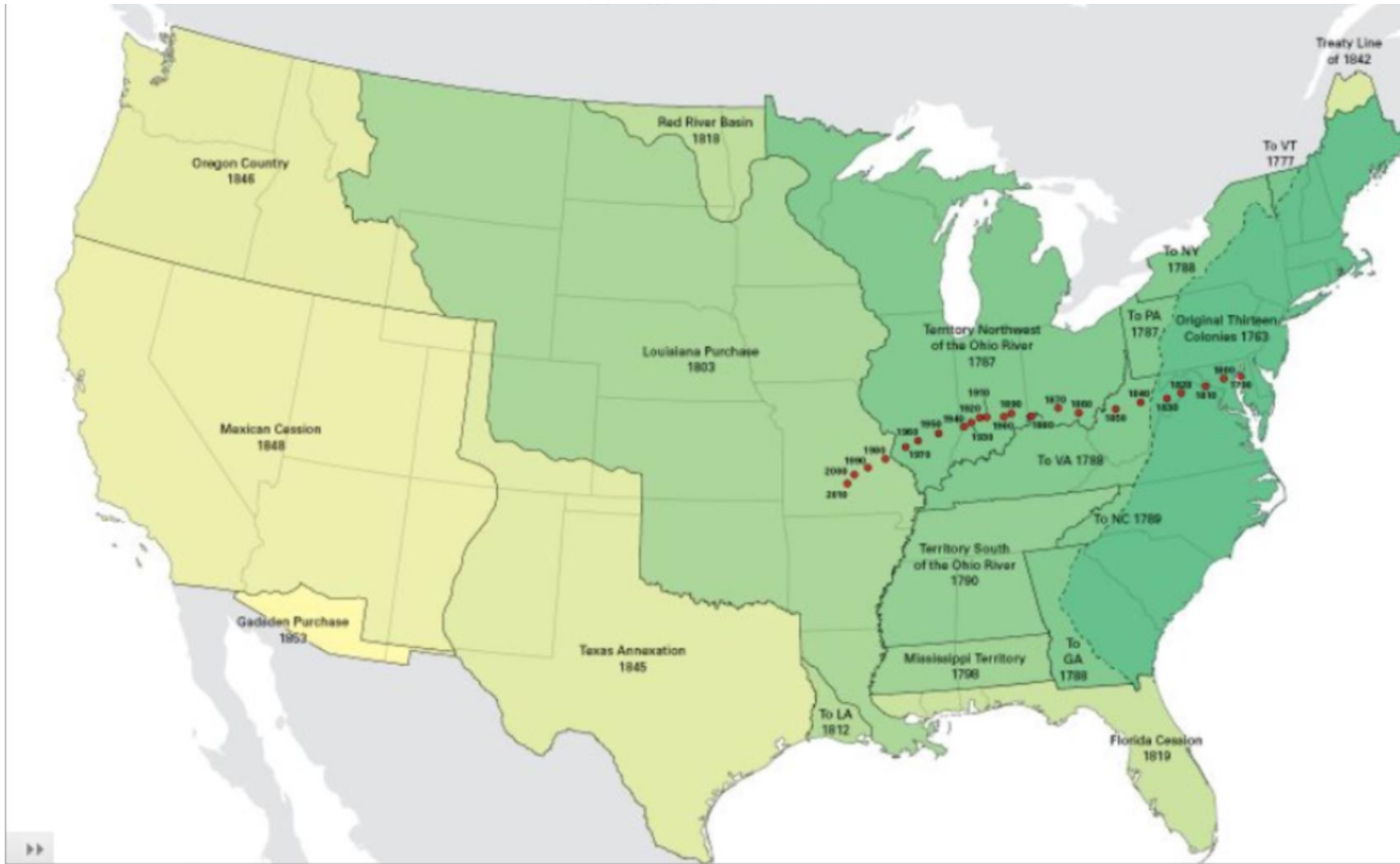




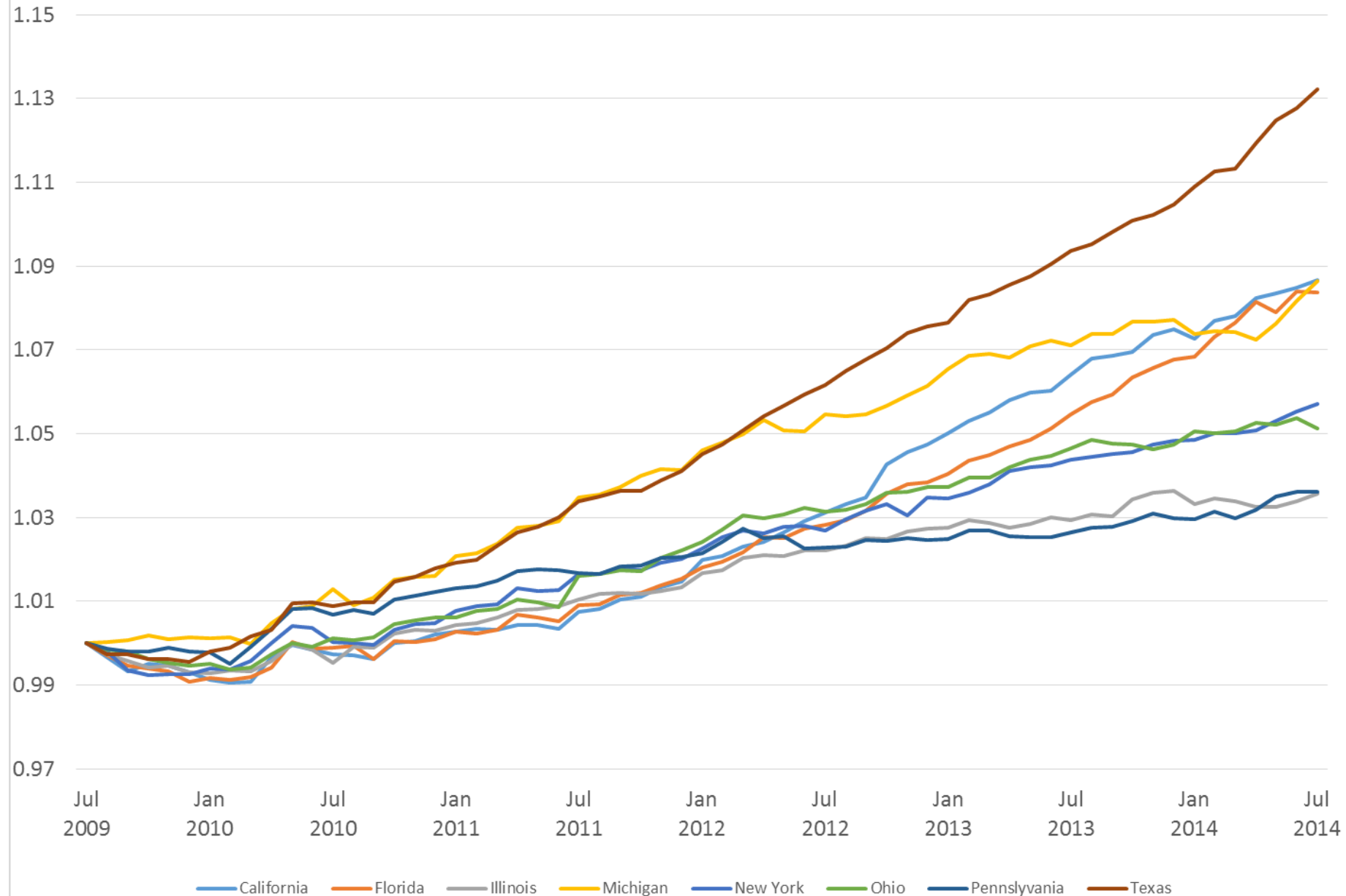
State Perspectives on EPA 111(d) Proposal  
AAPCA Annual Meeting  
Austin, Texas

September 11, 2014

Brian Lloyd  
Executive Director  
Public Utility Commission of Texas

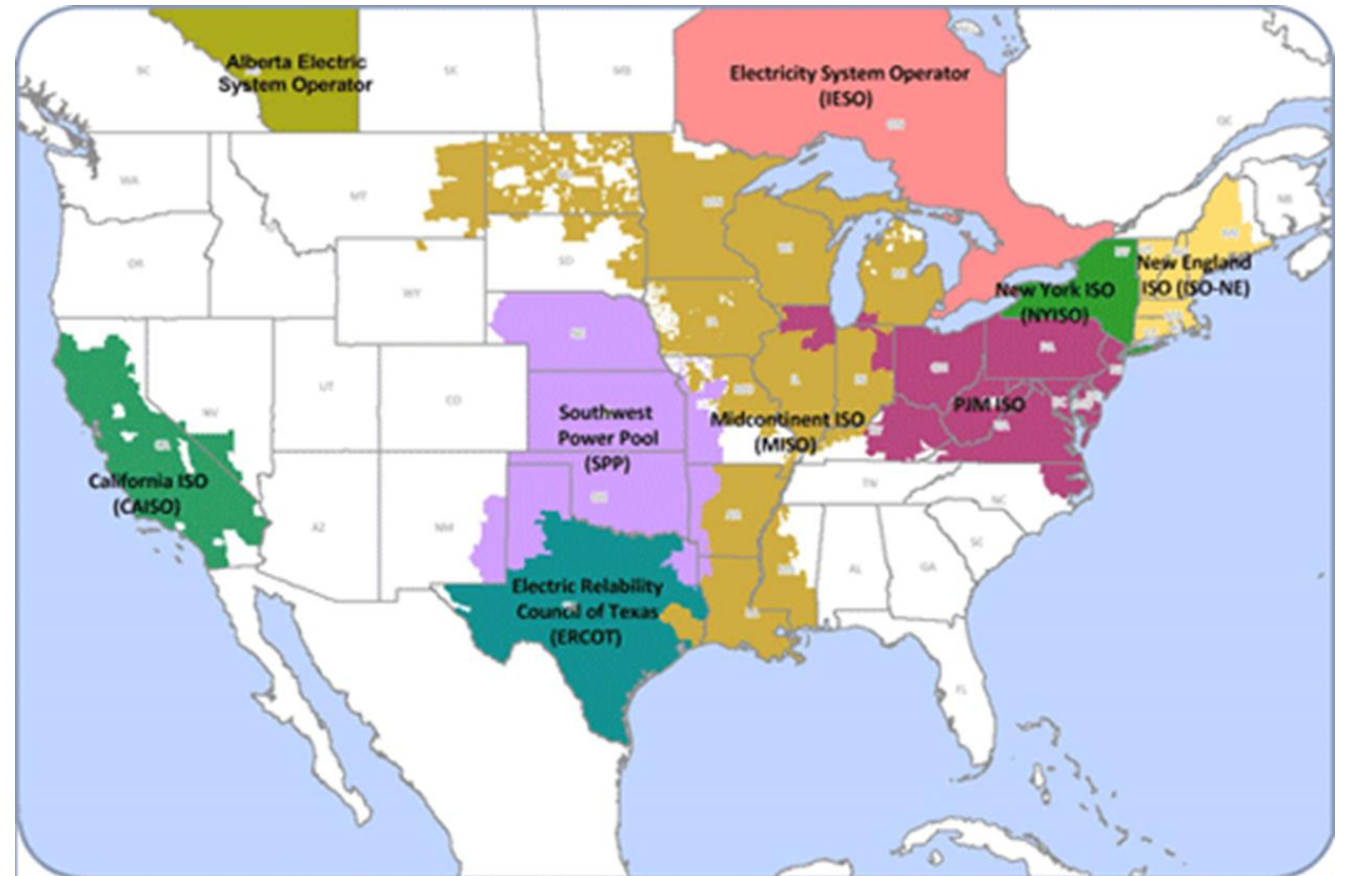
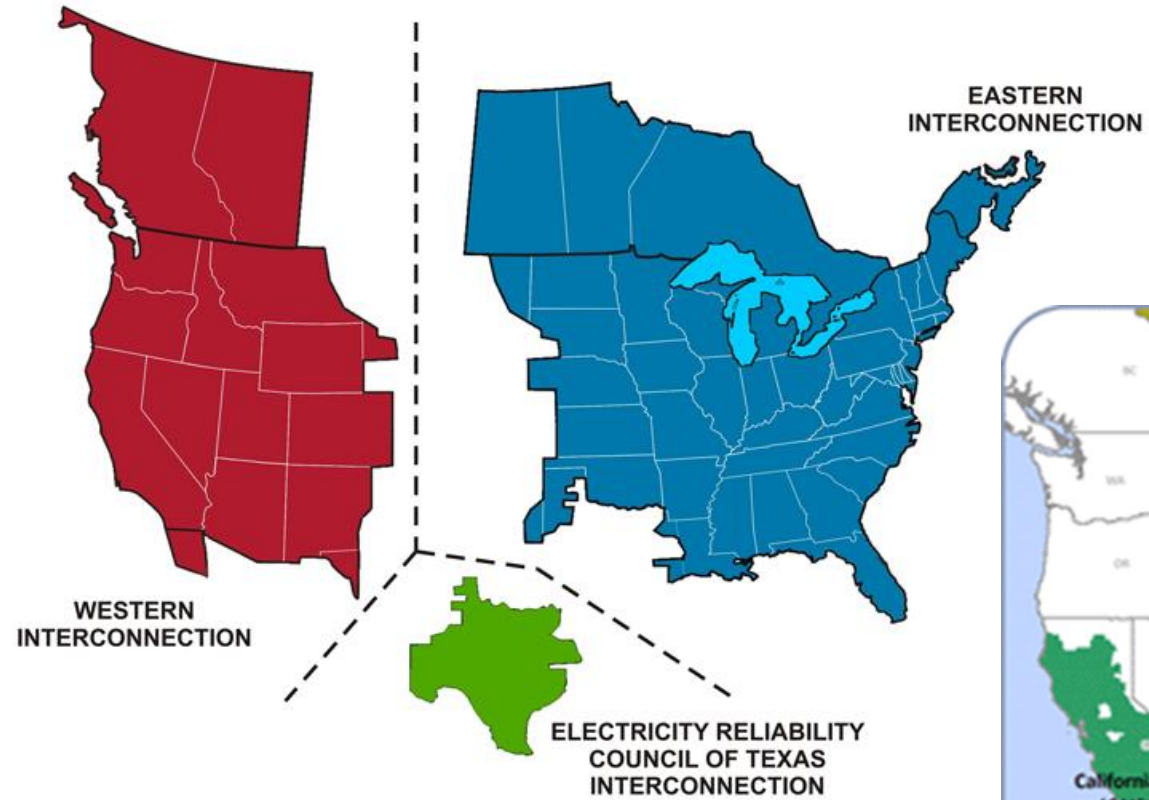








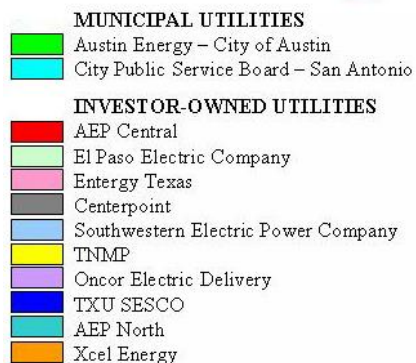
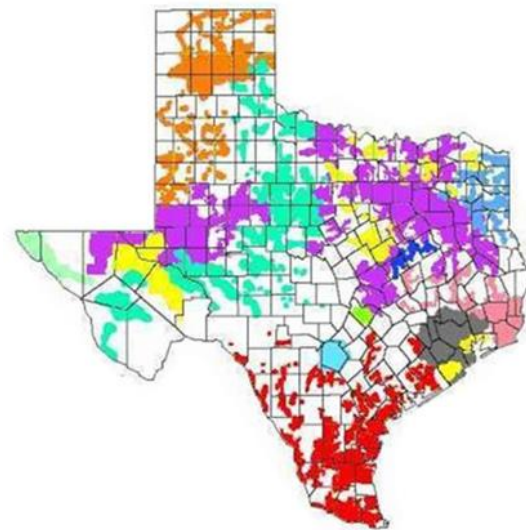
## North American Electric Reliability Corporation Interconnections







# PUCT Jurisdiction



- PUC has regulatory authority over investor owned utilities
  - Non-ERCOTs – Ratemaking/CCN authority over generation, transmission, distribution, retail
  - ERCOT – only transmission and distribution utilities
- Very limited authority over municipally owned utilities and electric cooperatives
  - Wholesale transmission rates
  - Appellate authority over MOUs rates for outside of city customers



# How do electricity markets work?

- Regulated Markets

- PUC approves power plants for investor owned utilities.
- PUC approves rate recovery, including depreciation schedule.
- Utilities have obligation to operate power plant fleet to achieve lowest costs.
  - Lowest cost fuel plants used first
  - Purchases from market when economic
- Regulatory requirements (i.e. environmental costs) are ultimately passed on to consumers as "reasonable and necessary costs".
- Governing bodies of municipally owned utilities and electric coops perform these functions for those utilities.
- Texas investor owned utilities that are still regulated are multi-state utility systems.

*State public utility commissions ultimately decide what gets built and how the costs are recovered from ratepayers.*

- Deregulated markets

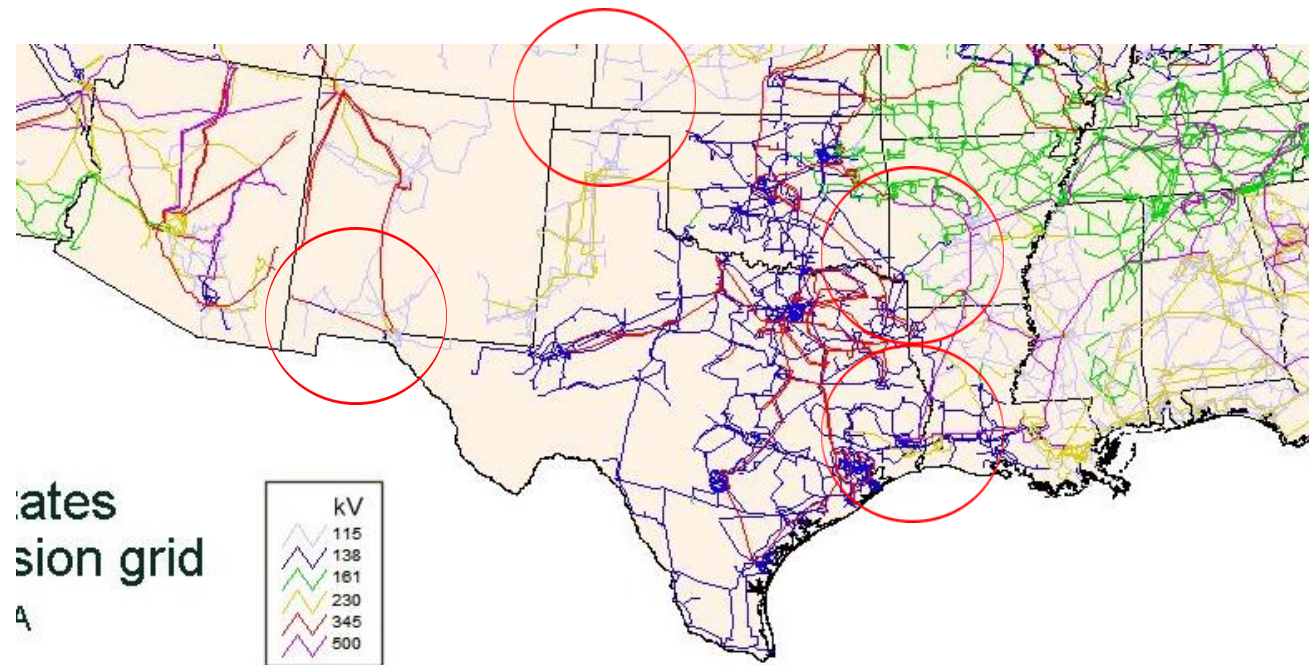
- PUC does not approve types or quantities of new power plants built.
- Parties contract bilaterally for power to serve ultimate consumers.
- Centralized real time markets are operated on a "security constrained economic dispatch" basis.
  - Lowest bids selected first
  - If transmission constraints, go to next highest cost resource that can meet customer demand
- Environmental costs must make economic sense or an asset owner will mothball or retire the power plant.

*The market decides what gets built (with exceptions for legislatively or regulatory mandated resources (i.e. renewables/demand response)).*



# Issues with Texas' electricity markets

- ERCOT grid has limited interconnections to rest of country
- Transmission limitations into non-ERCOT Texas utilities in multi-state grids
- Adding transmission and natural gas pipelines in interstate markets is a slow endeavor







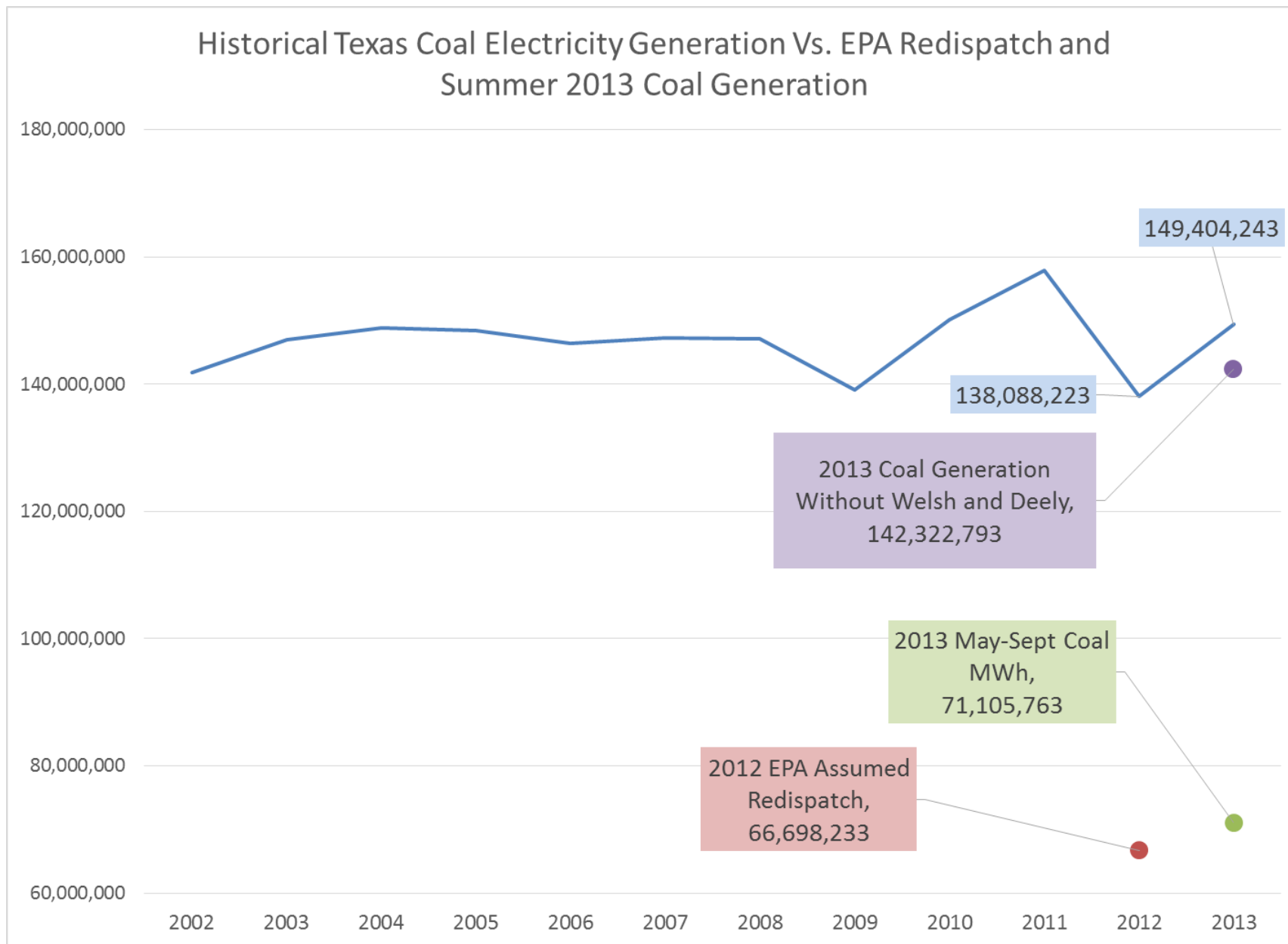
# Competitive Markets Have Already Driven Efficiency

- Since inception, Texas' competitive electricity market has been an "energy only" market.
  - Generators only make money when running plants with marginal costs below the market clearing price
- "Block 1" improvements have generally been done in Texas' coal fleet – particularly those that "pay for themselves"
- Requiring further reductions on power plants that have already made the feasible investments EPA points to arbitrarily penalizes those owners/states that have already done so.
  - However, had EPA stopped here (inside the fence) and then allowed utilization of other means (increased renewables, efficiency, etc.) to help meet this goal, the proposal would be far more workable from a legal, reliability, and economic perspective.
  - Conversely, EPA should abandon this "lazy" approach and instead calculate state specific heat rate improvement goals after fully taking into account what improvements have already been done.



# Issues with EPA's lack of understanding of power markets

- Re-dispatch between natural gas/coal that has been market driven pales in comparison to what EPA assumes Texas must do.
- Redispatch can only be accomplished one of two ways for competitive markets.
  - Annual limits on MWH production from coal plants and/or retiring about 10-12,000 MW of capacity
    - Implies coal plants would be unavailable in winter when gas curtailments are the highest risk.
    - If you shut plants in regulated/muni/coop markets, huge stranded costs.
    - Operating coal plants in a cycling/peaking/standby mode increases the heat rate and SO<sub>2</sub>/NO<sub>x</sub> emissions.
    - Dire resource adequacy problems if that much coal is forced to retire
  - Cap and trade / carbon permits
    - Carbon price would need to be approx. \$40 per ton at \$6 per MMBtu natural gas price. Would result in a \$20 per MWh increase in power prices on average, which would be a \$8-\$9 billion increase in annual power costs.
    - Redispatch on regulated utilities would significantly increase fuel charges.
- The degree of redispatch contemplated would likely have a need for substantial new transmission and gas pipeline – cannot realistically be accomplished before 2020.



Source: United States Energy Information Administration

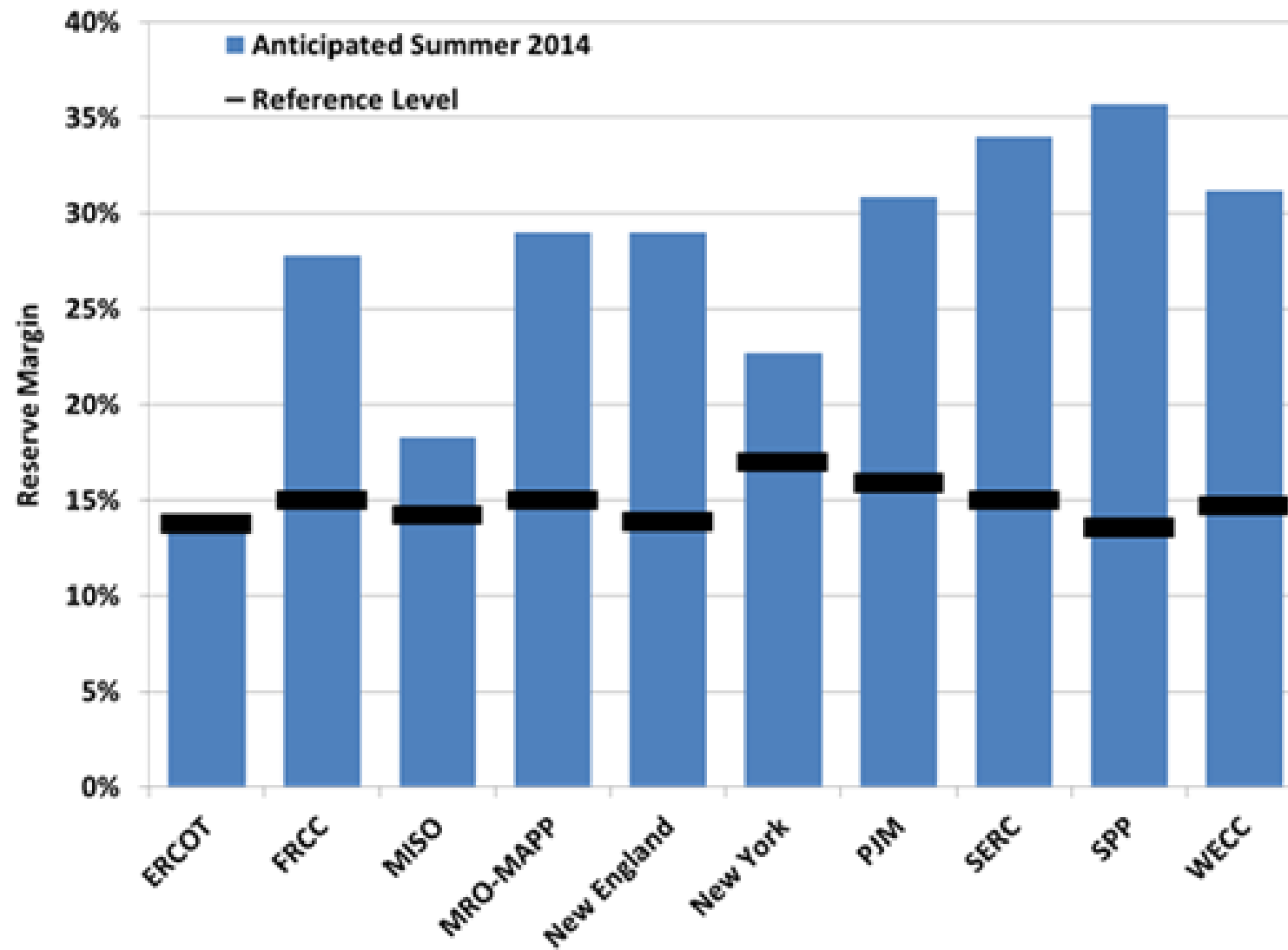


# Resource Adequacy

- “The EPA uses the Integrated Planning Model (IPM) to project likely future electricity market conditions...”
  - “**Since the model must maintain adequate reserves in each region**, a portion of the reduced operational capacity in the policy case is taken from reserves that currently exceed the target reserve margin and will not be needed in the future. In order to maintain resource adequacy in each region where existing resources retire, the model relies on this excess reserve reduction, additions of new capacity, and reduced total resource requirements from increases in energy efficiency.”

**In other words, EPA finds that the proposed rules don't affect resource adequacy because the model EPA used doesn't let them affect resource adequacy.**



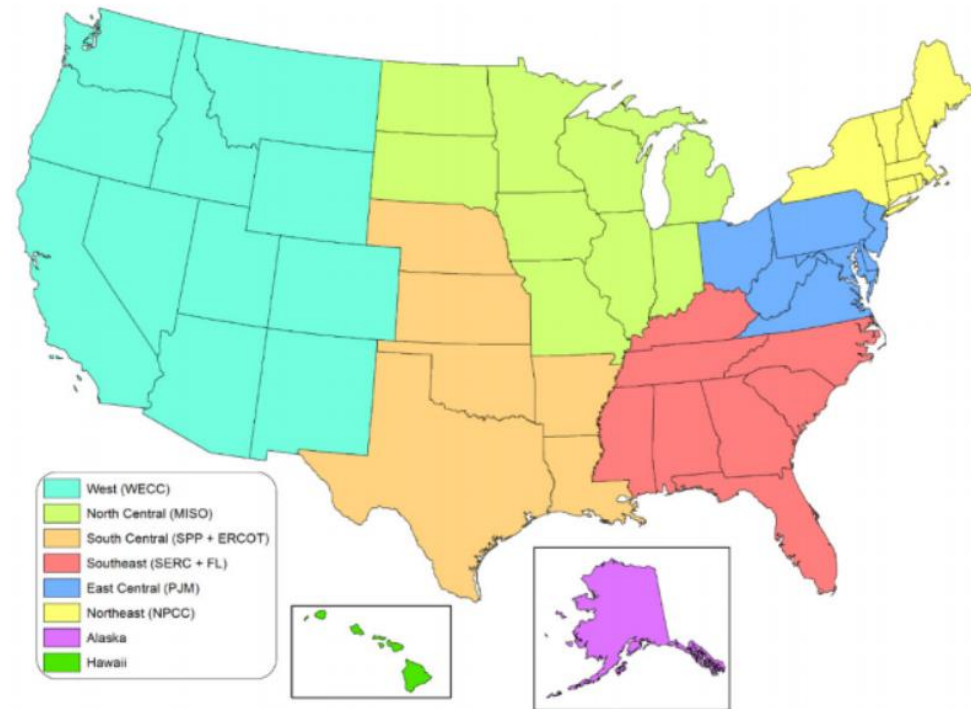




# Block 3 Has Serious Problems

- Only Kansas' RPS is used to calculate the South Central – Texas' is not used (5,880 MW ~ 4% of energy).
- Kansas RPS is a % of capacity, not energy, but is used to calculate an annual energy requirement of 20% for the region.
- Kansas' RPS has numerous safety valves if retail rates rise more than 1%.
- Kansas' electricity sector is 1/10<sup>th</sup> the size of Texas'.

Figure 4.3. Proposed Approach Regions





# Texas penalized for existing renewable energy

- South Central States

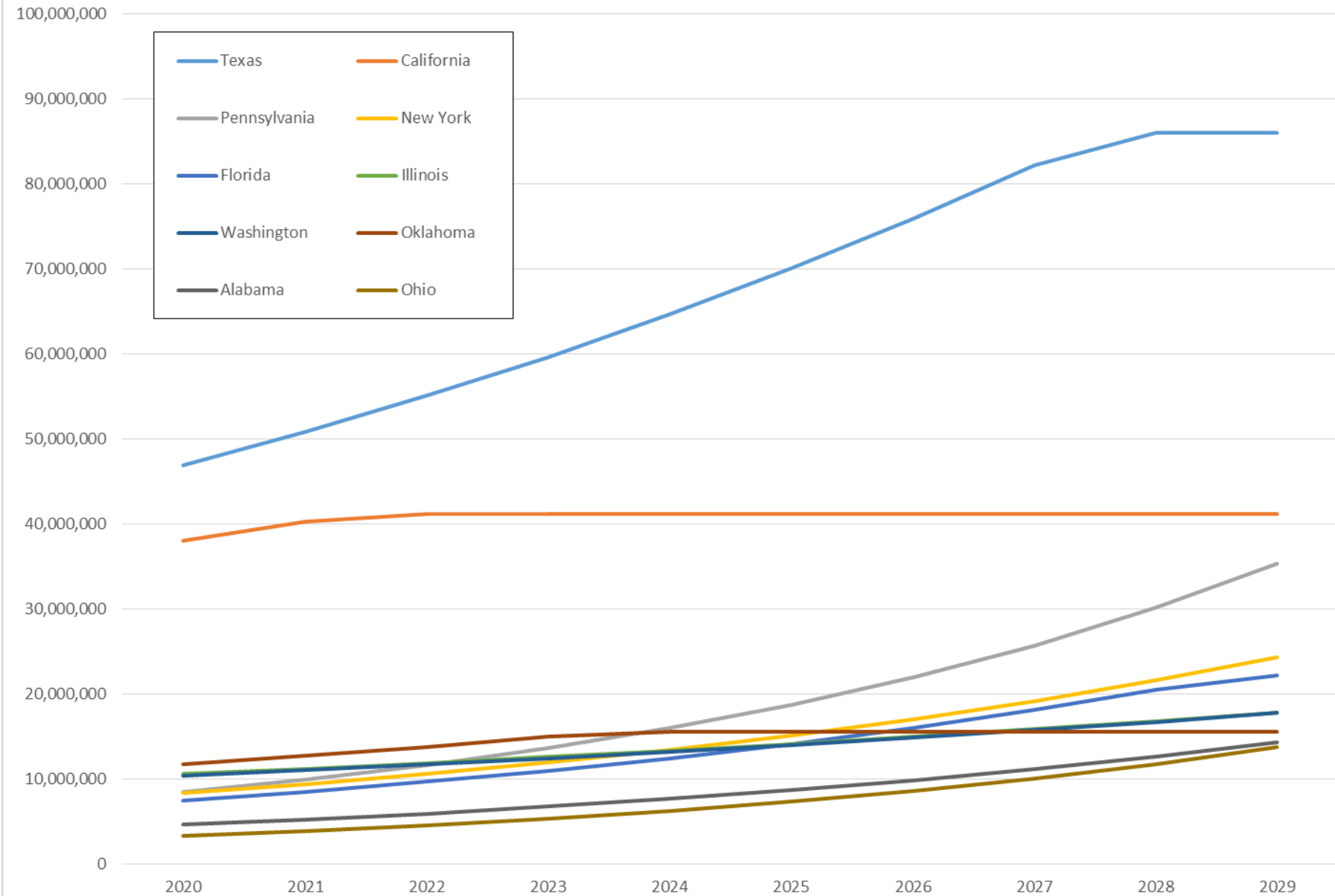
- Texas – 20% requirement
- Kansas – 20%
- Oklahoma – 20%
- Nebraska – 11.2%
- Arkansas – 7.2%
- Louisiana – 6.7%

- Other states

- Florida – 10%
- Illinois – 11%
- Iowa – 15% (at 25% in 2012)
- Kentucky – 1.9%
- Missouri – 3%
- Washington – 16% (Historic 2012 = to Texas)



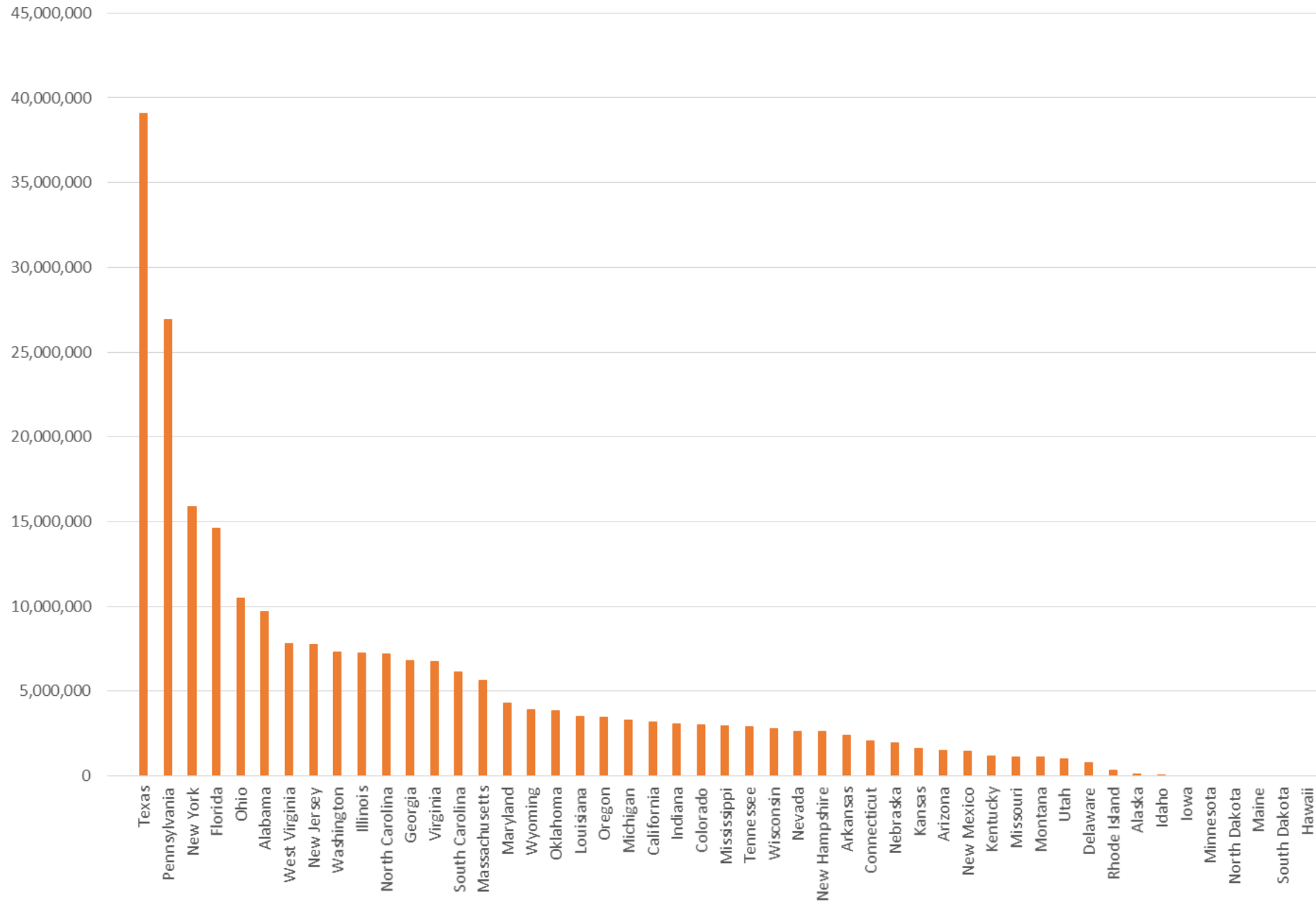
Growth in Renewable Energy Required by EPA Rules







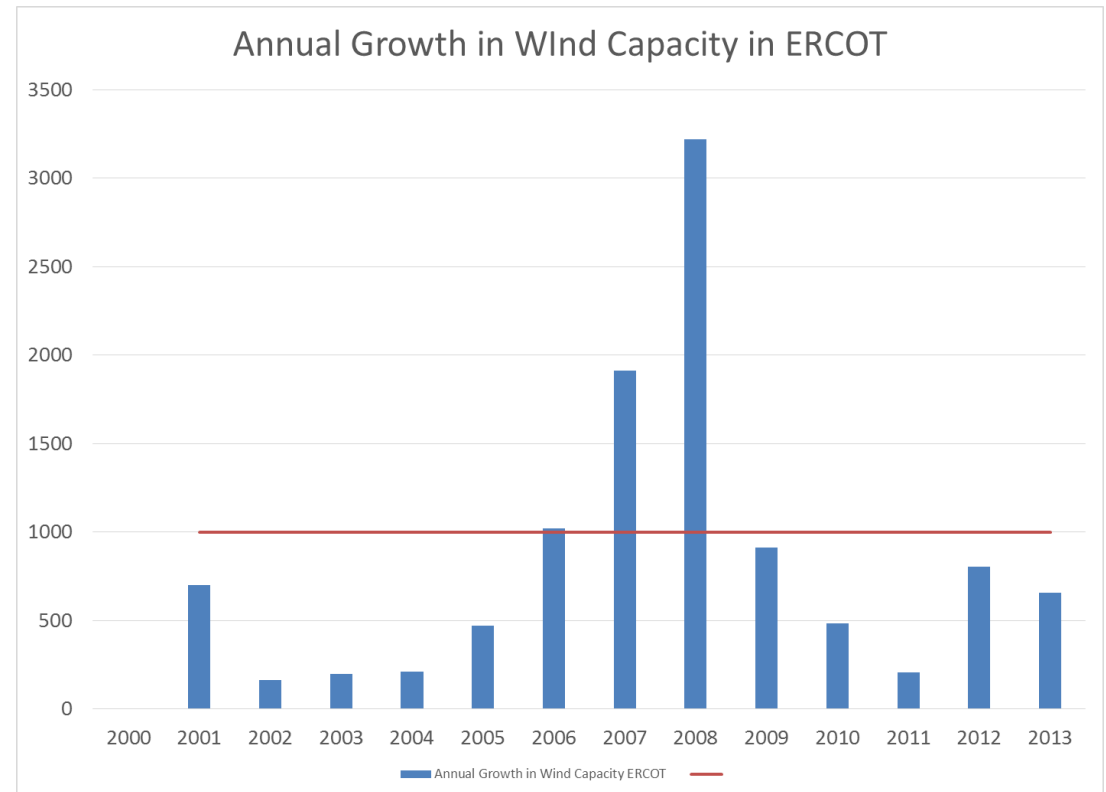
Total Growth in Renewable Energy (MWh) Required by State 2020-2029

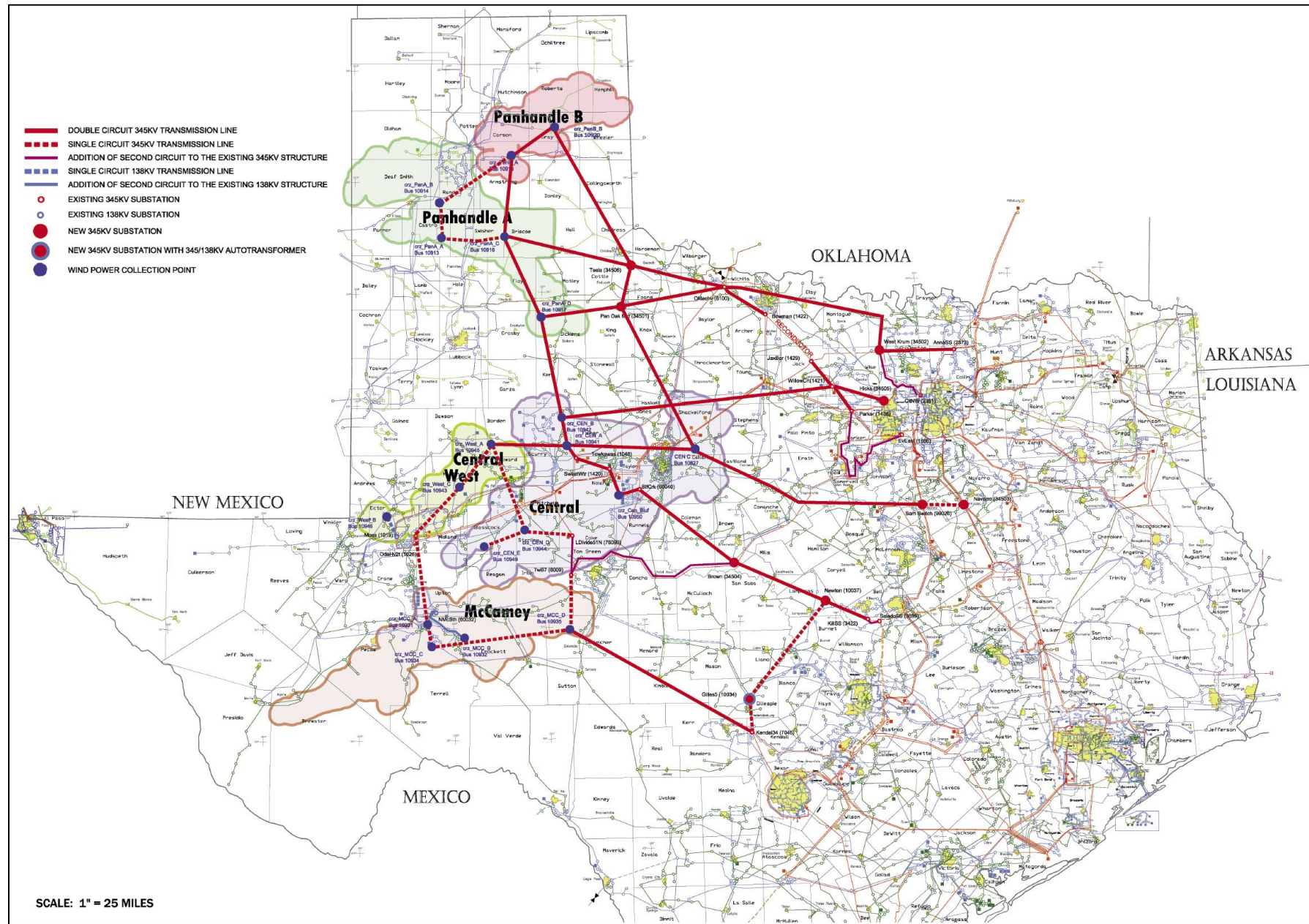


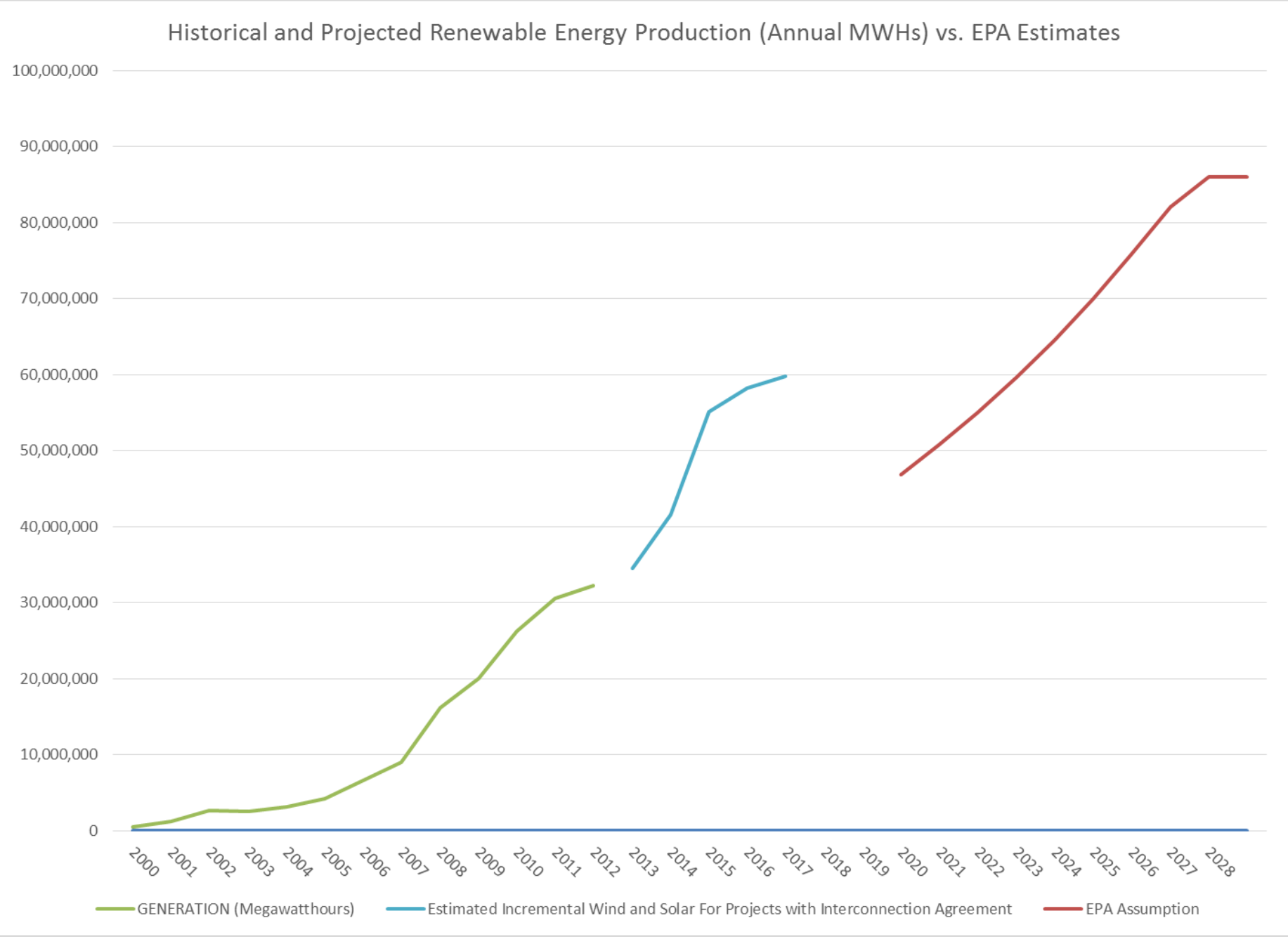


# Feasibility

- Texas “requirement” by 2030 is 85 GWh.
- A total of 20,000 MW of wind capacity (maxed out CREZ plus coast wind) gets to 61 GWh.
- Likely need upwards of 10,000 MW – 20,000 MW of additional wind/solar.
- This much additional renewables will further distort the energy market.
- Substantially more wind will require substantially more on-line backup generation, which at some point, will result in wind being curtailed.
- Substantial additional transmission investment will be needed.
- Inclusion in SIP would subject Retail Electric Providers (who bear the mandate) to EPA enforcement/lawsuits under the CAA.









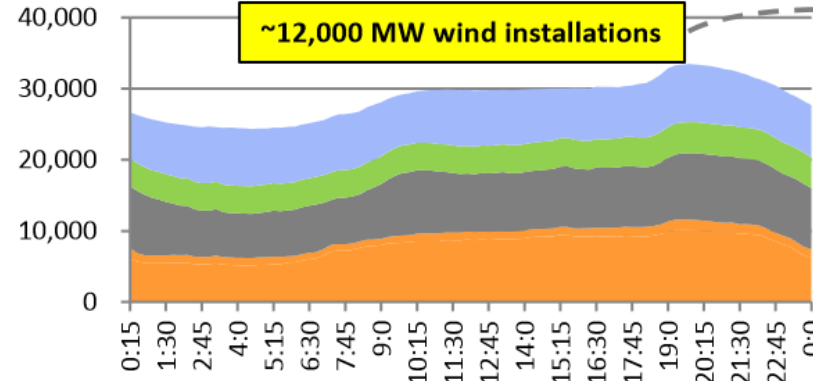


## ENERGY PRODUCTION PROFILE SIGNIFICANTLY ALTERED IF WIND DISPLACES GAS

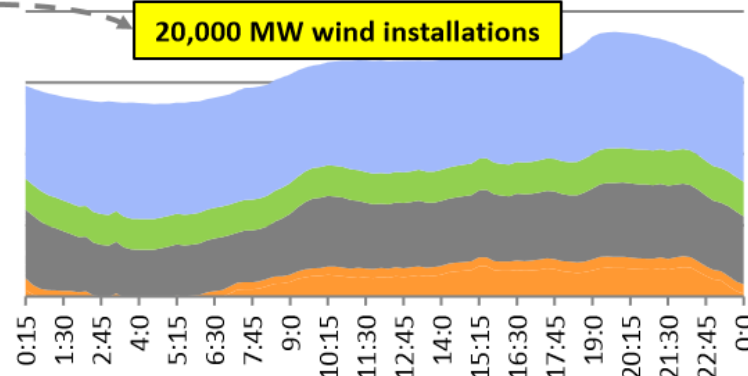
Actual 2013 lowest net load day (11/3/13)

Projected 2018 lowest net load day

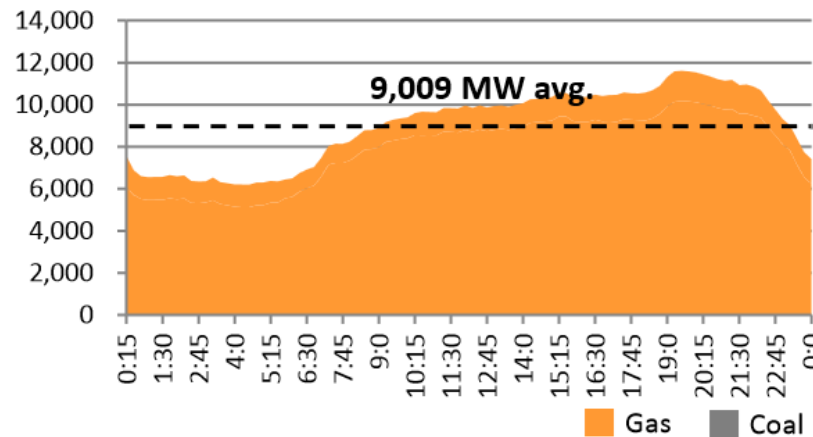
Total production (MW)



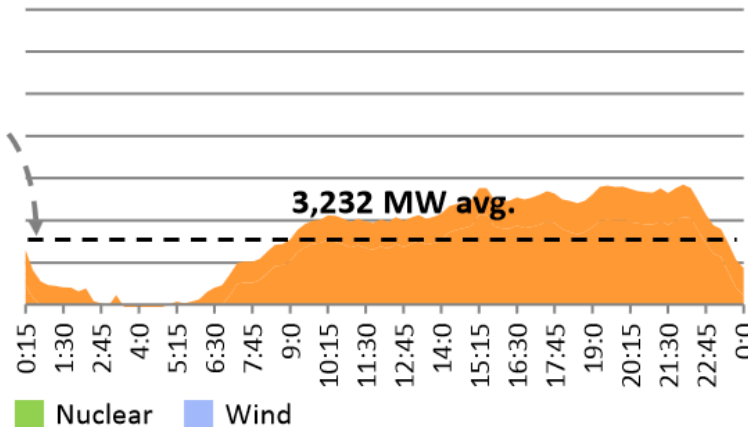
Total production (MW)



Gas production (MW)



Gas production (MW)



Gas Coal Nuclear Wind

**Increased wind production will severely constrain the capability to accommodate the minimum energy output required by resources needed for online ancillary service provision**



# Energy efficiency

- Texas' current program is geared toward a reduction in the growth of peak demand
  - Cheapest form of EE
  - As goals increase, costs increase because the cheap options are exhausted
- EPA's calculations effectively require a reduction in annual energy usage. Analysis justifying this points to California, Vermont, Maine, and Arizona – very different states vs. Texas.
- In 2013, Texas utilities spent \$136 million to achieve 415 MW of peak demand reduction/548,326 MWh of energy savings.
- Cost caps on program.
- Projections of utilities (and the EPA's own numbers) are that a 1.5% energy reduction target would cost \$1.6-2.9 billion per year --- 11x current spend.
- Inclusion in SIP would subject Texas utilities to EPA enforcement/lawsuits under the clean air act.
- The rule suggests a very expensive reporting, measurement, and verification process.



# Inconsistencies

- Block 2 conflicts with Block 1. EPA's analysis on block 1 justifies the heat rate improvement at a 78% capacity factor. It is internally inconsistent to then require much lower capacity factors/limits on production but still preserve the requirement for heat rate improvements.
- Blocks 3 and 4 conflict with Blocks 1 and 2. Increasing renewable energy and energy efficiency will:
  - Displace marginal gas units, meaning fossil dispatch and emissions rates will become more heavily weighted toward coal; and/or
  - Displace coal in some hours, decreasing capacity factors and increasing heat rates



# Disproportionate Impacts

- Even though Texas has the nation's fastest population and electricity demand growth, Texas is required to achieve 18% of nation's CO2 reductions. 8 states can actually increase CO2 emissions, including those with stagnant or declining population.
- Texas' modeled coal reduction is more than the next 9 most impacted states combined.
- Texas has the nation's largest renewable fleet, but is expected to grow it by another 153%, when the second largest renewable state only has to grow it 37%.
- EPA's modeled renewable energy fleet for Texas would be larger than any other country in the world (including the rest of the US if you excluded Texas).





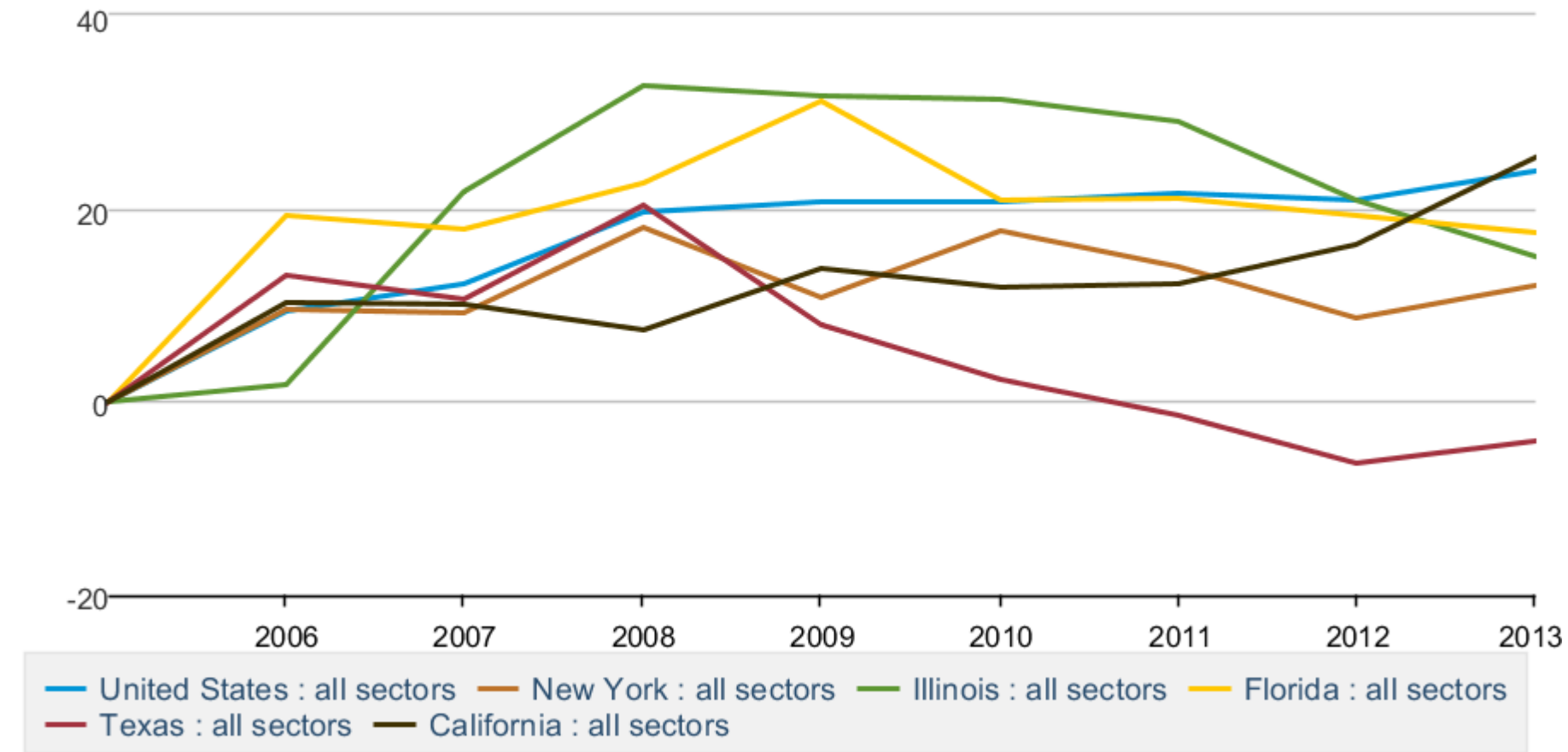
# Other Big Issues

- Questionable authority to regulate CO<sub>2</sub> under 111(d) in light of power plants being subject to EPA's MATS requirements
  - Will plants undergo investments for MATS requirements in 2015/2016 if they effectively have to close the plants in 2020-2030?
- State PUCs (including Texas) generally do not have authority over municipally owned utilities and electric cooperatives. The implication in the EPA rule is that these entities would be brought under numerous new regulatory constructs.
- Beyond Block 1, all reductions occur "outside the fence". EPA has rarely, perhaps never, before construed the Clean Air Act to grant authority that broad.
- The "flexibility" in the program is faux flexibility for Texas because each of the assumptions to get the final rate are very difficult for Texas to meet.
- Can EPA impose severely disproportionate impacts on states, particularly when they are directly contrary to their stated goal (i.e. under EPA's method, some states can actually emit more CO<sub>2</sub> and generate less renewable energy)?
- Can EPA effectively hi-jack state legislatures and force them to adopt aggressive RPS and energy efficiency standards, and probably cap-and-trade systems?
- What happens if a state doesn't submit a SIP? Who actually bears the compliance responsibility?



## Average retail price of electricity, annual

Indexed to 2005 as percent



Data source: U.S. Energy Information Administration



alone a good reason for rejecting it, but that is not the only reason. EPA's interpretation is also unreasonable because it would bring about an enormous and transformative expansion in EPA's regulatory authority without clear congressional authorization. When an agency claims to discover in a long-extant statute an unheralded power to regulate "a significant portion of the American economy," *Brown & Williamson*, 529 U. S., at 159, we typically greet its announcement with a measure of skepticism. We expect Congress to speak clearly if it wishes to assign to an agency decisions of vast "economic and political significance." *Id.*, at 160; see also *MCI Telecommunications*

Moreover, in EPA's assertion of that authority, we confront a singular situation: an agency laying claim to extravagant statutory power over the national economy while at the same time strenuously asserting that the authority claimed would render the statute "unrecognizable to the Congress that designed" it. Tailoring Rule 31555. Since, as we hold above, the statute does not compel EPA's interpretation, it would be patently unreasonable—not to say outrageous—for EPA to insist on seizing expansive power that it admits the statute is not designed to grant.<sup>7</sup>