Clean Power Plan –
Understanding the Implications for Regional Energy Delivery

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The electric power industry landscape continues to be affected by numerous regulations

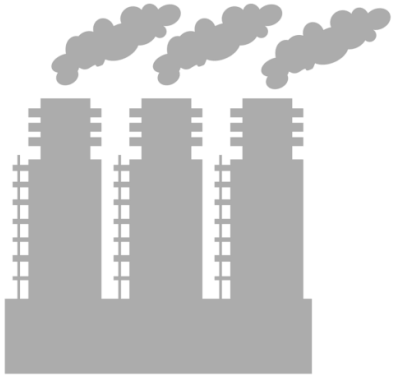
Regulation	Mercury and Air Toxics Standards	Cross State Air Pollution Rule & cooling water intake structure rule (316(b))	CO_2 limits for existing & new power plants	National Ambient Air Quality Standard (NAAQS) for ozone
Compliance Dates	In effect	Both in effect	Existing: Beginning 2016[1] New: Beginning in 2015	In effect, but could be tightened on Oct. 1, 2015
Impacts	• Significant coal retirements • Outage coordination challenges • Shrinking reserve margins around MISO • Growing dependence on natural gas	• NOx requirements tightened • Higher compliance costs influence plant retirement decisions	• Significant coal retirements • Greater dependence on gas and CO_2-neutral resources • Possible impacts on economic dispatch • New coal builds much more expensive & unlikely	• Existing units could have to install new controls or modify their operations • Possible retirement of coal and/or gas units • Harder to build new coal & gas-fired generation in 'nonattainment' areas

[1] – States must submit "initial" implementation plans by Sept. 6, 2016, and final plans by Sept. 6, 2018.

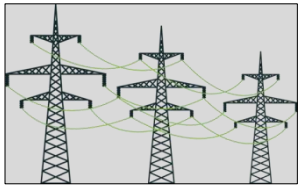
EPA's Clean Power Plan (CPP) will have wide-ranging impacts

Generation Impacts

- Less coal generation
- More gas generation
- Siting questions: Near existing transmission, or gas pipelines?
- More renewables & energy efficiency



Infrastructure Impacts



- More transmission and gas pipeline capacity likely needed
- Siting of infrastructure driven by location of new generation & other factors
- Cost-allocation issues

Reliability Impacts

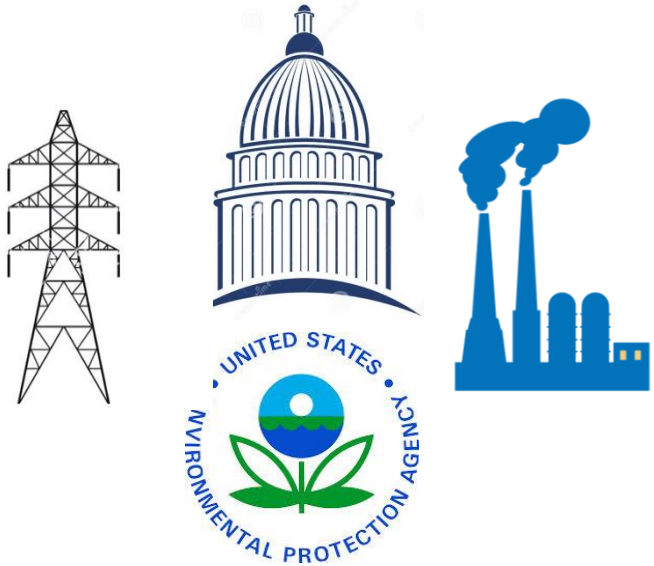
- Will the rule jeopardize resource adequacy at a local and/or regional level?
- Will states and utilities have enough time to build & permit new resources?
- Will ancillary services continue to be sufficient?

Economic Dispatch Impacts

- Which compliance approaches would preserve economic dispatch cost savings?
- How can states equate rate & mass-based compliance plans w/ economic growth?
- How can compliance costs best be monetized?

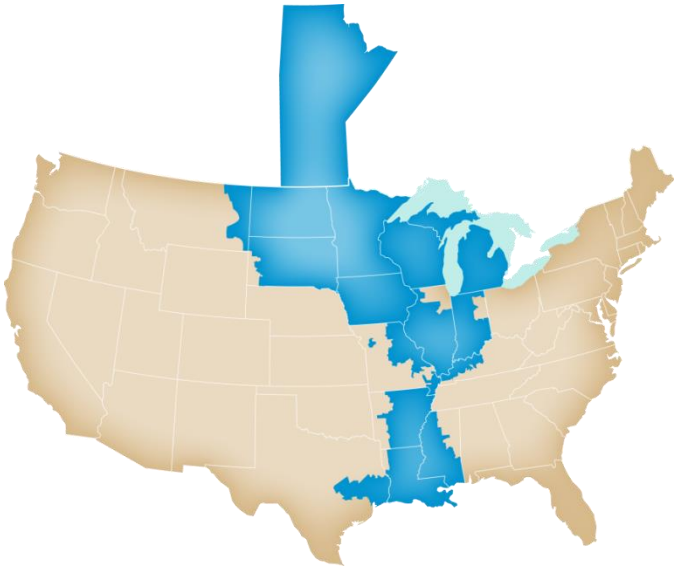
MISO plays key roles with respect to the Clean Power Plan and other forces that impact the footprint, including:

Informing Policymakers and Asset Owners



- Using our planning study and analytical capabilities to help asset owners and policymakers make well-informed decisions.

