Clean Power Plan: MISO Analysis ADEQ/APSC Stakeholder Meeting

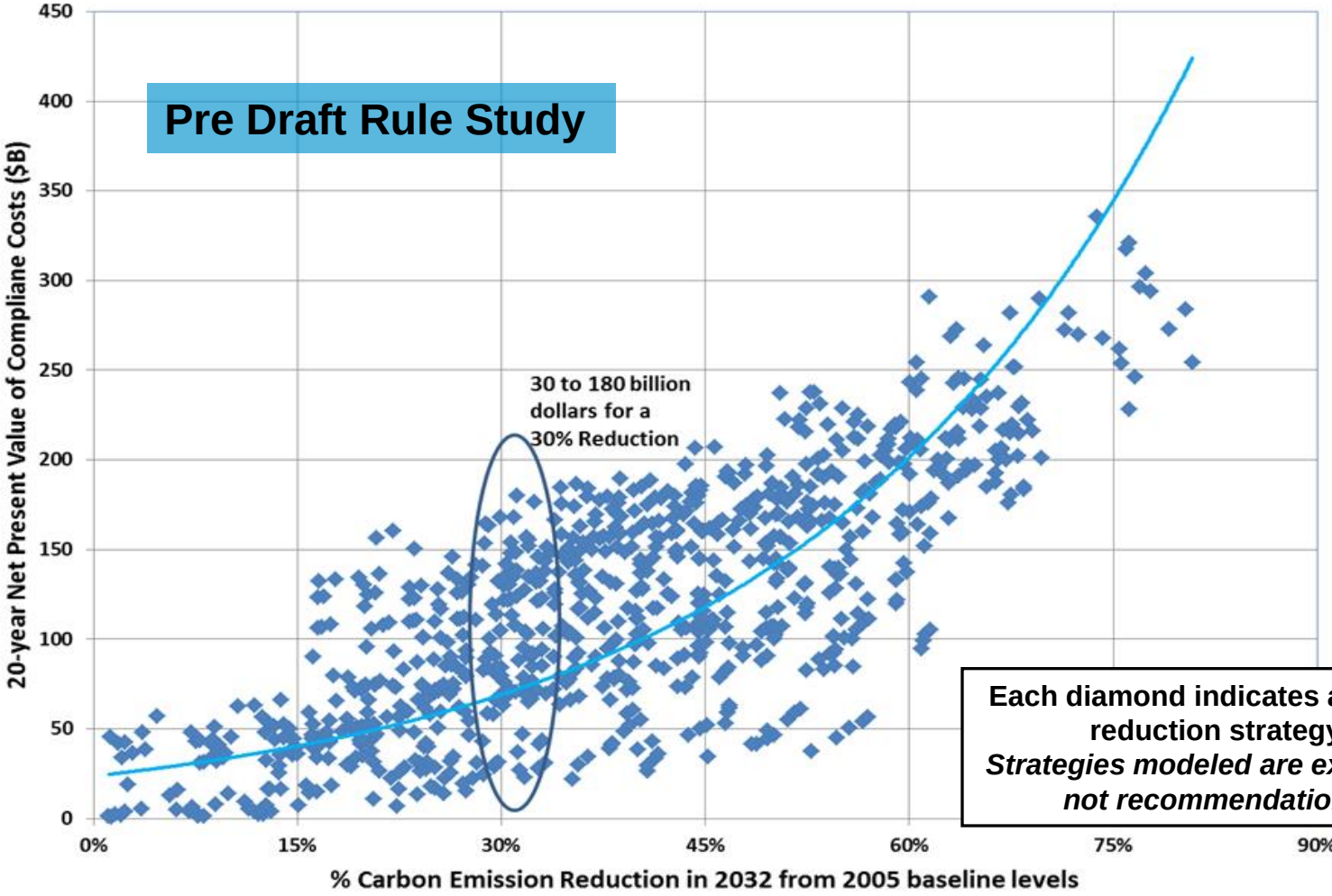
8/28/2014

The generation fleet in MISO is being affected by timing, fuel prices and multiple phases of environmental regulations.

