



MTEP13 Futures Development

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ATC Economic Planning

November 27, 2012

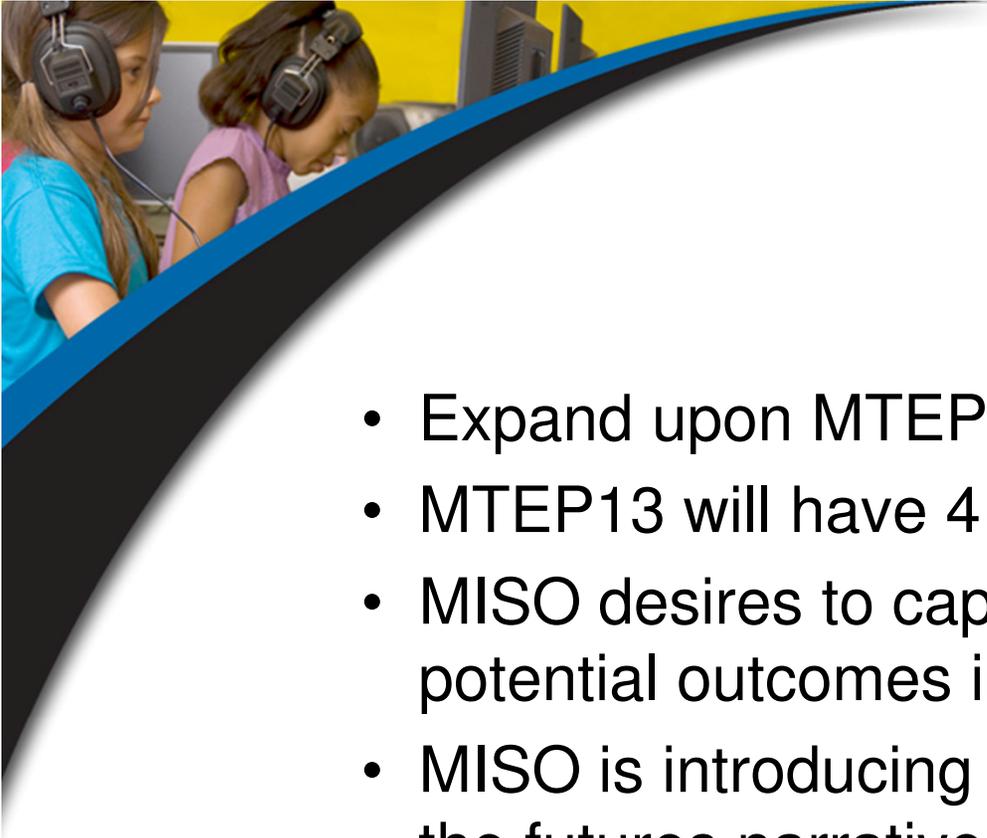
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Introduction

- MISO presented information on the MTEP13 Futures Narratives development at the October 23rd Planning Advisory Committee (PAC) meeting
- The full presentation can be found at:
<https://www.midwestiso.org/Events/Pages/PAC20121023.aspx>
- Today I will review the MISO information and present comments made by ATC
- Much of the information presented here is taken directly from October 23rd MISO presentation



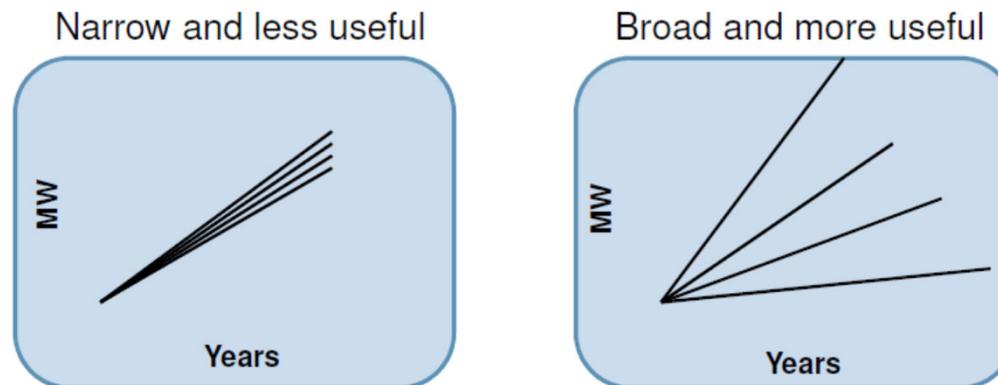
Overview

- Expand upon MTEP12 futures
- MTEP13 will have 4 futures
- MISO desires to capture a broad range of potential outcomes in these futures
- MISO is introducing themes on which to build the futures narratives
 - MISO will define specific values for the variables for each future at upcoming Planning Advisory Committee (PAC) meetings

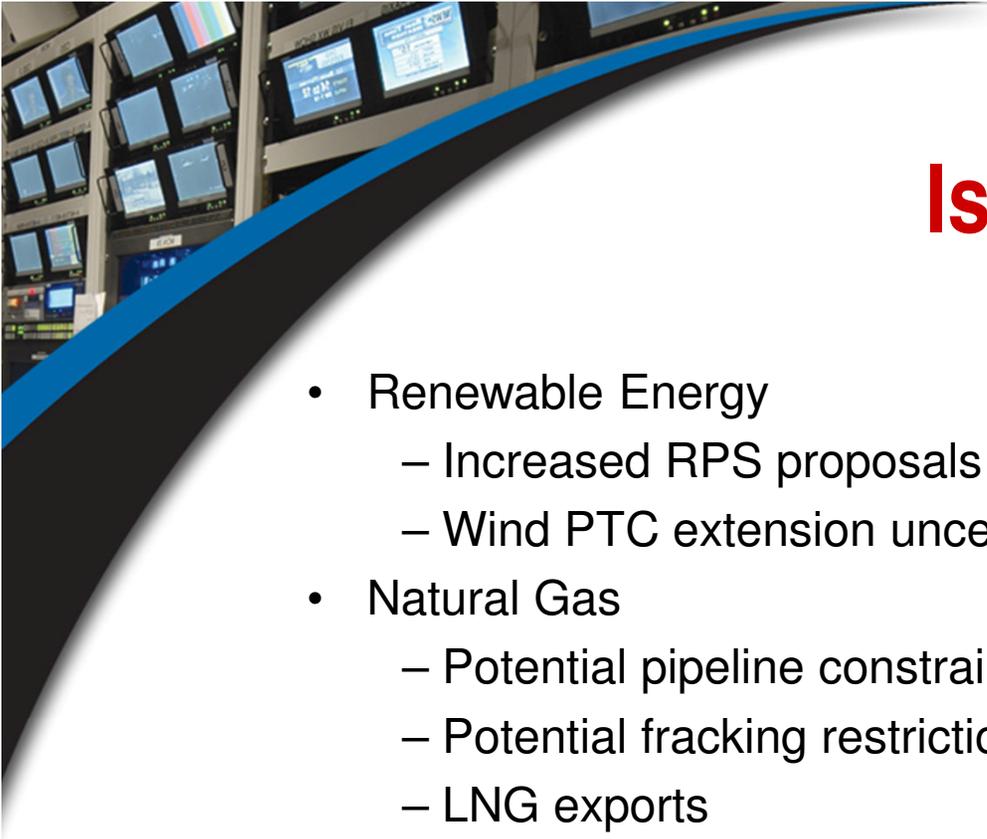
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Regional Resource Forecasting

