A large, stylized sun graphic is positioned on the left side of the slide. It features a central white circle with rays extending outwards, rendered in a light gray color. The rays are composed of various geometric shapes, including triangles and trapezoids, creating a fan-like effect.

MISO's analysis of EPA's Clean Power Plan: Regional grid implications

WIRES 2016 Winter Meeting

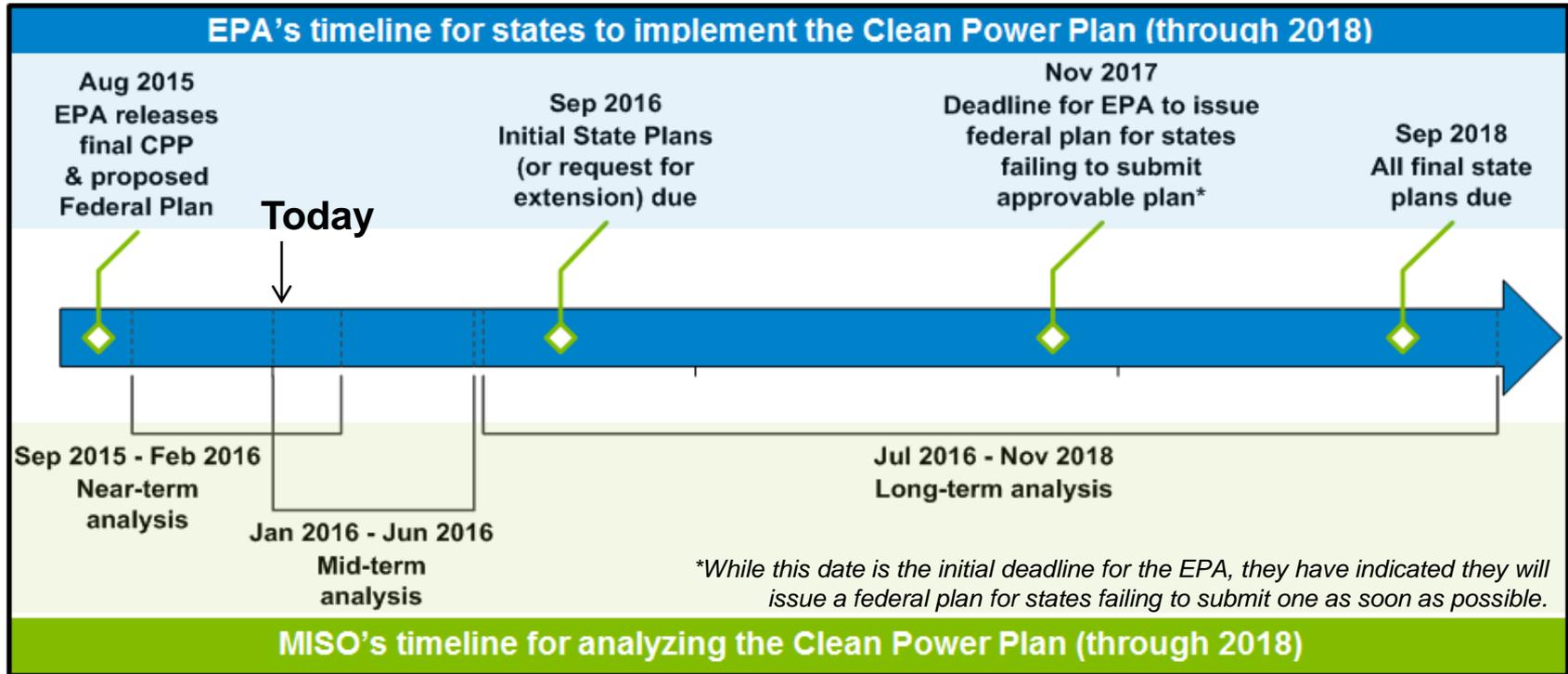
January 21, 2016

**Clair Moeller
Executive Vice President
Transmission & External Affairs**

MISO's analysis of EPA's Clean Power Plan will report key findings ahead of the coming deadlines that states must meet