	MATS	CSAPR & CWIS	CO_2	NAAQS & Coal Ash
Nature of Regulation	Mercury and Air Toxics Standards	Cross State Air Pollution Rule and Water Regulations (316(b))	Carbon regulations (Clean Power Plan/NSPS)	National Ambient Air Quality Standards/ Coal Ash?/Other?
Compliance Dates	2015 / 2016	As early as 2015	2020-2030	???
Impacts	• Significant coal retirements • Outage coordination challenges • Shrinking reserve margins around MISO • Growing dependence on natural gas	• NO_x requirements tighten • Final water intake rule released May 2014. • Higher plant costs that influence retirement decisions	• Draft Rule released June 2014 • Continued pressures on reserve margins • Increased dependence on natural gas	• Potential ozone NAAQS changes • Haze rules • Etc.

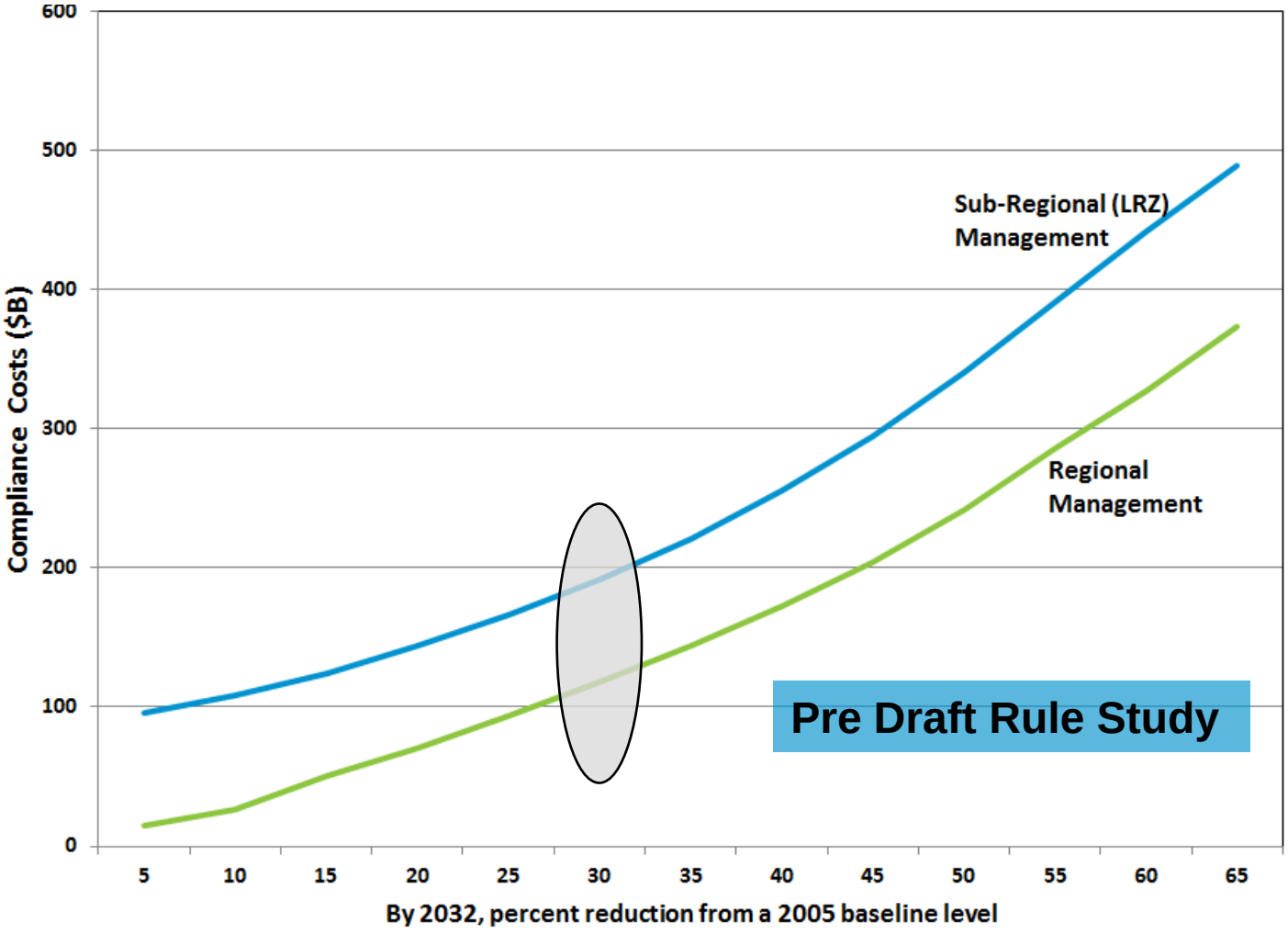
These factors will culminate in the erosion of reserve margins and an increase in reliability risk.