- Need to obtain multiple long term views of potential supply and demand resource availability, given different policy and economic drivers
- Future scenarios and assumptions are developed collaboratively with stakeholders through the PAC
- The goal is for the range of futures to be linked to likely real-life scenarios and provide an envelope of outcomes that is significantly broad, rather than a single expected forecast



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Issues for Consideration

- Renewable Energy
 - Increased RPS proposals in MI & WI
 - Wind PTC extension uncertainty
- Natural Gas
 - Potential pipeline constraints
 - Potential fracking restrictions
 - LNG exports
 - Automobile conversions
- Generation Retirements
 - ~5 – 6 GW from MISO's latest survey results
 - CSAPR stayed, MATS to take effect in 2015

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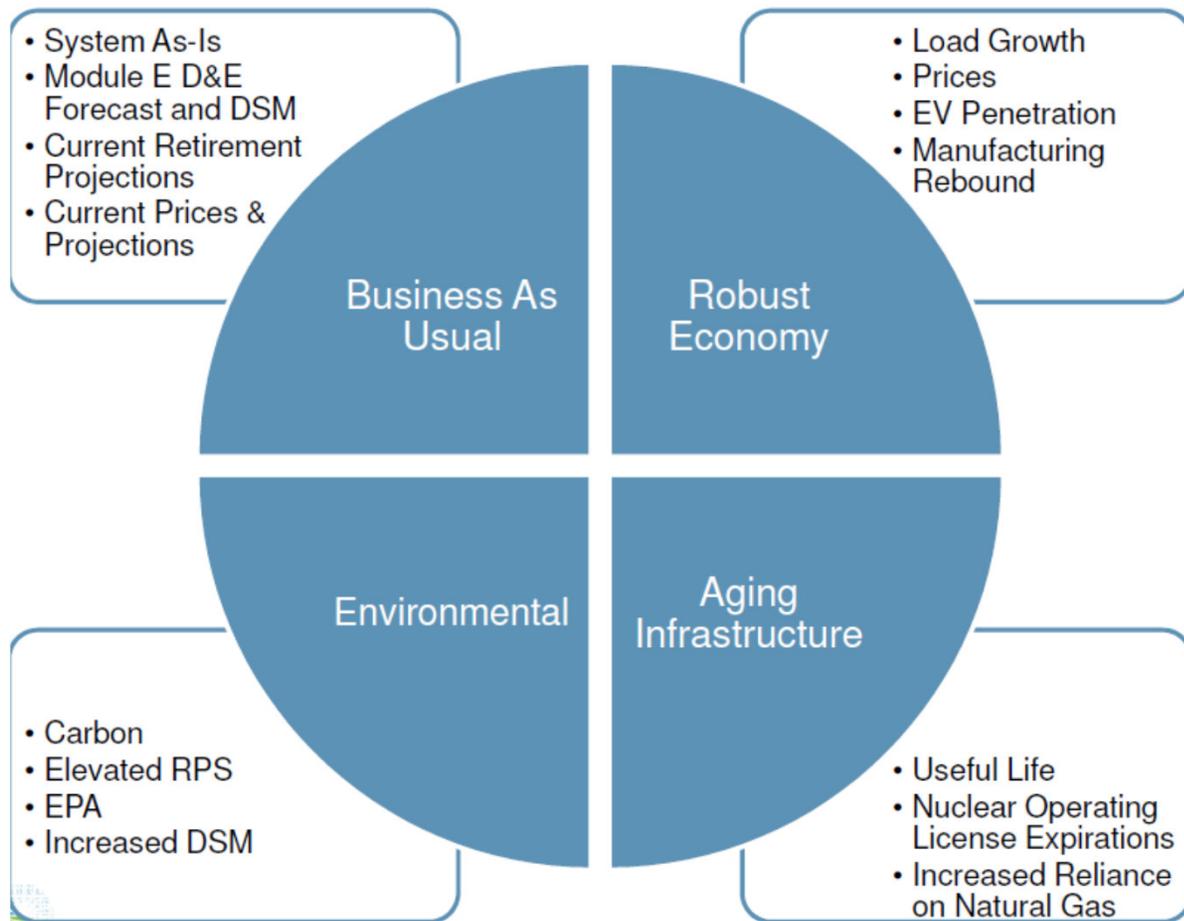


