNITED STATES EMISSIONS OF ALL GREENHOUSE GASES expressed as billions of tons of carbon dioxide

If nothing is done

'Business as usual'

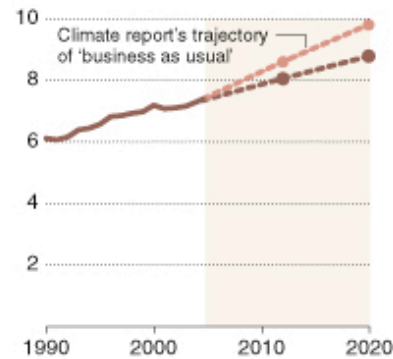
The baseline case, which projects emissions with no policy guidance.



Administration's version

Mr. Bush's policies

The emissions would rise at a slightly slower rate than 'business as usual.'

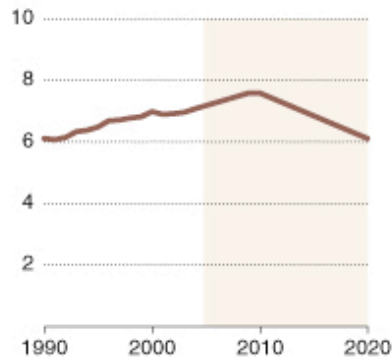


Senate proposals

Bills introduced by Senators Barbara Boxer, Bernard Sanders, John McCain, Joseph I. Lieberman and Jeff Bingaman.

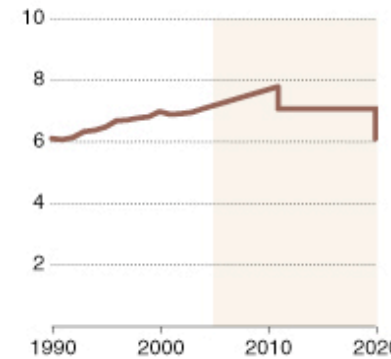
Sanders-Boxer

This is among the most stringent plans and similar to a bill by Senators John Kerry and Olympia J. Snowe.



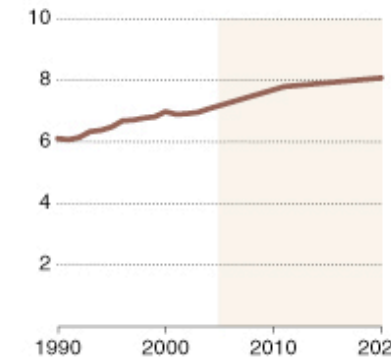
McCain-Lieberman

This proposal lowers emission limits over time but over all is less restrictive than Sanders-Boxer.



Bingaman (discussion draft)

Limits in this proposal are flexible and are based on projections of emissions and gross domestic product.



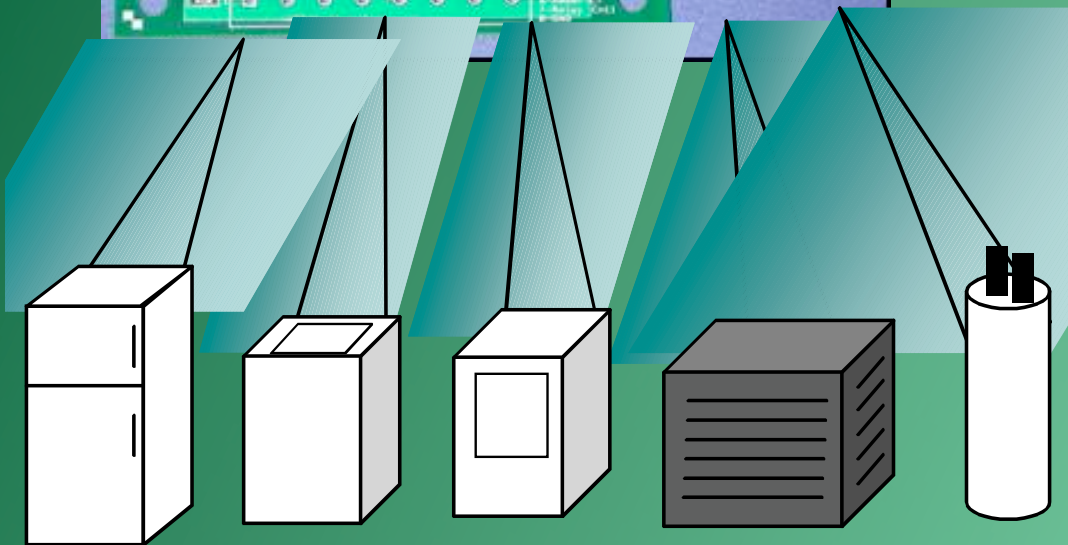
Note: Some senators' bills include "safety valve" provisions that permit emissions to exceed the cap if the price of the program exceeds a certain threshold.