EPA's release of draft carbon emission guidelines provide the parameters to refine our analysis and better assess impacts



Preliminary results show that, for given policy and economic conditions, certain combinations of carbon reduction strategies are more cost effective than others. Strategies modeled do not represent an exhaustive range of compliance options.

Achieving emissions reductions regionally is economically beneficial compared to sub-regional solutions



CO2 Regulation Impact Analysis Under CPP

- **Study Initiation (Comment Period Study)** – MISO announced plans to continue study CO2 reduction at the Planning Advisory Committee, May 2014
- **Purpose** - Inform stakeholders on potential carbon regulation impacts
- **Intent** of this study is to:
  - Understand the impacts of the carbon regulations on the generation fleet and load in the MISO footprint
- **Intent** of this study is **not** to:
  - Recommend any specific compliance plan to meet the regulation
  - Enable support or opposition to this regulation
- **Stakeholder Input** – Seeking stakeholder input on analyses that will assist in comment development
  - Advisory Committee Hot Topic in August
- **First Look** – Initial results may lend to additional analysis, as appropriate and determined in collaboration with stakeholders

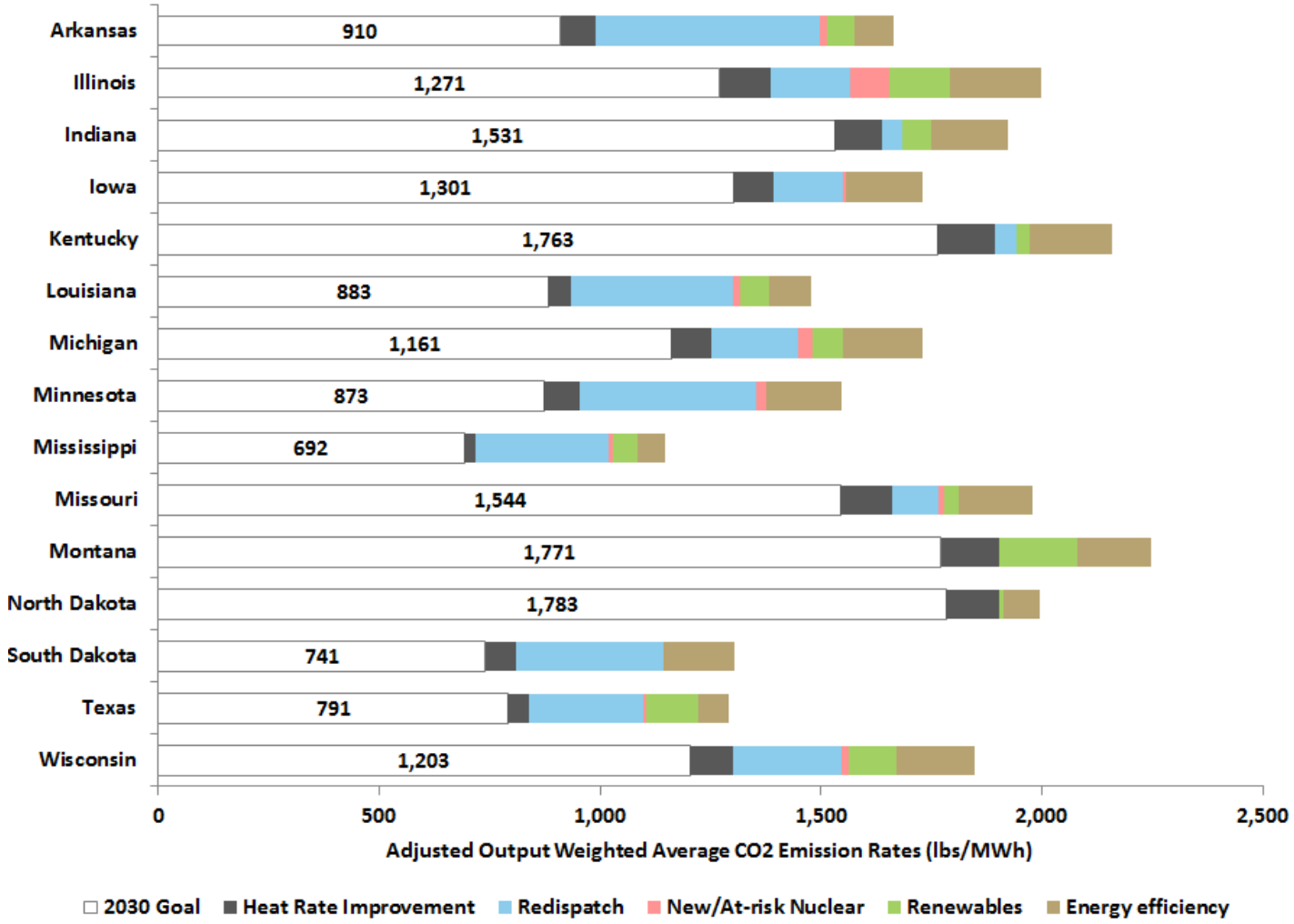
Clean Power Plan: promulgated under the authority of Section 111(d) of the Clean Air Act, the EPA's carbon emissions rule for existing power plants:

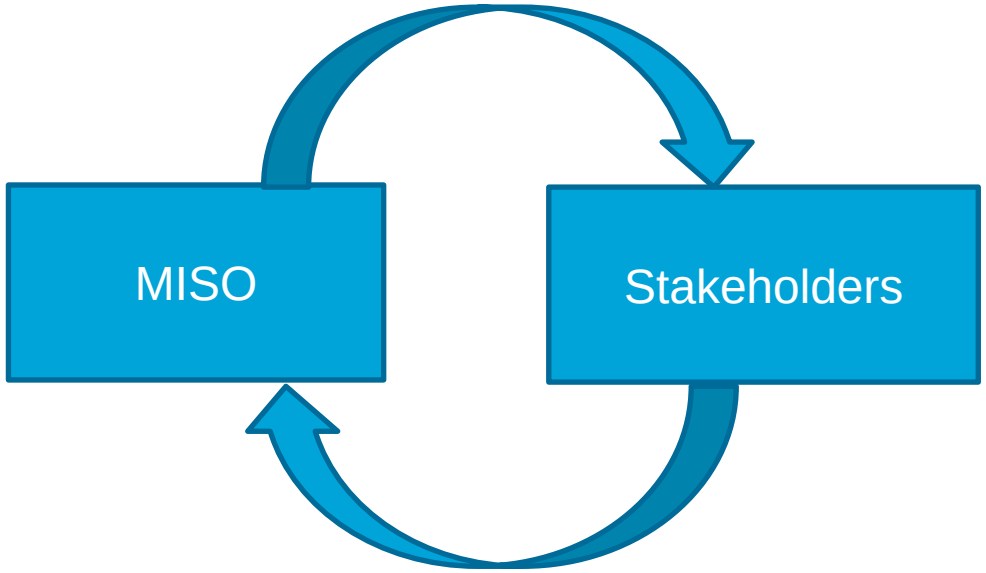
- Proposes state-specific emission rate-based CO_2 goals with various options for flexibility in compliance.
- Offers guidelines for the development, submission and implementation of state plans to address CO_2 emissions from existing fossil-fired electric generating units (EGUs).
- Reflects the emissions reduction that can be achieved by the application of the *Best System of Emission Reduction (BSER) … adequately demonstrated*.

The EPA's definition of BSER is based on four "building blocks" of emissions reduction…

Building Blocks			
1. Improve efficiency of existing coal plants	2. Increase reliance upon CC gas units	3. Expand use of renewable resources and sustain nuclear power production	4. Expand use of demand-side energy efficiency
EPA Calculations/Assumptions in the Proposed State Goal Development			
6% efficiency (heat rate) improvement across the fleet, assuming best practices and equipment upgrades	Re-dispatch of CCGTs up to a capacity factor of 70%	Meet regional non-hydro renewable target, prevent the retirement of at-risk nuclear capacity and promote the completion of nuclear capacity under construction.	Scale to achieve 1.5% of prior year's annual savings rate

