

# **US EPA Rules Overview**

**John Hendricks**  
**Director, Air Quality Services**  
**American Electric Power**

**August 13, 2014**  
**TAUC Summer Summit**

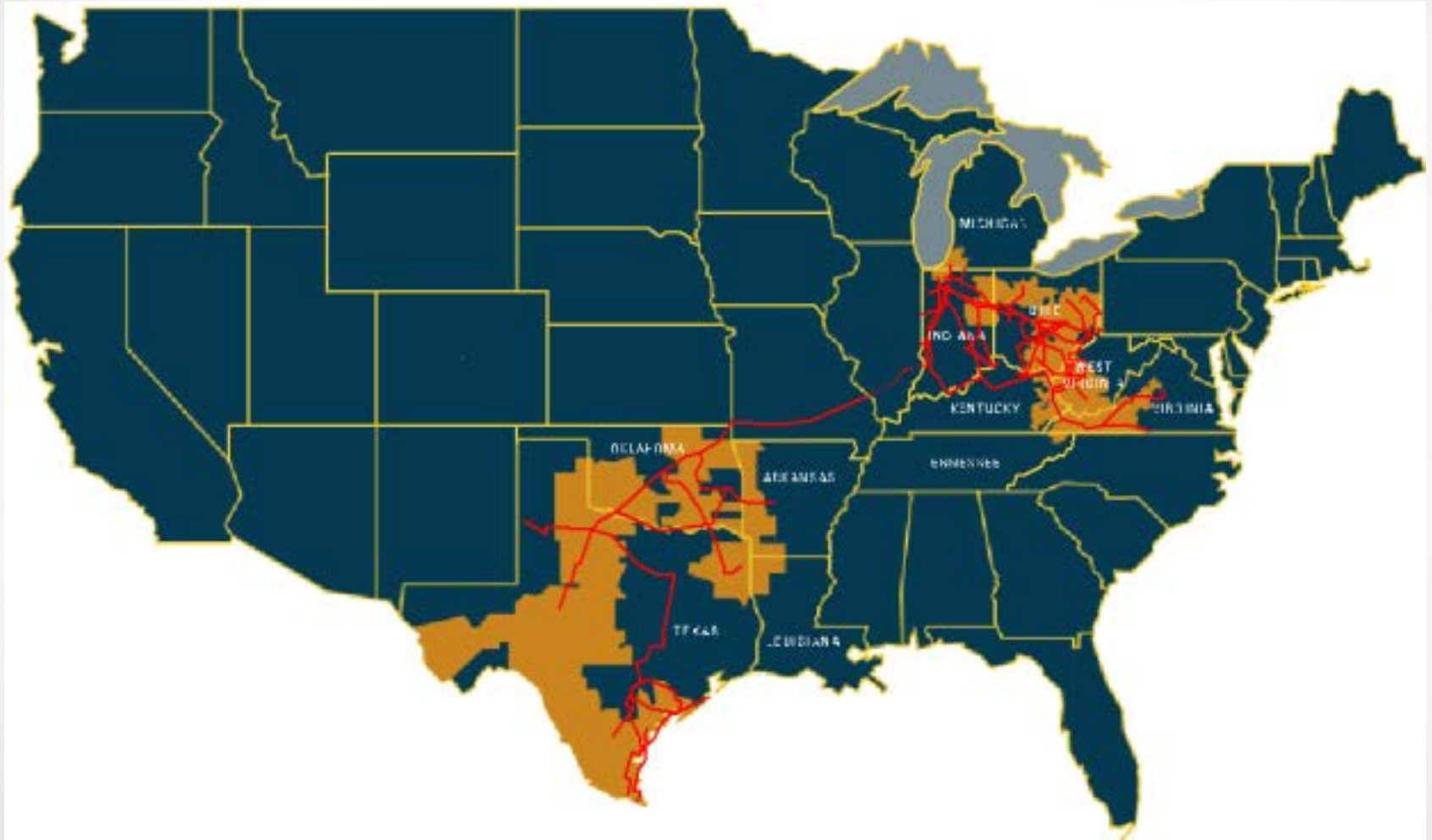
# Agenda

- American Electric Power overview
- Review significant EPA regulations impacting electric generating units
- Timing/Extent of Impacts
- Next Steps

