



MISO IMM Comments on LRTP Tranche 2 Benefit Metrics

MISO Independent Market Monitor

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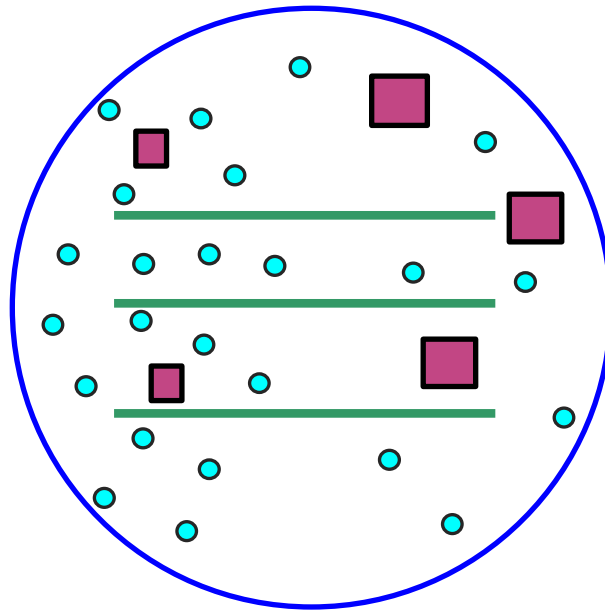
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Comments on Analysis of Transmission Benefits

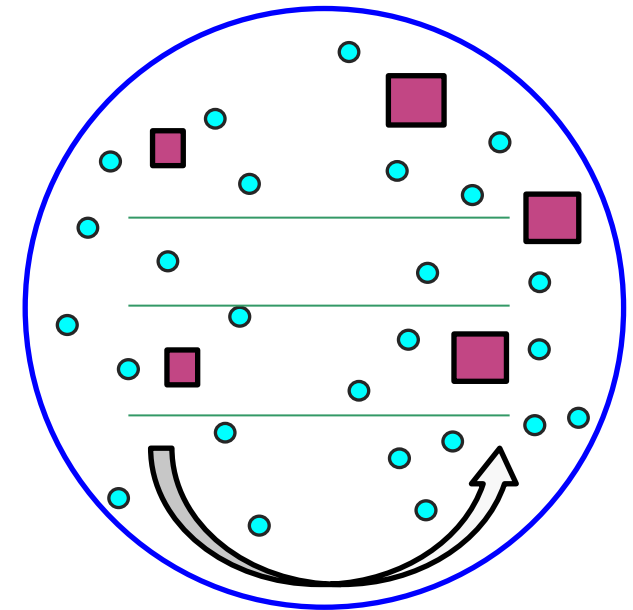
- Transmission investment will be a critical component of MISO's evolution over the next 20 years.
- It is important that this investment be economic –
 - ✓ Uneconomic investment will raise costs and undermine investment in resources, storage and other alternatives to transmission.
 - ✓ We have previously expressed concerns about the unrealistic nature of Future 2A growth assumptions.
 - ✓ MISO has chosen not to attempt manual optimization (evaluating alternative siting impacts on individual projects or to resolve overloads).
 - ✓ The benefits methodologies are likely to lead to substantially over-estimated benefits, which we describe in this presentation.
- One of our primary concerns is related to the fact that the effects of MISO's markets are not properly recognized as illustrated below.

Recognizing the Market Effects in the Benefit Analyses

With Tranche 2



Without Tranche 2



- One of MISO's main responsibilities is to operate markets that provide key economic signals to guide generation investment and retirement decisions.
- Benefit analyses must recognize that new transmission will change energy and capacity market signals – less transmission will shift resources closer to load.
- This will reduce or eliminate many of the benefits (e.g., capacity savings and reduced losses).

Classes of Transmission Benefits

- MISO has proposed 9 classes of transmission benefits.
- Classes that are likely to be valid and reasonable, depending on the details:
 - ✓ Congestion and fuel costs savings
 - ✓ Reduced transmission outage costs
- Classes for which we have significant or fundamental concerns:
 - ✓ Avoided capacity costs
 - ✓ Decarbonization
 - ✓ Mitigation of reliability issues
- Classes that are may be overestimated depending on the methodology
 - ✓ Capacity savings from reduced losses
 - ✓ Energy savings from reduced losses
 - ✓ Avoided transmission investments
 - ✓ Reduced risks from extreme weather events
- This presentation discusses our comments on each class of benefits.

Congestion and Fuel Costs Savings

- This class of benefits is the most valid and represents the truest measure of the economic benefits of transmission
- **Concerns:** Although it is the most valid, it depends heavily on the input used to ensure the savings are accurate. Some factors that would tend to reduce these benefits may not be included in MISO's methodology.
- **Recommendations:**
 - ✓ Develop a reference case that modifies siting assumptions to simulate market responses without Tranche 2. Siting would locate new additions inside of congested areas (closer to load, in capacity import limited areas, at raise help locations).
 - ✓ Include the effects of AARs on the existing network facilities.
 - ✓ Model the contribution of storage in reducing peak transmission flows and congestion since mitigating congestion is a significant component of the business case for storage.

Reduced Transmission Outage Costs

- **Comment:**
 - ✓ This benefit is a potentially valid class of benefits since the base production costs savings would not tend to include transmission outages that are experienced regularly.
 - ✓ However, the magnitude of this estimated benefit is highly uncertain.
- **Recommendation:**
 - ✓ MISO should adopt a conservative approach to estimating this benefit that reflects the historical effects of outages.

Avoided Capacity Cost

- **Concern:** There is little basis to assume that transmission will affect MISO's capacity requirements.
- The extent to which resources are deliverable *will* affect the amount of capacity needed, but the markets provide incentives to be deliverable.
- However, the MISO methodology:
 - a. Creates a base case with sufficient generation to meet 1-in-10 on a copper sheet, but the generation is not deliverable.
 - b. Adding in the network makes it appear that more capacity is needed to meet 1-in-10 since the assumed generation is not fully deliverable.
 - c. Tranche 2 makes the generation much more deliverable so capacity needs are lower than in (b).
- This is not a valid benefit because, absent the transmission, markets will motivate/require generation in deliverable locations closer to load.
- **Recommendation:** i. Eliminate this benefit or ii. Develop alternative case with modified siting assumptions and calculate cost of *moving* resources.

Decarbonization

- **Concern:** The congestion and fuel savings include the PTC values, which fully reflects the value of decarbonization, so calculating an additional benefit is double counting.
 - ✓ The PTC is the most reasonable benchmark for the value of carbon since it is law and represents what the government will actually pay.
 - ✓ The PTC corresponds to a carbon value of ~\$50/ton. The Biden administration's value of carbon is \$51/ton, which is being litigated.
 - ✓ EPA has proposed almost a 4-fold increase, almost all of which is based on lowering the discount rate from 3% to 2% percent based on falling interest rates up to 2021. Rates have been rising since then to > 4%.
 - ✓ MISO has no basis to impose a cost higher than the PTC on its customers when there is no consensus that the PTC undervalues carbon.
- **Recommendation:** Eliminate this benefit class as it is already captured in the production cost savings.

Mitigation of Reliability Issues

- **Concerns:**

- ✓ Quantifying this benefit by assuming MISO will shed load to address voltage or other issues (without Tranche 2) is not realistic.
- ✓ In reality, these issues are addressed by thermal proxies, reconfigurations, or by investments in other equipment that would be much less expensive than load shedding.

- **Recommendation:**

- ✓ Eliminate this class of benefits; or
- ✓ Quantify cost based on the next operating action to address the issues if transmission is not built (not load shedding):
 - Congestion from modeling a thermal proxy; or
 - The costs of equipment to address the issues (e.g., voltage support).

Capacity and Energy Savings from Reduced Losses

- **Concern:**

- ✓ In principle we agree that new higher voltage transmission will reduce losses;
- ✓ BUT, the loss reductions should reflect the fact that resources will relocate closer to load without the Tranche 2 projects.

- **Recommendations:**

- ✓ Develop alternative reference case that modifies siting assumptions to reflect market responses without the portfolio.
- ✓ Siting would locate new additions closer to load, in capacity import limited areas, and at raise help locations.

Avoided Transmission Investment

- **Concerns:**

- ✓ Avoided transmission maintenance/replacement could be a valid benefit.
- ✓ Avoided transmission investment that is hypothetically needed to address congestion would be inappropriate unless:
 - Avoided benefits are quantified and deducted from the avoided capital costs.

- **Recommendation:**

- ✓ Include only maintenance/replacement projects (age and condition) that would be avoided.

Reduced Risks from Extreme Weather Events

- **Concern:**

- ✓ This is one of the most uncertain and speculative benefits.
- ✓ Each of the extreme weather events have resulted in extremely different patterns of flows so it is difficult to predict how transmission would help.
- ✓ The benefits should be small because the probability of extreme weather events are low.

- **Recommendation:**

- ✓ MISO should ensure that it does not implicitly increase the probability of extreme weather events in calculating the benefits.
- ✓ $\text{Benefit} = \text{Potential Savings during Event} * \text{Probability of Event}$.

Other Comments on Benefit Estimates

- We have additional recommendations to improve the benefit estimates.
- Divide the portfolio into groupings of projects that address separate issues to validate that each grouping passes a benefit-cost test.
 - ✓ Assessing the entire portfolio together would not allow MISO to pair it down so that it only includes the economic groupings.
- Adopt a sensitivity case similar to IMM-2A, which has more dispatchable/storage/hybrid resources than MISO's Future 1A.
 - ✓ Although Future 1A has substantially less intermittent renewables, it also understates the likely quantity of dispatchable resources that are key for managing congestion.
- Consider improving a) the siting of resources based on the location of congestion, and b) the modeling of battery storage to resolve congestion.
 - ✓ MISO should examine whether the congestion identified in reference case can be more economically be managed with storage to verify the robustness of the business case.