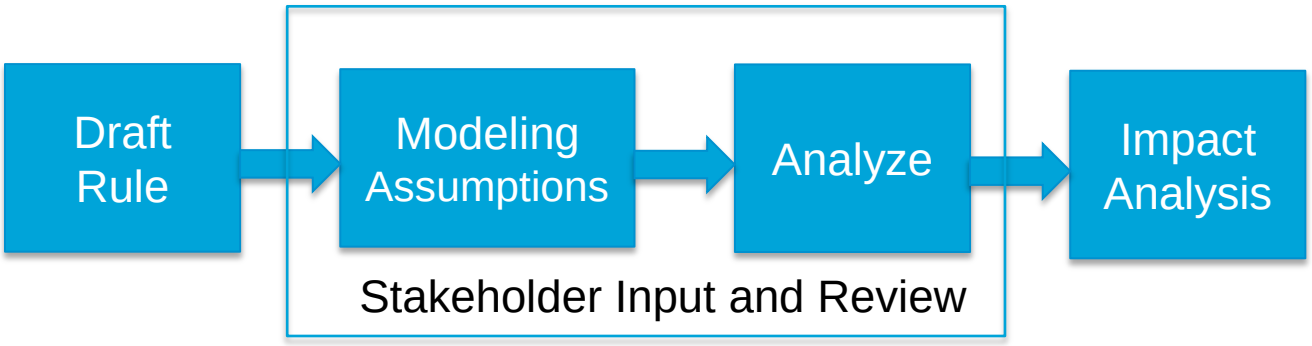
The EPA based state 2030 emission targets on the application of the building blocks to the state's power generation resource mix, along with other factors.





Study Scope

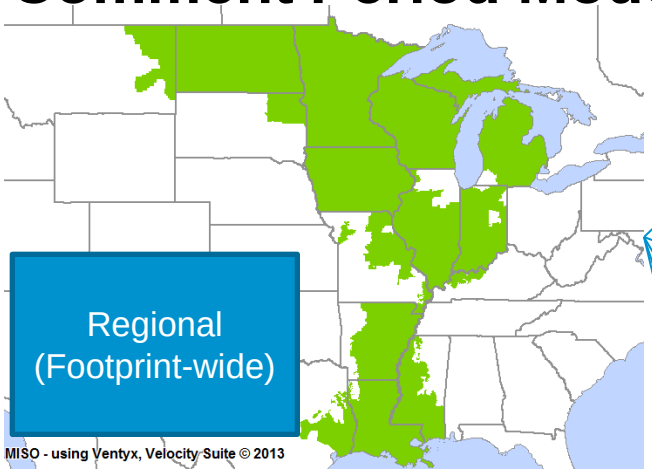
Comment Period Modeling

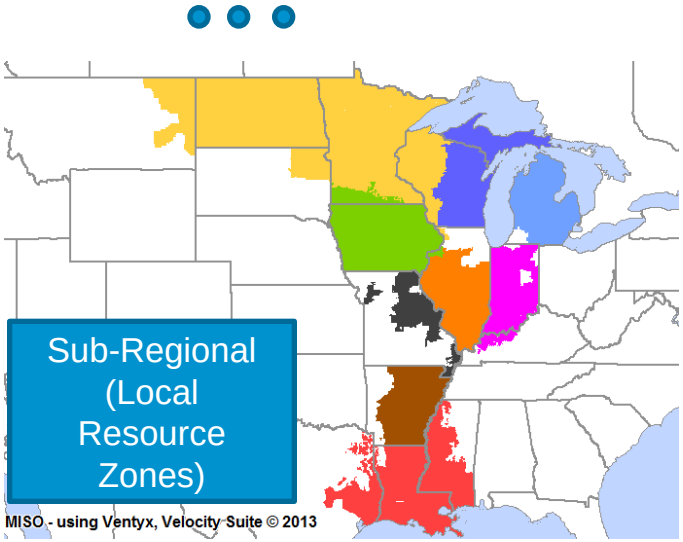


Using Electric Generation Expansion Analysis System (EGEAS)

- Two phases for comment period modeling
- Phase 1: Calculate compliance costs for Regional (footprint-wide) vs. Sub-regional (LRZ level) carbon management
  - Using the building blocks individually and in combination as proposed in the draft regulation
- Phase 2: Based on stakeholder feedback, examine the range of reduction achievable in various sensitivities

