UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

North Dakota Public Service Commission	)	
Montana Public Service Commission	)	
Arkansas Public Service Commission	)	
Mississippi Public Service Commission	)	
Louisiana Public Service Commission	)	
Complainants,	)	**Docket No. EL25-109-000**
	)	
v.	)	
	)	
Midcontinent Independent System Operator, Inc.,	)	
Respondent	)	

MOTION TO INTERVENE AND COMMENTS OF
THE MISO INDEPENDENT MARKET MONITOR

Pursuant to Rules 212 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"), 18 C.F.R. §§ 385.212 and 214 (2018), Potomac Economics, Ltd. respectfully moves to intervene in the above-captioned proceedings concerning the July 30, 2025 complaint by the Public Service Commissions of North Dakota, Montana, Arkansas, Mississippi, and Louisiana ("the Concerned Commissions") against the Midcontinent Independent System Operator, Inc. ("MISO") in which they assert that MISO violated the MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff (Tariff).[1] They argue that MISO miscalculated the benefits and inappropriately approved $22 billion in transmission projects ("Tranche 2.1") as Multi-Value Projects.

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[1] *North Dakota Pub. Serv. Comm'n v. Midcontinent Indep. Sys. Operator, Inc.*, Complaint of the Concerned Commissions and Requests for Expedited Action and Fast Track Processing, Docket No. EL25-109-000 (July 30, 2025) ("Complaint").

Potomac Economics is the Independent Market Monitor ("IMM") for MISO and respectfully submits this Motion to Intervene to address issues raised by the Concerned Commissions in their Complaint.

I. NOTICE AND COMMUNICATIONS

All correspondence and communications in this matter should be addressed to:

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II. MOTION TO INTERVENE

Potomac Economics is the Independent Market Monitor for MISO. In this role, we are responsible for monitoring and evaluating the performance of MISO's energy and ancillary services markets. We also are responsible for recommending market design changes to improve the performance of the markets and evaluating design changes proposed by MISO or market participants. Potomac Economics has a direct interest in this proceeding that cannot be adequately represented by any other party. Good cause also exists to permit Potomac Economics' motion to intervene as it has a significant interest in this proceeding.

III. BACKGROUND

Transmission investment will be a critical component of MISO's evolution over the next 20 years. It is, therefore, vitally important that this investment be economic. Uneconomic investment will raise costs – we estimate that Tranche 2.1 will cost each family in the Midwest more than $2500 in present value terms. More importantly, uneconomic transmission investment is likely to undermine efficient investment in generation and storage resources that can address some of MISO's transmission congestion needs at a much lower cost to MISO's customers. It is this adverse effect on the markets' ability to facilitate efficient investment in generating resources that caused Potomac Economics, as the IMM for MISO, to evaluate MISO transmission planning processes and results. The Commission validated that this monitoring and evaluation is an important component of the IMM's scope as market monitor in July 2025.[2]

The IMM's evaluation of MISO's Tranche 2.1 benefit cost analysis revealed flaws in MISO's processes and supporting analyses and ultimately demonstrated that the likely benefits of Tranche 2.1 are far below the costs as argued by Dr. Hogan and the Concerned Commissions.[3] The Complaint is supported by Dr. Hogan independent assessment of MISO's benefit analyses, which is consistent with the IMM's evaluation. As Dr. Hogan's assessment is the basis for the Complaint, we find the arguments made in the Complaint to generally be sound and accurate. In these comments, we describe our evaluation of MISO's transmission planning results and the extent to which they support the arguments made in the Complaint.

MISO's transmission planning process includes the following steps:

1. MISO develops its forecasted "Futures" scenarios for future load growth and resource development used to estimate the transmission needs MISO may encounter in the future.
2. It then develops assumptions regarding where resources in the future will be located.
3. MISO uses these assumptions to identify where transmission congestion and reliability issues may arise
4. It develops a portfolio of transmission projects that address its identified transmission needs and quantifies its costs
5. MISO then develops a "business case" by calculating an array of benefits the transmission projects may generate. Since the benefits are inherently uncertain and

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2 *Midcontinent Independent System Operator, Inc.*, Order on Petition for Declaratory Order, 192 F.E.R.C. ¶ 61,055, (2025).

3 See Testimony of William Hogan at p. 39.

the costs more certain (and tend to rise before completions), the benefit-cost ratio of long-range transmission should be well above 1.0.

Our evaluation of MISO's Futures that were the basis of Tranche 2.1 began in 2023 and continued through the analysis of the benefits of Tranche 2.1 in late 2024. This evaluation supports the concerns raised in this Complaint. In summary, we found that:

- MISO's Future 2A that is the basis for the Tranche 2.1 transmission proposal does not accurately reflect its members plans and likely significantly overstates MISO's future transmission needs;
- Reasonably calculated, the benefits of the Tranche 2.1 projects are likely well below its costs even if one accepts the Future 2A scenario.
- Because reasonably calculated results do not indicate that Tranche 2.1 is economic, its implementation will undermine the market incentives for participants to invest in lower-cost resources and transmission upgrades that would be more efficient and lower MISO's long-term costs.

While these findings support the requested relief in the Complaint to reclassify Tranche 2.1 to no longer be deemed Multi-Value Projects (MVPs), this may not address our concerns regarding the adverse market effects of Tranche 2.1. Therefore, we respectfully recommend that the Commission Order MISO to revise Tranche 2.1 based on an updated Futures scenario and improved benefits assessment. To address future LRTP tranches, we support the request in the Complaint for the Commission order a modification to the MISO tariff to require that future business cases be filed and approved by the Commission.

Our comments below provide a detailed discussion of these issues and comment on the relief requested by the Concerned Commissions in this Complaint.

IV. SUMMARY OF THE IMM EVALUATION OF MISO LRTP RESULTS

A. MISO's Future 2A is Not Realistic and Does Not Reflect its Members' Plans

We generally agree with the concerns raised in the Complaint regarding MISO's benefit analyses. These concerns are heightened when one considers that the benefits are calculated based on Future 2A, which is not a realistic forecast of future resource development in MISO. Dr. Hogan discusses significant flaws in the Future 2A scenario.[4] These flaws likely increased the perceived long-term transmission needs in MISO, causing MISO to propose projects to address needs that may never materialize.

As an initial step in the transmission planning process, MISO establishes the long-term future forecast of generating resources and loads. Scenarios with different types of resources, even if they are located in the same locations, can substantially affect transmission flows and the perceived transmission needs of the system. In particular, intermittent renewable resources create different and generally larger transmission needs than dispatchable resources for at least three reasons:

- The output of these resources tend to be highly correlated;
- The resources have been developed in geographically concentrated areas, particularly the wind resources;
- Intermittent resources can only reduce output when needed manage congestion and they are generally very costly to curtail.

For these reasons, developing a Future with an excessive amount of intermittent renewables and underestimating the quantity of dispatchable storage and conventional resources will generally inflate the transmission needs of the system. The figure below illustrates the difference in transmission needs and congestion that can arise in different futures. The first

4 Id. at p. 16.

illustration depicts a system with a large quantity of remotely cited intermittent renewable resources. When the output of these resources peaks, it loads the transmission paths between location A and B in this illustration, resulting in transmission overloads. This illustration is consistent with MISO's Future 2A that is the basis for Tranche 2.1.

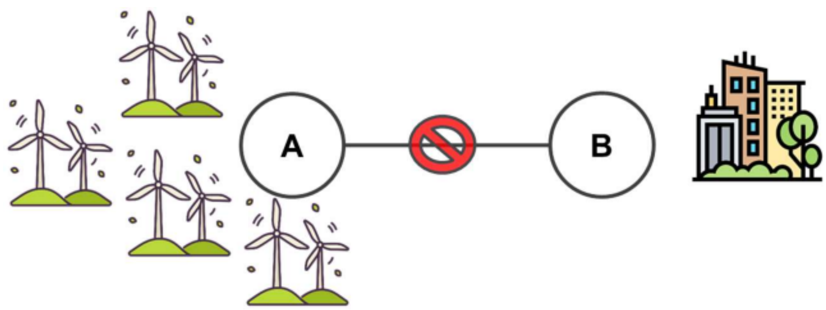
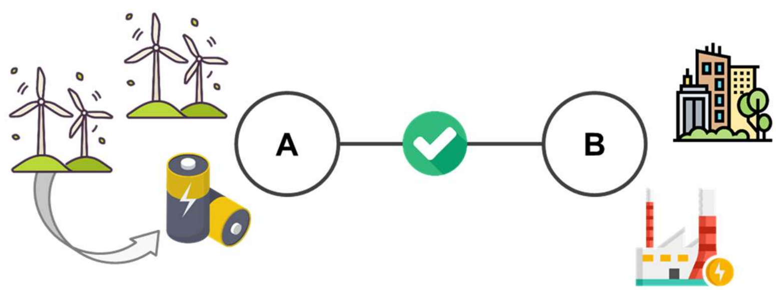


Illustration B depicts a more realistic view of MISO's future system, which is likely to include a much heavier reliance on storage resources and dispatchable generation than is included in Future 2A.



This illustration shows a scenario that would produce substantially lower transmission flows and associated congestion between A and B because of: (i) lower quantities of intermittent renewable resources, (ii) greater quantities of storage resources that can charge when the renewable resource output peaks to take the loading off of the transmission system, and (iii) the presence of dispatchable resources whose output can be adjusted up and down by MISO to reduce the transmission flows and manage congestion.

This difference between these types of Future scenarios is significant because our evaluation found that the latter scenario is more consistent with the plans of MISO's members.

Additionally, such a scenario will satisfy all of MISO's reliability needs at a much lower cost than Future 2A while still allowing the states to achieve their carbon goals.

We established this finding when we evaluated MISO's Future 2A in detail and the capacity expansion model MISO used to produce it. MISO started with the member utilities' plans regarding the resources they plan to build in the coming years. MISO then used a capacity expansion model, EGEAS, to determine additional resources that will be built over the long term. Unfortunately, EGEAS (i) predicted an excessive amount of intermittent renewable resources will be built and (ii) understated investment in dispatchable and storage resources. This occurred because of the following flaws in the model and the input assumptions MISO used:

- EGEAS simply minimizes the costs of meeting MISO's carbon and reliability objectives rather than building the most economic and profitable resources as one would expect to be built in a market. After MISO included the production and investment tax credits included in the Inflation Reduction Act as cost-reducers, the model forecasted that virtually all new resources would be intermittent renewables. In the real world, the energy, ancillary services, and capacity revenues for energy storage and dispatchable resources will likely make them extremely profitable to build in the future, which is not perceived by the cost-minimization objective of the EGEAS model.
- MISO assumed capacity accreditation values for intermittent renewables that were inflated and that do not fall as more resources are assumed to be built, which was inconsistent with the marginal capacity accreditation framework that MISO had proposed and that has now been approved by the Commission.
- MISO modeled a system-wide carbon constraint that was inconsistent with the carbon policies and targets of its states and members. Modeling this constraint restricted the model's ability to properly forecast that generators will invest in dispatchable conventional resources in states with no carbon legislation or targets. MISO's capacity and energy markets will provide strong incentives to invest in such resources, which we see reflected in MISO's interconnection queue.

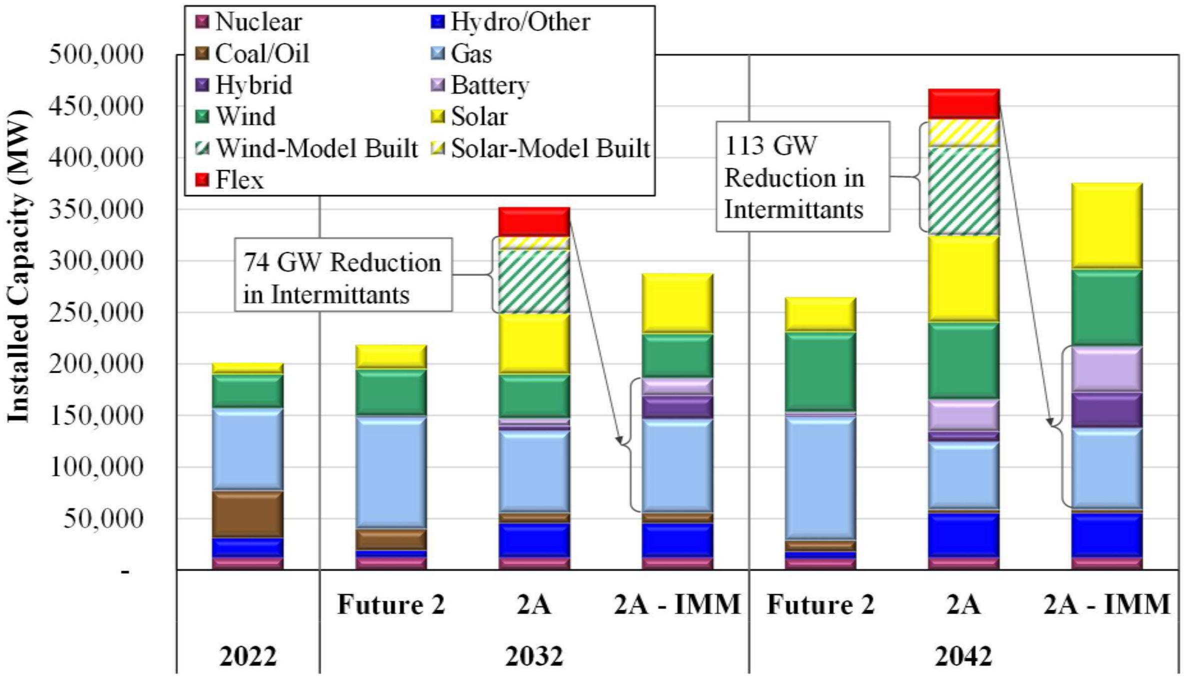
These issues caused EGEAS to forecast that nearly all new model-built resources will be intermittent renewable resources and virtually no new conventional dispatchable resources. The fact that the EGEAS model did not recognize the attributes and reliability value of different types of resources caused it to forecast a portfolio that would not satisfy MISO's energy adequacy needs. Therefore, after MISO developed the capacity expansion plan, it added 30 GW of "Flex" resources that are non-emitting dispatchable resources.

The fact that the Flex resources were added *after* the capacity expansion model ran and attempted to optimize the investment in new resource invalidates the results of the model. A valid analysis would require that MISO iterate to add the Flex resources as an input to the model and then re-run EGEAS to determine a new quantity of model built resources. We believe this would have reduced the forecasted intermittent resources by a quantity much larger than the quantity of Flex resources since the capacity availability and reliability value of dispatchable Flex resources would be much higher than the intermittent resources.

B. A More Realistic Future 2A Would Be More Consistent with the Members' Plans

To estimate the corrections in Future 2A that would address these issue, we estimated the quantity of intermittent resources that would be displaced by the addition of the dispatchable flexible resources that will be needed to meet MISO's energy adequacy needs. The difference in our case is that we assume the "flex resources" will be a blend of storage, hybrid renewables, and new natural gas resources. This is consistent with MISO members' Integrated Resource Plan's (IRPs) and the resources that already exist in MISO's interconnection queue. Our replacement methodology determined the quantity of dispatchable "flex" resources necessary to provide the same amount of accredited capacity as MISO assumed would be provided by the intermittent resources and sufficient to eliminate MISO's need for its assumed Flex Resources.

As shown in the figure below, we estimate that building dispatchable resources to meet MISO's reliability and energy adequacy needs would displace 113 GW of intermittent renewable resources and reduce the costs of Future 2A by $92 billion.



Importantly, the IMM's modification of Future 2A would satisfy all of the States' and member utilities carbon goals by 2042, as well as the energy adequacy needs of the MISO system. The IMM Future 2A portfolio is also much better aligned with the generation in MISO's interconnection queue and the IRPs of MISO's members.

For example, MISO recently implemented an Expedited Resource Addition Study (ERAS) process intended to accelerate the interconnection of resources needed for reliability. The initial proposals were accepted in August 2025 and total more than 26 GW of new resources. Of this total, 89 percent of the proposals are the types of dispatchable we predict in the IMM Future 2A alterative – 74 percent gas resources and 15 percent battery storage resources. On an accredited capacity basis (rather than installed capacity), this share would exceed 95 percent. Importantly, many of the natural gas-fired resources are proposed by member utilities that have carbon goals and/or in states that have carbon mandates. These ERAS proposals are summarized by state and generating technology in the table below.

Summary of Projects Proposed for Expedited Study

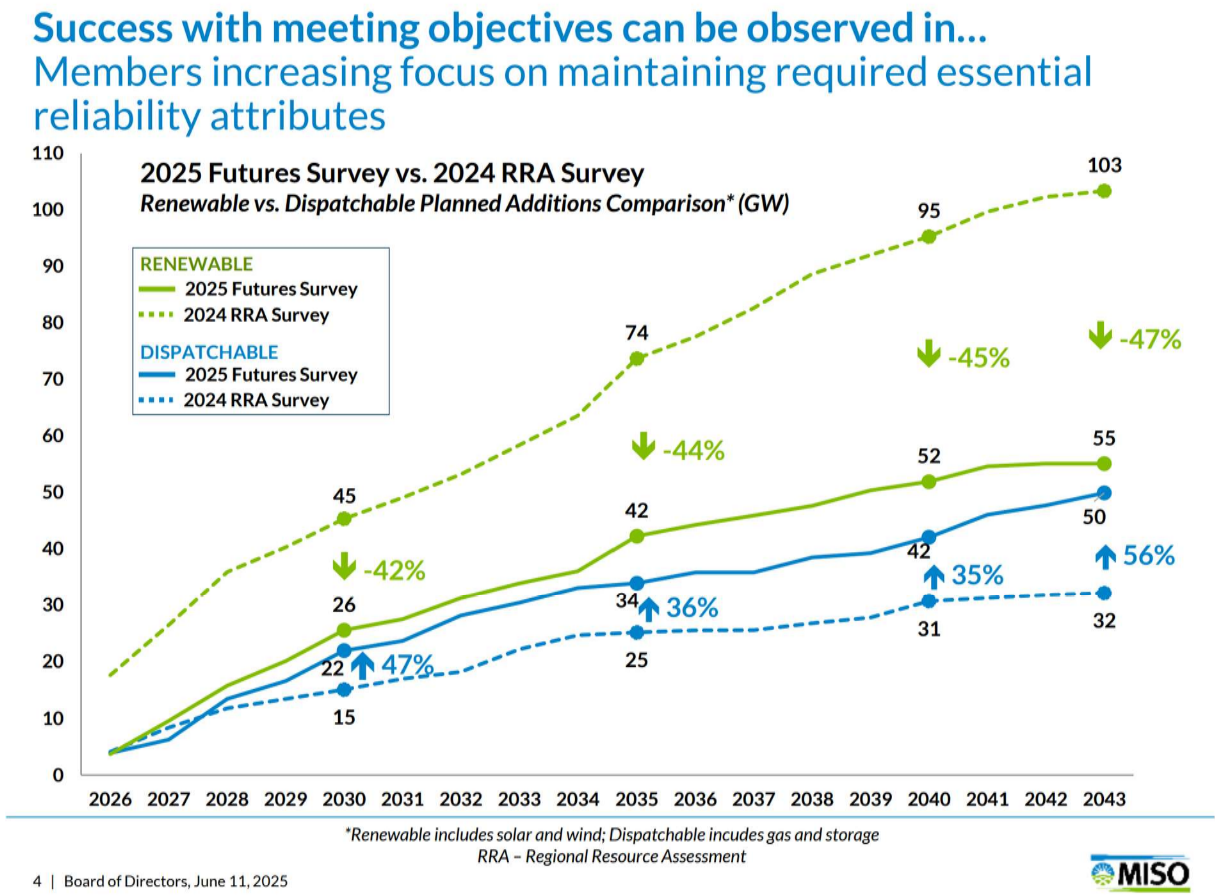
State	ERAS Projects (MW)	Share of Total (%)	State Shares by Technology Gas	Nuclear	Renewable	Storage
Iowa	3084	12%	66%	22%	12%	0%
Illinois	128	0%	0%	0%	100%	0%
Indiana	5564	21%	74%	0%	0%	26%
Louisiana	6376	24%	97%	0%	0%	3%
Michigan	1177	4%	0%	0%	33%	67%
Minnesota	2468	9%	33%	0%	16%	50%
Missouri	568	2%	0%	0%	55%	45%
Mississippi	1640	6%	100%	0%	0%	0%
North Dakota	659	2%	0%	0%	100%	0%
South Dakota	265	1%	100%	0%	0%	0%
Texas	1298	5%	100%	0%	0%	0%
Wisconsin	3323	13%	100%	0%	0%	0%
Total	**26550**		**74%**	**3%**	**8%**	**15%**

The substantial quantities of natural gas and storage resources proposed through the ERAS process is very important because their flexible, dispatchable characteristics make them valuable for managing transmission flows and congestion. Hence, MISO's transmission needs are likely to be substantially affected by the recognition of these resources.

In addition to this evidence from the ERAS process, the changes in members' IRPs over the past year after the approval of MISO's marginal accreditation framework by the Commission also validate our concerns with Future 2A. As the members have recognized that intermittent renewable resources will not satisfy MISO's reliability requirements over time, the IRPs have been revised substantially. These revisions were summarized in a figure produced by MISO to show the changes in the survey results of its members from 2024 to 2025 that reflects the changes in the members' IRPs.[5] This figure shows that the amount of planned renewable resources has

5 Board of Directors: MISO Strategy Update, June 11, 2025.

fallen by 47 percent by 2043 and the amount of planned new gas resources has increased by 56 percent in the same timeframe.



Maybe even more compelling than the changes in the IRPs is the vast difference between these values and the quantities MISO projects in its Future 2A. MISO's Future 2A shows 235 GW of new renewable resources by 2042 compared to just 55 GW currently in the members' plans. Likewise, MISO's Future 2A shows 23 GW of new gas resources compared to its members' 50 GW by 2043.

C. The Flaws with MISO's Future 2A are Critical Because Future 2A Determines MISO's Transmission Needs and the Benefits of Tranche 2.1

The stark differences outlined above between MISO's Future 2A and a more realistic alternative to Future 2A would likely substantially affect MISO's transmission needs and the projects needed to address those needs. Although the Complaint did not focus on the shortcomings of Future 2A, using Future 2A to evaluate the benefits of Tranche 2.1 would likely greatly increase the perceived benefits of the proposed transmission projects. With considerably less intermittent renewables loading the transmission system during hours of high output and many more dispatchable resources available to manage the system flows, the need for and benefits of new transmission investment would likely be far lower. Therefore, we have always advocated that reforming Tranche 2.1 based on an improved version of Future 2A is necessary to ultimately correct the shortcomings in Tranche 2.1.

V. COMMENTS ON THE BENEFIT ANALYSIS SUPPORTING TRANCHE 2.1

A. Fundamental Problem with MISO's Benefit Analyses

As Dr. Hogan describes in his testimony, one of the most pervasive issues with MISO's cost-benefit analyses is that it fails to adopt the fundamental approach that should be used in all cost benefit analyses: to quantify the costs and benefits of the outcomes *with* and *without* the actions being studied.[6] MISO departs from this fundamental approach by not developing a base case future scenario without Tranche 2.1. Specifically, MISO does not recognize that the transmission investments in Tranche 2.1 will affect the resources that enter in the Midwest and where they are located. MISO has developed a single Reference Case, including siting assumptions that are based on an exogenous methodology (existing sites and sites identified by stakeholders). In reality, resource entry and siting decisions will be substantially affected by the transmission investments because it will affect congestion pricing and local capacity requirements in the PRA.

To ignore these effects is a key oversight, particularly since one of MISO's fundamental roles is to operate markets designed to facilitate resource investments by MISO suppliers. Therefore, it is essential for MISO to have two generation siting cases:

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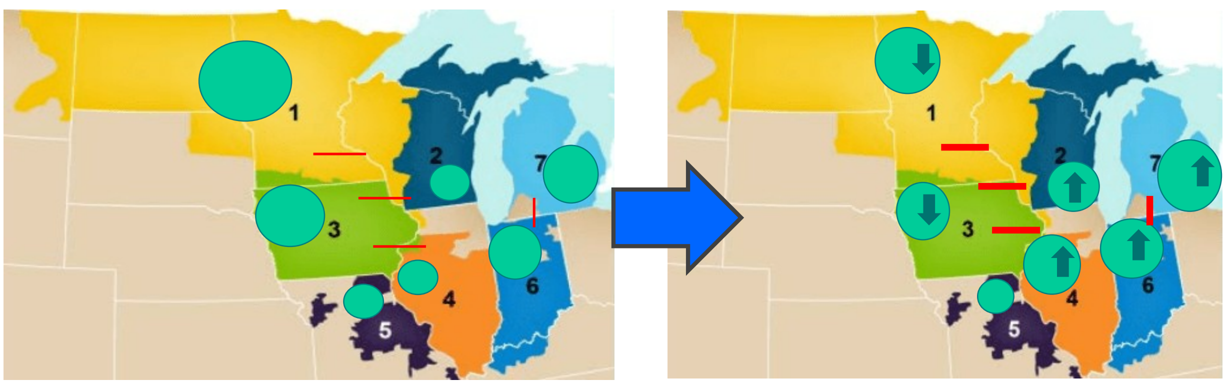
6 Id. at p. 6.

- A case *with* the Tranche 2.1 investments; and
- A case *without* the Tranche 2.1 investments.

The differences in resource entry and siting in these two cases must be estimated because they will affect MISO's transmission needs and congestion patterns. Therefore, the benefit estimates will not be accurate if MISO does not estimate the effects of the transmission investments on participants' resource investment and siting decisions. This is illustrated in the figure below where the green circles represent the quantity of new resources and the red lines represent the constraints (with the thickness indicating the severity of the constraints).

Transmission Case – With Tranche 2.1 **Base Case – Without Tranche 2.1**



This illustration shows why the benefit analyses must recognize that new transmission will change energy and capacity market signals – *because less transmission will shift resources closer to load*. The left illustration depicts the distribution of new resources under Future 2A, showing a larger share of resources located farther from load and utilizing the reinforced transmission network to deliver its energy output to the larger load centers. Assuming this fixed distribution of new resources under Future 2A leads to relatively large transmission benefits from Tranche 2.1 associated with reducing congestion, reducing transmission losses, reducing the need to build additional generation to replace capacity that is not deliverable, and mitigating reliability issues associated with transmission violations.

However, the distribution of new resources is not fixed and will be substantially affected by the change in market signals if Tranche 2.1 is not built as Dr. Hogan indicates in his testimony.

The right illustration shows how the location of resources is likely to change, as indicated by the green arrows and the changing size of the green circles. This illustration shows that the new resources will generally shift closer to load if less transmission is built. This will occur because both investment and retirement decisions will be affected by the change in market signals and capacity requirements. Importantly, this shift in resources will reduce or eliminate many of the benefits MISO estimated because it will reduce:

- The congestion and fuel cost savings by reducing congestion and renewable curtailments as resources shift from constrained locations to locations the relieve constraints;
- The two categories of transmission loss benefits as resources shift closer to load;
- The mitigation of reliability issues as resources shift to locations that will likely mitigate the transmission violations; and
- The avoided capacity costs as new resources shift to deliverable locations. This shift will reduce or eliminate the need to build additional resources.

The overstatement of benefits in the last two areas listed above are the largest by far so we describe the concerns in these two areas in the following subsections.

B. Avoided Capacity Benefits

MISO's avoided capacity cost benefit is based on an assertion that decreasing the levels of congestion will decrease the planning reserve margin requirements (PRMR) of the system to achieve the 1-in-10 LOLE level. Dr. Hogan discusses the issues with MISO's calculation of this class of benefits at length, which are consistent with the concerns we have raised previously and discuss in this subsection.[7]

[7] Id. at p. 14.

The reason it may appear that additional capacity is required by MISO's planning model is because new generation that is sited behind transmission constraints (i.e., resources that are not deliverable) will not be deployable when contingencies occur. Therefore, one could conclude that additional generation would be needed to meet the 1-in-10 reliability standard in the absence of Tranche 2.1. The cost of this additional generation is the avoided capacity benefit quantified by MISO. However, Dr. Hogan explains why this method of calculating benefits in this area will be substantially overstated.[8]

One critical issue cited by Dr. Hogan is that MISO implicitly assumes that the new generation would be sited in the same locations regardless of whether the Tranche 2.1 transmission projects are made. This is an unreasonable assumption because MISO's market incentives and resource adequacy requirements will compel resource investments to shift away from undeliverable locations toward deliverable locations. These incentives and requirements include:

- Energy and ancillary service prices that would include congestion, causing prices and market revenues to rise in deliverable locations and fall in undeliverable locations; and
- Local clearing requirements in the capacity market zones that would: increase capacity prices and revenues in deliverable zones that are tight and reduce capacity prices and revenues in undeliverable zones that are over-supplied.

Additionally, most members develop their integrated resource plans with the intention of meeting their resource adequacy requirements. Therefore, the effect of the differences in LCRs with and without Tranche 2.1 on members' IRPs must be estimated and considered. Ultimately, if MISO were to estimate the changing locational patterns of resource development in a reasonable manner, it would likely find that little or no additional resources are needed if Tranche 2.1 is not

[8] Id. at p. 14-27.

built. Although there may be costs associated with resources moving to more deliverable locations in the absence of Tranche 2.1, the costs of moving resources are likely to be an order of magnitude lower than the costs of building additional resources.

Importantly, these changes in resource investment and retirement will ensure that the resources needed to satisfy MISO's capacity needs remain deliverable and will prevent the PRMR from rising as MISO assumes. While some renewable resources would undoubtably be less deliverable without the transmission investments, these resources over time will supply a very small portion of MISO's capacity given that their capacity accreditation will be extremely low. Hence, we find no basis to believe that transmission investment will change the PRMR appreciably.

Even if one were to believe new resources may be needed, MISO's methodology substantially overstates the costs of any new resources by the same capacity expansion model (EGEAS) as it used to create Future 2A. The EGEAS model strongly prefers intermittent renewables because it does not accurately perceive the relative market and reliability value of renewables versus other technologies. After MISO estimates the additional MWs needed for reliability, its model chooses to meet 75 percent of this need with intermittent renewables (16.8 GW). This is problematic because these resources are being built to satisfy a reliability need but will provide almost no marginal reliability in the out years, which will be recognized by MISO's new capacity accreditation framework. The same reliability value can be provided by a combination of battery storage, hybrid renewables, and dispatchable resources totaling 5 to 6 GW and costing $13 billion less than MISO's assumed 23 GW of new resources.

C. Mitigation of Reliability Issues

MISO asserts that building the Tranche 2.1 transmission projects will address or mitigate local reliability issues. While this may be true, MISO proposes to quantify this benefit by assuming that these local reliability issues would result in load shedding absent the Tranche 2.1 projects and then estimating the costs of the load shedding as avoided costs. Because the value of lost load is very high, this methodology massively overvalues these issues because RTOs never manage such reliability issues by relying on frequent load shedding. Therefore, MISO is not quantifying a valid benefit since load-shedding would not happen without Tranche 2.1.

Dr. Hogan correctly asserts that in reality RTOs manage these types of voltage and local reliability issues by taking other short and long-term actions *to avoid* load shedding.[9] In particular, they are managed operationally through out-of-market commitments, modeling thermal proxy transmission constraints, or transmission reconfigurations. In the longer-term, RTOs manage such issues by investing in other transmission facilities and establishing locational capacity requirements to facilitate resource development that will address these types of reliability issues.

An example may help illustrate the flaw in MISO's analysis. Imagine that a person drives a car and his mechanic identifies a faulty component that could cause an accident resulting in serious injury to himself and others. Assume that the expected value of these injuries is $2 million and that the component would cost $700 to replace. Now, imagine that person is now considering buying a new car that costs $100,000 and doing a benefit-cost analysis of the new car, which would eliminate this risk. Is the benefit of buying the new car:

- $2 million because it eliminates this risk; OR
- $700 because it eliminates the need to make the repair?

The answer to this question depends on what the person would rationally do if he does not buy the new car. Clearly, a rational person would spend the $700 to repair the car so this avoided repair cost is the benefit of buying the new car. MISO's methodology would quantify this benefit

[9] Id. at p. 35.

at $2 million because it does not consider the alternative costs that it would incur to avoid the load shedding, i.e., the $700 repair in this example. Importantly, if this person deems the $2 million expected value of the risk to be the proper benefit, he could justify purchasing virtually any new car in the world regardless of its cost.

Hence, a proper benefit analysis would identify the actions that would be necessary in the base case (without Tranche 2.1) to address any potential reliability issues. The benefit could then be quantified based on the avoided cost of these actions. In this case, however, the avoided cost of these actions is already captured in other categories of benefits. For example, the shift in locational capacity requirements and resulting shift in new resource siting would already be captured in the avoided capacity cost category if it were calculated correctly. Likewise, the avoided transmission investment category would capture any necessary transmission upgrades that can be avoided by building Tranche 2.1. Therefore, we find that there are no benefits to quantify in these area.

Even if one were to accept MISO's assertion that 23 GW of new resources will be needed in deliverable locations without Tranche 2.1 under its avoided capacity cost methodology, Dr. Hogan points out that MISO failed to consider that these additional resources would likely address the identified reliability issues.[10] If these resources enter in high-value locations related to MISO's perceived reliability issues, they would be more than sufficient to eliminate the load shedding MISO estimates. Therefore, this category of benefits is double counted, which can most reasonably be addressed by simply eliminating it.

[10] Id. at p. 32-33.

D. Comments on the Decarbonization Benefits

Dr. Hogan makes a number of key points on the decarbonization benefits MISO estimates.[11] First, he correctly notes that the current Federal Production Tax Credit (PTC), which implies a social cost of carbon (SCC) of roughly $50 per metric ton, already internalizes the value of decarbonization. In other words, incurring costs to build transmission to produce more renewables at a cost of $50 per ton and then paying the PTC at $50 per ton would only be justified if the social cost of carbon equaled $100 per ton. If one accepts that the PTC establishes an implied value of environmental benefits of renewable output, as argued by Dr. Hogan, then the low-end decarbonization benefit would be zero. Likewise, the high-end decarbonization benefit based on the Minnesota PUC SCC of $249 per metric ton would have to be reduced by 20 percent to appropriately net the PTC subsidy.

Dr. Hogan also notes that that the wide disparity in views on the SCC within the MISO footprint is not appropriately reflected in MISO's analysis. While MISO includes the Minnesota PUC view to quantify the high end of the range, MISO ignores that other states like North Dakota currently assume a $0 per metric ton value of carbon. While we do not personally believe that $0 is a reasonable SCC, we find it inappropriate for the IMM or MISO to impose its views regarding the SCC on its members in the absence of a consensus. This may explain why FERC did not endorse a decarbonization benefit to be included in long-range transmission planning more broadly.

Given that the current PTC internalizes a $50 per metric ton SCC. Additional valuation of decarbonization is embedded in the implied subsides for renewable resource investment that is embedded in Future 2A. As the marginal capacity accreditation falls and shortages in the energy

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11 Id. beginning at p. 37.

market occur only when renewable energy output is low, the subsidies necessary to support the net costs in renewable resources in excess of $200 billion will rise substantially. Since these subsidies are only justified on the basis of decarbonization benefits, it is unlikely than any additional decarbonization benefits can be attributed to Tranche 2.1 without double counting the decarbonization benefit. In other words, if the states will be required to pay $200 per metric ton in subsidies to achieve Future 2A (through renewable energy credits and other programs) and the SCC is less than $200 per metric ton, then there is no residual decarbonization benefit to be claimed associated with incurring the costs to build Tranche 2.1.

For all of these reasons, we agree with Dr. Hogan that the most reasonable approach for estimating the benefits of LRTP tranches is not to include decarbonization benefits.[12] This would be consistent with FERC policy issued in Order 1920.

E. Estimate of Corrected Benefit-Cost Ratios

It is important to estimate a corrected benefit cost ratio because this a key result indicating whether Tranche 2.1 is economic and whether it qualifies for MVP cost allocation. We are not able to correct all of MISO's classes of benefits to address the failure to establishing a base case without Tranche 2.1. As discussed above in Section V.A., establishing a proper base case would reduce most of the categories of benefits. For the analysis presented in this section, however, we focus only on the three specific categories of benefits discussed in detail above.

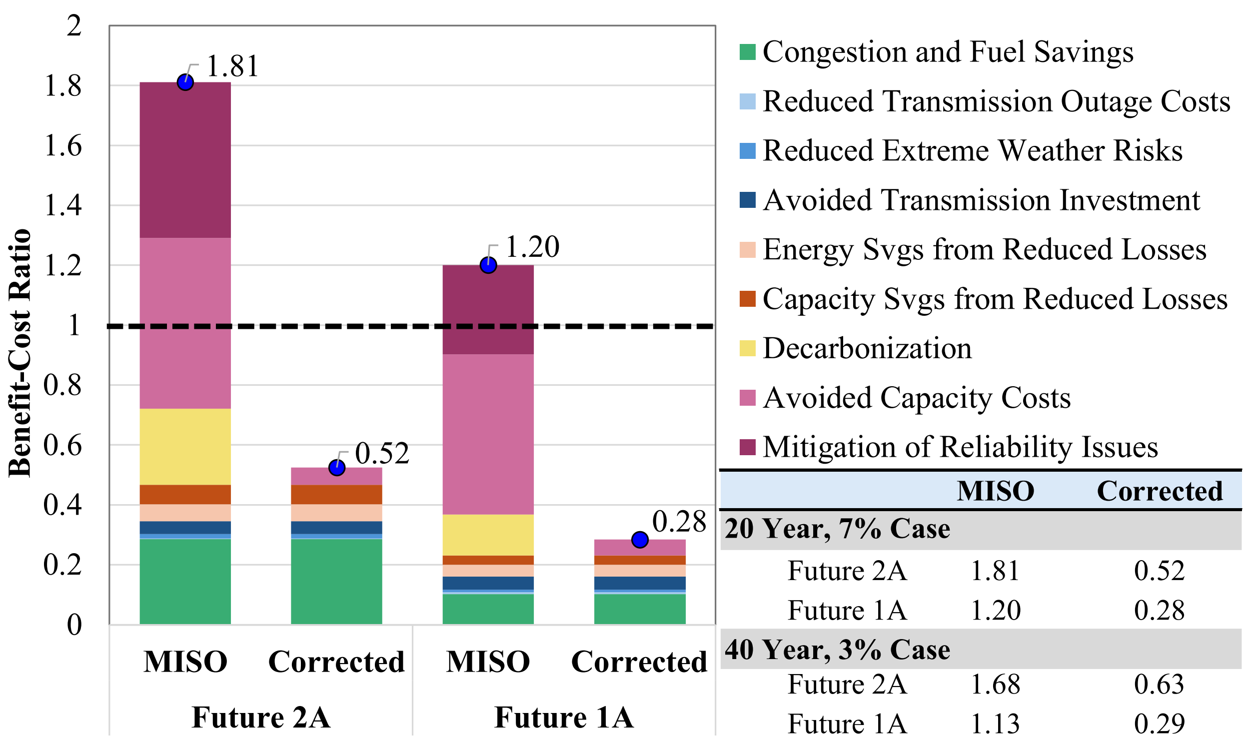
To correct MISO's benefits, we make the following adjustments:

- To account for the fact that resources will enter in deliverable locations closer to load if Tranche 2.1 is not built, we assume that the cost of the 23 GW MISO finds that it needs will entering at locations that are 10 percent higher than assumed originally. This 10 percent assumption is generally consistent with the differences in overnight capital costs on the western MISO states and eastern MISO states in the Midwest.

[12] Id. at p. 39.

- We eliminate the mitigation of reliability issues for the reasons described in Section V.C.
- We eliminate the decarbonization benefits for the reasons discussed in Section V.D.

These three adjustments, although they do not completely correct the results of MISO's business case for the flaws discussed in these comments and in the Complaint, produce very different benefit-cost ratios for Tranche 2.1. The figure below summarizes and compares the benefit-cost results produced by MISO compared to our corrected results. MISO's results are produced over two timeframes – 20 and 40 years, and with two discount rates – 3 percent and 7 percent. The stacked bars on the left side of the figure show the contribution of each category of benefits to the benefit cost ratio in the 20-year 7% discount rate cases. MISO measured its benefits against the Future 2A scenario and the Future 1A scenario, which assumes lower levels of renewable resources and loads. We show the benefits for both scenarios. The inset table in the lower right also summarizes the benefit-cost ratio results in the 40 year 3% case.



	MISO	Corrected
20 Year, 7% Case		
Future 2A	1.81	0.52
Future 1A	1.20	0.28
40 Year, 3% Case		
Future 2A	1.68	0.63
Future 1A	1.13	0.29

* MISO cases show the minimum value, affecting only 2 benefits by excluding the high-end carbon value and VOLL.

This figure shows that even if one only corrects the three categories of benefits discussed in our comments above and specifically identified by Dr. Hogan and the Concerned Commissions, the 20-year benefit-cost ratio falls to 0.5 for Future 2A and 0.3 in Future 1A. These ratios rise only marginally in the 40-year 3% case.

These results demonstrate that it would be reasonable to grant the Concerned Commission's request to reclassify the Tranche 2.1 projects to not be MVPs. More broadly, it raises concerns that this Tranche is not economic and should be reformed to ensure that the costs MISO's customers will be asked to bear are reasonable.

VI. CONCLUSION

While the IMM findings support the requested relief in the Complaint to reclassify Tranche 2.1 to no longer be MVPs, this may not address our concerns regarding the excess costs and adverse market effects of Tranche 2.1. Therefore, we respectfully recommend that the Commission Order MISO to revise Tranche 2.1 based on an updated Futures scenario and improved benefits assessment.

To address future LRTP tranches, we support the request in the Complaint for the Commission order a modification to the MISO tariff to require that future business cases be filed and approved by the Commission. This will provide extremely valuable independent regulatory oversight of this process, which we believe is necessary to ensure that FERC-sanctioned transmission rates are just and reasonable.

Respectfully submitted,

/s/ David B. Patton

David Patton
President
Potomac Economics, Ltd.

CERTIFICATE OF SERVICE

I hereby certify that I have this day e-served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated this 9th day of September 2025 in Fairfax, VA.

/s/ David B. Patton