



An Insanely Succinct Summary Of the Electricity System

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NARUC & Grants & Research

- NARUC members are the State PUCs that regulate investor-owned utilities
 - <http://www.naruc.org>
- G&R Dept. addresses research and facilitates dialogue on key questions facing Commissions
- Federal Funders: EPA, Dept. of Energy, Dept. of Homeland Security
- Partnerships with FCC, NCS, FERC, private sector, non-governmental orgs

Today's presentation is all about my opinions,
not NARUC policy or any of its members.
Hopefully my opinions are mostly in agreement with those.



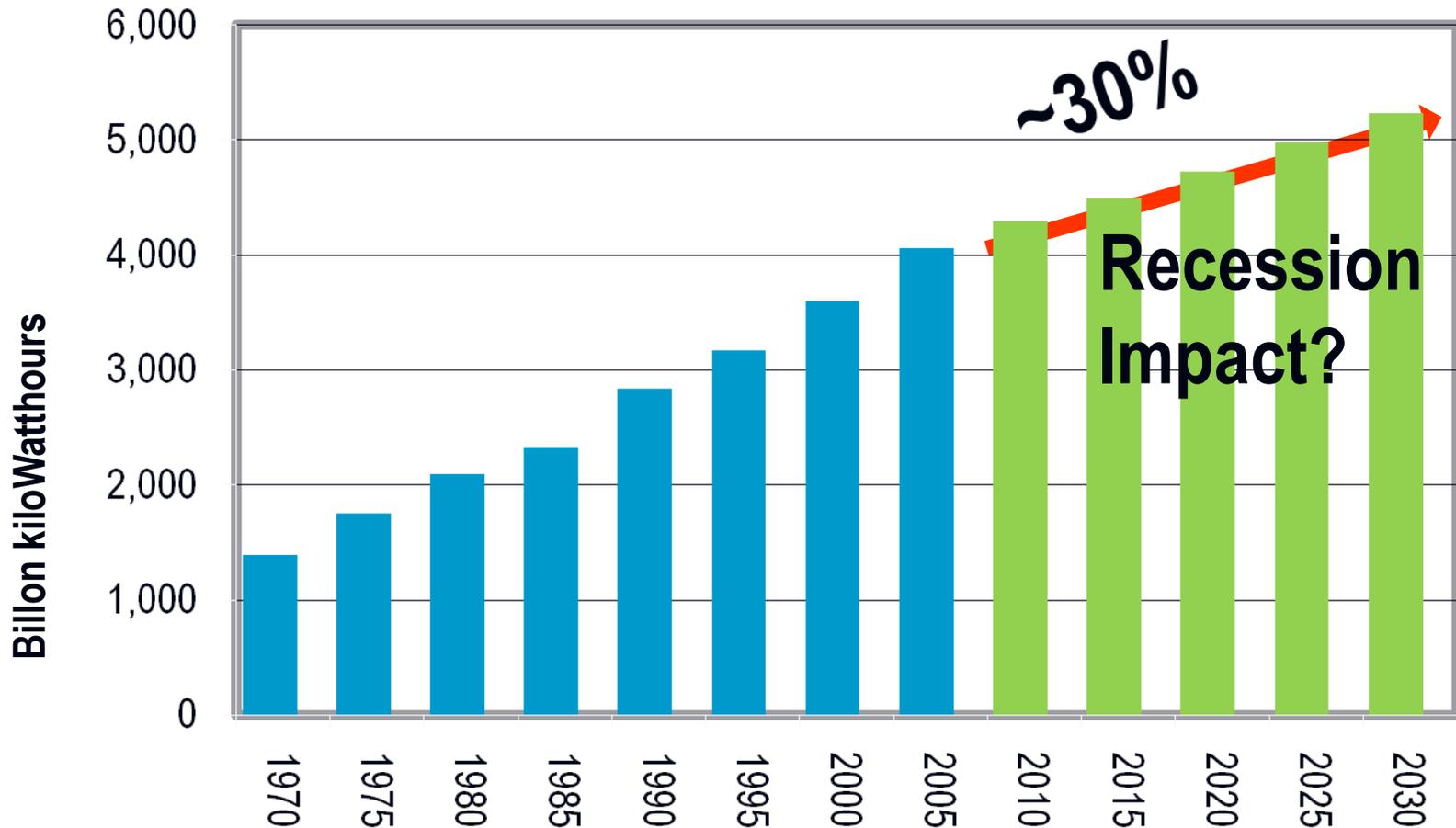
Summary

- Where does our electricity come from?
- Three different maps: regulatory, market, power systems
- How we choose the order of power plant operation
- How we choose to build power plants
- State program leadership on clean energy
- A perfect segue into the other presentations



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Demand is (probably)growing



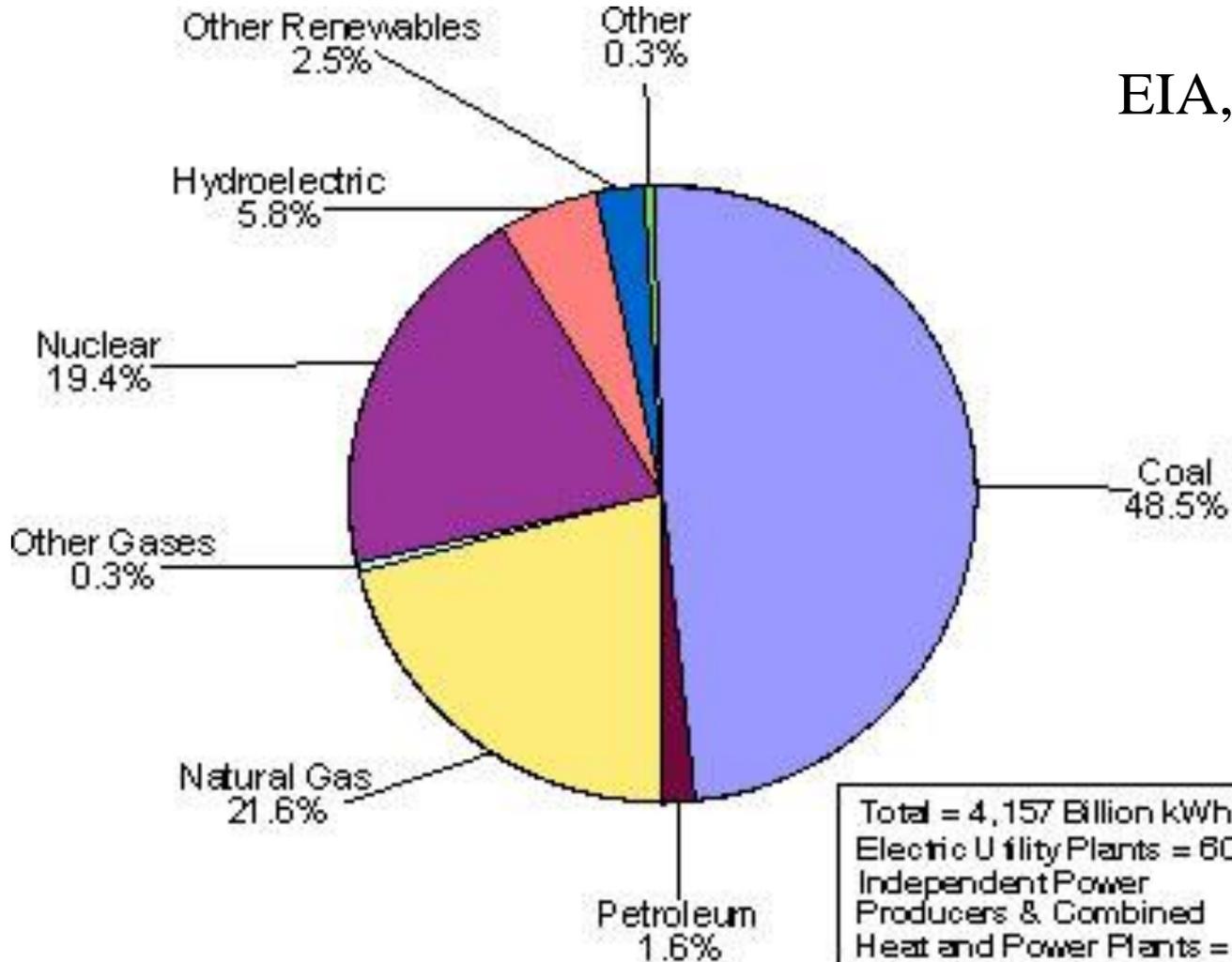
Sources: U.S. Department of Energy, Energy Information Administration, *Annual Energy Review 2006* and *Annual Energy Outlook 2008 Early Release*

*Electricity demand projections based on expected growth between 2006-2030



Energy Resources In the US: where we are

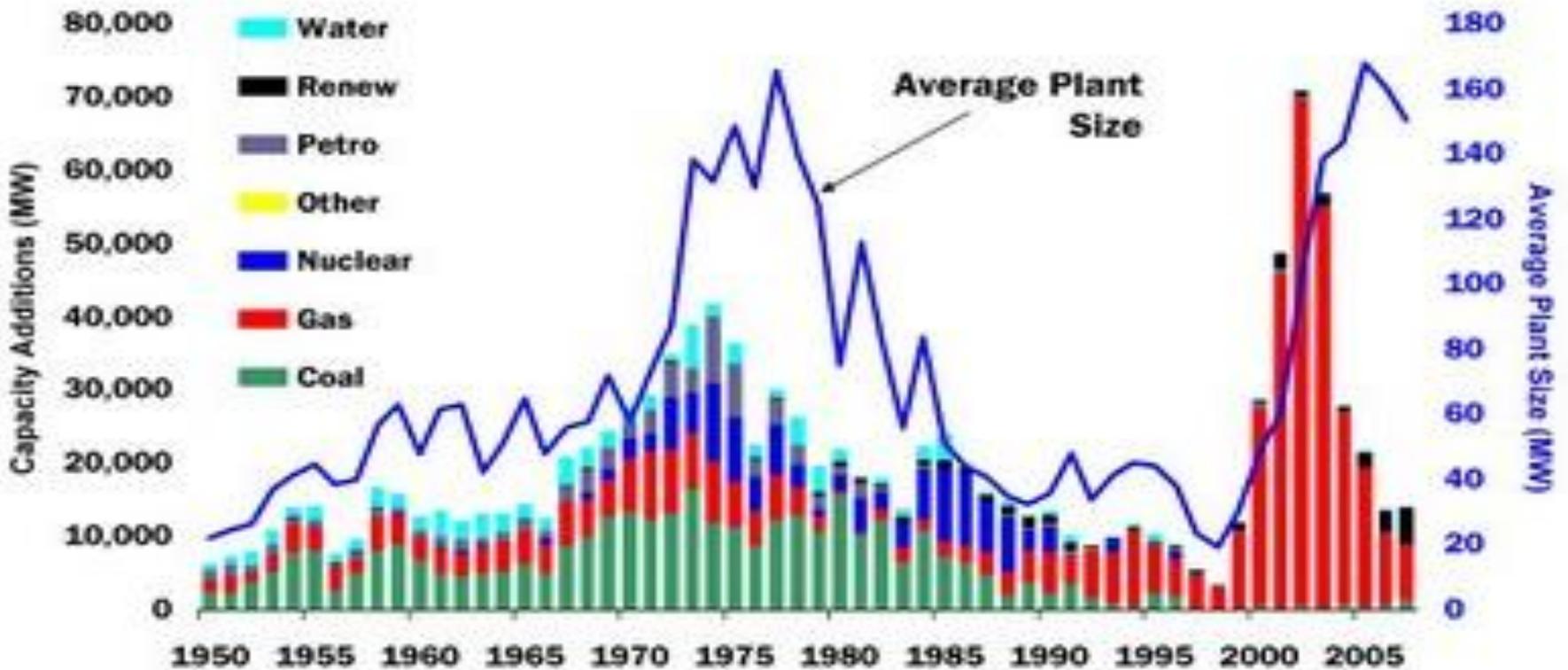
EIA, 2007





Where we've been

Capacity Brought Online by Fuel Type and Average Plant Size 1950-2007



Source: Ventyx, Global Energy Decisions

Updated: 1/08



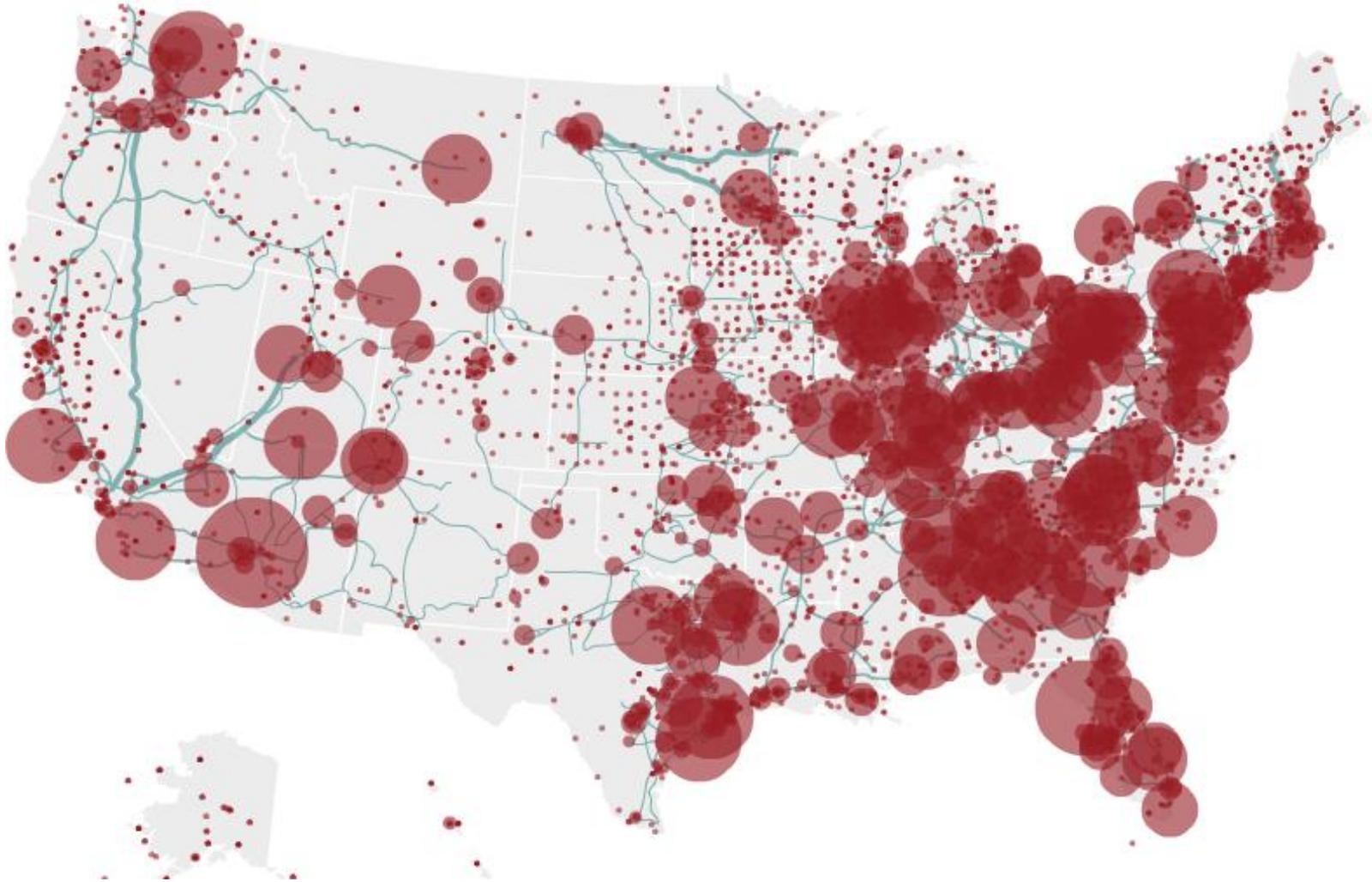
Transmission in North America





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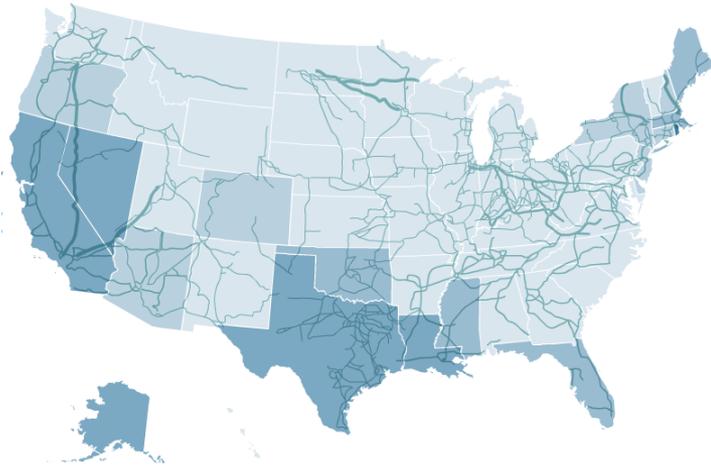
Where The Power Is



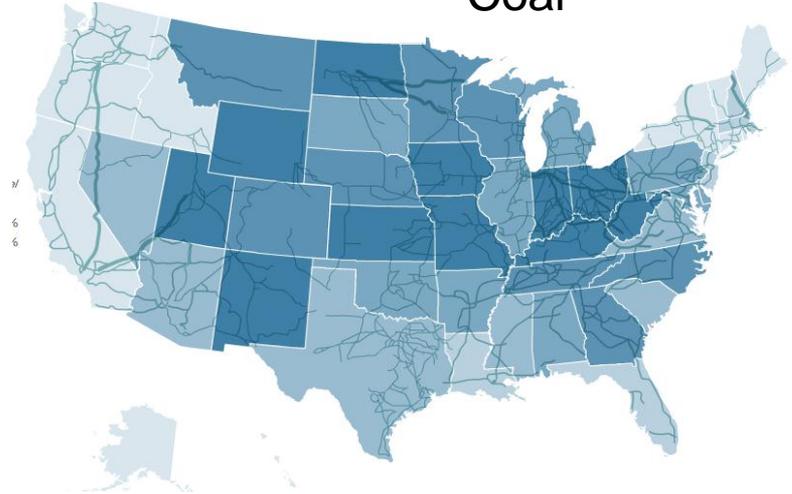


Resources

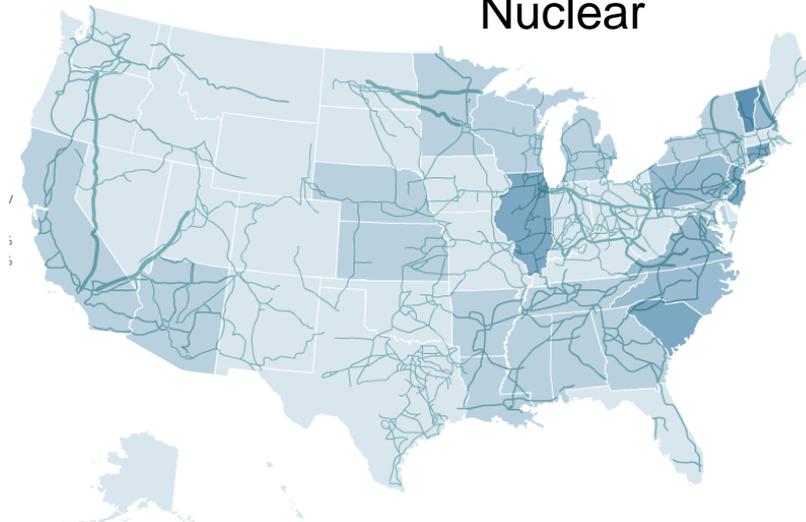
Gas



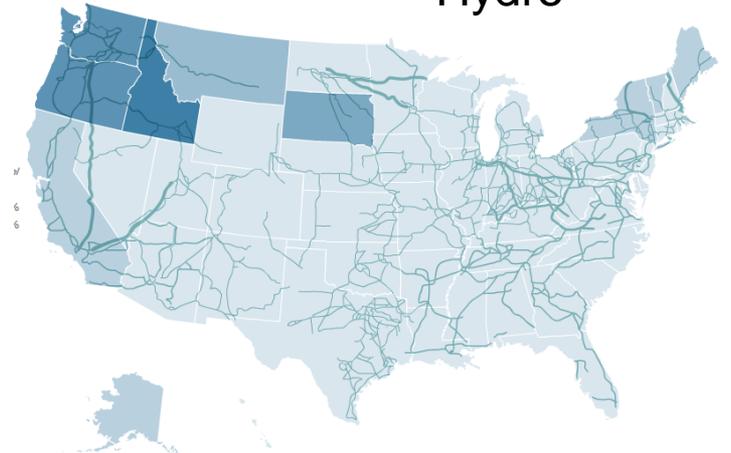
Coal



Nuclear



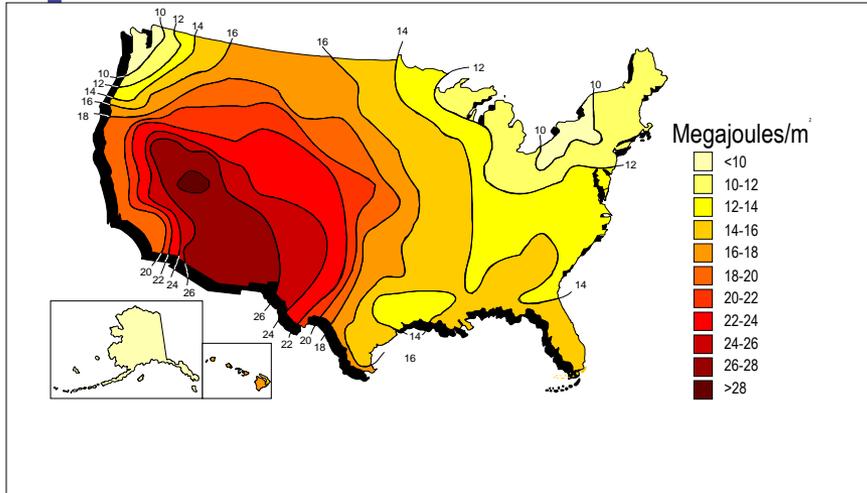
Hydro



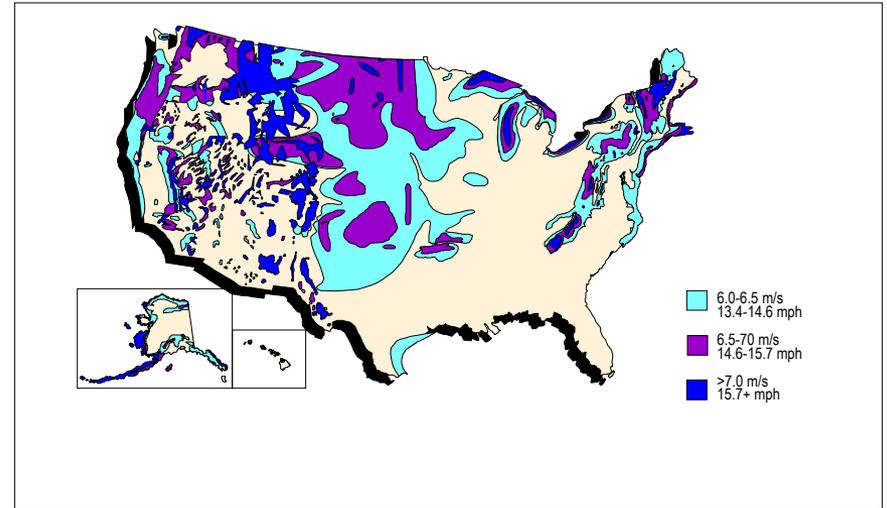


Renewable Resources

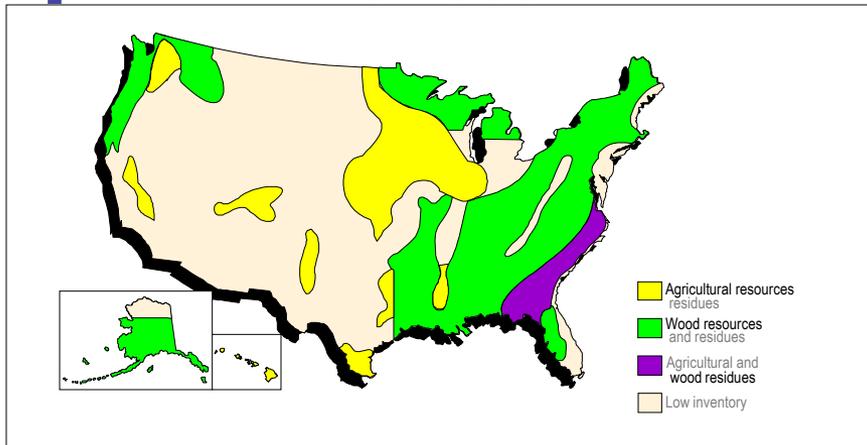
Solar



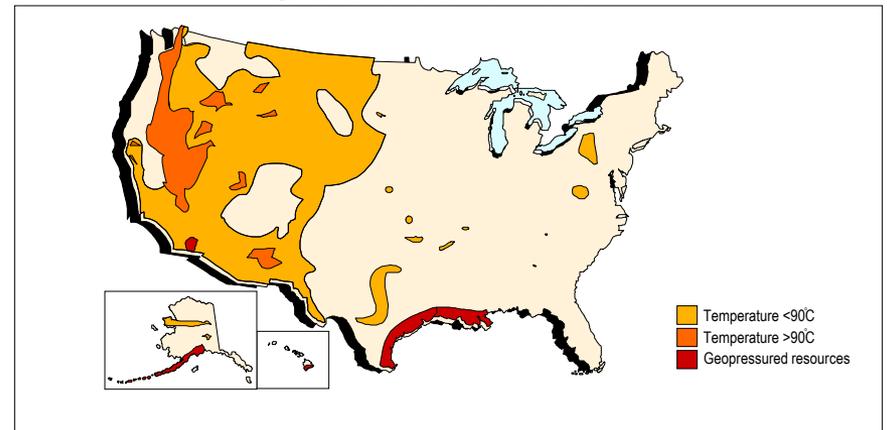
Wind



Biomass



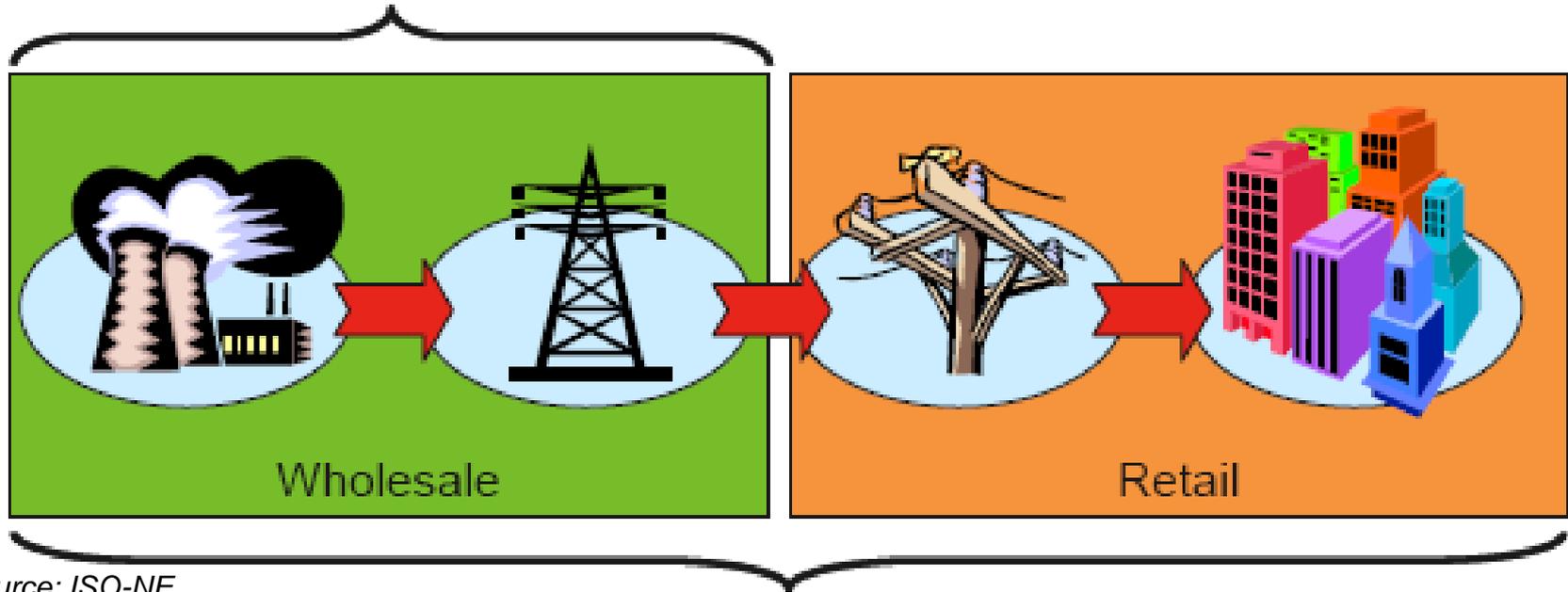
Geothermal





Federal & State Jurisdiction

Federal Jurisdiction



Source: ISO-NE

State Jurisdiction – Facility Siting, Distribution, Retail Rates

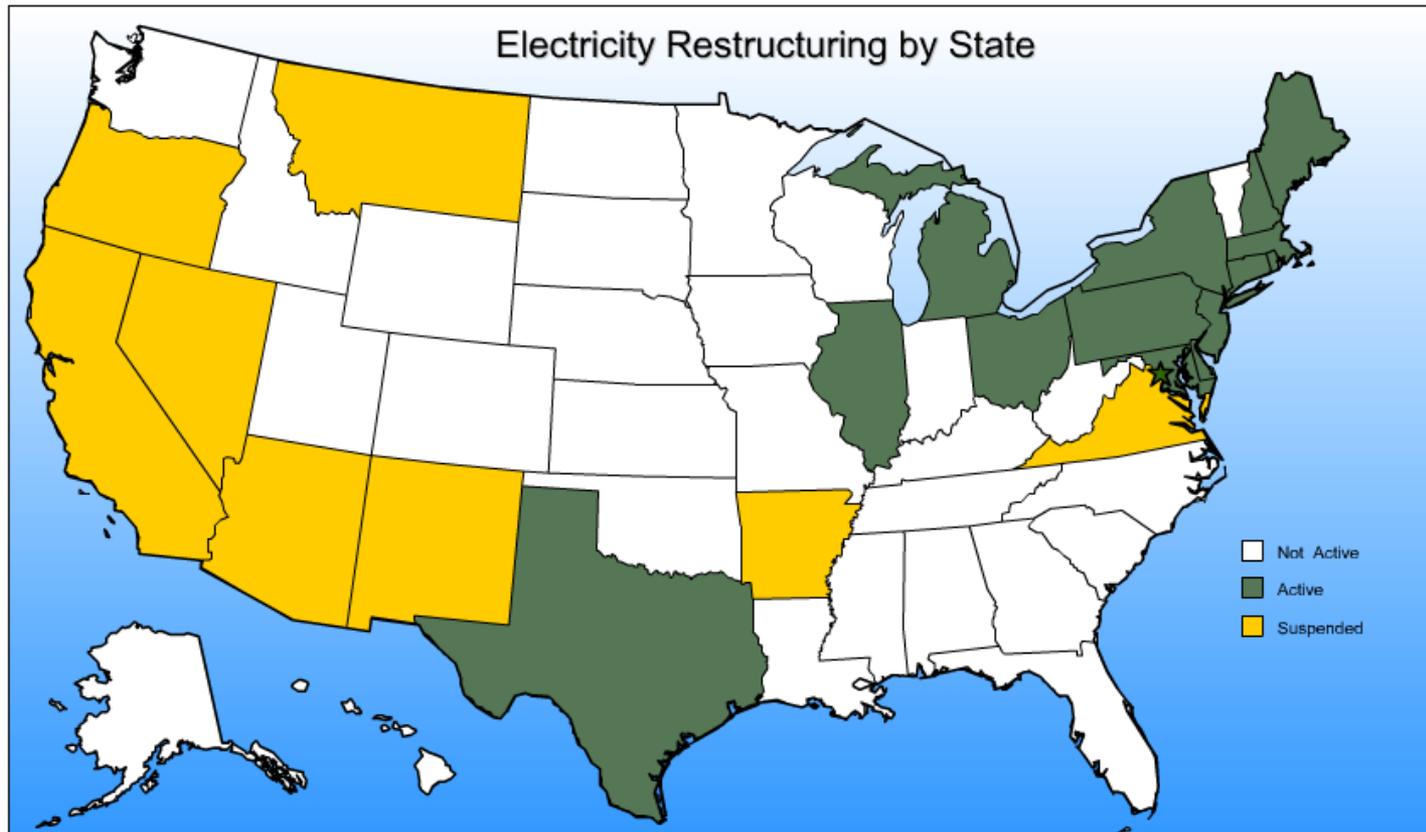
Who needs a mnemonic?

FERC jurisdiction is over “sale for resale”*

* Who doesn't know what a mnemonic is?



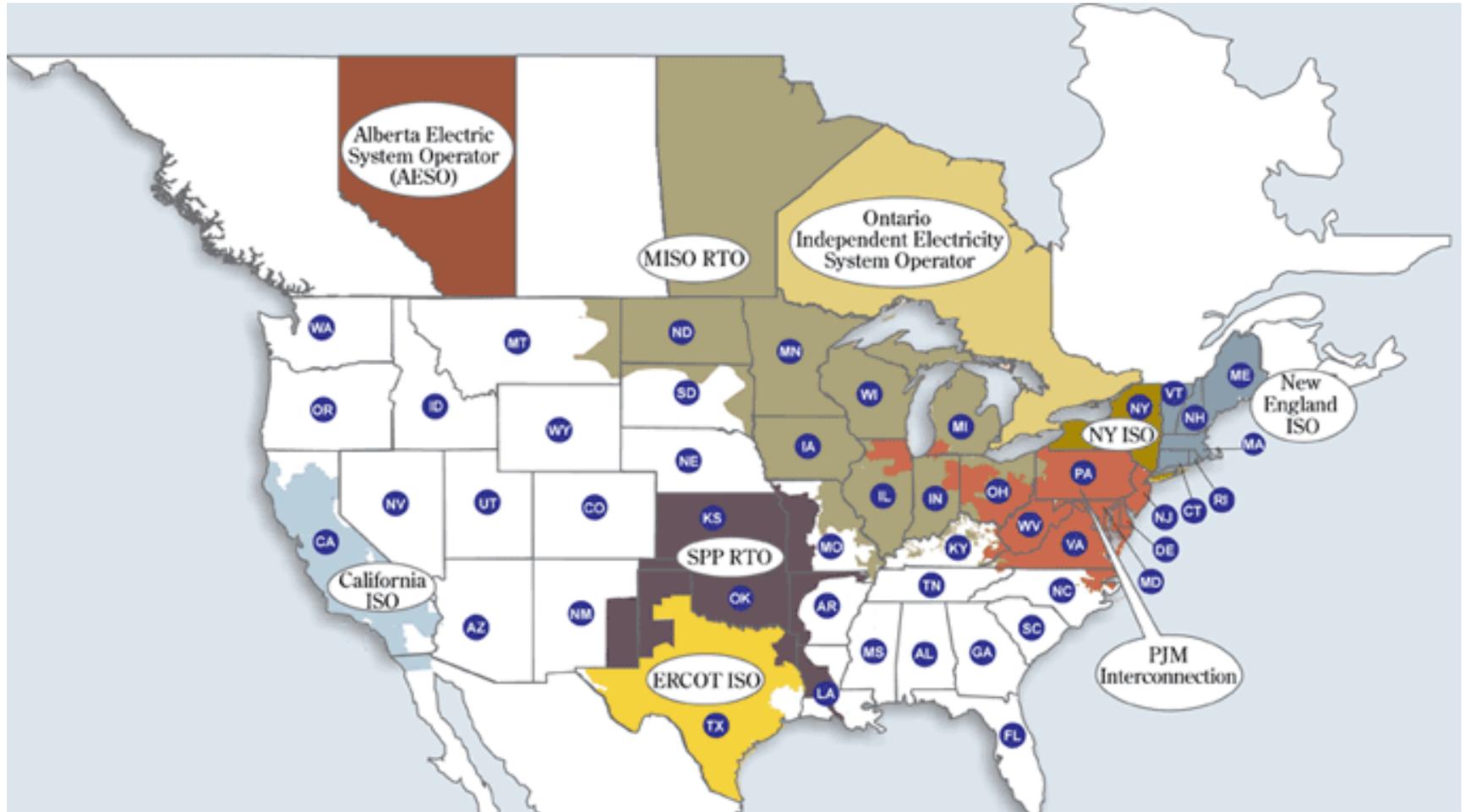
Electricity Restructuring



Source: Energy Information Administration, status as of April 2007



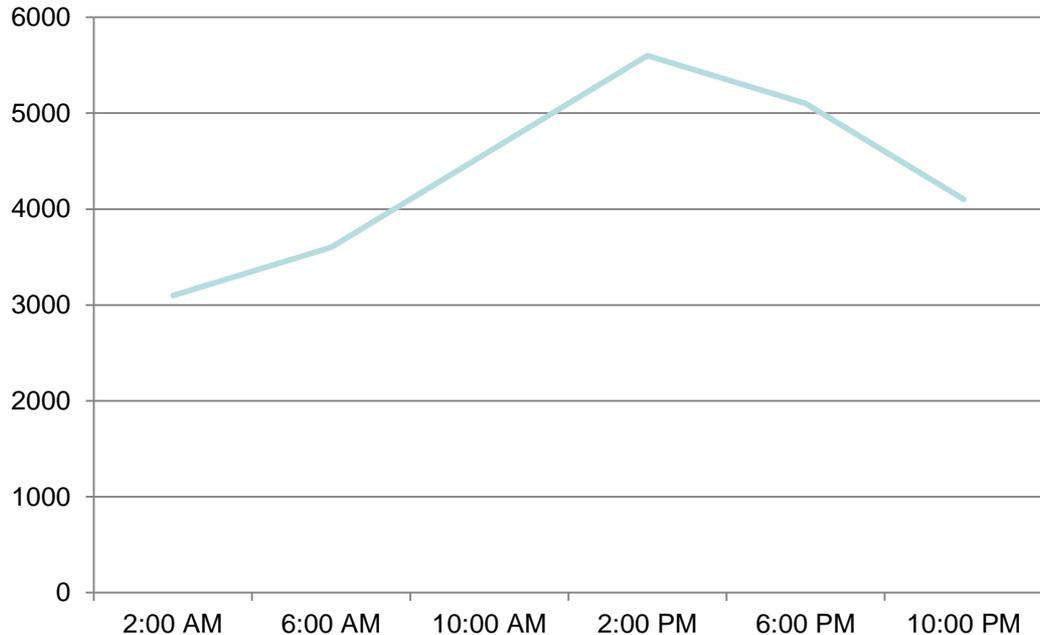
RTOs



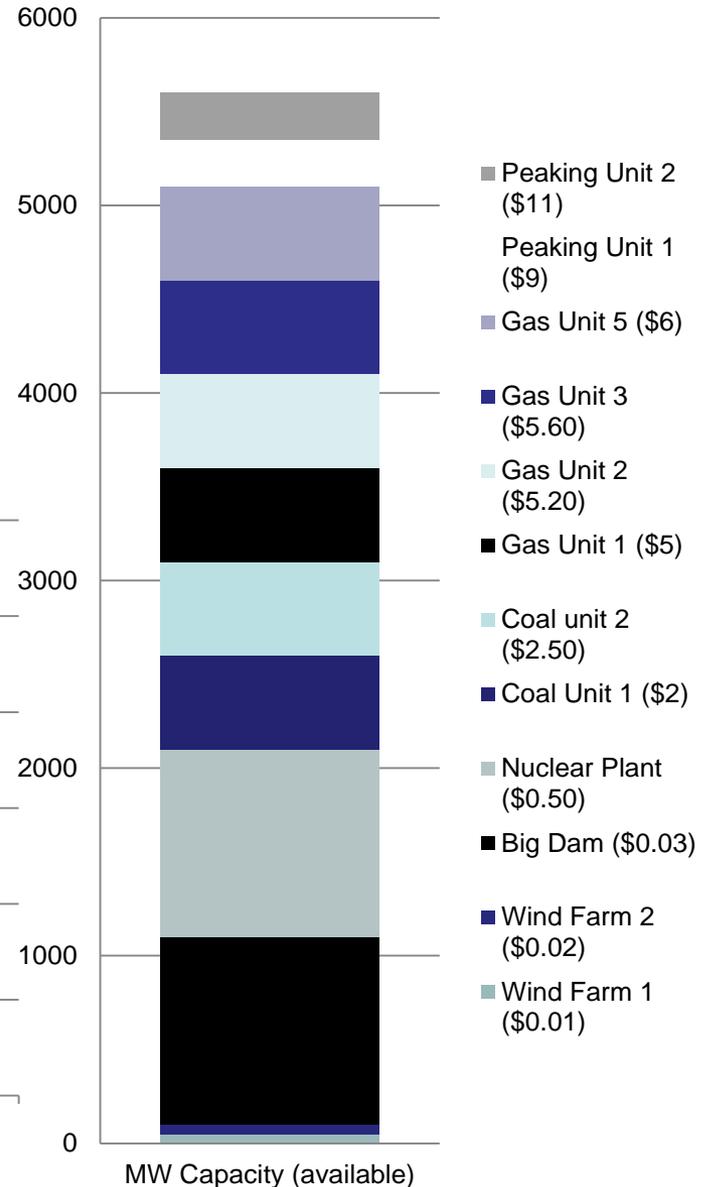


An Intro to Power Dispatch

RTO Demand (MW)