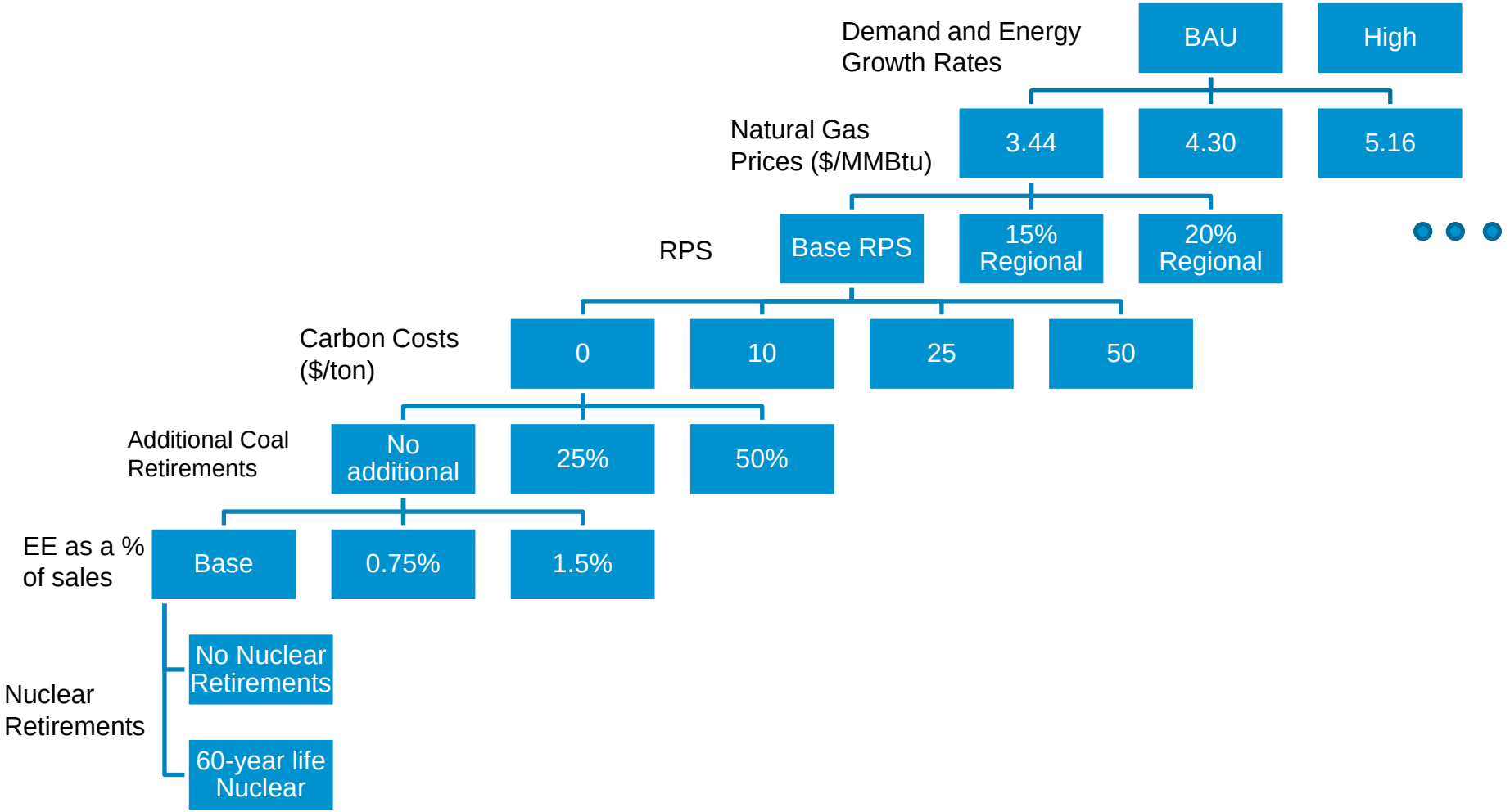
Phase 1: An assessment of EPA's building blocks – Comment Period Modeling





- Building Block 1
  - Cost of Compliance
  - Emissions Reduction Achieved
- Building Block 2
  - Cost of Compliance
  - Emissions Reduction Achieved
- Building Block 3
  - Cost of Compliance
  - Emissions Reduction Achieved
- Building Block 4
  - Cost of Compliance
  - Emissions Reduction Achieved
- All building blocks
  - Cost of Compliance
  - Emissions Reduction Achieved

Phase 2: Proposed Sensitivities – Comment Period Modeling



Clean Power Plan Summary

- MISO does not hold a position on the EPA's effort to regulate greenhouse gas emissions from existing power plants
- MISO is uniquely positioned to study the impacts to the generation fleet and consumers in the MISO footprint
- The goal of our analytics is to increase visibility and inform policy maker and stakeholder decisions around compliance
- MISO is encouraged by the amount of flexibility in the draft rule that gives states the opportunity to harness the benefits of regional implementation of the emission reduction targets