Enabling the Reliable, Efficient Implementation of Policy Decisions



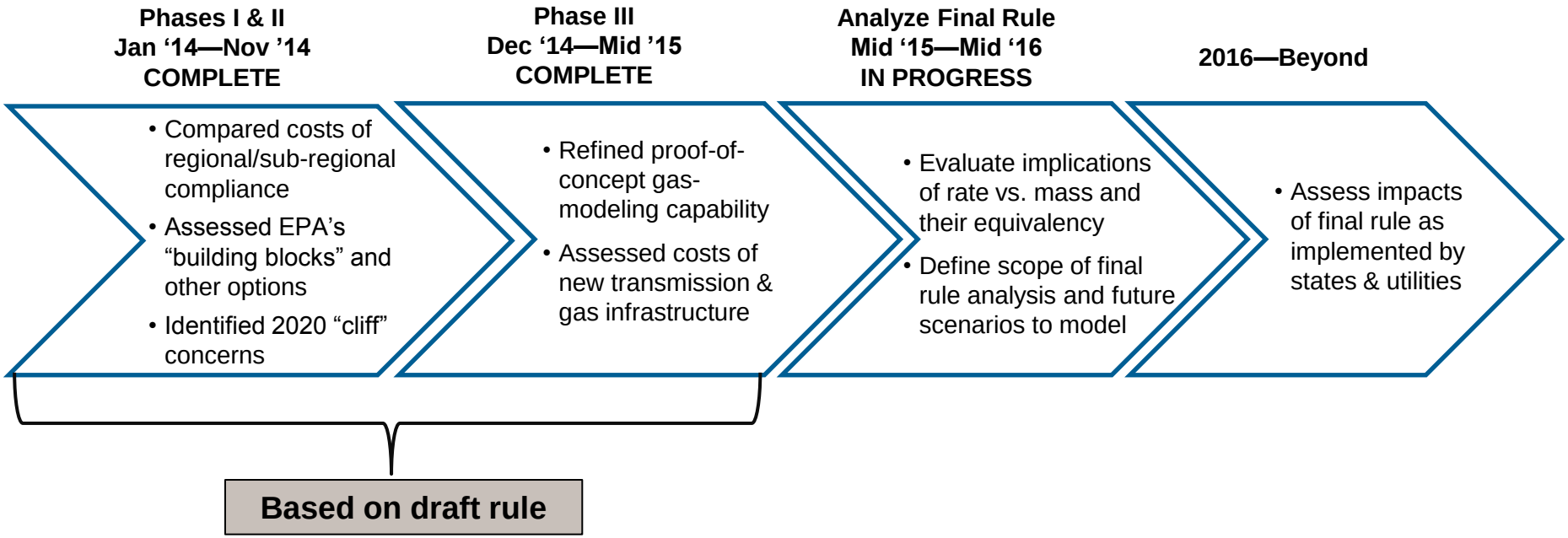
- Once policy makers and asset owners make their decisions, leverage our regional planning and operational capabilities to implement those decisions in a reliable and efficient manner.

EPA's final Clean Power Plan differs significantly in some respects from the proposed rule

- The national CO_2-reduction requirement is more stringent
- A new EPA methodology imposes more stringent CO_2-reduction requirements on heavily coal-reliant states
- The start of the "interim" compliance period is delayed by two years
- States have more time to submit their compliance plans
- Multi-state trading schemes are encouraged, and utilities are encouraged to trade emissions/credits with other utilities even in the absence of formal multi-state/regional compliance programs.
- The final rule includes a "Reliability Safety Valve," and requires states to demonstrate they considered reliability in developing state plans
- State CO_2-reduction requirements are expressed in both rate and mass forms
- The final rule promotes renewable energy and energy efficiency over increased gas-fired generation as a compliance option
- The energy-efficiency building block is no longer used in determining state requirements

MISO's Analysis of the Clean Power Plan

We are working with stakeholders to define the best scenarios to study in order to capture an appropriate range of outcomes possible through 2030 and beyond



Key findings and lessons learned from our earlier analysis of EPA's draft Clean Power Plan include:

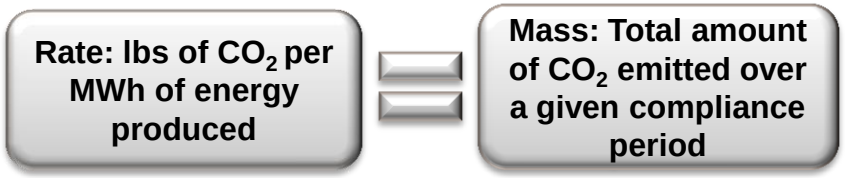
- Regional (footprint-wide) compliance is less costly than state-by-state or other sub-regional compliance approaches
- Multi-billion-dollar transmission build-out would be necessary for compliance
- Generation dispatch would change dramatically from current practices
- Improved coordination between electric and natural gas industries has increasing importance
- Building out renewable resources further exacerbates the need for new transmission

MISO's studies of the draft CPP have positioned us well for study of the final rule

- **Study Tool**
  - Allows for modeling state- and regional-level compliance, CO_2 mass or rate constraints and integrated gas-electric system dispatch
- **Study Process**
  - Scenarios allow for study of a range of options in a structured fashion
  - Stakeholder input is essential to producing relevant scenarios
  - Phased study approach produces valuable information prior to completion of the entire analysis

The final rule expresses states' CO_2-reduction goals in both rate-based and mass-based forms

- EPA says the rate & mass approaches in the final rule can be "equivalent" if states properly account for certain factors



- States can choose the rate or mass goal that best suits their particular energy profiles and other circumstances
- Factors that may influence states' rate/mass decisions include:
  - Anticipated load growth
  - An interest to participate in multi-state/regional emissions-trading programs
  - An interest in preserving the benefits of broad regional economic dispatch

MISO stands ready to help states and utilities to assess these and other factors so they can craft implementation plans that best suit their needs