Goals:

- Inform policymakers as they formulate compliance strategies
- Enable the reliable, efficient implementation of CPP-related policy decisions made by our member-states and asset-owners



Near-Term Modeling
Understanding compliance pathways

Mid-Term Modeling
Preparing for transmission overlay development

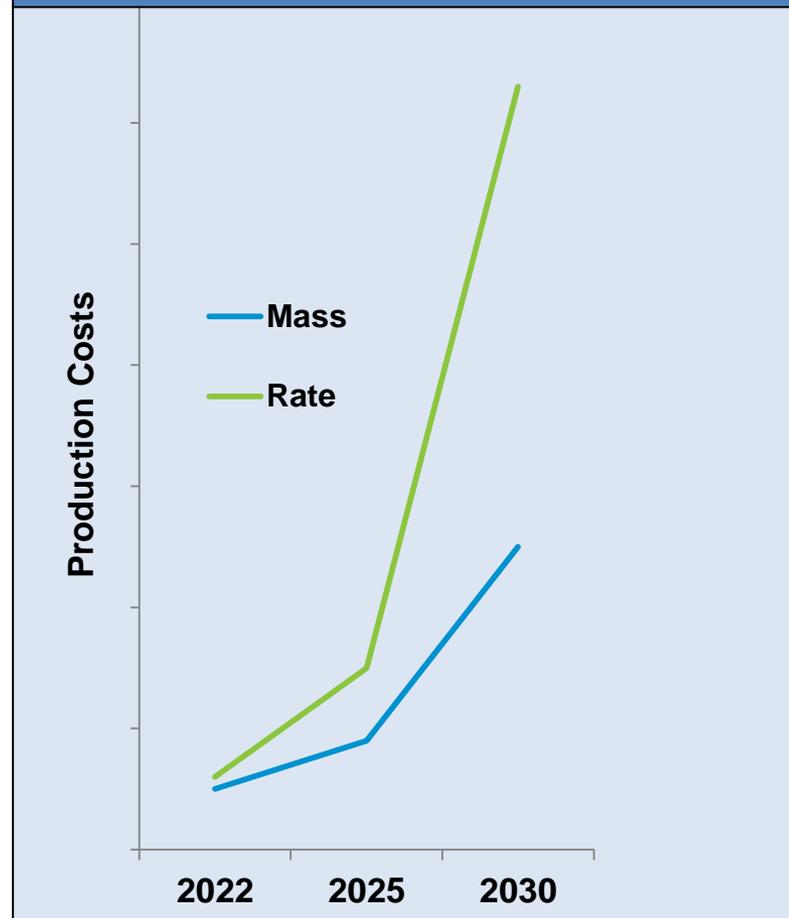
Long-Term Modeling
Developing transmission overlay

Mass-based compliance would cost less on regional basis, but a few states may fare better with a rate-based approach