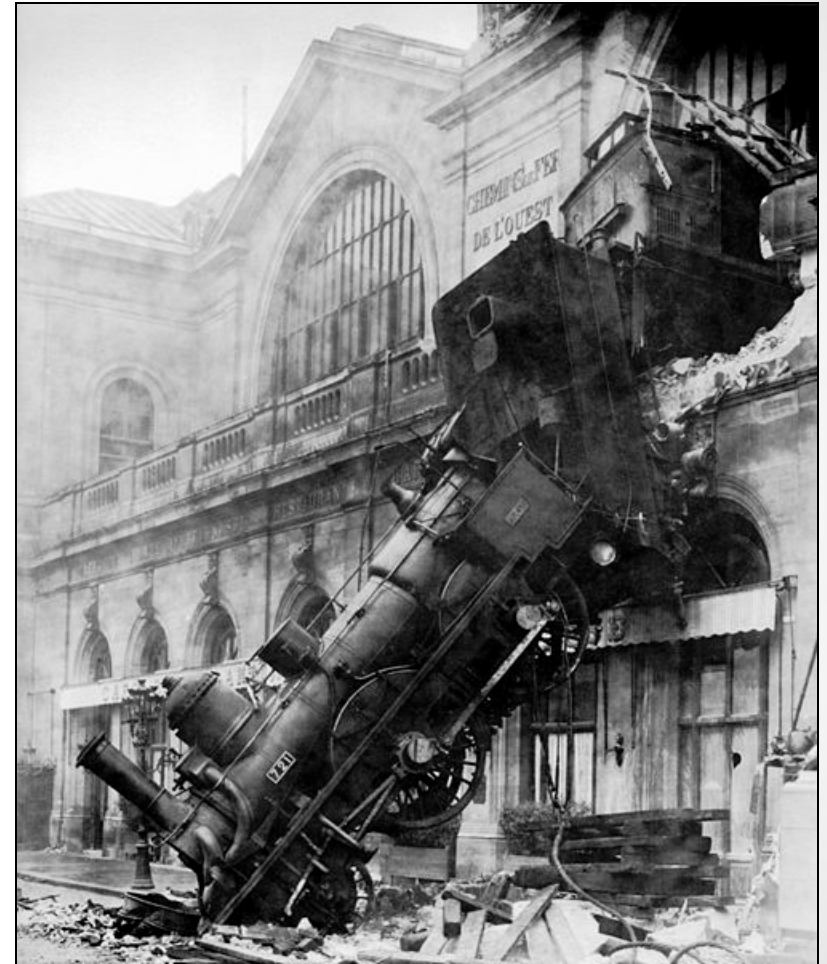
# AEP Overview

- 5.2 million customers with operations in 11 states
- Owns or operates 60 generating stations in US
- Generation capacity by fuel type
  - Coal – 60%
  - Natural Gas/Oil – 23%
  - Nuclear – 5%
  - Wind, Hydro, Solar, other – 12%
- Total generation capacity ~ 38,000 MW
- Transmission line miles = 39,000