More Issues for Consideration

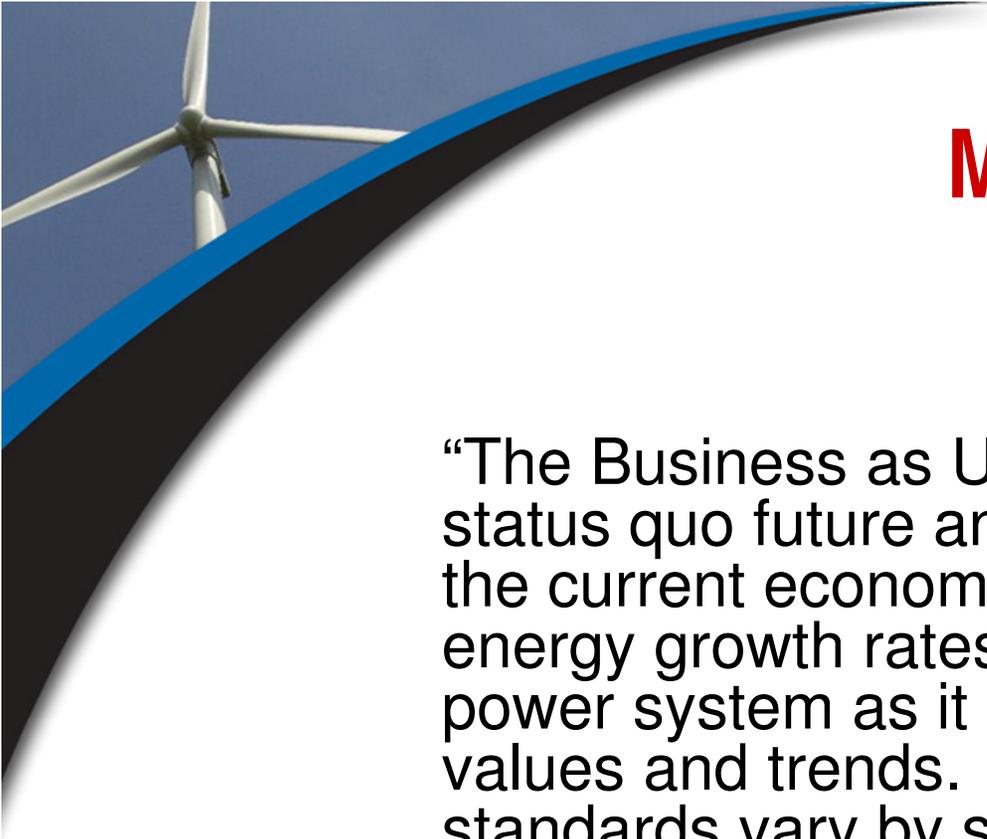
- Demand and Energy
 - MISO set new system peaks the past two summers
 - Module E projections remain low (~1% range)
- Electric Vehicles
 - Potential for 1 million by 2015
- Manufacturing
 - Recovery has been slow so far
- Nuclear Plants
 - Construction and Operating Licenses (COL) issued
 - Vogtle in Georgia and V.C. Summer in South Carolina
 - NRC halted further licensing activities due to waste disposal uncertainty
 - Announced retirement of Kewaunee in 2013 for economic reasons

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MTEP13 MISO Futures Proposal



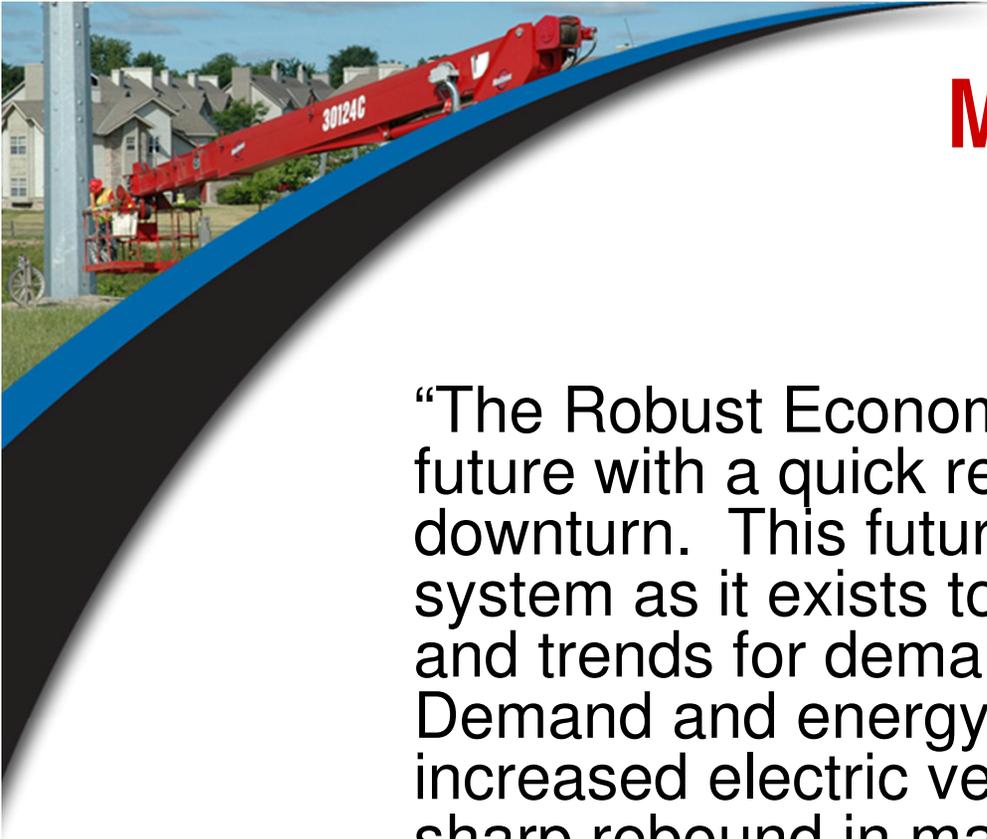
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A photograph of a white wind turbine against a blue sky is positioned in the top-left corner. A decorative graphic consisting of a thick blue line curving downwards and then a thick black line curving upwards follows the bottom edge of the image area.

MISO Proposed Narrative - Business as Usual

“The Business as Usual future is considered the status quo future and continues the impact of the current economic downturn on demand and energy growth rates. This future models the power system as it exists today with reference values and trends. Renewable portfolio standards vary by state and coal unit retirement levels will be modeled using the latest MISO EPA survey projections.”

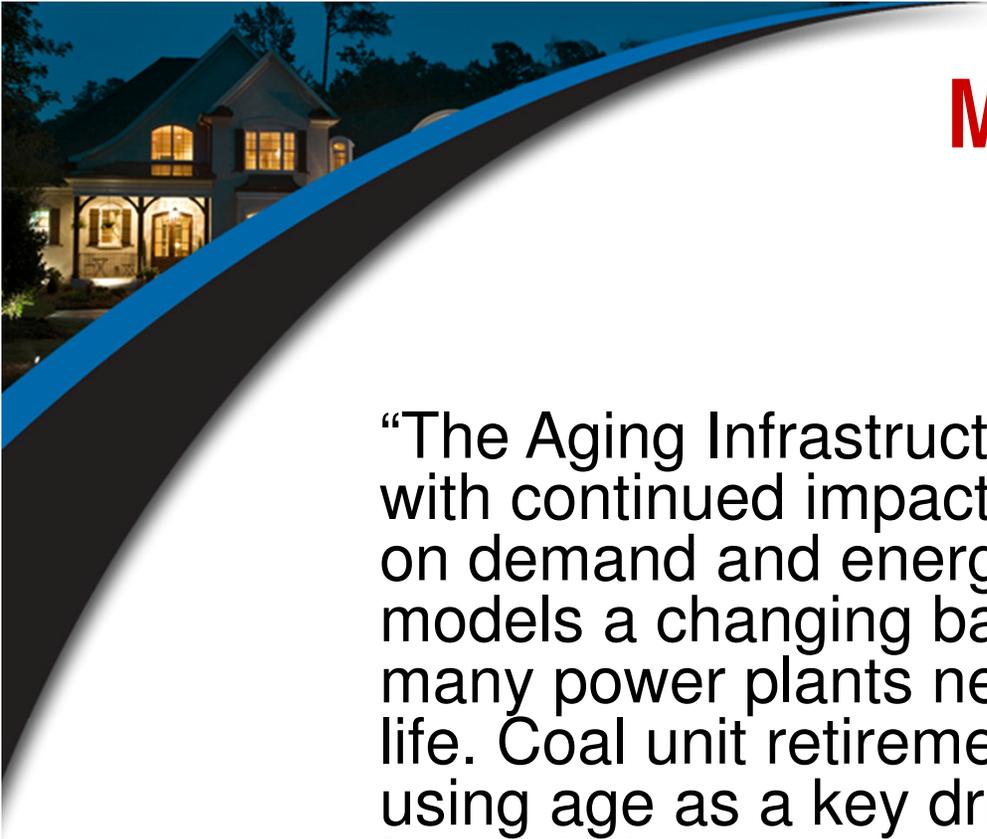
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MISO Proposed Narrative - Robust Economy

“The Robust Economy future is considered a future with a quick recovery from the economic downturn. This future models the power system as it exists today with historical values and trends for demand and energy growth. Demand and energy growth is spurred by increased electric vehicle penetration and a sharp rebound in manufacturing. Renewable portfolio standards vary by state, with both state mandates and goals being modeled. Coal unit retirement levels will be modeled using the latest MISO EPA survey projections.”

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MISO Proposed Narrative - Aging Infrastructure

“The Aging Infrastructure future considers a future with continued impact from the economic downturn on demand and energy growth rates. This future models a changing baseload power system due to many power plants nearing the end of their useful life. Coal unit retirement levels will be modeled using age as a key driver and nuclear units will not have their current operating licenses extended. Renewable portfolio standards vary by state.”

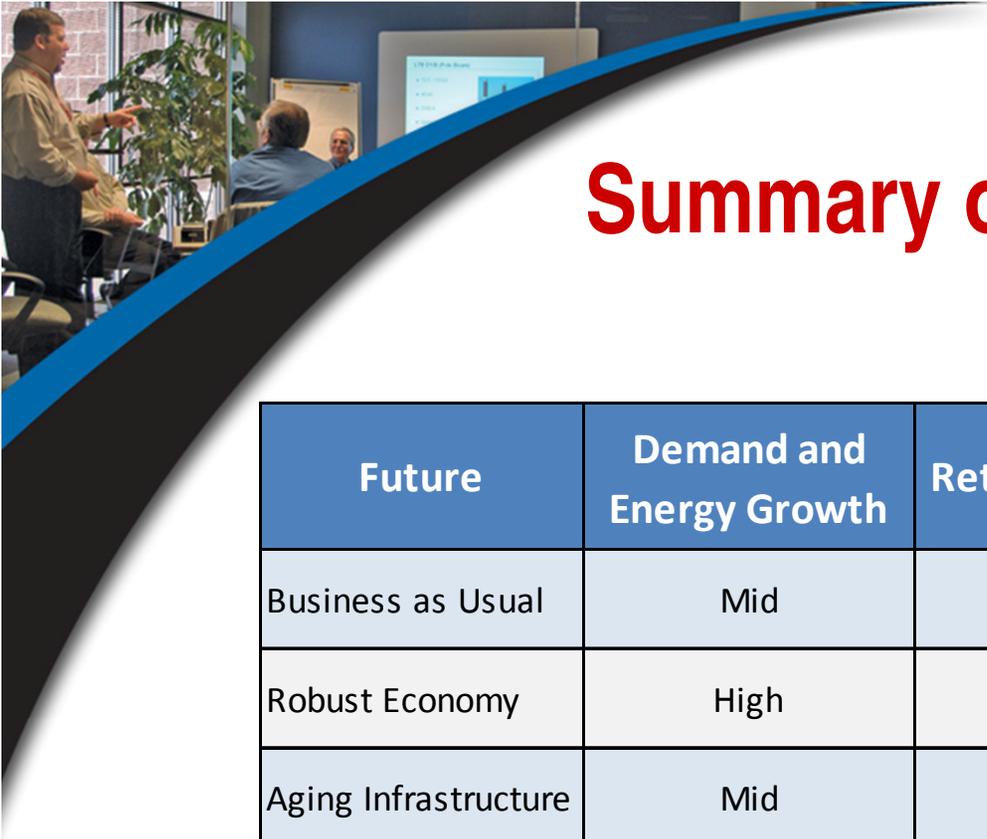
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MISO Proposed Narrative - Environmental

“The Environmental future considers a future where demand-side management programs have a heavy impact on demand and energy growth rates. An even greater EPA presence will be represented through a carbon tax and a federal-level renewable portfolio standard will be modeled. Coal unit retirement levels will be modeled using the highest MISO EPA Impact Analysis Study projections.”

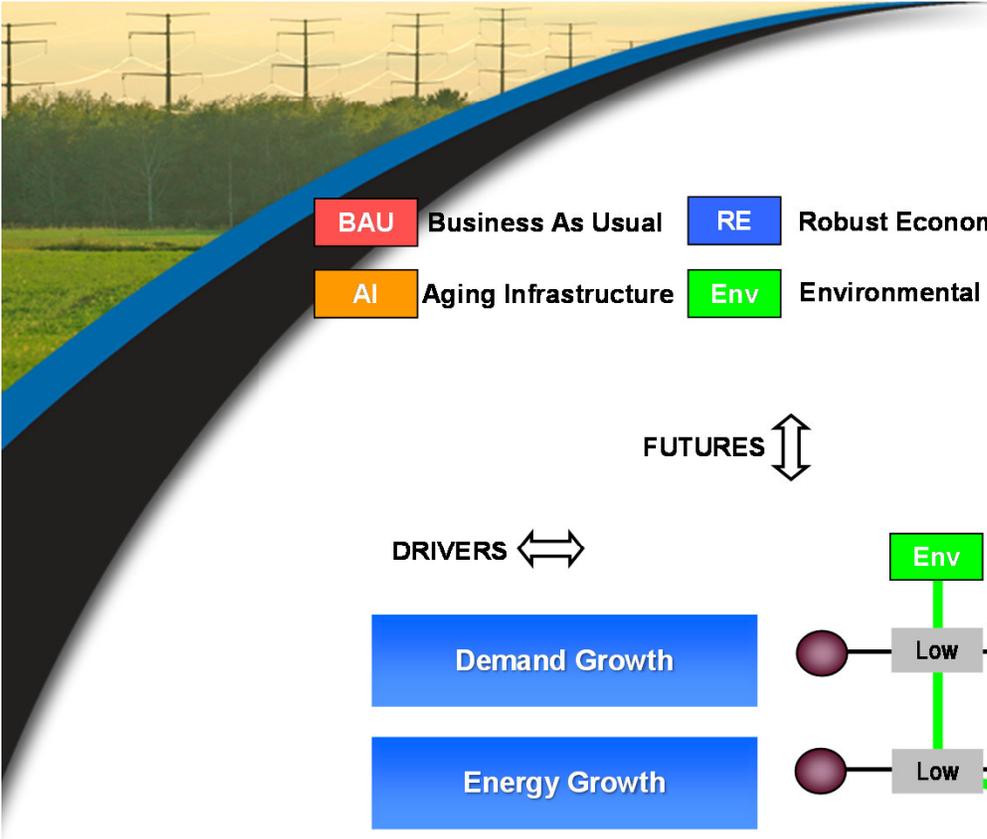
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Summary of Initial MISO Proposal

Future	Demand and Energy Growth	Retirements	Natural Gas Price	Renewable Portfolio Standards
Business as Usual	Mid	Low	Low	State Mandates
Robust Economy	High	Low	Mid	Elevated State Mandates and Goals
Aging Infrastructure	Mid	Mid	High	State Mandates
Environmental	Low	High	Mid	Federal Mandate

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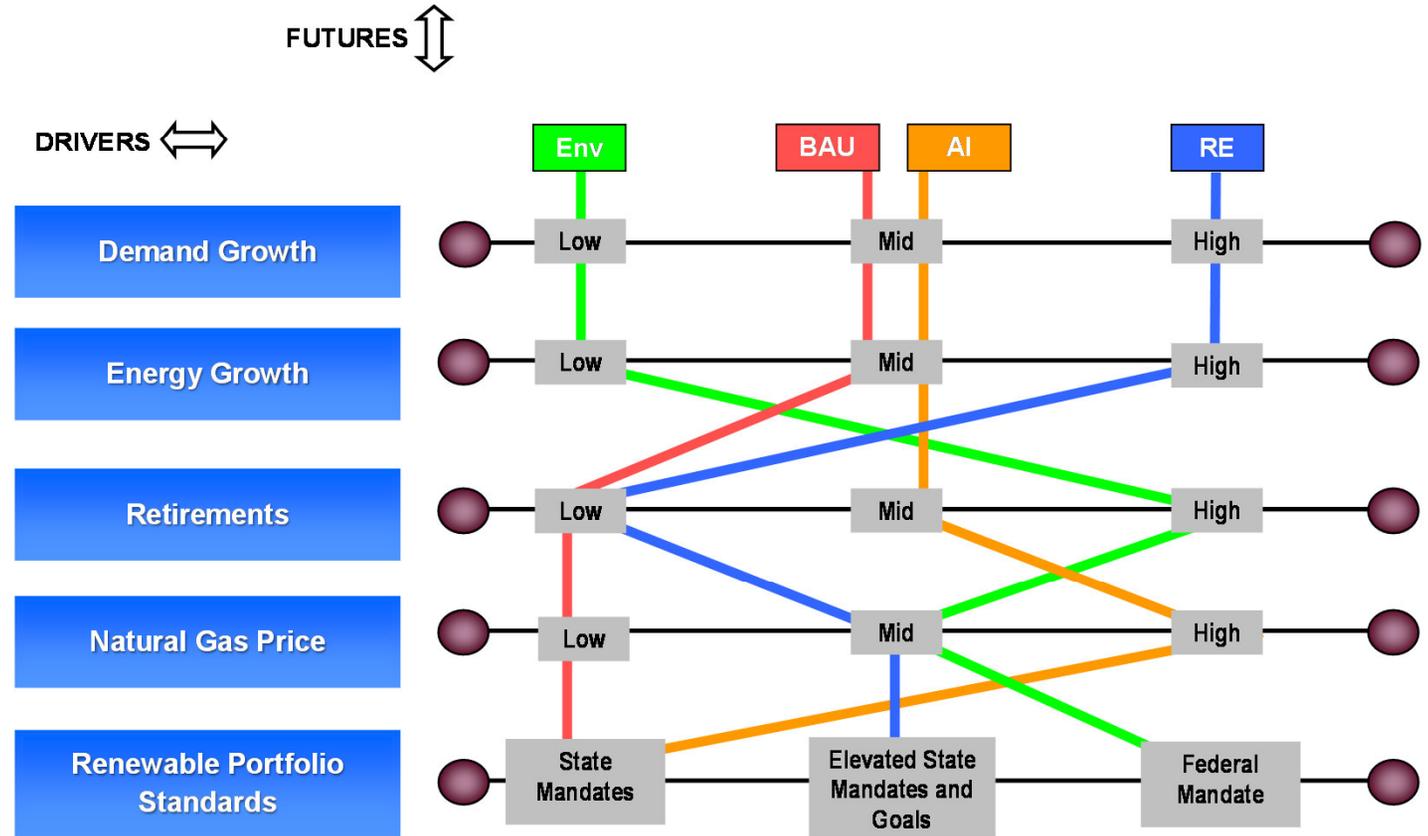


