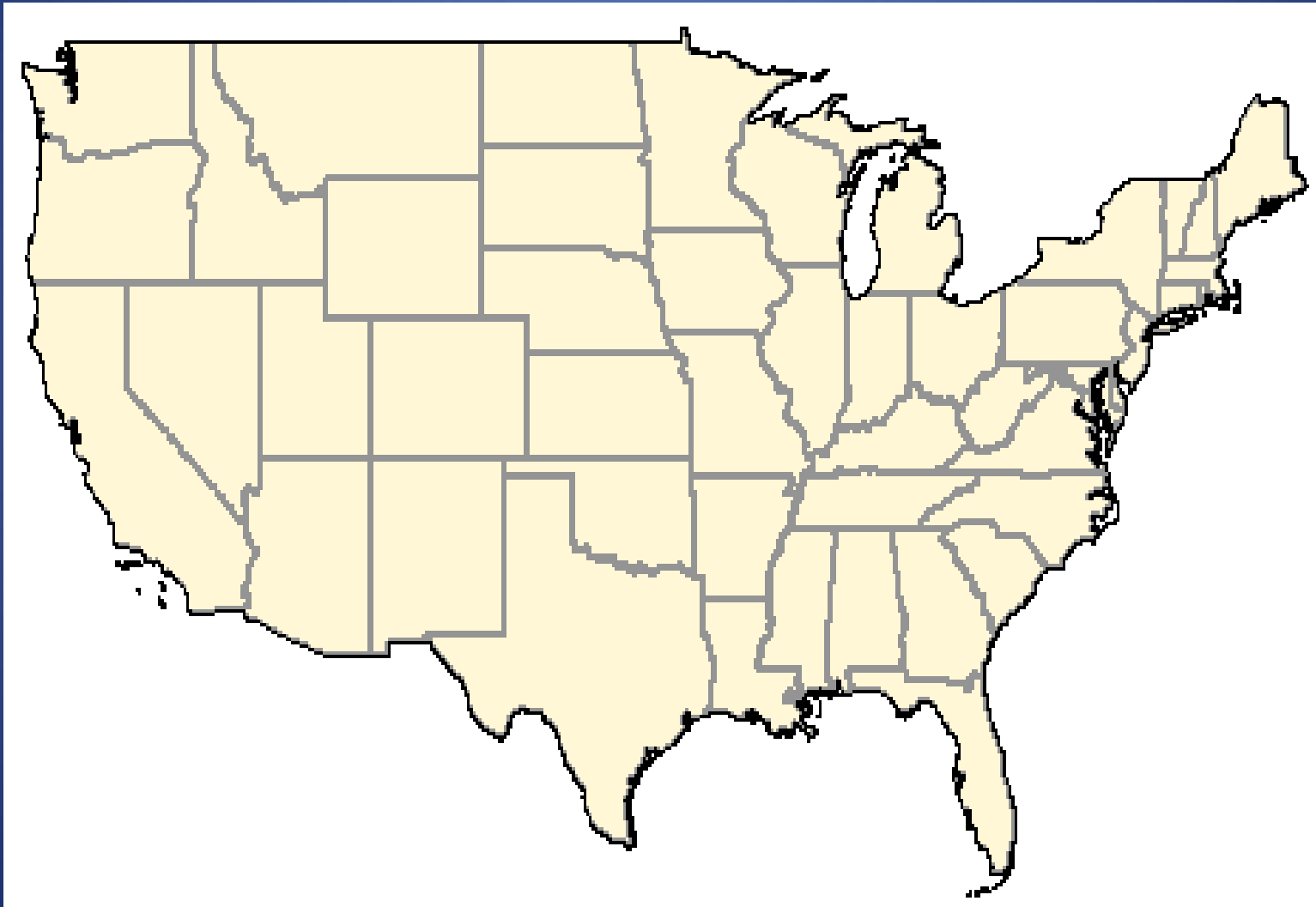


HYDROPOWER: A Comparative Energy Review