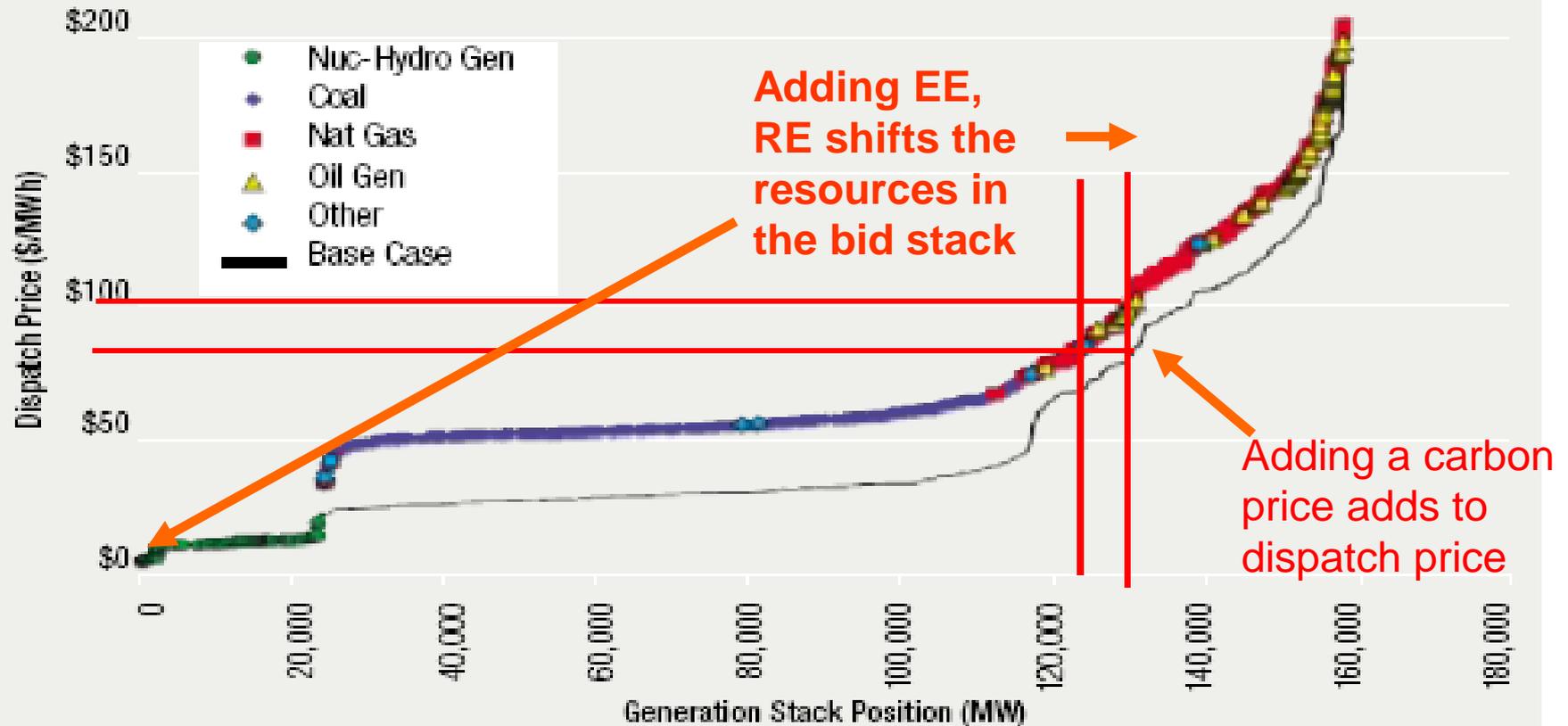
Bid stack at full capacity





Bumping marginal units off the bid stack: Utility Procurement and CO2 dispatch pricing

FIG. 3 SUPPLY CURVE WITH EMISSIONS PENALTY OF \$25/TON CO₂





The Many Charms Of Efficiency

- Costs less than a power plant!**
- Pays you back – now with local benefits!**
- NIMBY-proof!**
- Terrorist-proof!**
- Hurricane-proof!**
- Hugo Chavez-proof!**
- Easy to install: no wires or pipes!**
- 100% NOx and SOx-free!**
- Legal everywhere, and Yucca-free!**
- Bird / Bat-friendly!**
- Good-looking!**
- More Popular Every Day!**

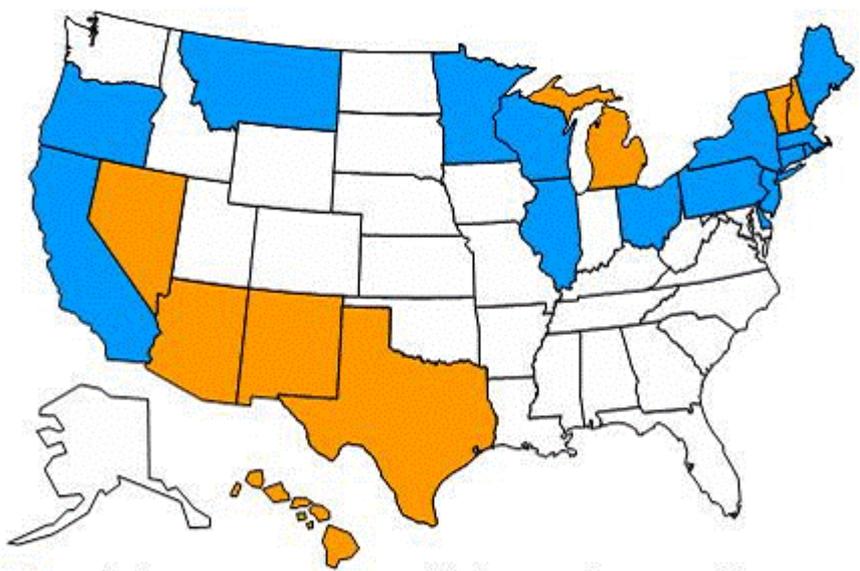
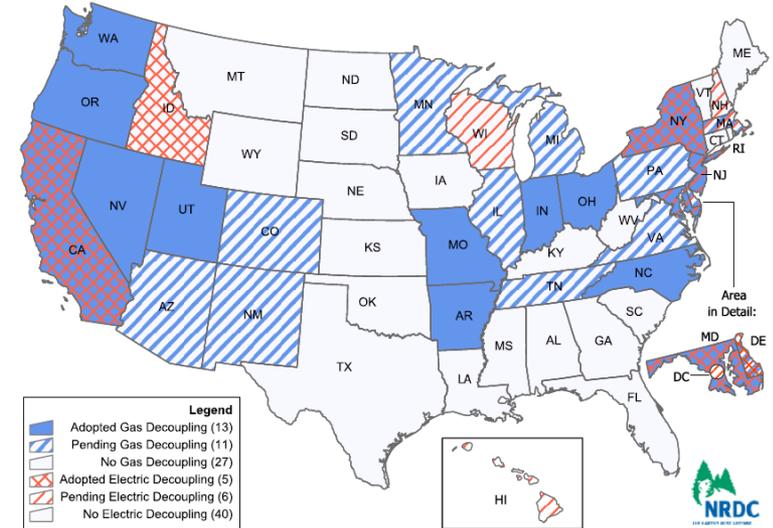




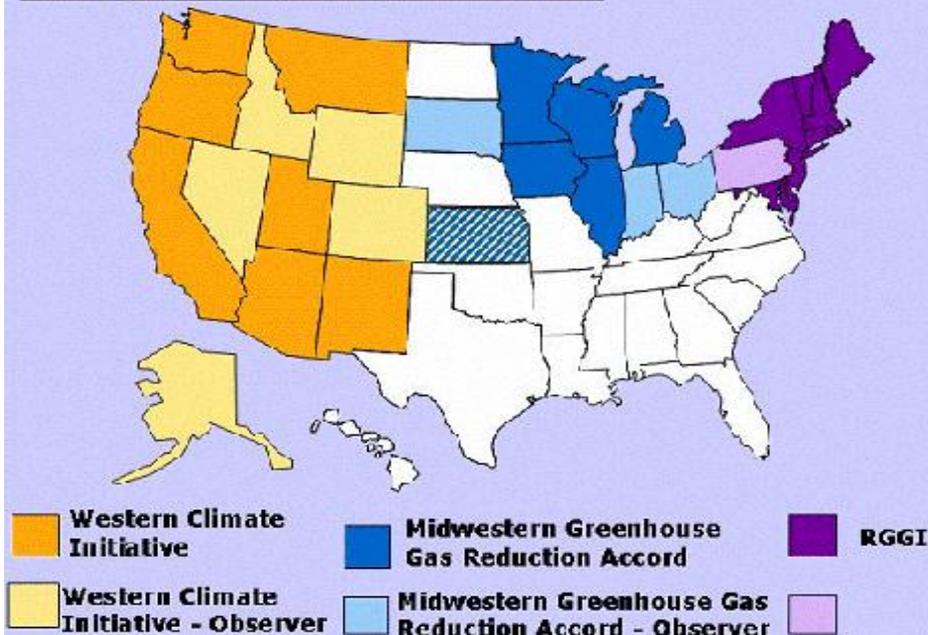
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State programs are the only programs that matter

Gas and Electric Decoupling in the US

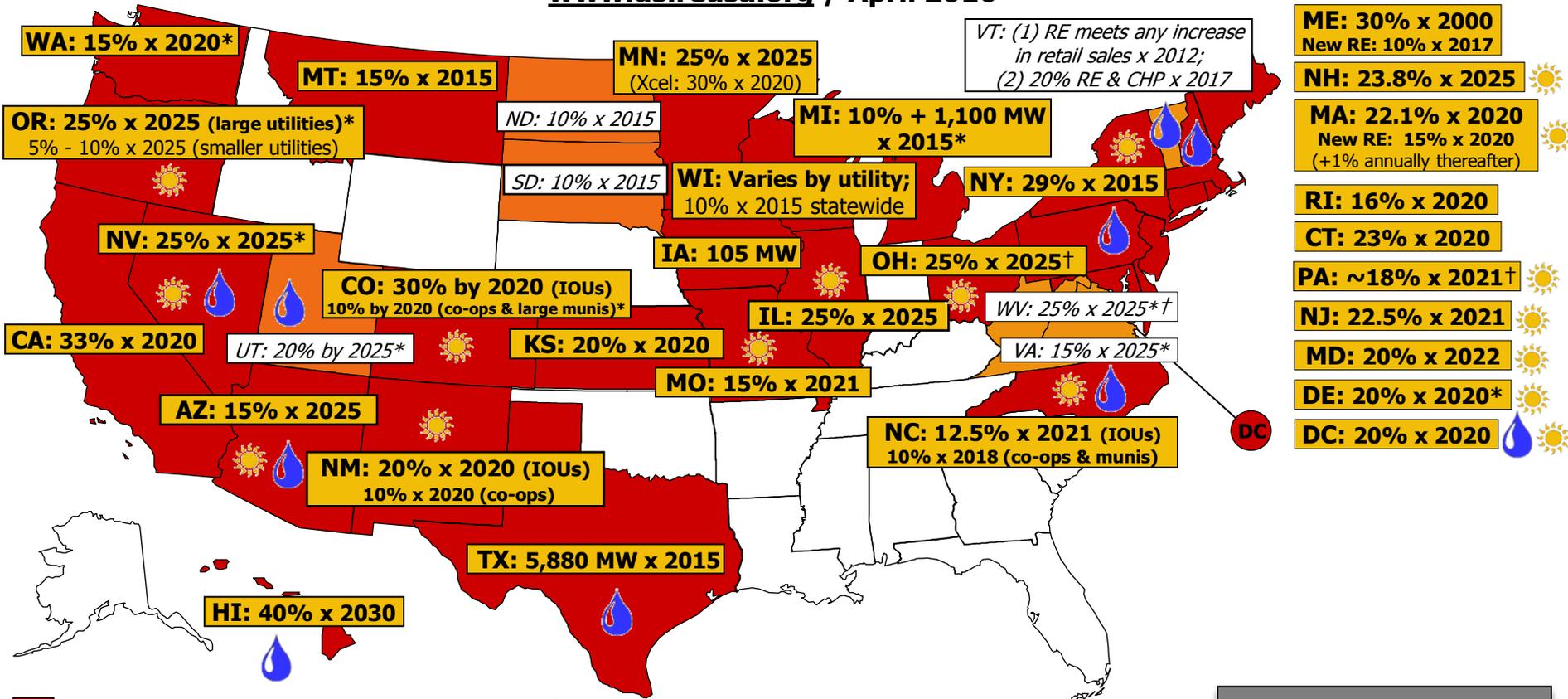


Regional Initiatives



Renewable Portfolio Standards

www.dsireusa.org / April 2010



- State renewable portfolio standard
- State renewable portfolio goal
- 💧 Solar water heating eligible

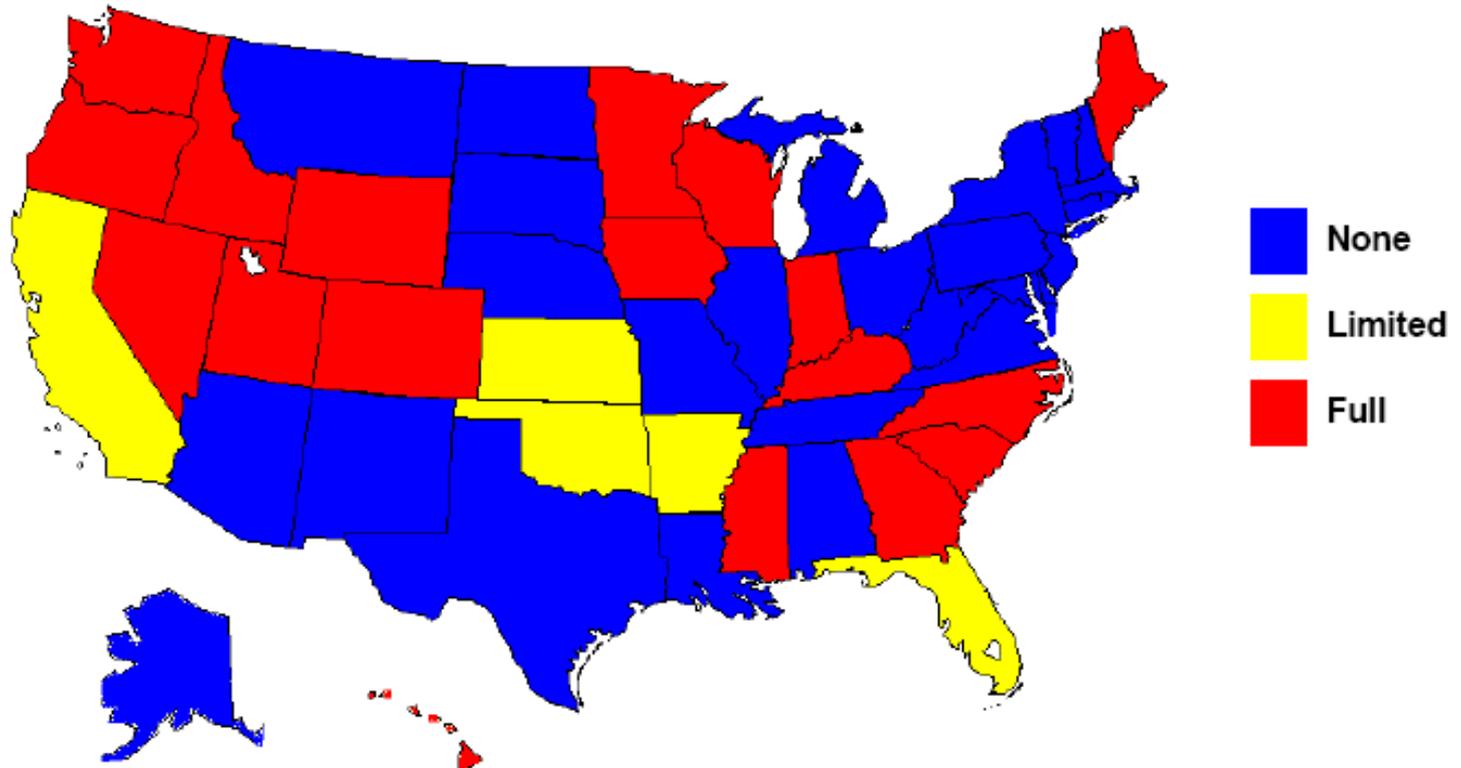
- ☀️ Minimum solar or customer-sited requirement
- ✳️ Extra credit for solar or customer-sited renewables
- † Includes non-renewable alternative resources

29 states + DC have an RPS
(6 states have goals)



Resource Planning

- IRP evaluates scenarios and chooses resource mix that has best reliability, affordability, and other desired attributes
- Even without IRP, portfolio management is gaining ground





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I Will Now Confront Your Most Challenging Questions!



Or! Later if you prefer!

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