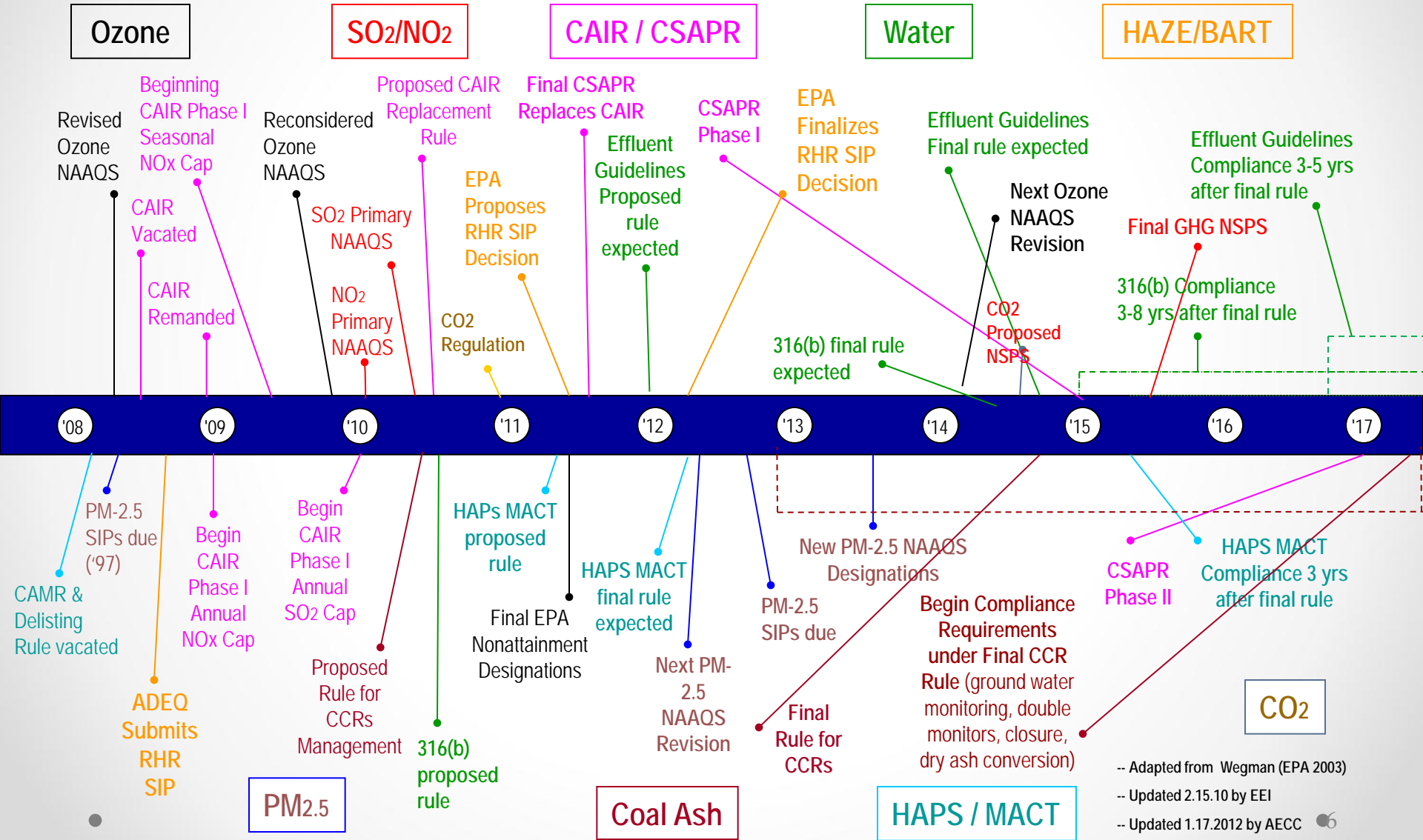
# AEP – Service Territory



# EPA's Regulatory Train Wreck



# Timeline for Environmental Regulatory Requirements for the Utility Industry



-- Adapted from Wegman (EPA 2003)  
 -- Updated 2.15.10 by EEI  
 -- Updated 1.17.2012 by AECC

# Significant EPA Rules

- **Mercury and Air Toxics Standards (MATS)**
- **Greenhouse Gas Regulations (GHG)**
  - New Plants
  - Existing Plants
- **Revised Ozone Air Quality Standard**
- **Cross State Air Pollution Rule (CSAPR)**
- **Coal Combustion Residuals Rule (CCR)**
- **Effluent Guidelines Rule (ELG)**

# MATS Rule

- Final rule issued February 2012
- Stringent emission limits applicable to coal/oil-fired power plants
- Regulates emissions of:
  - Mercury
  - Acid Gases
  - Other metals
- Compliance deadline = April 16, 2015
- Significant impacts to utility industry



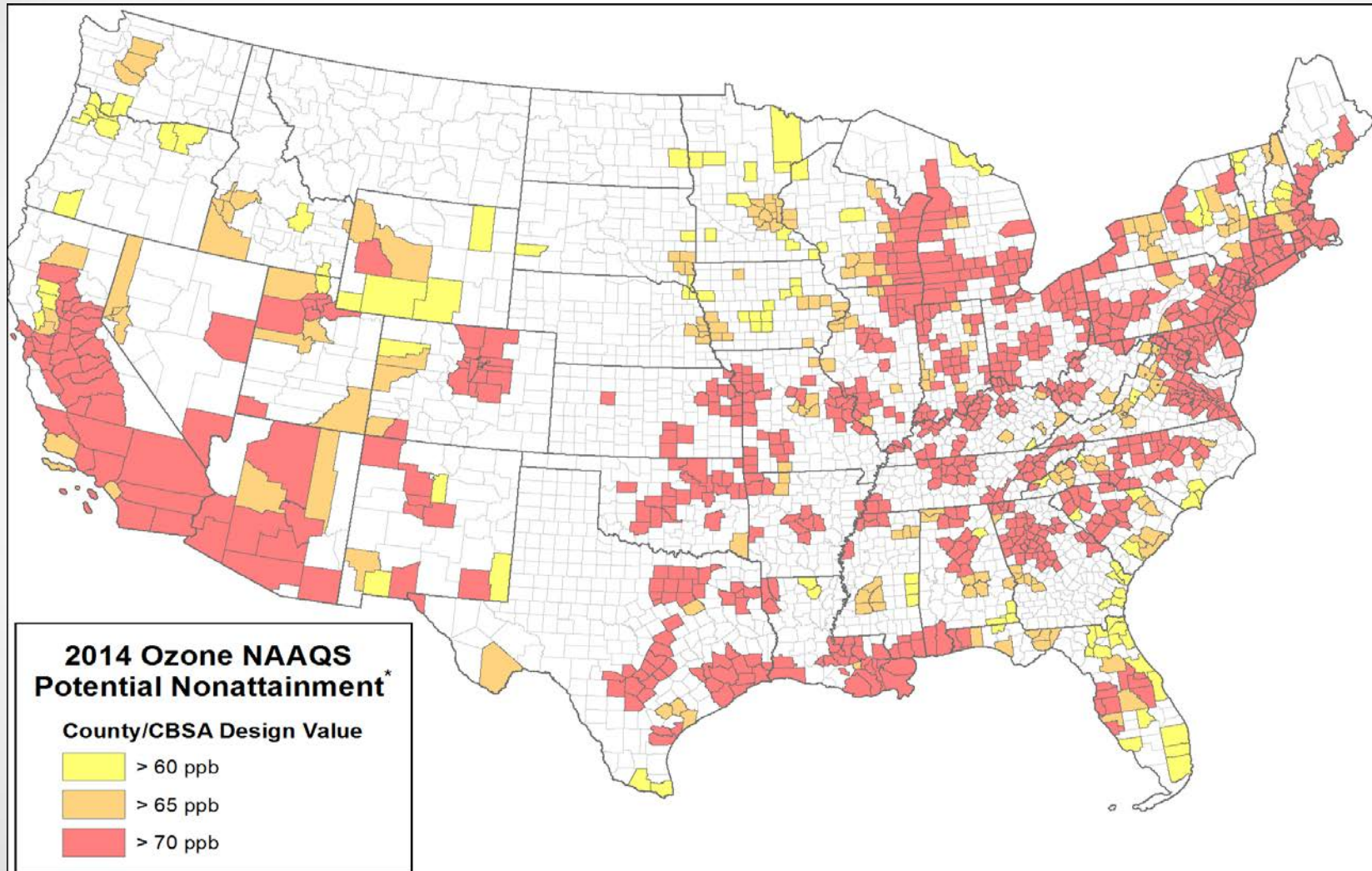
# MATS Rule – Impacts

- Retirement of nearly 6,000 MW of AEP coal-fired power plants
  - Nationwide retirement estimates ~ 60– 80 GW
  - Grid reliability concerns
- Retrofits added to over 2,300 MW
  - Activated carbon, direct sorbent injection, baghouse
- Refuel from coal to natural gas ~755 MW
- Cost for retrofits and refuel projects > \$ 1 billion
- Transmission mitigation projects

# Ozone Air Quality Standard Revision

- National Ambient Air Quality Standards
  - meant to protect human health with an adequate margin of safety
- Ozone standard revised in 2008
  - down to 75 ppb
- By December 2014, EPA must propose another revision to this standard
  - Final rule by October 2015
- Standard likely to be reduced to between 60 – 70 ppb
- Significant economic impacts possible

# 2014 Ozone NAAQS Potential Nonattainment



## 2014 Ozone NAAQS Potential Nonattainment\*

County/CBSA Design Value

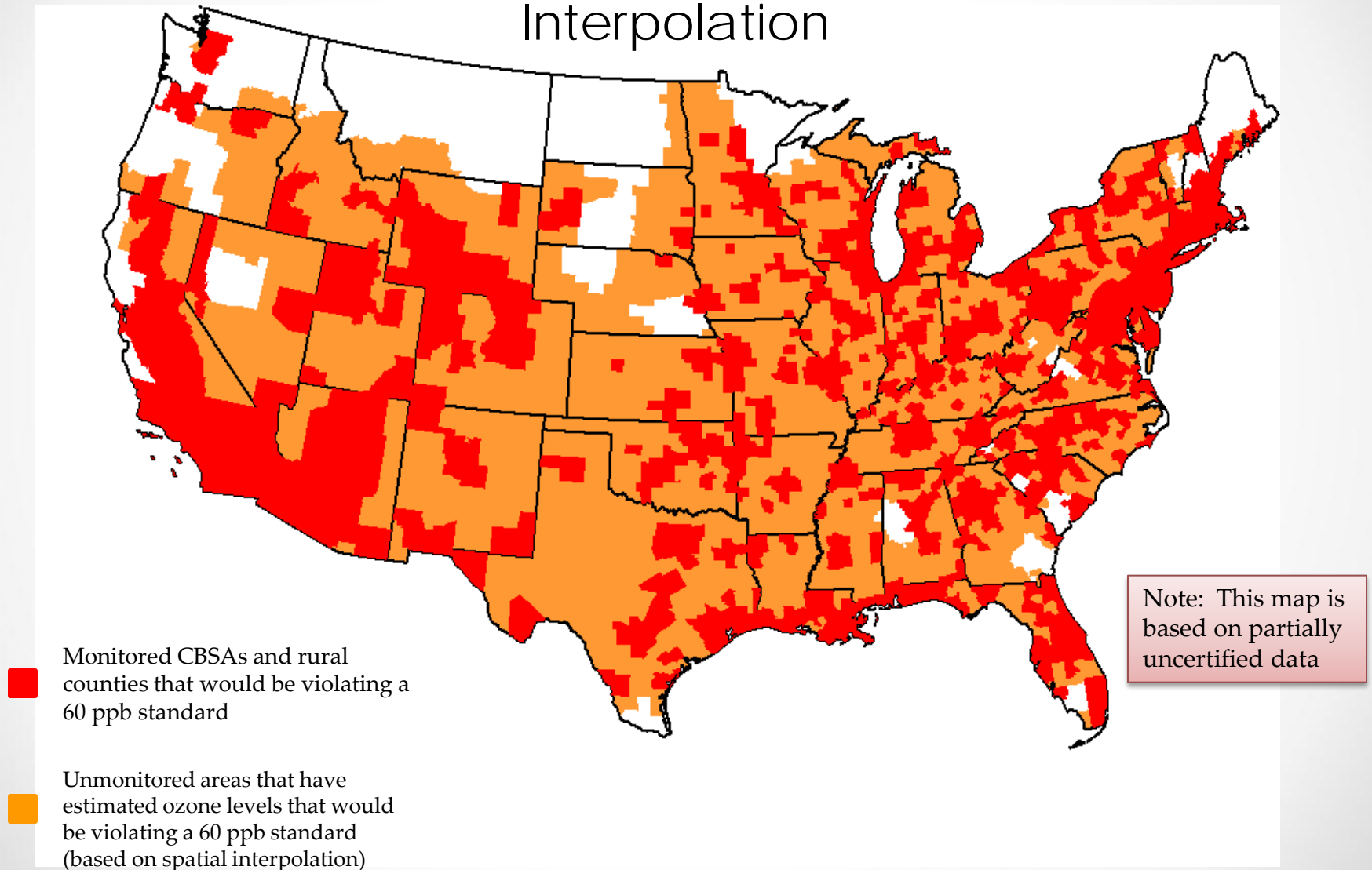
- > 60 ppb
- > 65 ppb
- > 70 ppb

\*Based on 2010-2012 monitoring data

Updated: October 30, 2013

DRAFT

# Monitored Areas Exceeding 60 PPB And Un-Monitored Areas Estimated To Exceed 60 PPB Based on Spatial Interpolation



Based on 2011-2013 data accessed from <http://www.epa.gov/airtrends/> and <http://www.epa.gov/airdata/> on 6/2/2014

# Revised Ozone Standard

- **Nonattainment Designation – Implications**
  - States must take action to reduce NO<sub>x</sub> & VOCs so more emission controls
  - New sources or expansion of existing sources face more difficult permitting requirements
  
- **Potential Economic Impacts of a Stricter Ozone Std**  
(NERA Economic Consulting report)
  - Reduce US GDP by \$270 billion per year
  - Result in 2.9 million fewer job equivalents per year on average through 2040
  - Cost average US household \$1,570 per year in lost consumption
  - Increase natural gas and electricity costs for manufacturers and households across the country
  
- **What can you do?**
  - Contact your state and federal congressmen – let them know your concerns
  - Encourage your trade organizations to submit comments to EPA

# **EPA's Clean Power Plan**

## **Greenhouse Gas Proposed Rules for Existing Plants**

# EPA's Clean Power Plan GHG Proposed Rules for Existing Plants



# GHG Proposed Rules for Existing Power Plants

- EPA published proposed rules applicable to existing power plants on June 18, 2014
- Purpose – reduce emissions of carbon dioxide (CO<sub>2</sub>)
- EPA proposed state specific CO<sub>2</sub> emission rate goals
  - Lbs CO<sub>2</sub>/MWh
- Schedule for this rule
  - Final rule by June 1, 2015
  - States must submit plan for compliance by June 30, 2016 (1 yr extension)
  - EPA has 1 year to approve state plans



# GHG Proposed Rules for Existing Power Plants

- How did EPA come up with each state's CO<sub>2</sub> emission goal?
- Based on 4 Building Blocks
  1. Heat Rate Improvements
  2. Redispatch of Natural Gas Over Coal
  3. Renewable Energy/Nuclear Energy
  4. Energy Efficiency
- Each building block was used to estimate the potential emission reductions possible in a given state
- Significant flaws present in assumptions on feasibility and cost of these building blocks

# GHG Proposed Rules – Concerns

- **Heat Rate Improvements**
  - EPA assumed coal-fired plants could achieve a 6% heat rate improvement
  - Not possible nor sustainable - ~1 – 2 % more realistic
- **Redispatch to Natural Gas**
  - EPA assumes all NGCC plants could increase utilization to 70%
  - Would displace coal generation
  - Implementation issues with RTOs, gas supply concerns
  - EPA's analysis shows additional 46 – 49 GW of coal retiring by 2020
- **Renewable Energy**
  - Does not provide the same dispatchable and ancillary attributes relative coal and natural gas-fired power plants
  - Unrealistic goals for many states
- **Energy Efficiency**
  - EPRI estimates show 1/3 EPA levels may be achievable
  - Proposed levels (1.5% by 2025) not proven sustainable

# GHG Proposed Rules – Concerns

- **State CO<sub>2</sub> reduction goals vary widely**
  - West Virginia – 20% reduction from 2012 rate by 2030
  - Arkansas – 45 % reduction from 2012 rates by 2030
  - Significant reductions required by 2020
- **Not enough time for utilities and states to evaluate the proposed rule and prepare comments**
  - Comments due October 16, 2014
- **Implementation Timeline Not Workable**
  - Could have 2 years or less to implement wide-ranging programs
  - Would limit actions that can be deployed to meet 2020 goals
- **Many legal questions**
  - Legal authority to go beyond the source
  - Legal authority to require redispatch to natural gas units

# GHG Proposed Rules

- Next Steps
  - Prepare comments
  - Meet with state agencies (environmental, utility commissions, governors office)
  - Meet with regional transmission organizations (e.g., PJM, SPP)
  - Advise state and federal legislators on impacts of this proposal
- What can you do?
  - Become familiar with the proposed rule
  - Contact state congressman and voice your concerns
  - Speak out at public hearings
  - Submit comments to US EPA

**QUESTIONS?**