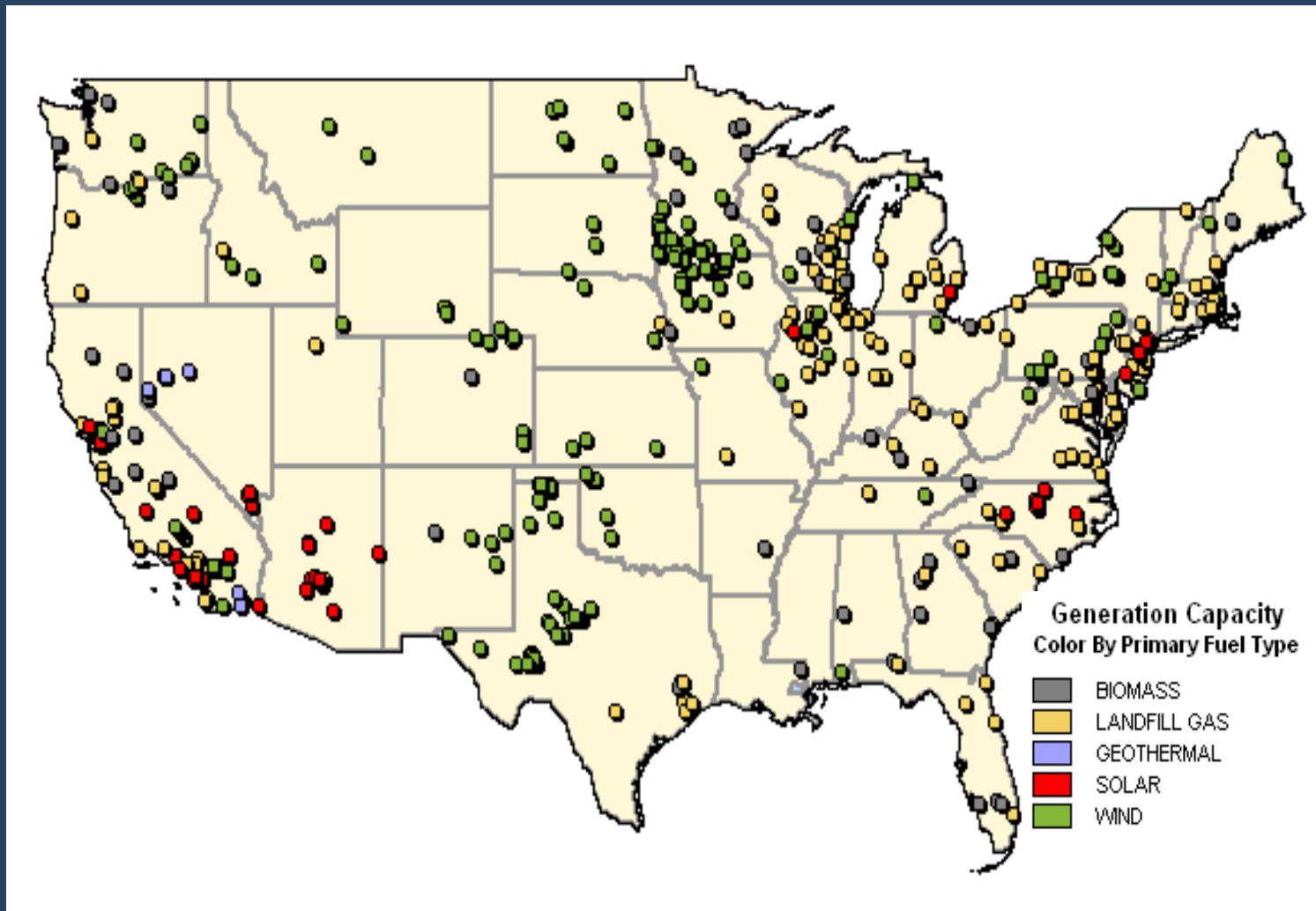


J. Mark Robinson
JMR Energy Infra, LLC
CHA October 26, 2010