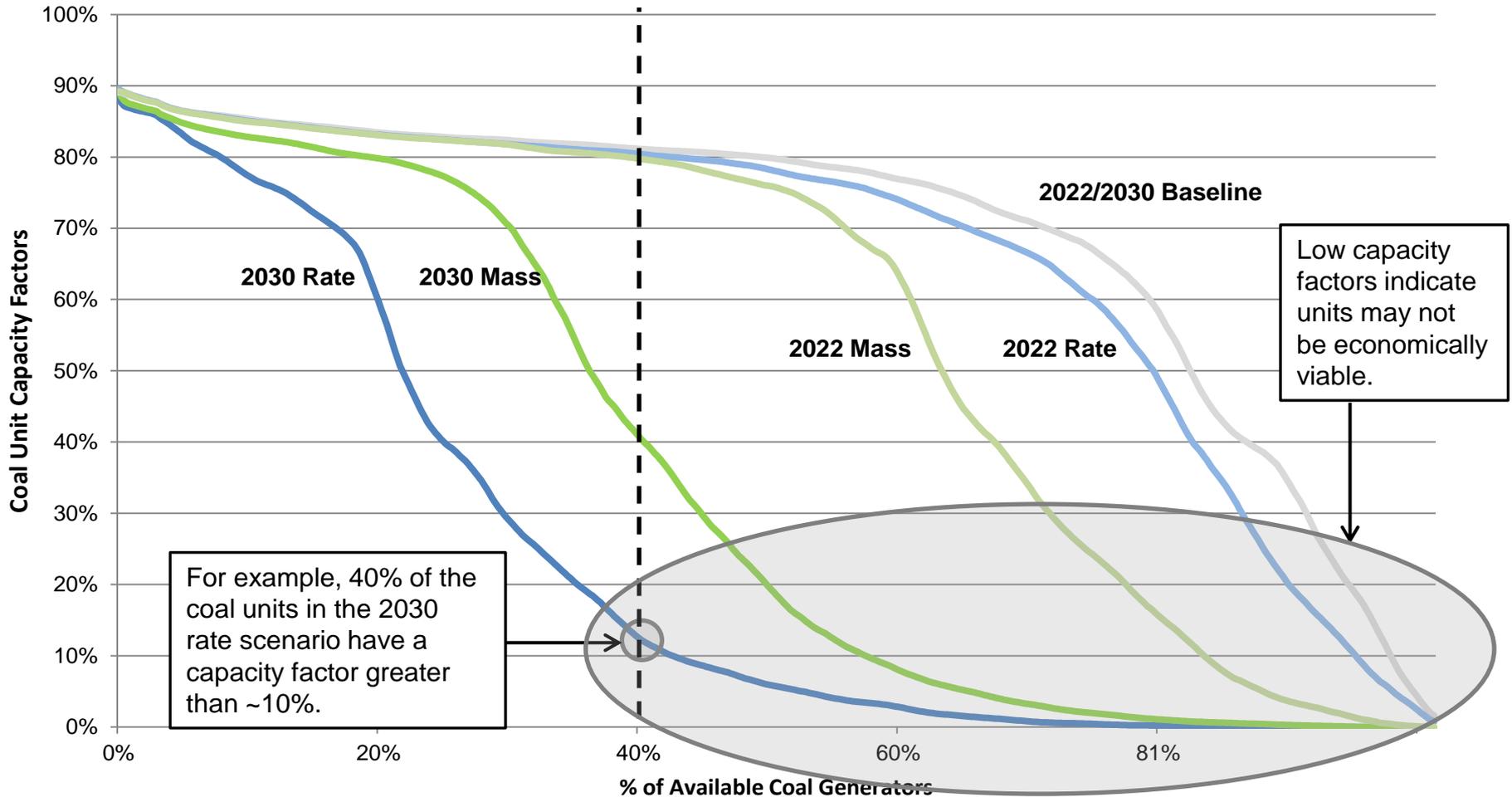
On a MISO region-wide basis, MISO's analysis indicates the following regarding rate-based and mass-based compliance:

- The production costs of a mass-based trading regime would be lower than the production costs of rate-based trading, with the gap increasing over time.
- Mass-based compliance would also require less capital investment than rate-based compliance.
- Some MISO-member states may initially fare better under rate-based compliance, but over time, most states would see greater benefits under mass-based compliance.
- States that already have (1) a heavy penetration of efficient gas-fired generation and/or (2) intend to build numerous non-CO₂-emitting resources may be marginally better off using rate-based compliance in the long run.
 - However, these states would only see advantages with rate-based compliance if the generators within their borders have access to a liquid market for emission rate credits (ERCs).

Directional comparison of mass-based & rate-based production costs for the MISO region as a whole



Under current capacity trends, coal unit capacity factors decrease greatly over time under the CPP, more dramatically with a rate-based implementation



Coal units run more in the near term under rate-based compliance and in the long term under mass-based compliance.

New resources will be needed to achieve CPP compliance, meaning planning and investment in new energy assets needs to begin soon

Typical conception-to-in-service timelines for various types of new energy assets*, overlaid on the CPP's compliance deadlines:

