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Kentucky and the President's Climate Action Plan

Tim Profeta

Presentation to the Governor's Conference on Energy and the Environment

September 18, 2013

Today's Topics

- Change is afoot in the power sector
- Kentucky's position in the transition
- President Obama's Climate Action Plan and power plants

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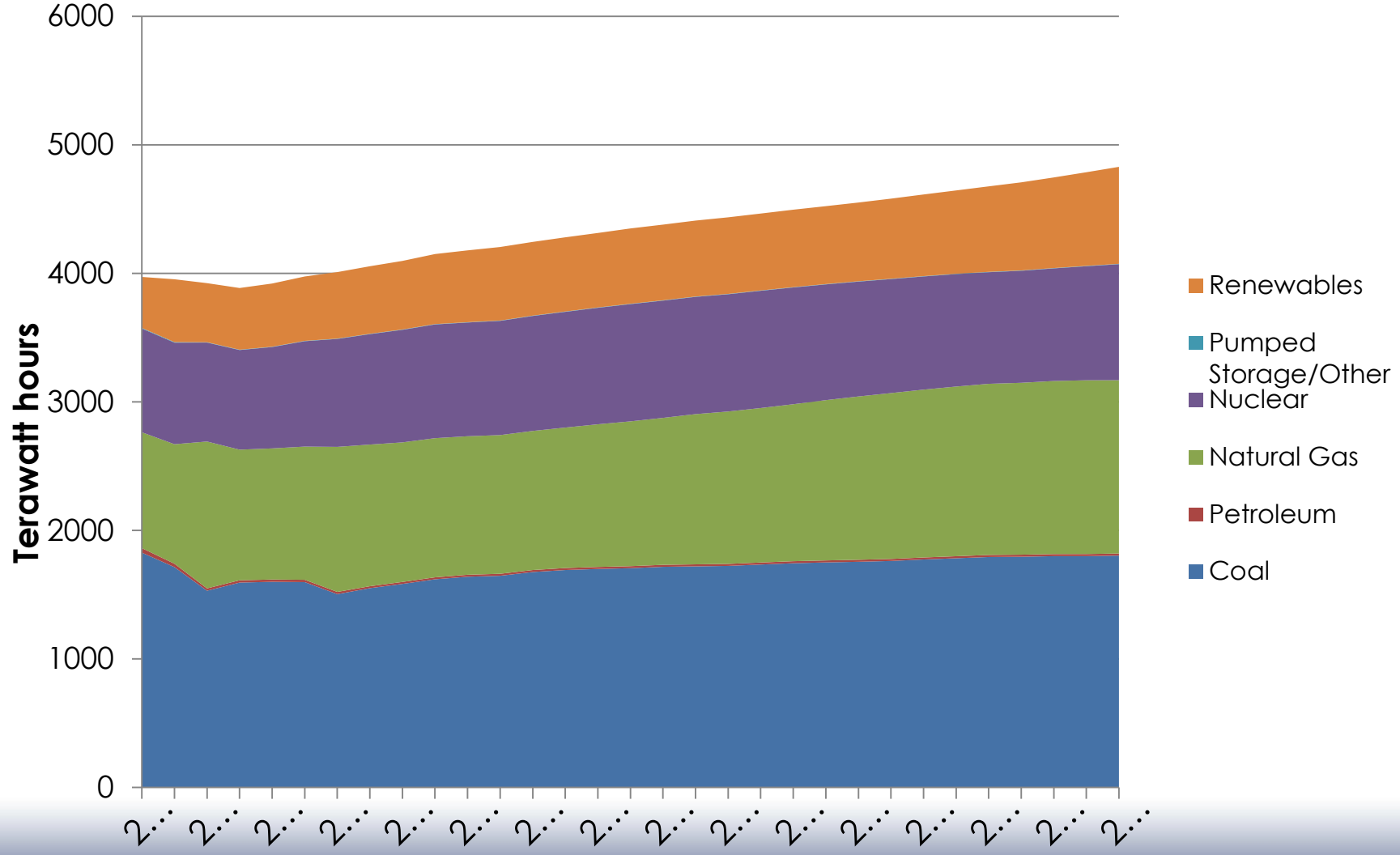
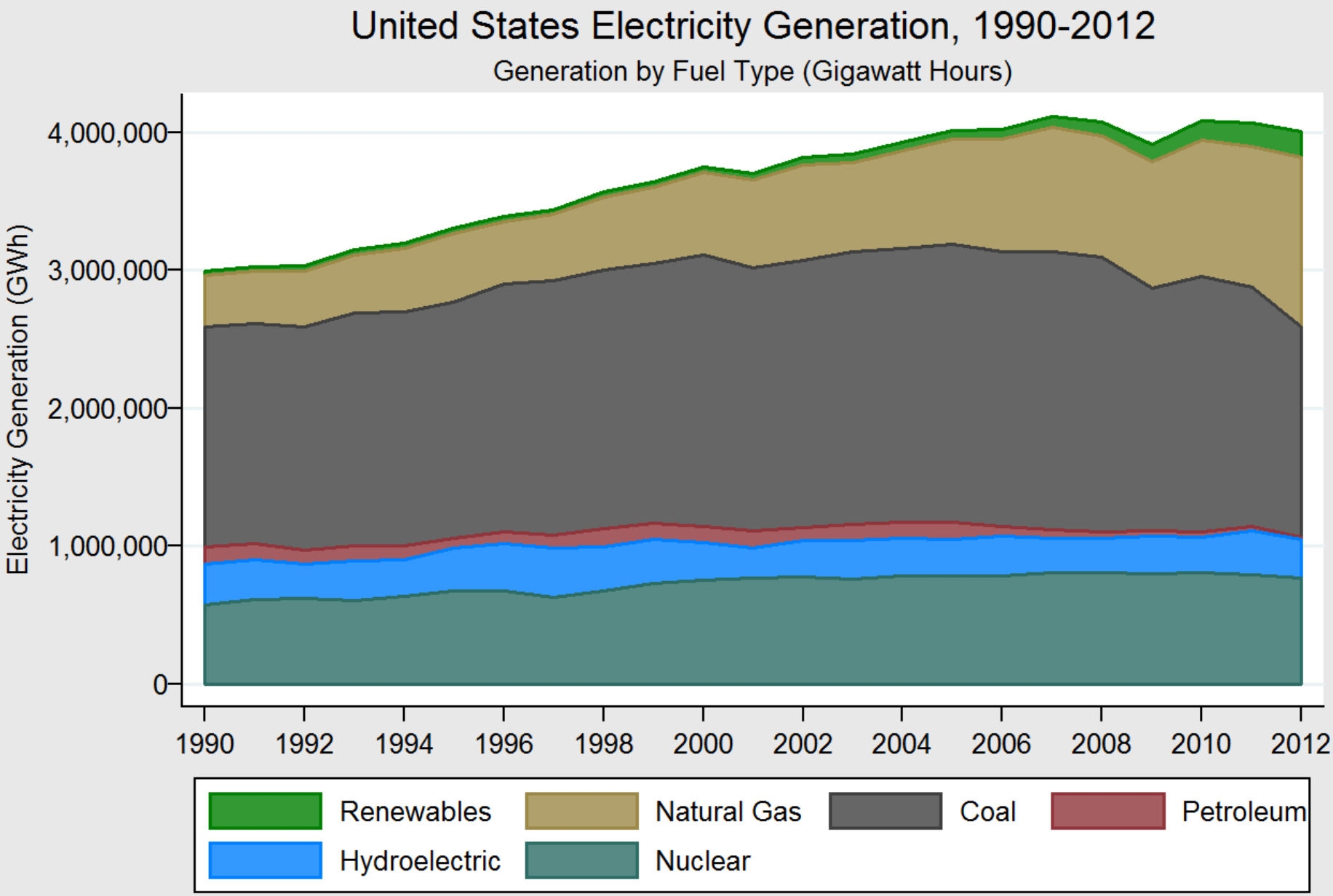
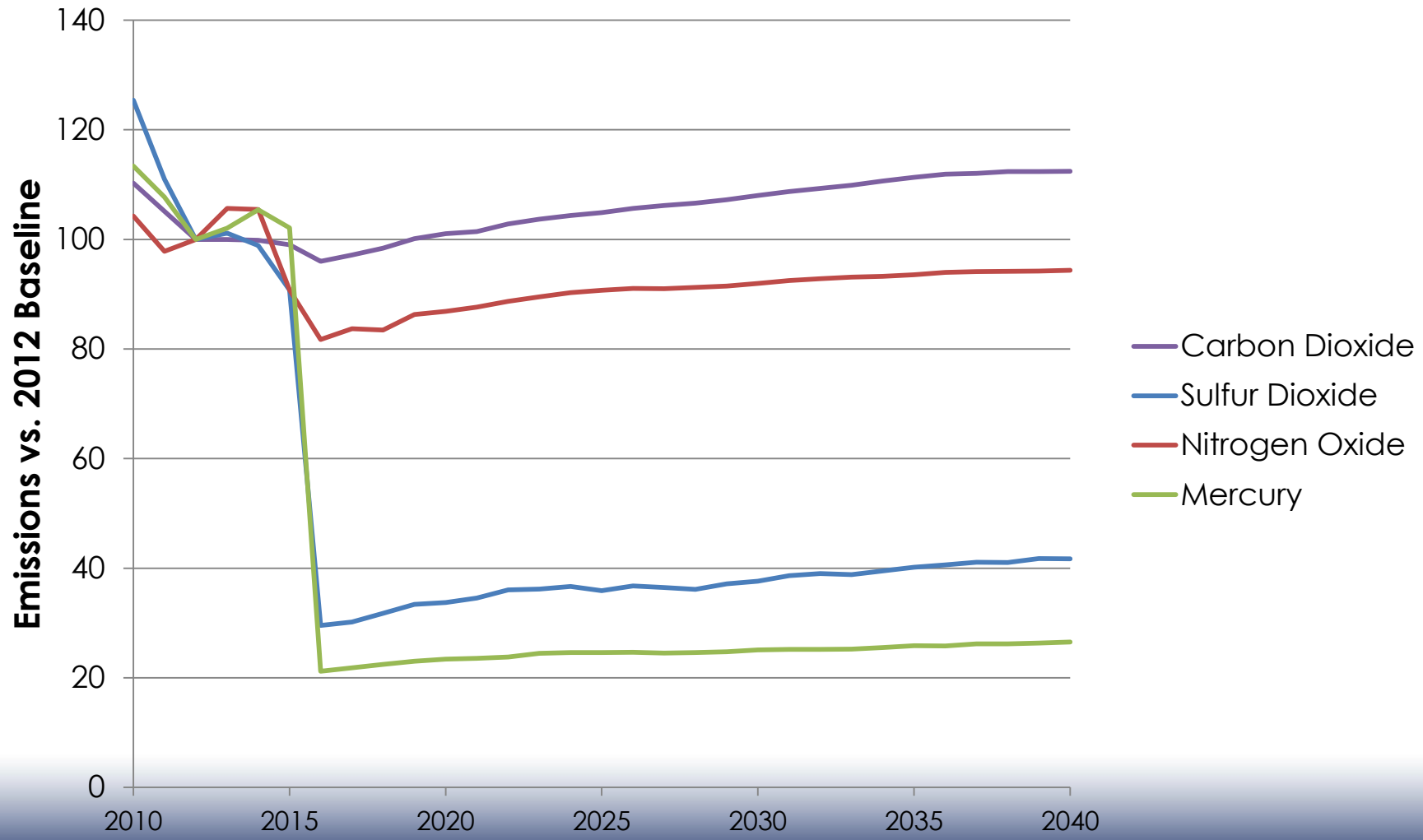
AEO 2013 Generation





Kentucky Energy Database, EEC-DEDI, 2013

AEO 2013 U.S. Electricity Emissions vs. 2012 Baseline



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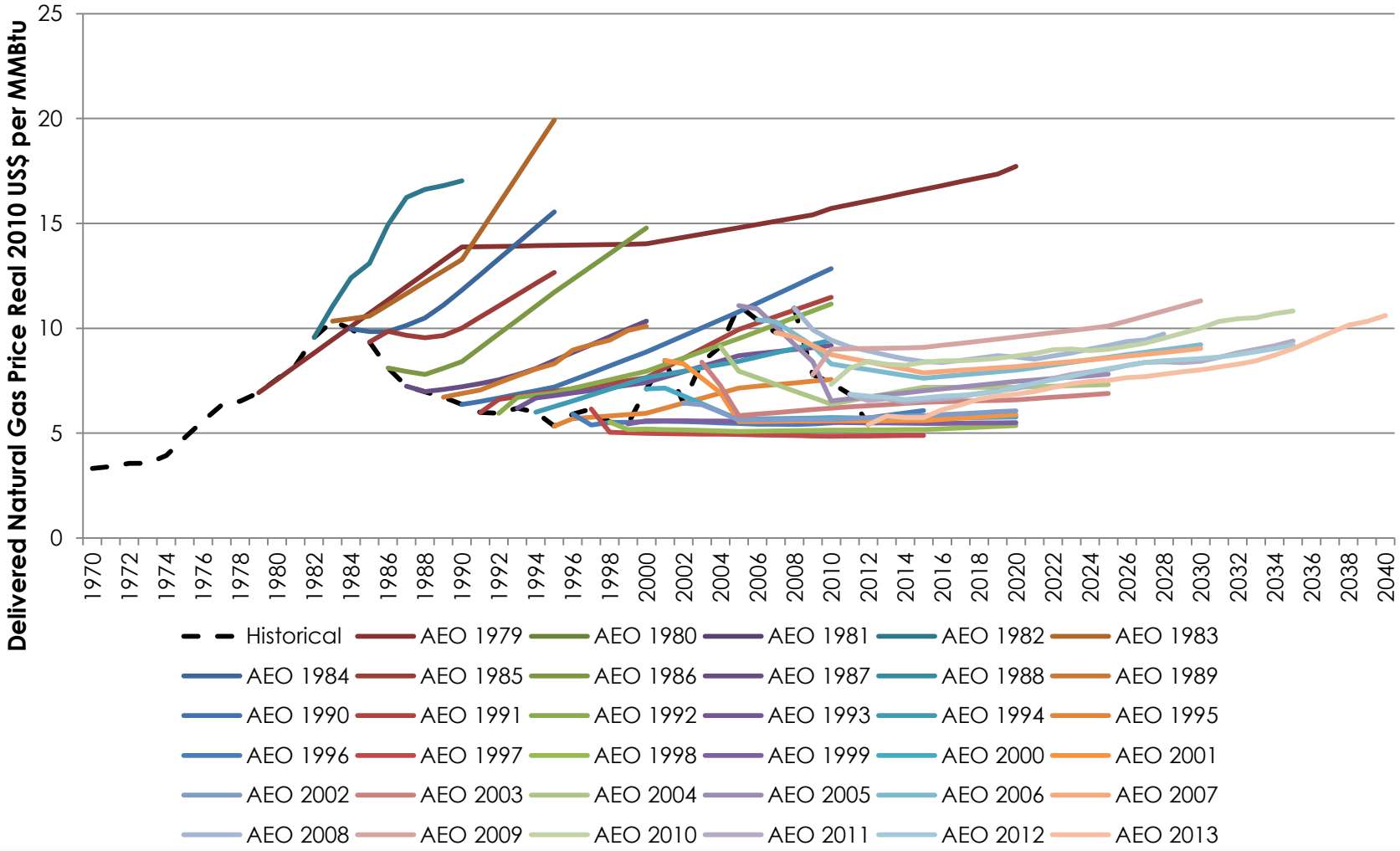

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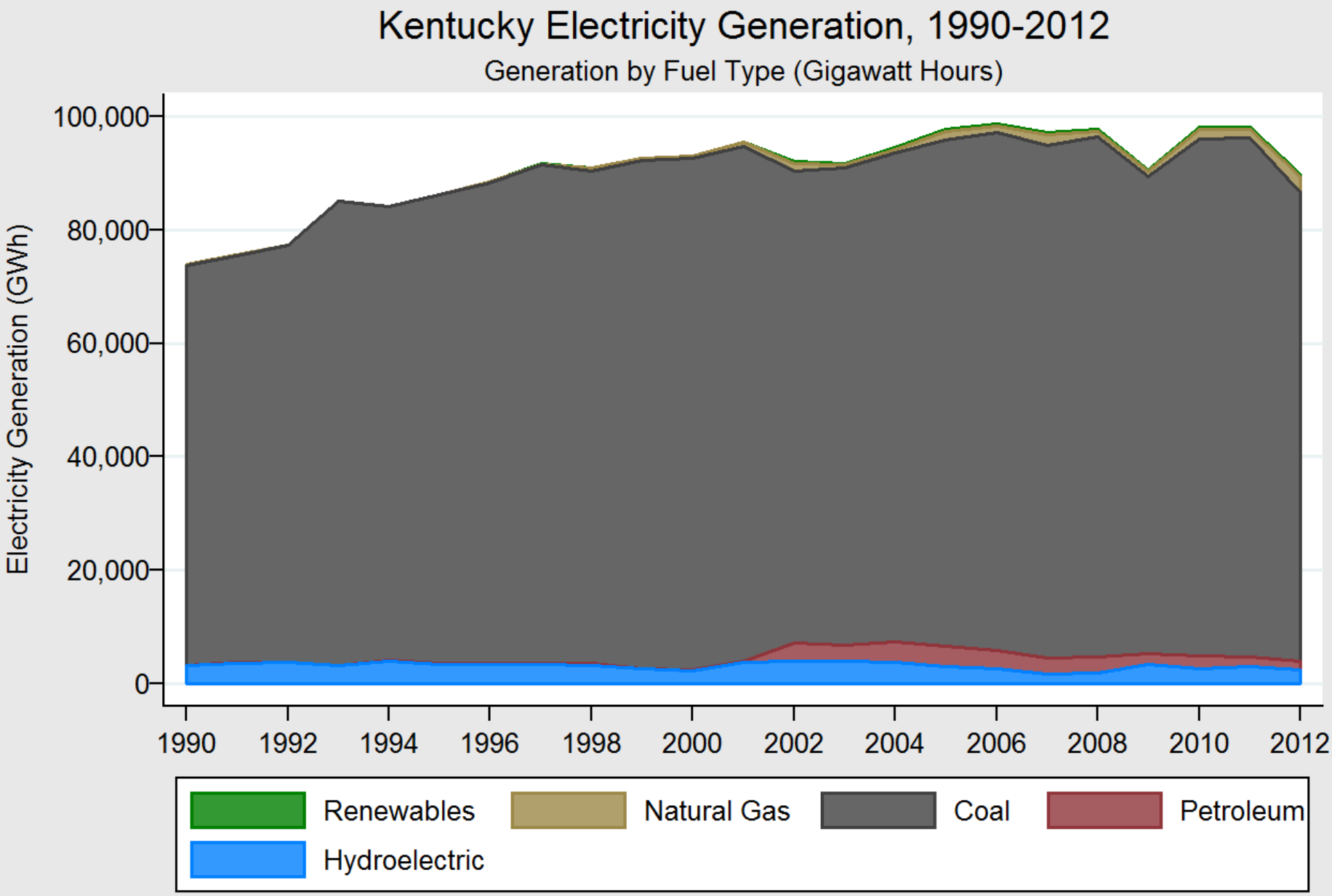

Kentucky Energy Database, EEC-DEDI, 2013

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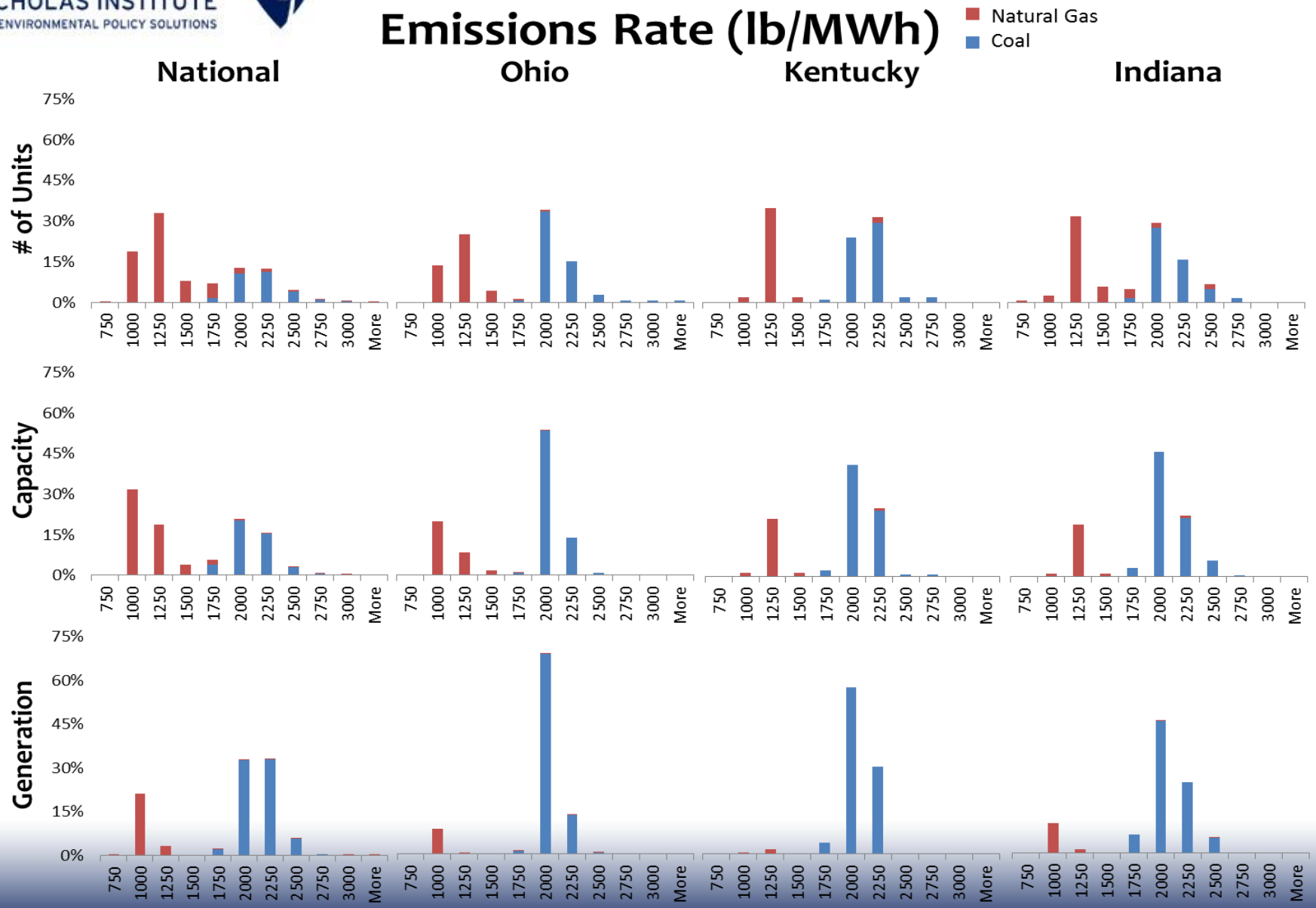
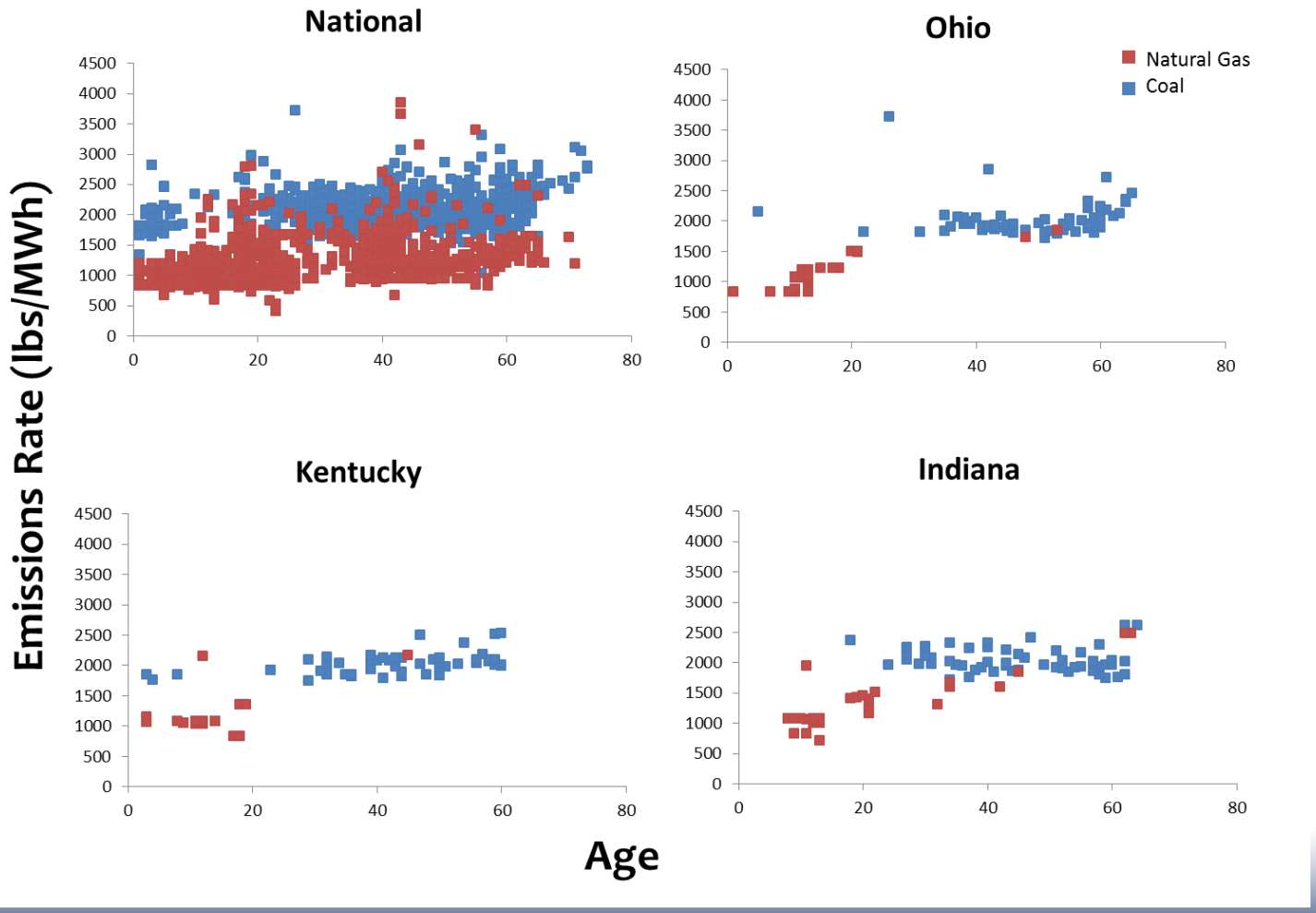
Source: AuroraXMP

Emissions Rate (lb/MWh)



Emissions rates by unit type and age



Source: AuroraXM

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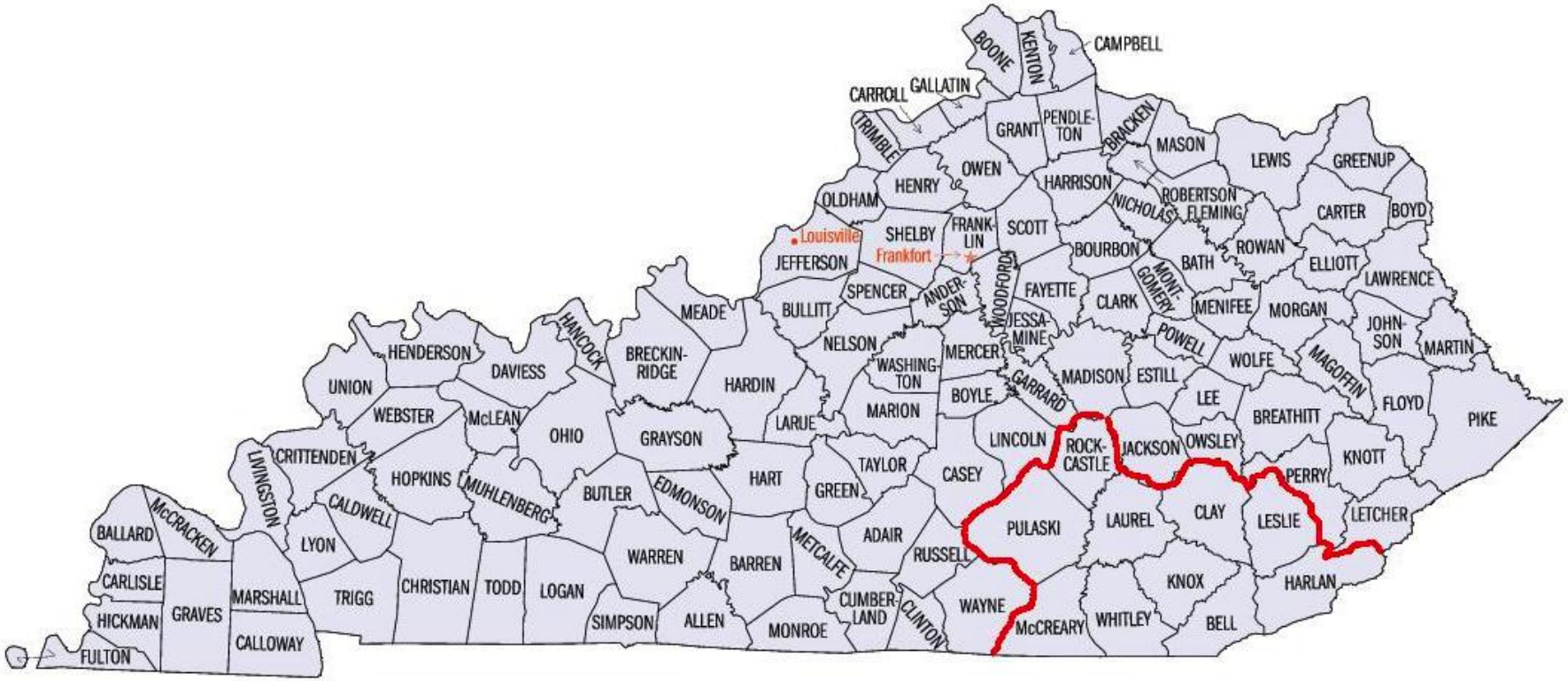

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KY household income (2009 numbers)

- According to the US Census Bureau, median KY household income is $40,061 (national average is $50,221)

- Median incomes in counties in KY within the southeast region of KU's coverage:

  - Bell - $24,501
  - Clay - $22,255
  - Harlan - $26,356
  - Knox - $22,493
  - Laurel - $36,664
  - McCreary - $23,163
  - Pulaski - $32,038
  - Rock-Castle - $29,2654
  - Whitley - $26,145

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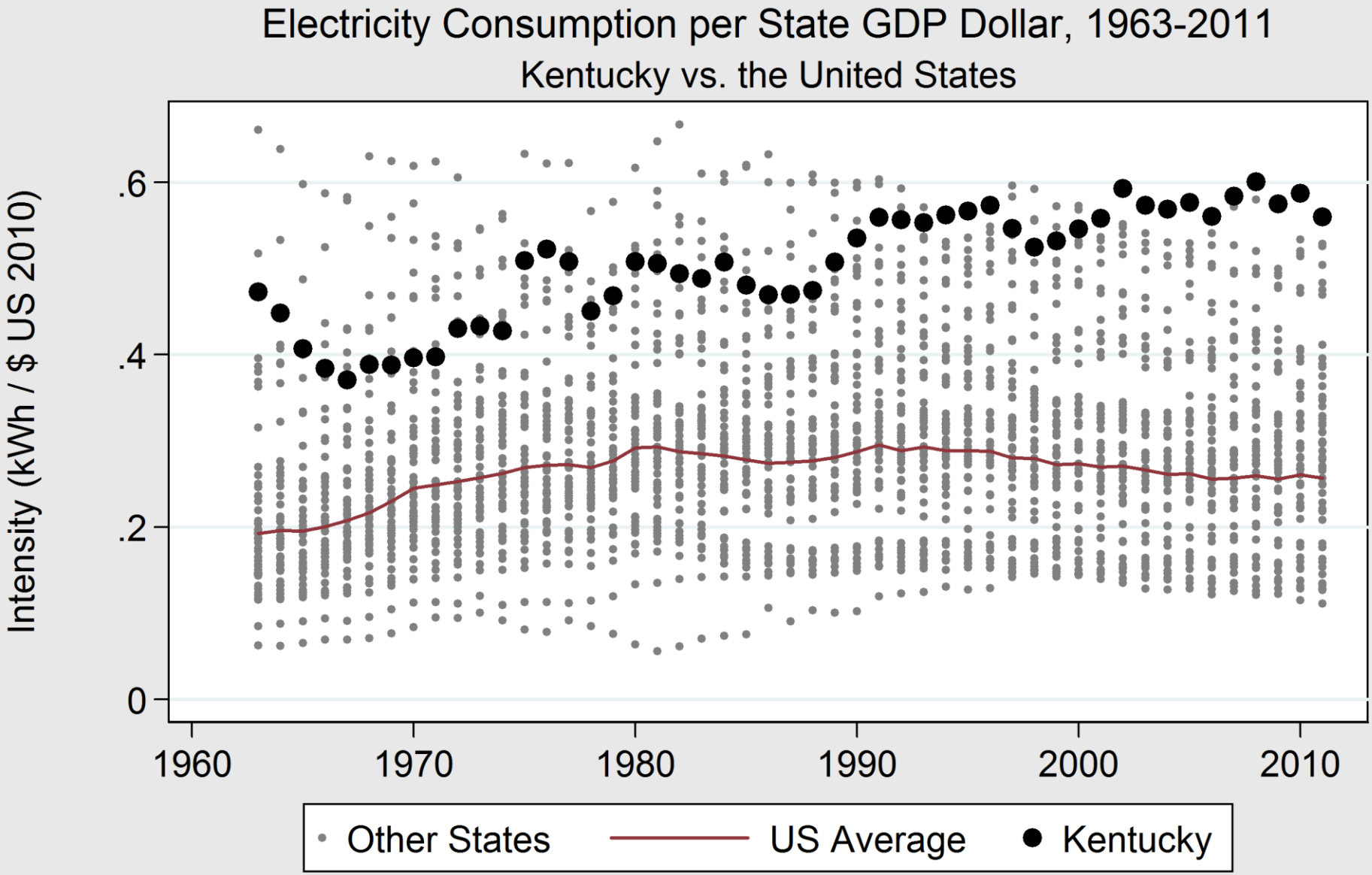
2010 Avg. Industrial Electric Cost per kWh

State	Cost per kWh
Alabama	.0605
Arkansas	.0541
Georgia	.0619
Illinois	.0671
Indiana	.0597
Kentucky	**.0507**
Michigan	.0716
Mississippi	.0636
Missouri	.0553
North Carolina	.0612
Ohio	.0632
South Carolina	.0569
Tennessee	.0665
Virginia	.0673
West Virginia	.0587
United States	.0679

Source: Energy Information Administration. Rates are in Cents per KWH. Released March, 2011.



Kentucky Energy Database, EEC-DEDI, 2013

Data Source: EIA Form 861 & 826 & BEA

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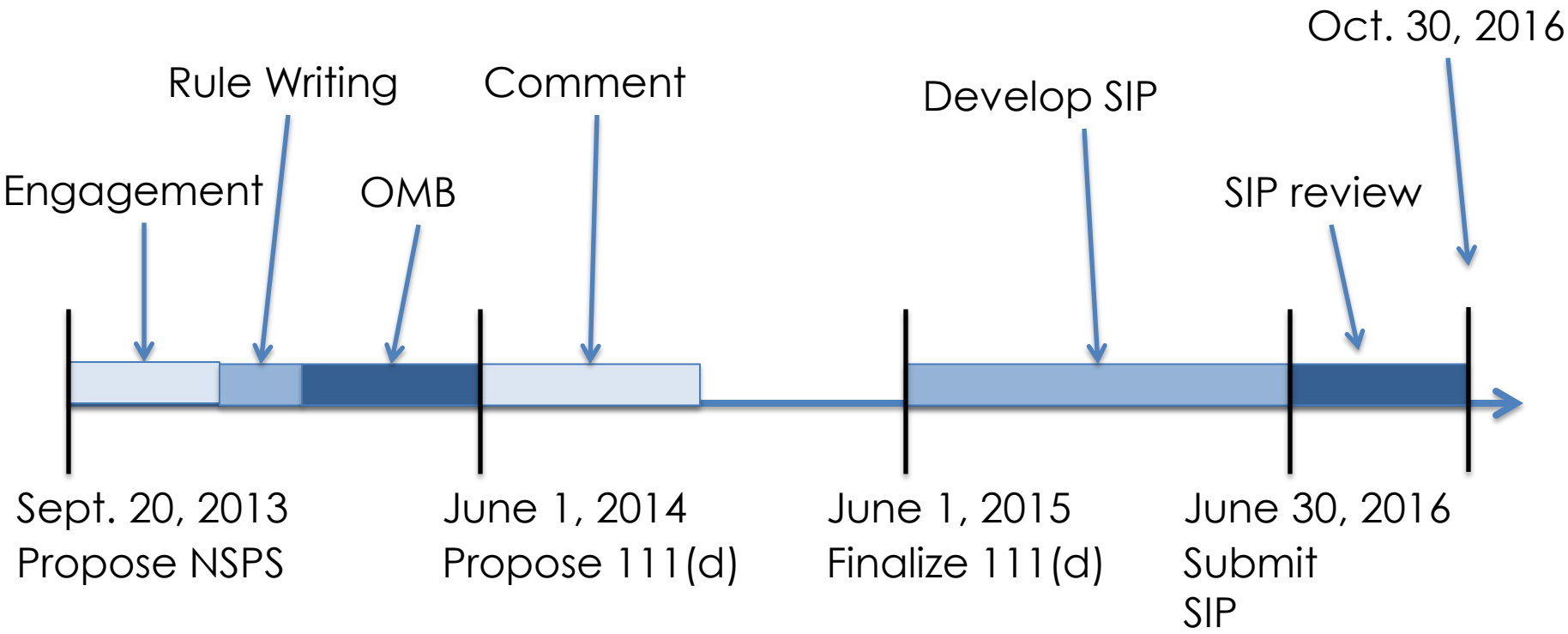
THE PRESIDENT'S CLIMATE ACTION PLAN

Executive Office of the President

June 2013

THE WHITE HOUSE
WASHINGTON

Climate Action Plan Timeline

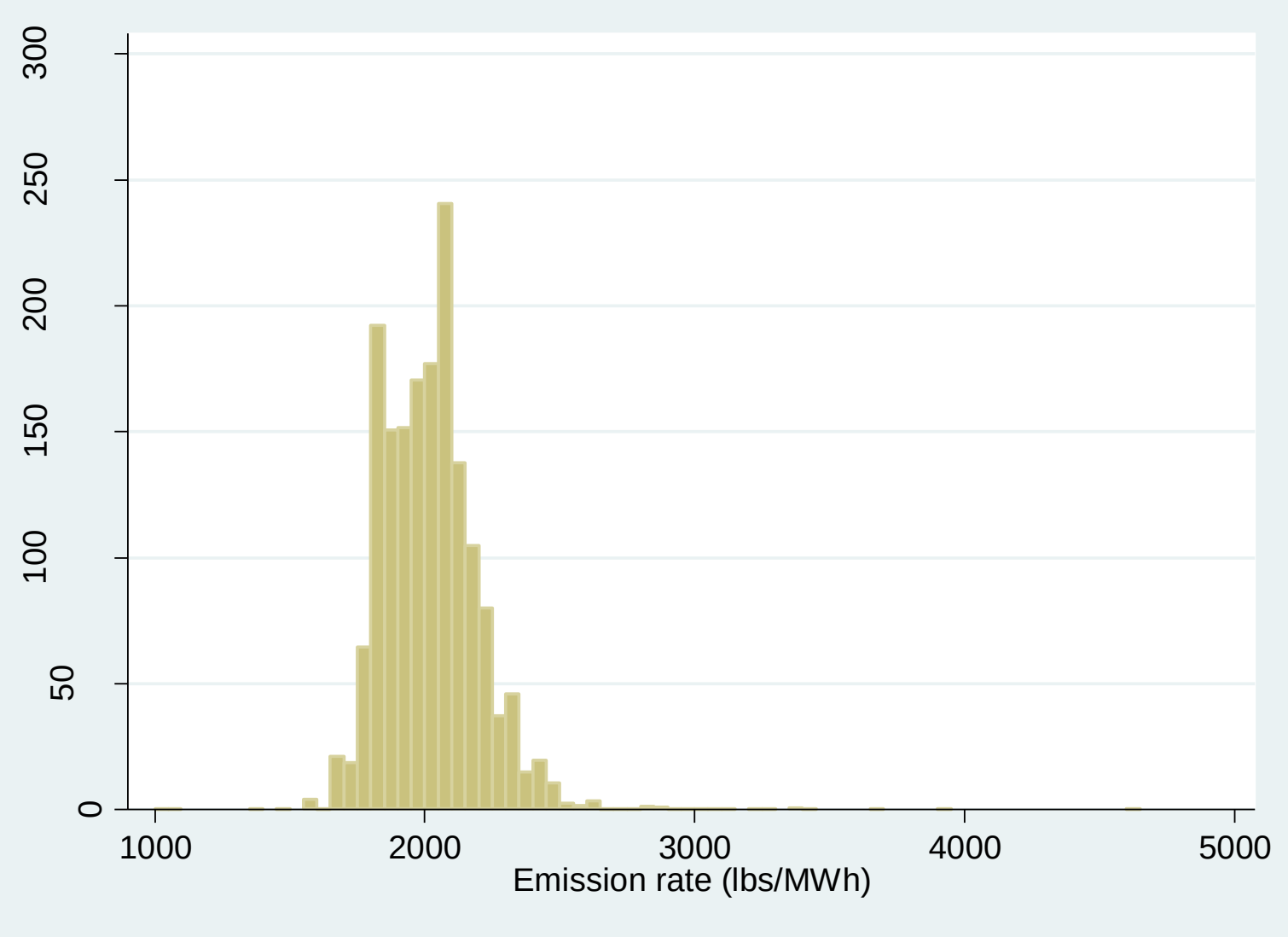


New Source Regulations

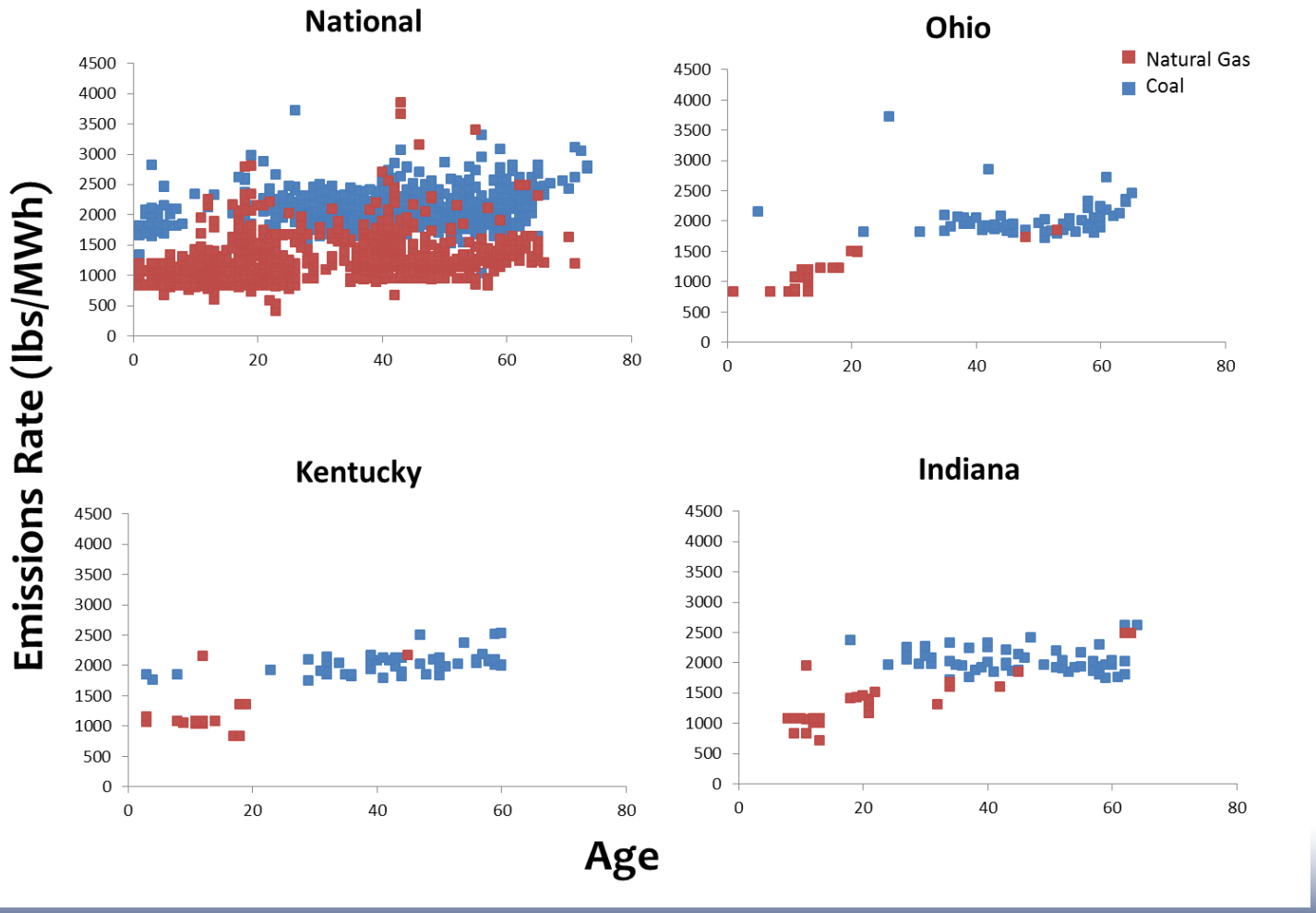
- Required due to Supreme Court ruling and finding of "endangerment"
- Reproposal due on Friday
- Rumors create separate limits for natural gas plants and coal plants
  - 1000 lbs CO2/mw for natural gas
  - 1300-1400 lbs CO2/mw for coal

Source: Juliet Eilperin, "EPA to Revise Climate Rule for New Power Plants: Will Still Require Carbon Capture," Washington Post, 9/11/ 13

Range of US emission rates in 2016 for coal



Emissions rates by unit type and age



Source: AuroraXM

Existing Source Regulations

3 Step Process:

1. EPA Determines the "best system of emissions reduction" for the pollutant and corresponding emission limit. EPA releases Guidelines.
2. Each State establishes a performance standard that will meet emissions limit.
3. State submits a State Implementation Plan to EPA for approval.

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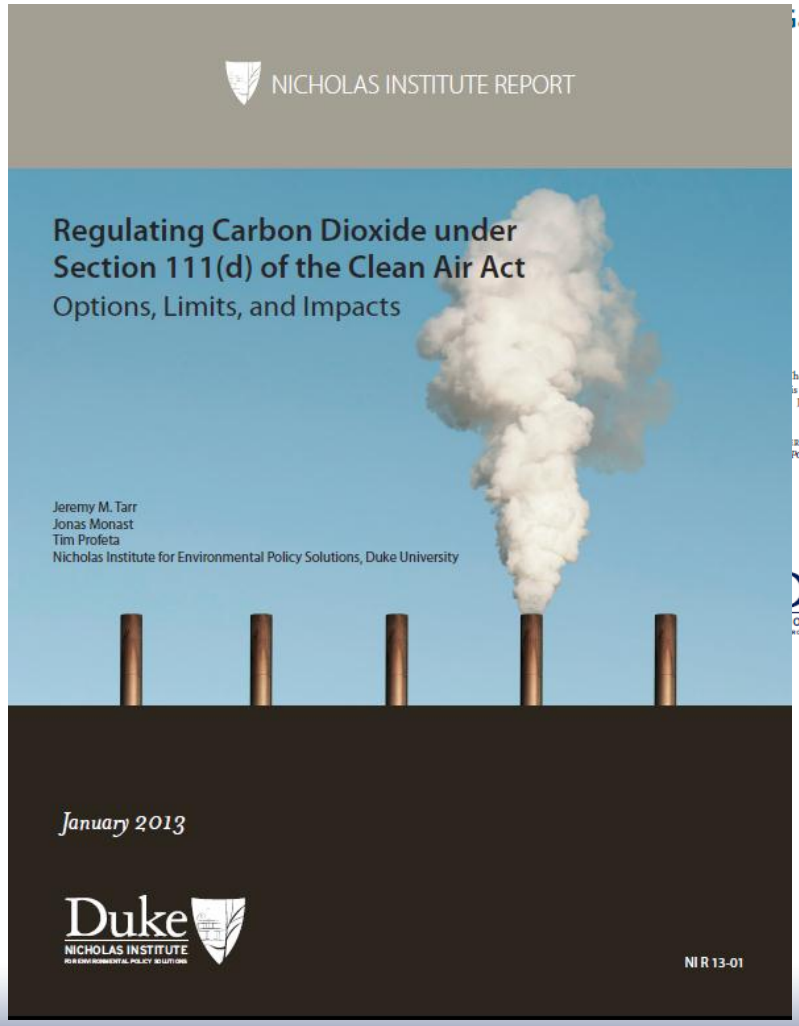

Nicholas Institute for Environmental Policy Solutions
Report
NI R 13-04
June 2013

Energy Efficiency and Greenhouse Gas Limits for Existing Power Plants: Learning from EPA Precedent

Jeremy M. Tarr**
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Acknowledgements

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How to cite this report

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COMMENT

Regulating Greenhouse Gas Emissions From Existing Sources: Section 111(d) and State Equivalency

by Jonas Monast, Tim Profeta, Brooks Rainey Pearson, and John Doyle

Jonas Monast is the Director of the Climate and Energy Program at the Nicholas Institute for Environmental Policy Solutions at Duke University. Tim Profeta is the Director of the Nicholas Institute. Brooks Rainey Pearson is Policy Counsel for Climate and Energy at the Nicholas Institute. John Doyle is in his final year of a joint degree program pursuing a J.D. at Duke University School of Law and an M.A. in Environmental Science and Policy from Duke's Nicholas School of the Environment.

On December 23, 2010, the U.S. Environmental Protection Agency (EPA) entered into a settlement agreement requiring new source performance standards (NSPS) covering greenhouse gas (GHG) emissions from fossil fuel-fired electricity-generating units and petroleum refineries.[1] Together, these two categories of sources account for close to 40% of total U.S. GHG emissions.[2] Typically, an NSPS rulemaking process applies only to new sources or existing sources undergoing major modifications. In situations where a pollutant covered by an NSPS is not also regulated as a criteria pollutant under the national ambient air quality standards (NAAQS) program *or* as a hazardous air pollutant (HAP), however, the Clean Air Act (CAA)[3] also requires states to develop performance standards for existing sources, subject to EPA's guidance and approval. Because GHGs are not regulated as criteria pollutants or HAPs, the existing source performance standard requirements under §111(d) of the Act will apply to the current GHG NSPS rulemaking.

Regulating GHGs under §111(d) is significant, for a number of reasons. First, the language of §111(d) is broad, suggesting that EPA and states have discretion regarding its implementation. Second, the majority of NSPS regulations apply to pollutants also covered under §§108-110 (NAAQS) or §112 (HAPs) of the Act. As a result, there is little precedent to guide the Agency as it develops guidance for the states. Third, unlike NSPSs, §111(d) does not require a uniform national standard, potentially allowing states to develop tailored plans for the existing sources within their borders. Fourth, there are significantly more existing power plants and refineries than there are new or modified sources within these categories. For example, in 2009, there were 594 existing coal-fired power plants in the United States,[4] but only 11 new coal-fired power plants became operational in 2010, and that reflected a 25-year high.[5]

Numerous states have one or more programs in place to limit GHG emissions, including renewable portfolio standards, energy-efficiency programs, and GHG markets. Some stakeholders, including state policymakers, electric utilities, and environmental groups, have suggested that the rules governing the existing source performance standards should allow states the flexibility to utilize existing GHG programs for compliance with the requirements.[6] If these programs do indeed achieve equivalent reductions in emissions, allowing states to submit existing programs as their §111(d) plan would avoid forcing covered entities to comply with multiple regulatory regimes with little to no additional environmental benefits. Allowing states to demonstrate the equivalency of existing programs could also help the Agency meet its stated goal of implementing standards that address the environmental harm in a cost-effective manner.[7] The impacts of climate change will

1. Boiler GHG Settlement, Dec. 23, 2010, *available at* http://www.epa.gov/airquality/pdfs/boilerghgsettlement.pdf. On the same day, EPA also entered into a settlement agreement to create NSPS for GHG emissions from petroleum refineries. *See* Refinery GHG Settlement, Dec. 23, 2101, *available at* http://www.epa.gov/airquality/pdfs/refinerryghgsettlement.pdf. Under the original settlement agreements, EPA was to propose performance standards and emissions guidelines for power plants by July 26, 2011, and for refineries by December 15, 2011, with final standards and implementation guidelines issued by May 26, 2012, and November 15, 2012, respectively. The Agency did not meet the deadlines for the proposed rules and, as of the submission date for this Article, has not announced an updated time line.
2. U.S. EPA, *Addressing Greenhouse Gas Emissions*, http://www.epa.gov/airquality/ghgsettlement.html.
3. 42 U.S.C. §§7401–7671q, ELR STAT. CAA §§101-618.
4. U.S. Energy Info. Admin., *Counts of Electric Power Industry Power Plants, by Sector, by Predominant Energy Source*, tbl. 5.1, EIA.gov, http://www.eia.doe.gov/cneaf/electricity/epa/epat5p1.html (last visited Jan. 26, 2012).
5. U.S. DEP'T OF ENERGY NAT'L ENERGY TECH. LAB., TRACKING NEW COAL-FIRED POWER PLANTS (2011), *available at* http://www.netl.doe.gov/coal/refshelf/ncp.pdf.
6. U.S. EPA, LISTENING SESSIONS ON GREENHOUSE GAS STANDARDS FOR FOSSIL FUEL-FIRED POWER PLANTS AND PETROLEUM REFINERIES, *available at* http://www.epa.gov/airquality/listen.html.
7. Press Release, EPA to Set Modest Pace for Greenhouse Gas Standards/ Agency Stresses Flexibility and Public Input in Developing Cost-Effective and Protective GHG Standards for Largest Emitters (Dec. 23, 2010),

http://nicholasinstitute.duke.edu/special-projects/clean-air-act

Existing Source Regulations

Key Themes:

- Maximizing State Flexibility

Existing Source Regulations

Key Themes:

- Maximizing State Flexibility
- Allowing inclusion of energy efficiency and renewable programs in state plan.

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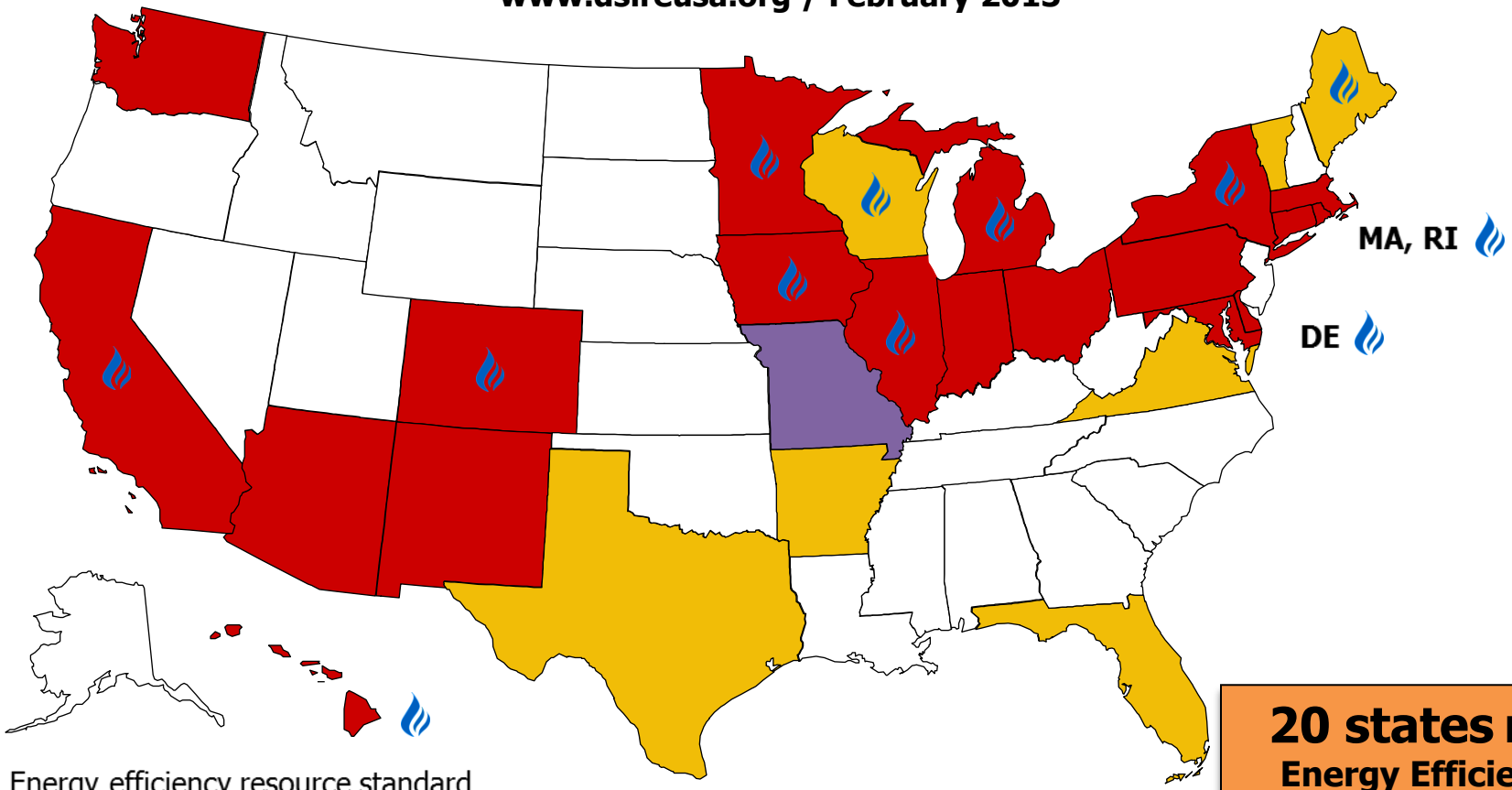
Energy Efficiency Resource Standards

www.dsireusa.org / February 2013



Energy efficiency resource standard

Energy efficiency resource goal

Policy includes natural gas savings requirements or goals

20 states have Energy Efficiency Resource Standards (7 states have goals)

Note: See following slide for a brief summary of policy details. For more details on EERS policies, see www.dsireusa.org and www.aceee.org/topics/eers.

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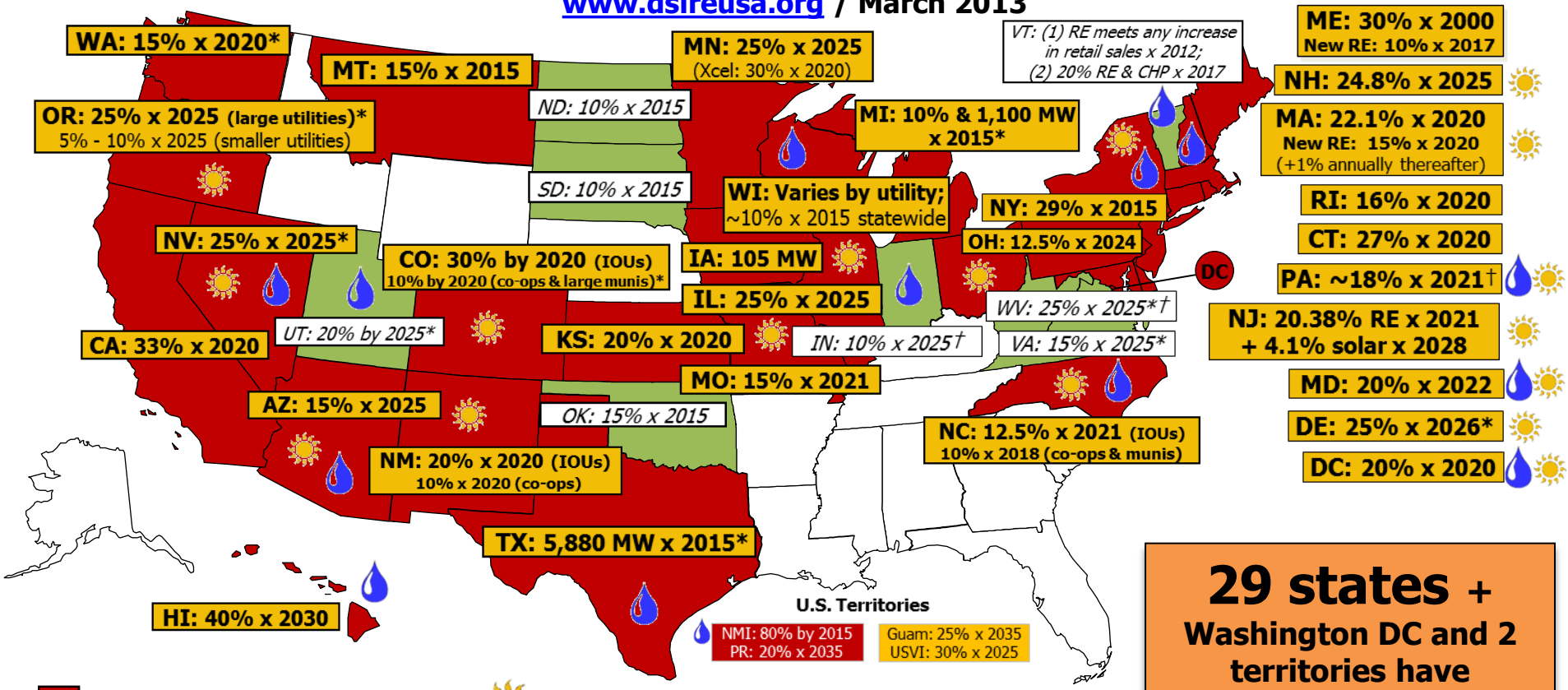
Renewable Portfolio Standard Policies

www.dsireusa.org / March 2013



29 states + Washington DC and 2 territories have Renewable Portfolio Standards

(8 states and 2 territories have renewable portfolio goals)

- Renewable portfolio standard
- 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

Existing Source Regulations

Key Themes:

- Maximizing State Flexibility
- Allowing inclusion of energy efficiency and renewable programs in state plan.
- Neighboring States Matter!

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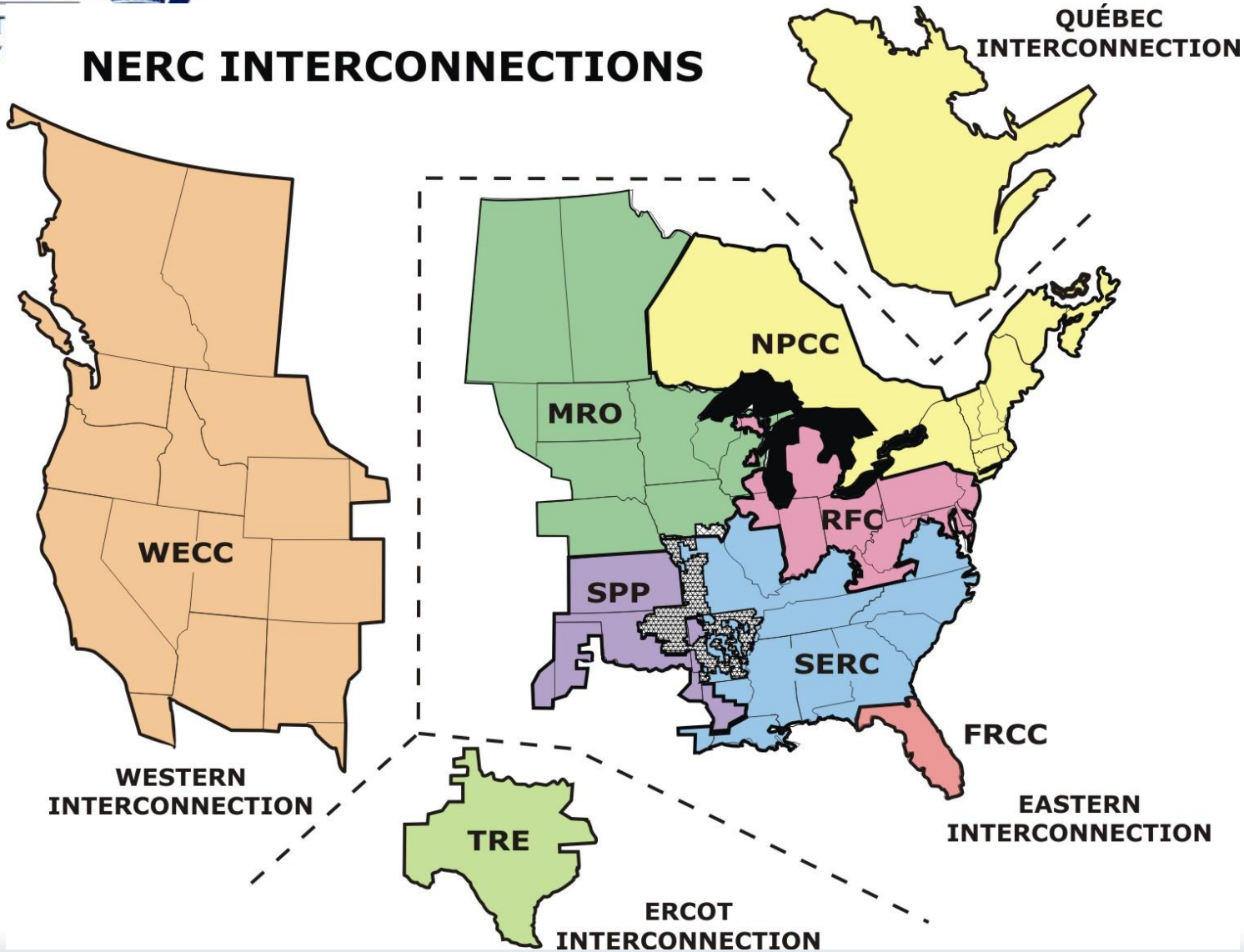
NERC INTERCONNECTIONS



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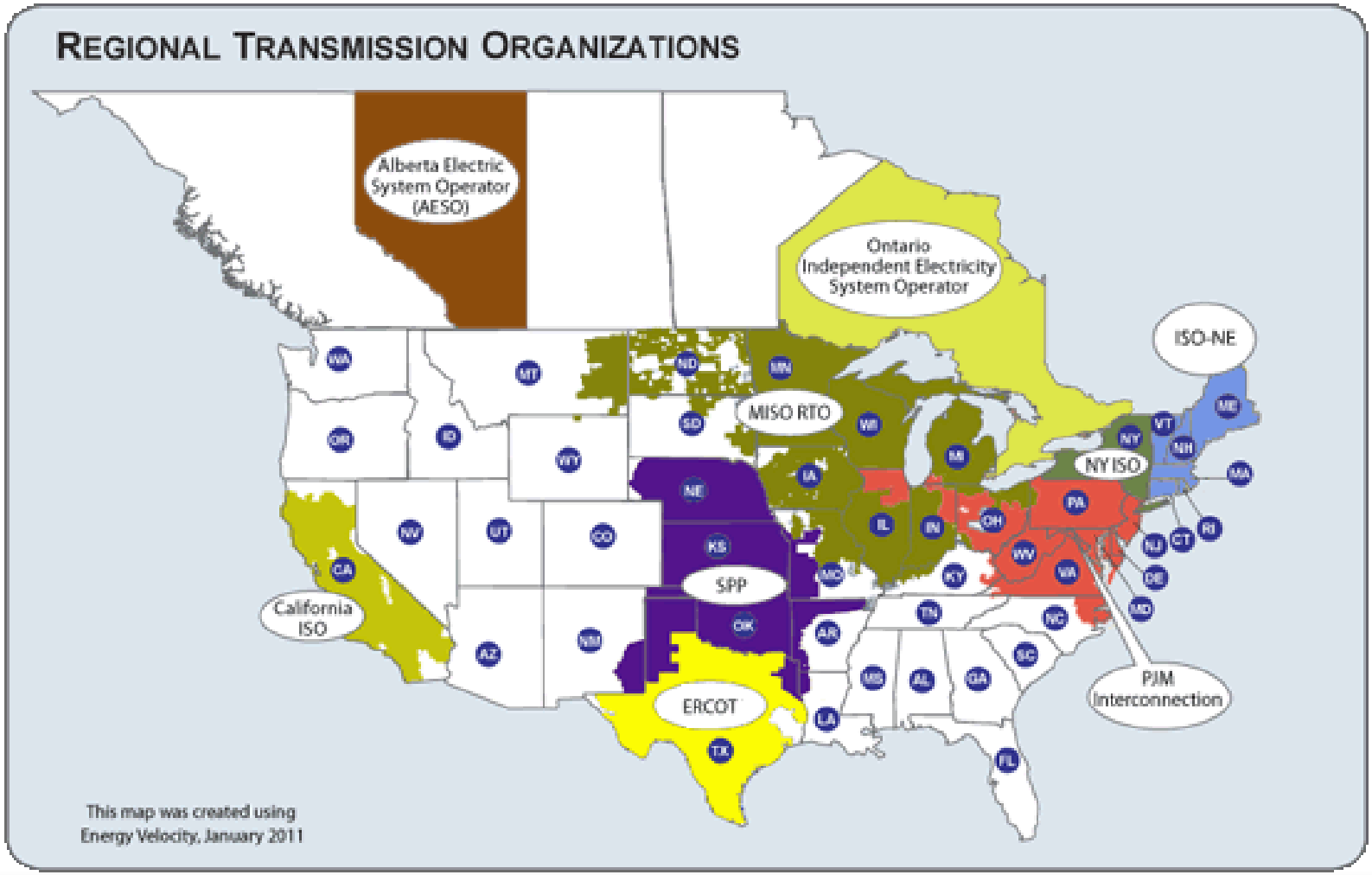

This map was created using Energy Velocity, January 2011

Existing Source Regulations

Key Themes:

- Maximizing State Flexibility
- Allowing inclusion of energy efficiency and renewable programs in state plan.
- Neighboring States Matter!
- Likely Close Engagement with Utility Commission.

Existing Source Regulations

Key Issues for resolution:

- How much detail do we need in the guidelines?
- What is the form of the guideline from EPA? Rate-based or Mass-based?
- What are the M&V details needed for EE/RE programs? Proffered before, or verified after?
- What multistate programs are appropriate for EPA to allow? What can be arranged in a timely manner?

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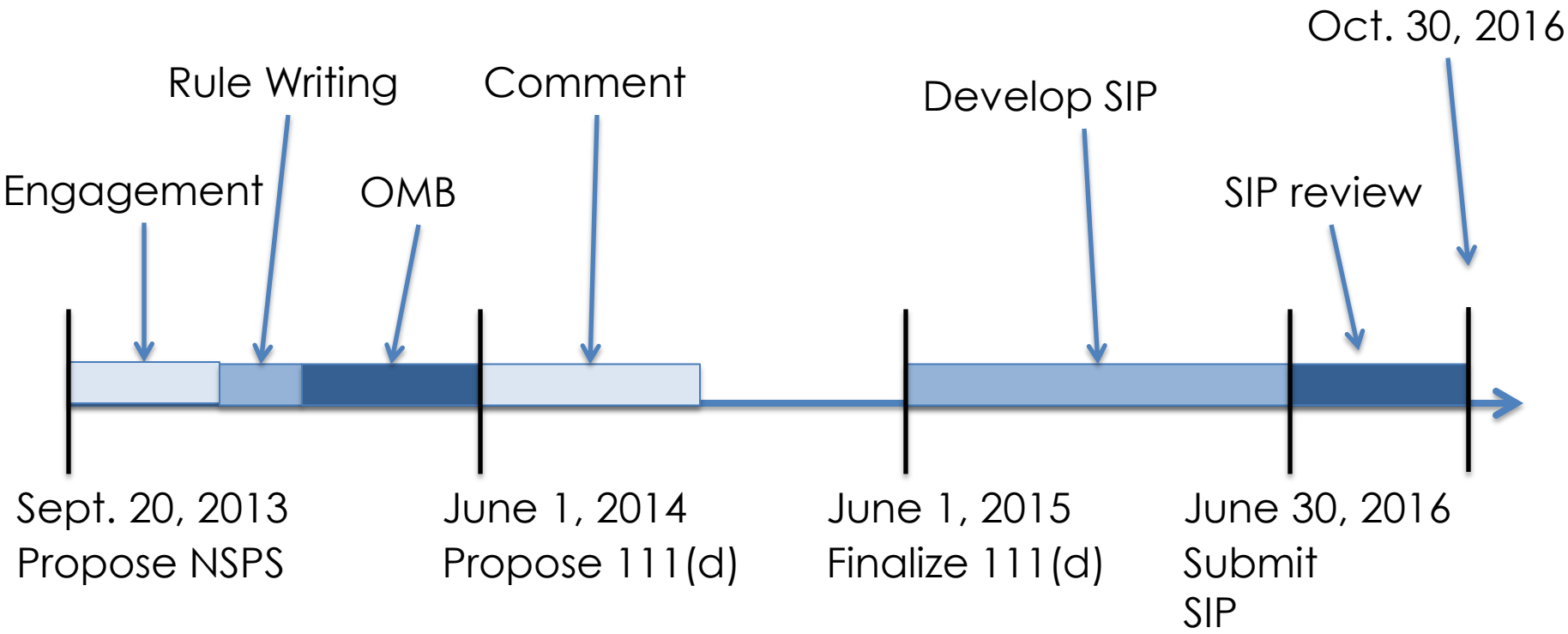
111d Modeling Scenarios currently being examined by NI

- Emissions guidelines options
  - Single Fossil category
  - Subcategorized options
    - Coal v gas
      - Similar stringency (performance threshold within category)
      - Differentiated stringency
    - Gas subcategories
- Compliance flexibility options
  - Strict compliance – retrofit or retire
  - Emissions averaging/trading
    - Geographic scope
      - National
      - Regional
      - Selected State
- Simulate energy efficiency program effects

Climate Action Plan Timeline