The New York Times

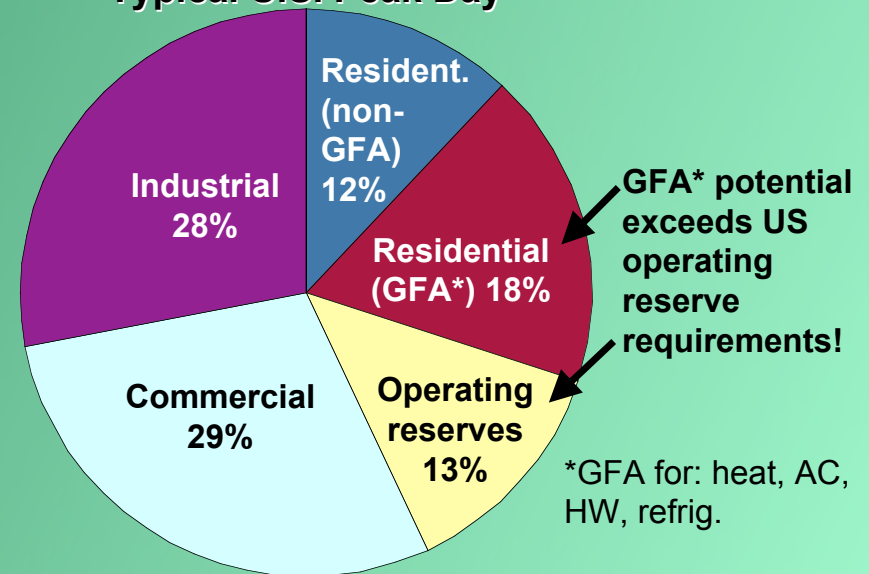
Grid Friendly™ Appliances

Demand Response in the Near Future

Grid Friendly Appliances sense grid frequency excursions & control region's appliances to act as spinning reserve – No communications required!



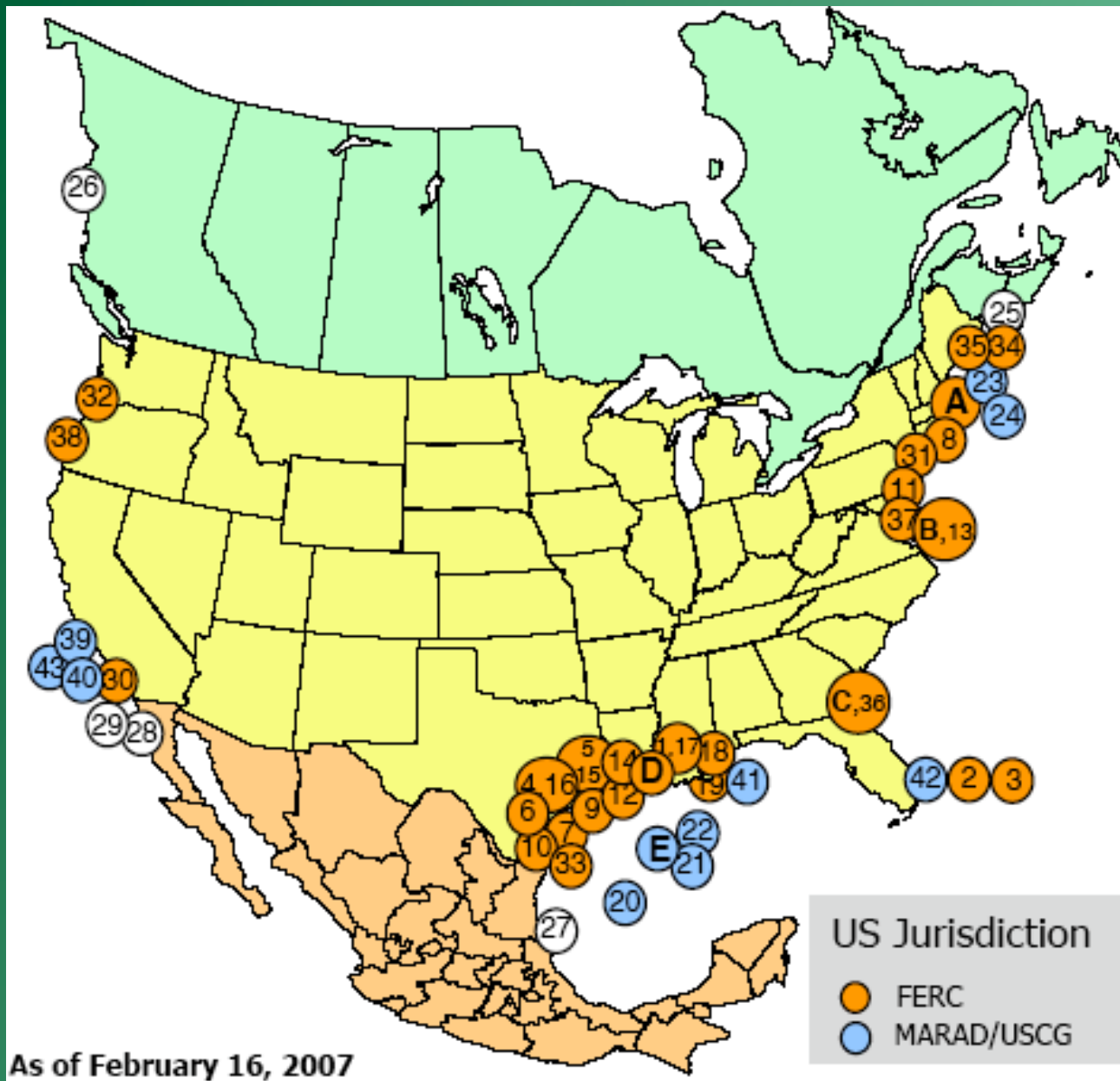
Loads and Reserves on a Typical U.S. Peak Day



Merging Grid & Transportation



Existing & Proposed LNG



- ★ 49 Total Terminals
- ★ 5 Existing
- ★ 19 Approved by FERC
- ★ 5 Approved by CG
- ★ 2 Approved by Can
- ★ 3 Approved by Mx
- ★ 9 Proposed to FERC
- ★ 5 Proposed to CG

Efficiency & LNG



Greenhouse Gas Emission Reductions-

SCHWARZENEGGER The Policy Leader



Thank You!