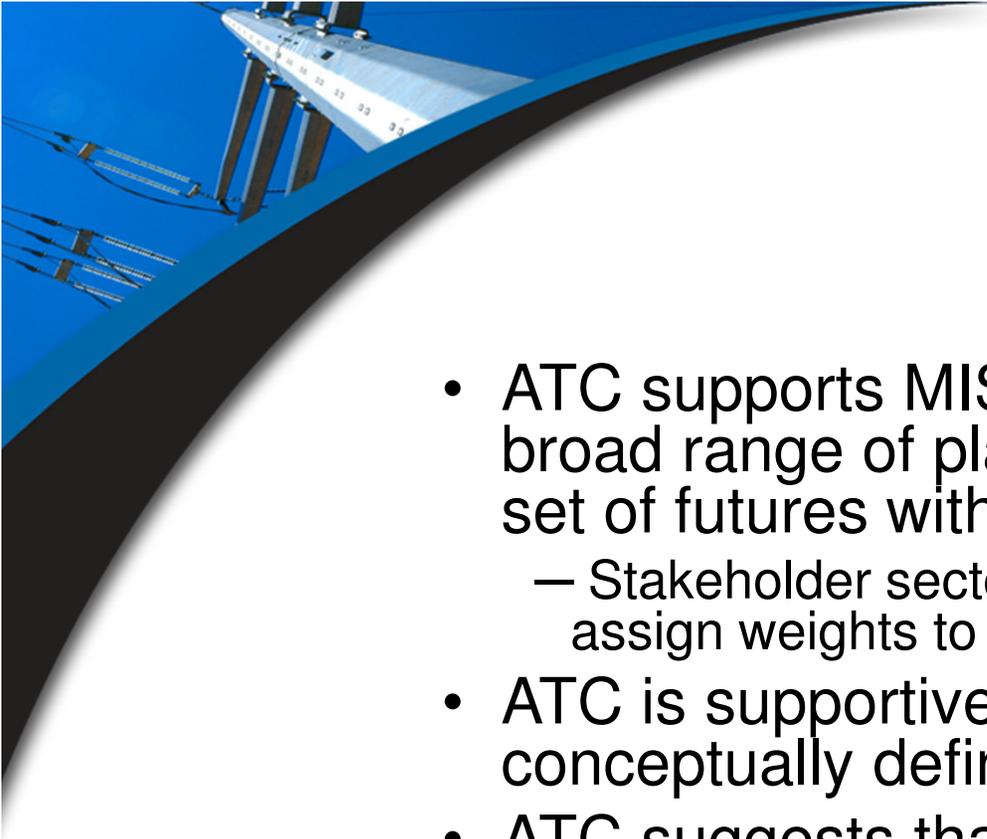
BAU Business As Usual
 RE Robust Economy
AI Aging Infrastructure
 Env Environmental

PRELIMINARY

MISO MTEP 13

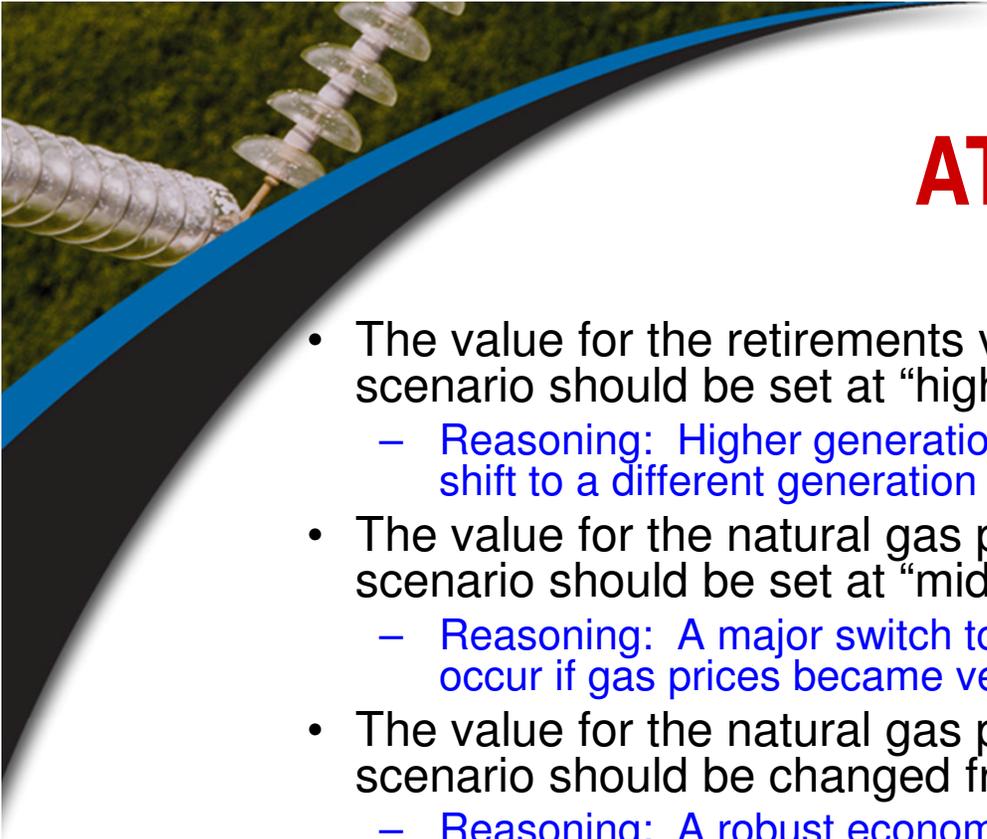
Futures





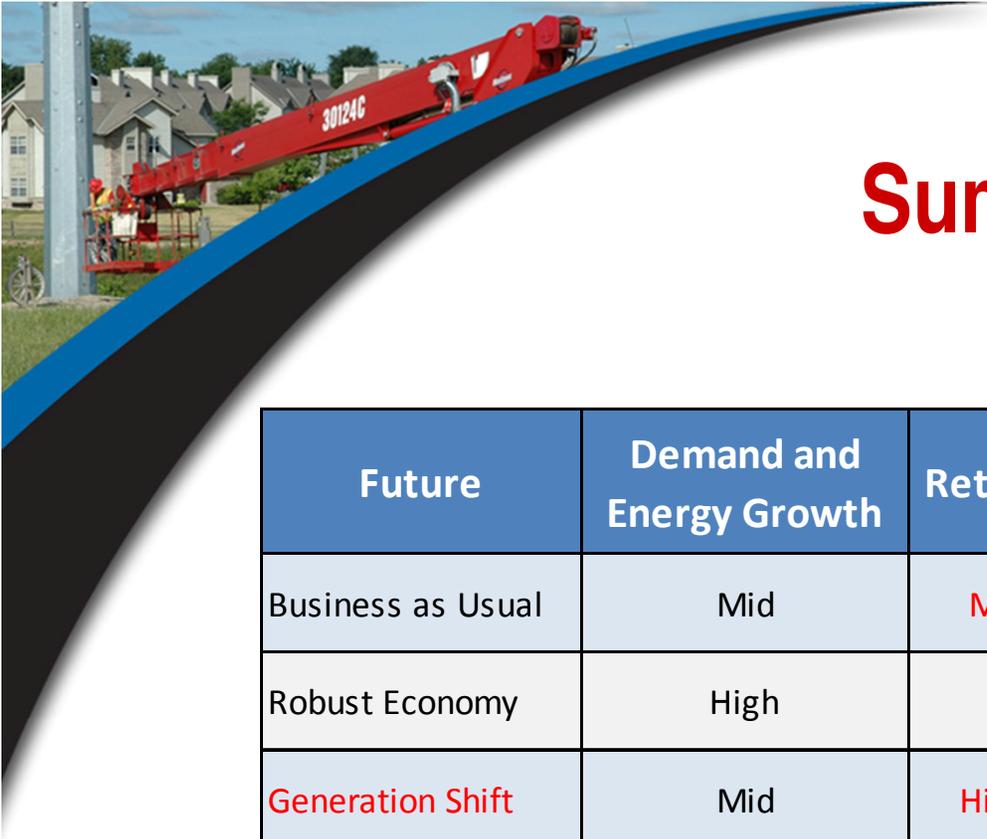
ATC Comments

- ATC supports MISO's intention to develop a broad range of plausible futures, rather than a set of futures with little variation
 - Stakeholder sectors will still have the opportunity to assign weights to each of the scenarios
- ATC is supportive of the four scenarios as conceptually defined in the narratives
- ATC suggests that the name of the “Aging Infrastructure” scenario be changed to “Generation Shift.”
- ATC suggests several changes to the variable ranges used in each future to be more consistent with the future narratives



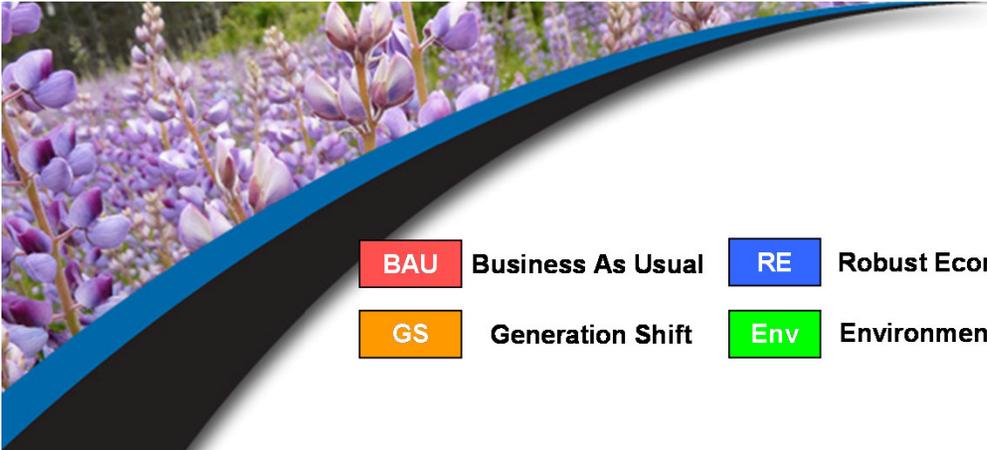
ATC Suggested Changes

- The value for the retirements variable for the “Generation Shift” scenario should be set at “high” rather than “mid”.
 - Reasoning: Higher generation retirement would be expected if there is a shift to a different generation mix.
- The value for the natural gas price variable for the “Generation Shift” scenario should be set at “mid” rather than “High”.
 - Reasoning: A major switch to more natural gas fired generation would not occur if gas prices became very high
- The value for the natural gas price variable for the “Robust Economy” scenario should be changed from “mid” to “high.”
 - Reasoning: A robust economy would put upward pressure on gas prices due to increased consumption from gas-fired generation and industry.
- The value for the natural gas price variable for the “Environmental” scenario should be changed from “mid” to “high.”
 - Reasoning: Upward pressure on gas prices due to increased reliance on natural gas generation in response to increase EPA regulations including a carbon tax.
- The generation retirements variable for the Business as Usual scenario should be moved from “low” to “mid” to reflect the status quo.



Summary of ATC Proposal

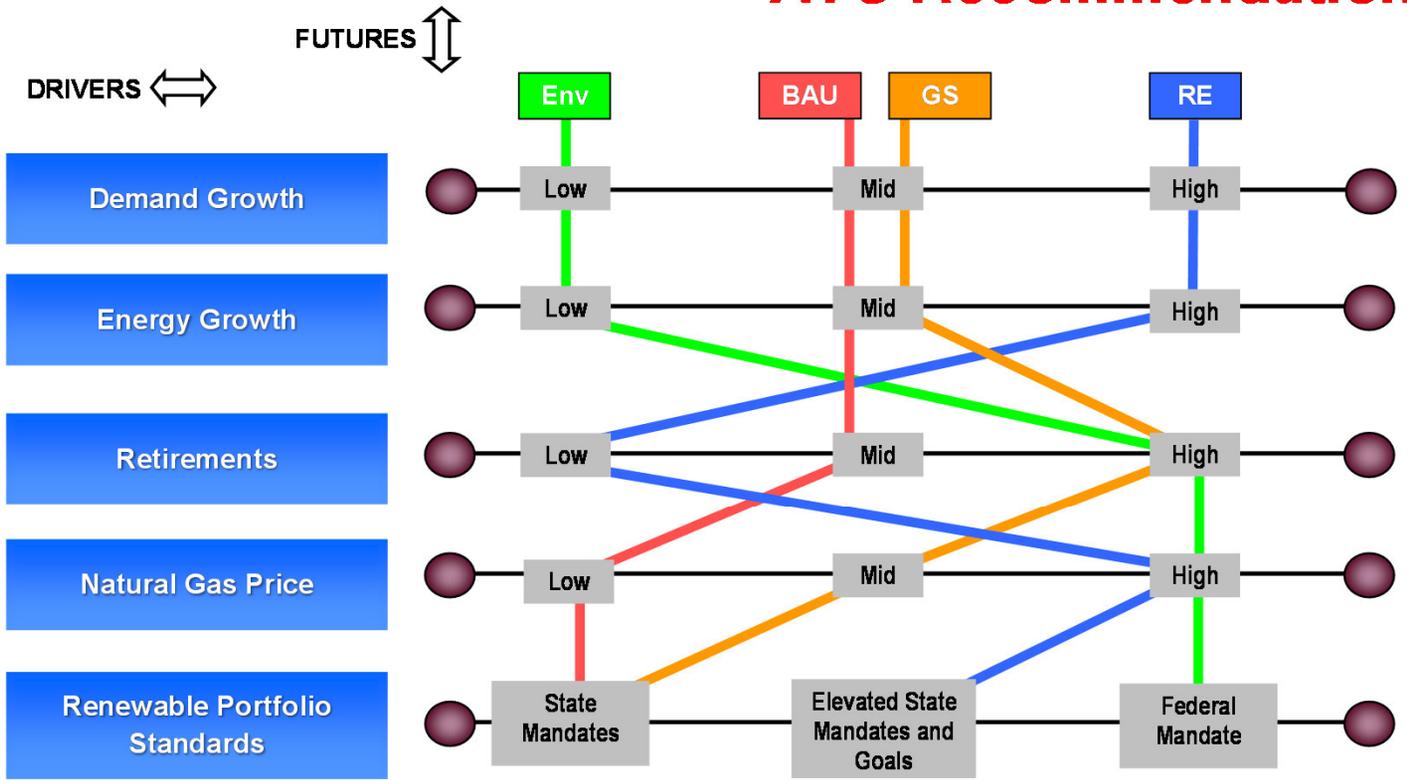
Future	Demand and Energy Growth	Retirements	Natural Gas Price	Renewable Portfolio Standards
Business as Usual	Mid	Mid (<i>low</i>)	Low	State Mandates
Robust Economy	High	Low	High (<i>Mid</i>)	Elevated State Mandates and Goals
Generation Shift	Mid	High (<i>Mid</i>)	Mid (<i>High</i>)	State Mandates
Environmental	Low	High	High (<i>Mid</i>)	Federal Mandate

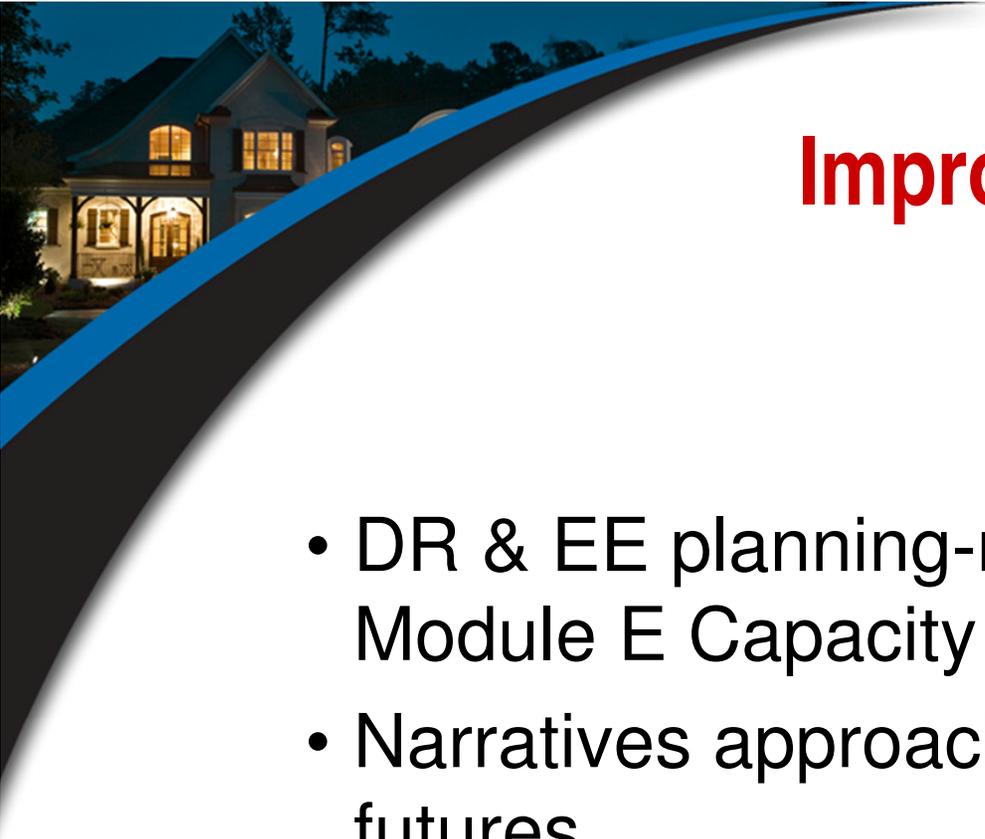


BAU Business As Usual RE Robust Economy
GS Generation Shift Env Environmental

PRELIMINARY MISO MTEP 13 Futures

ATC Recommendation





Improvements Since MTEP12

- DR & EE planning-related enhancements in Module E Capacity Tracking Tool
- Narratives approach to defining MTEP futures
- Scenario weighting methodology

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A decorative graphic in the top-left corner features a white wind turbine against a blue sky, partially obscured by a thick, curved black and blue swoosh that sweeps across the slide.

Next Steps

- MISO to receive feedback from stakeholders on proposed futures narratives and scenario weighting survey
- Quantify uncertainty variables
- Populate proposed futures matrix
- Upcoming Planning Advisory Committee (PAC) Meetings
 - November 28th (8:00 AM - 3:00 PM Central)
 - December 19th (8:00 AM - 3:00 PM Central)

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Questions?

ATC Economic Planning

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