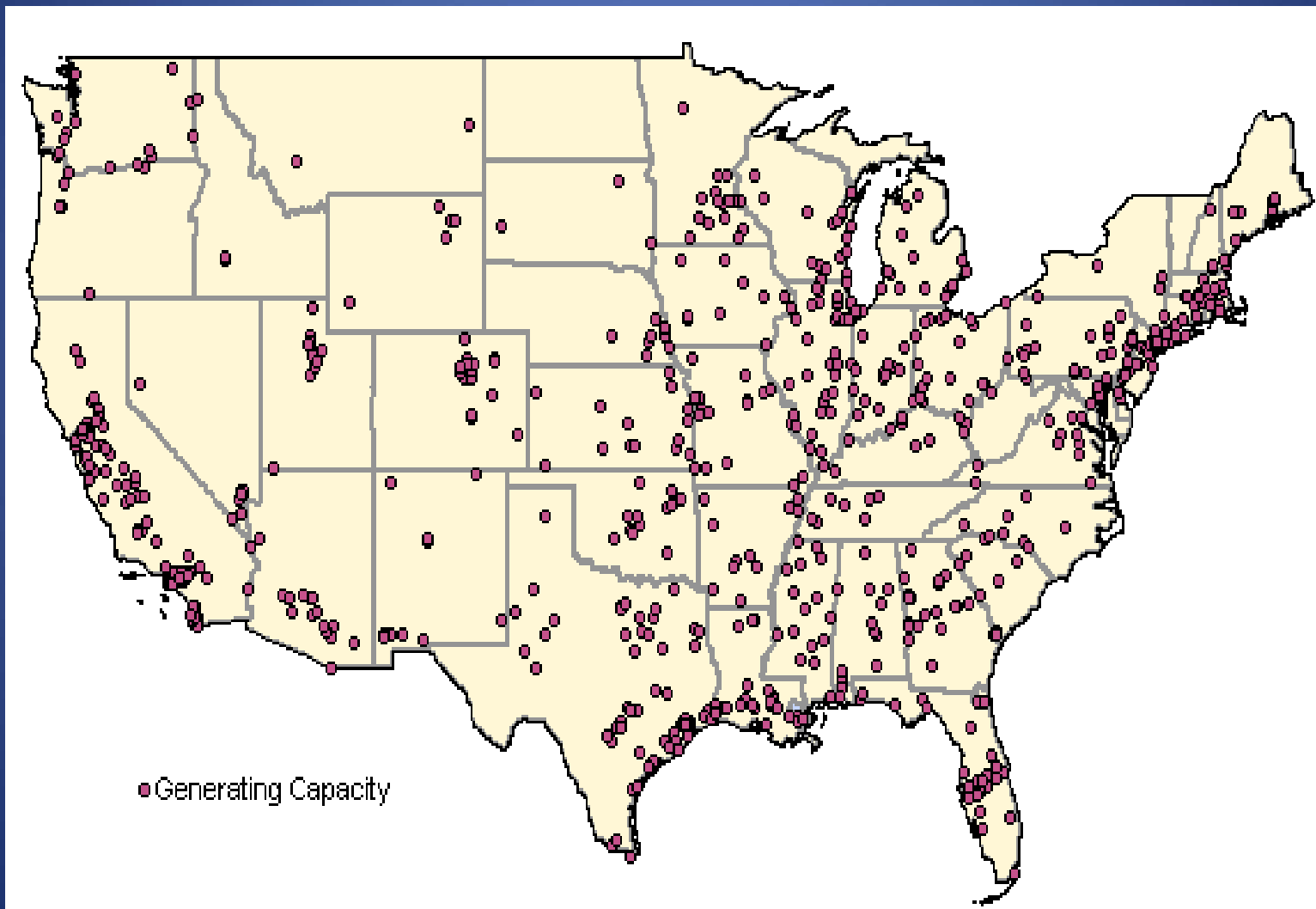
No New Nuclear Generation Sites 1997 - 2008 1,000 Net MW



New Non-Hydro Renewable Generation 1997 – 2008 23,000 Net MW

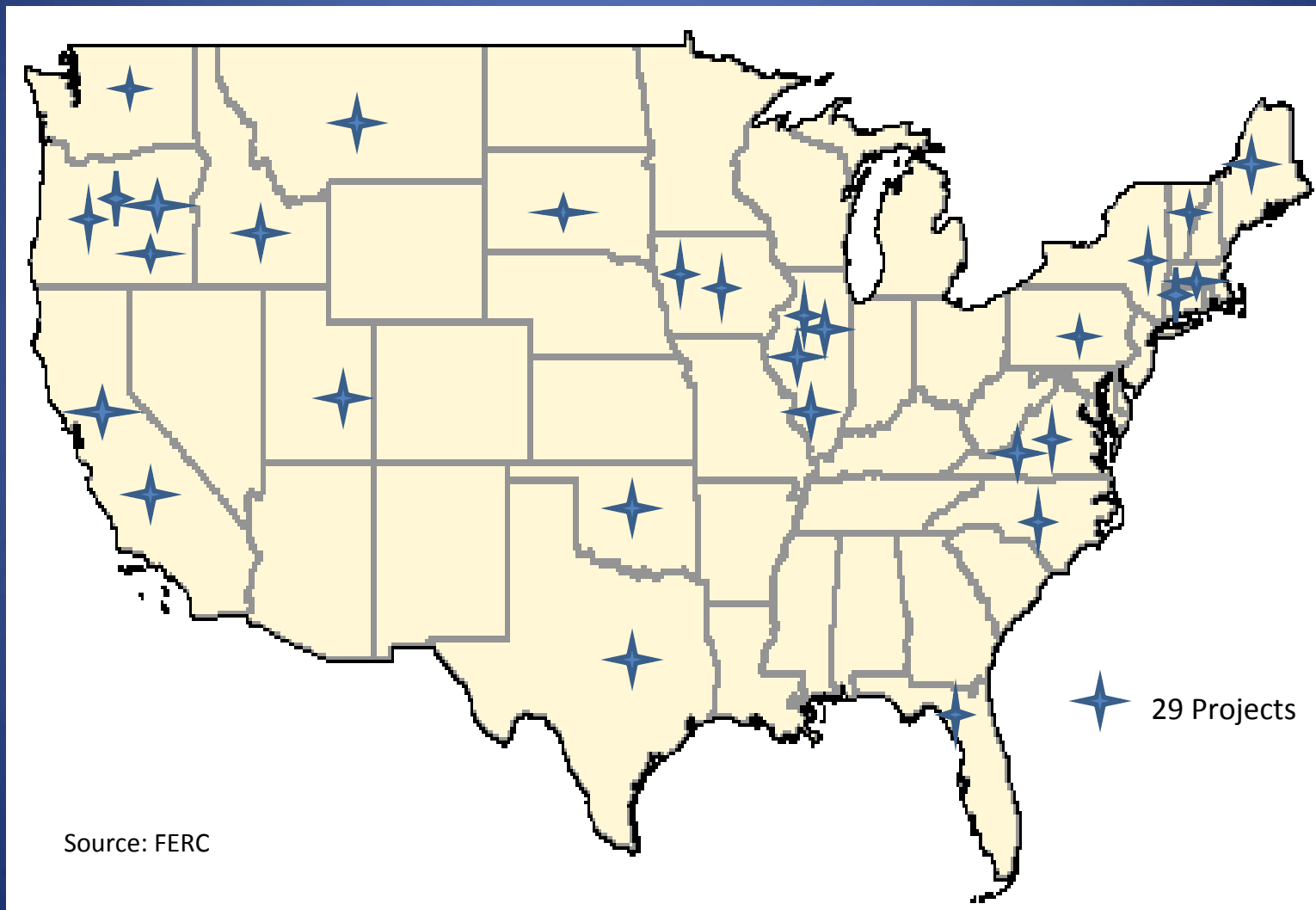


New Natural Gas Fired Generation 1997 – 2008 221,000 Net MW

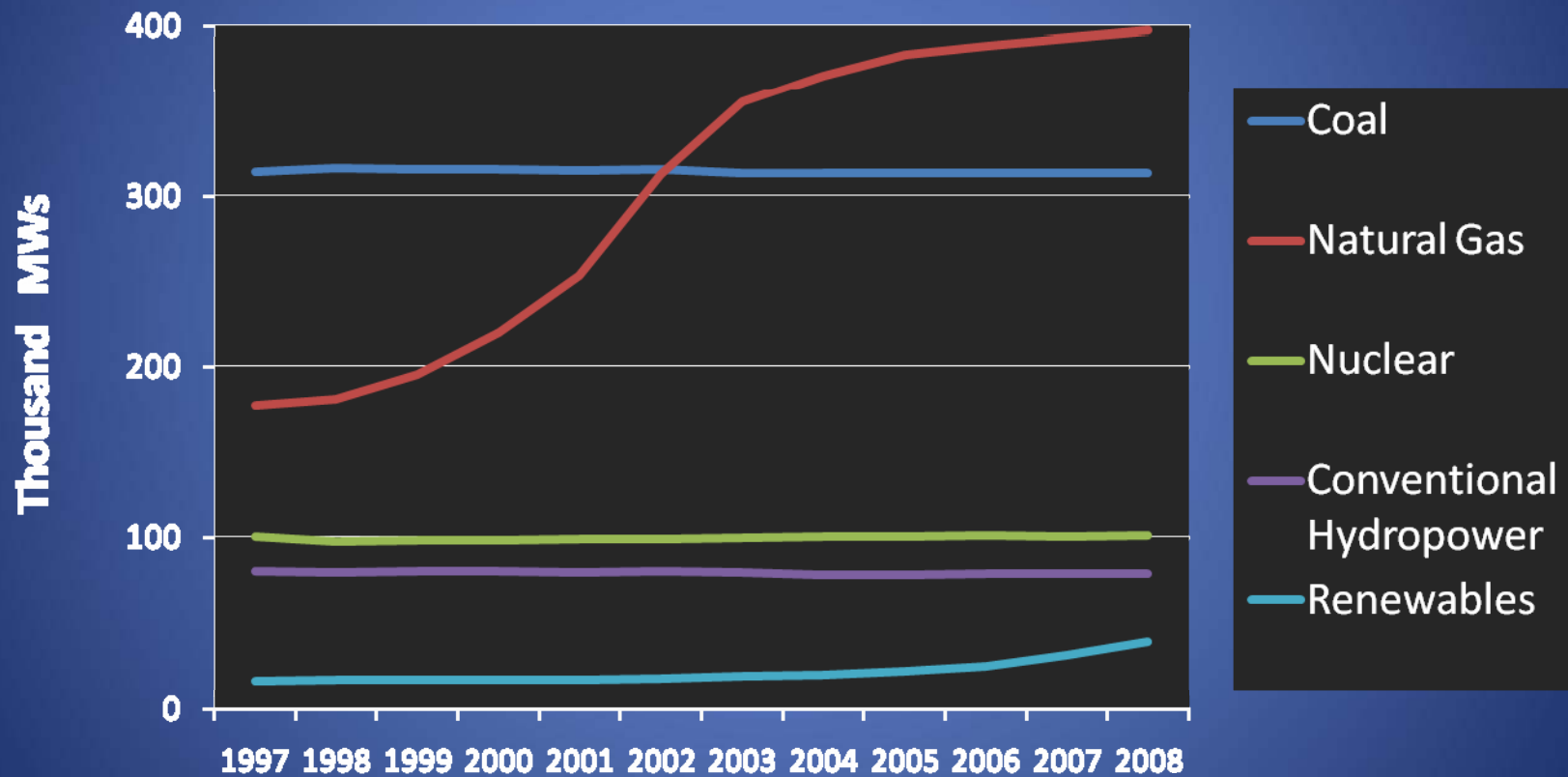


Pending Hydropower Projects

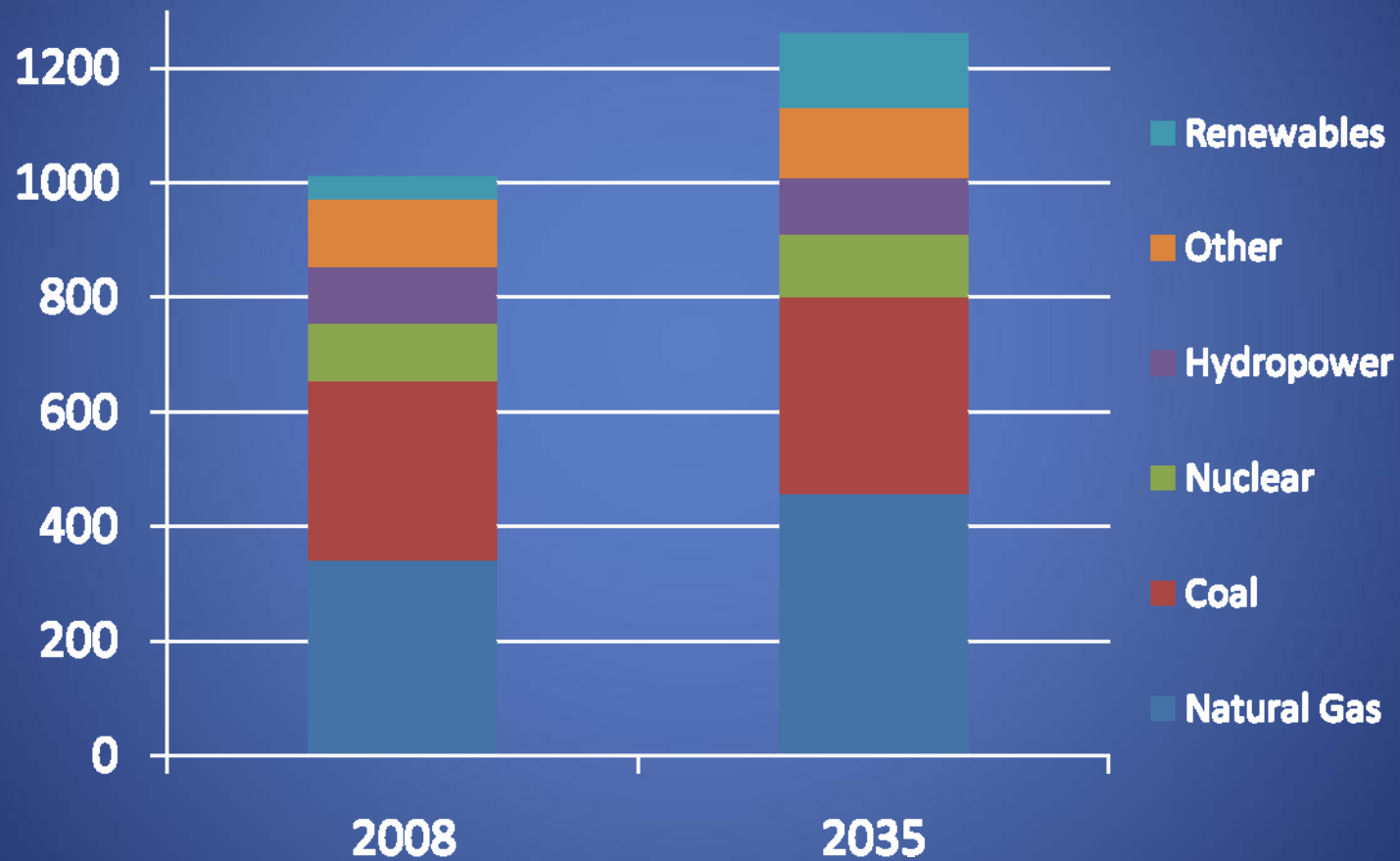
Sept 2, 2010 168 MW



Existing Net Summer Capacity by Energy Source



Electric Generation Growth (GWs)



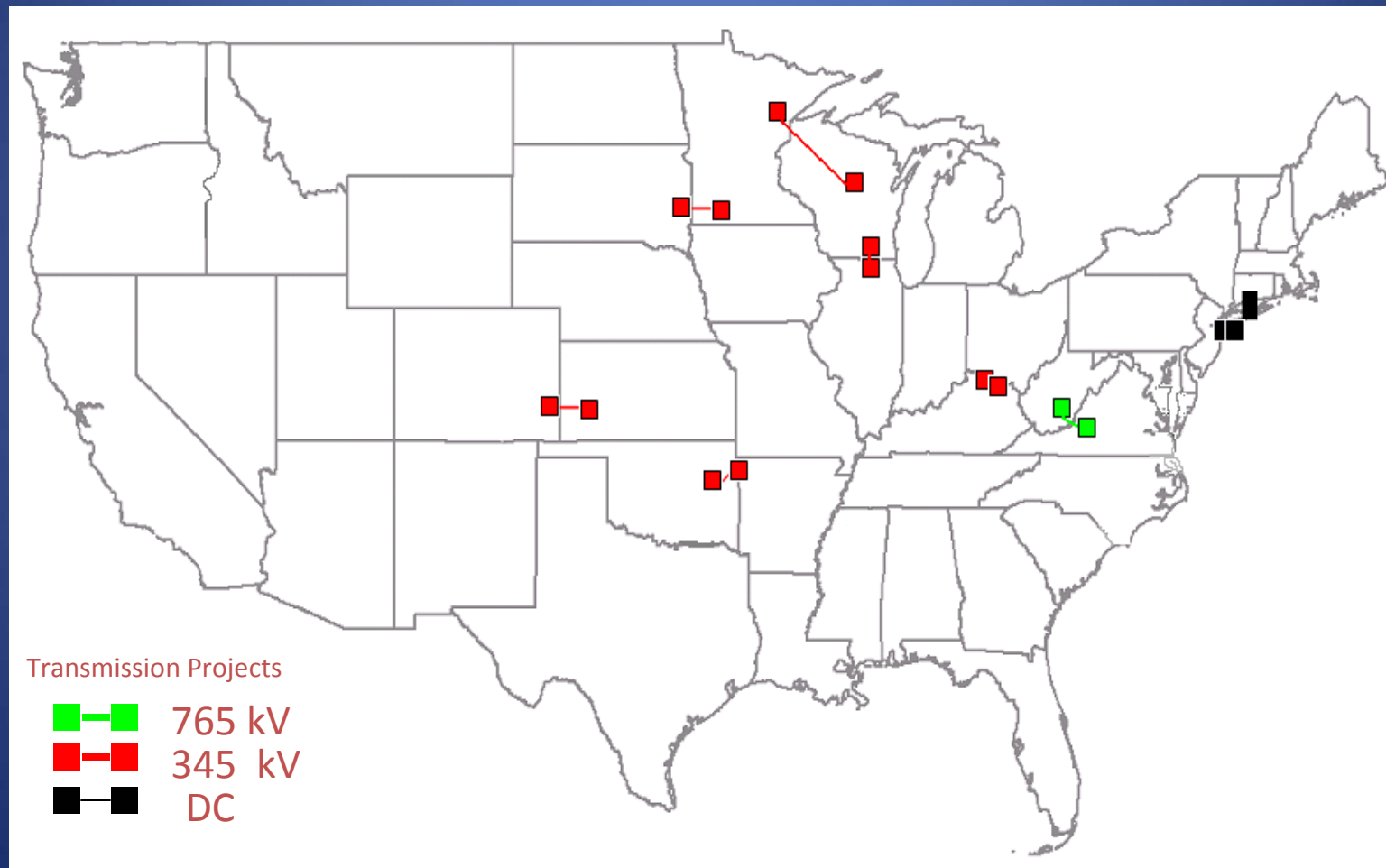
Source: EIA 2010 Annual Energy Outlook

JMR Energy Infra, LLC

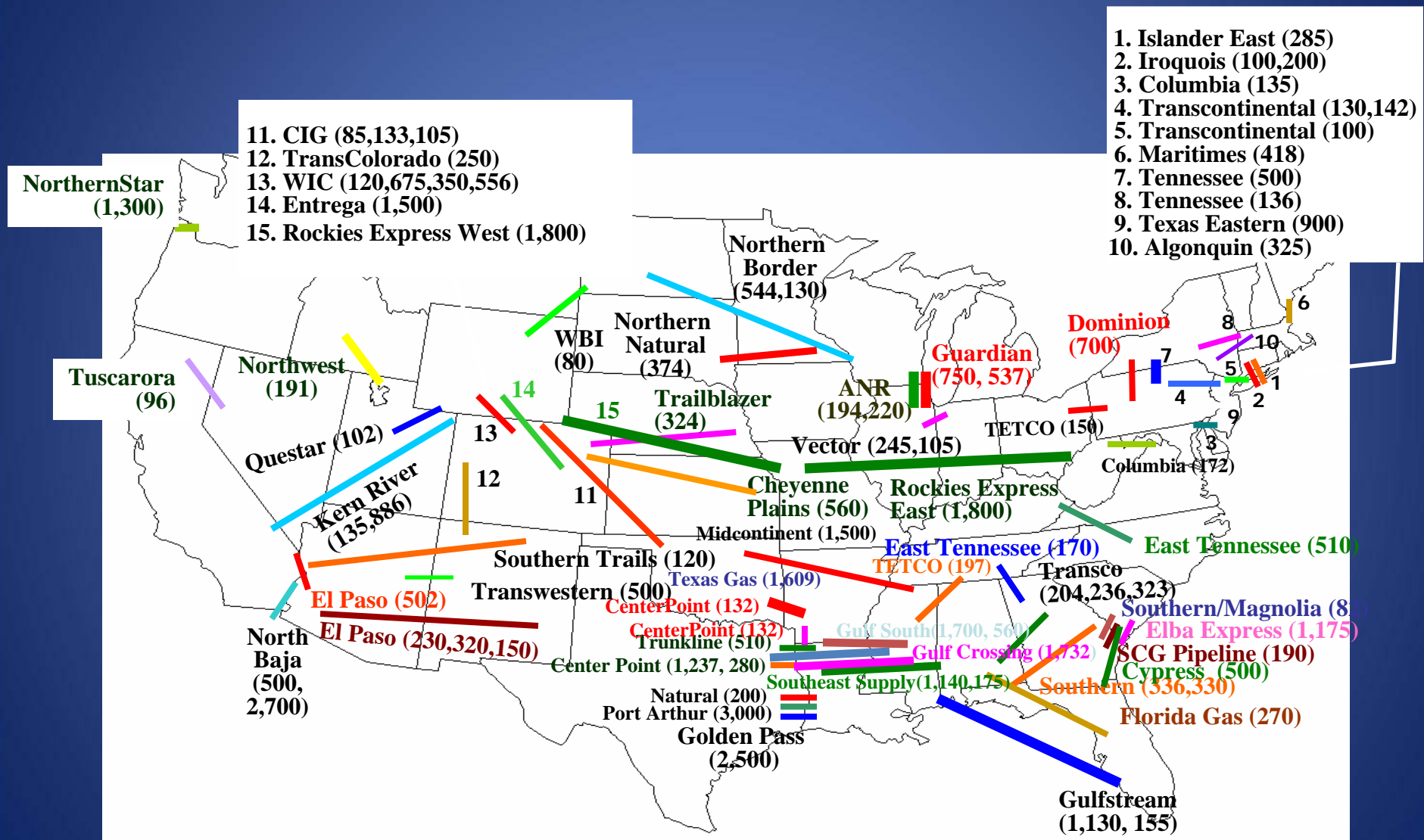
Six Principles of Energy Infrastructure Siting

Six Principles	Hydropower	Renewables/ Transmission	Natural Gas Pipelines
1) Pre-filing	X		X
2) Exclusive Authority			X
3) Disciplined Schedule			X
4) One Federal Record			X
5) Expeditious Judicial Review			X
6) Eminent Domain	X		X

Between 2000 and 2009 nine High Voltage ($\geq 345\text{kV}$) Interstate Transmission Lines have been built 682 miles.



Between 2000 and 2009 the Commission approved 15,000 miles of interstate pipeline



Wind and Solar Energy

Transmission and Land Use

- Renewable sources are not near the market
- Current regulatory regimes for siting electric transmission are poor
- S.1462 – Introduced July 16, 2009

- Land use: 500 MW facility
 - Wind: 30,000 acres
 - Solar: 3,500 acres
- DOE 20 percent by 2030 – 300,000 MW
- 13 to 18 million acres – Mass/Maryland/Conn

Gordon Gekko Moment: Uncertainty is Good

- Legislative/regulatory uncertainty works to the advantage of known generation
- Climate Bill is very unlikely - no carbon pricing
- EPA Endangerment Finding under attack by both parties (Murkowski/Rockefeller)
- Opportunities for competitive renewables

Hydropower Issues

- Competition among renewables
- Legislative/Regulatory Environment
- Development Culture

Hydropower Opportunities

- Firm Capacity – Transmission access
- Low Impact Energy
- Recognition as THE Renewable