



Pulling the Transmission Trigger

Evaluating MISO Transmission Ownership for Municipal Agencies and G&Ts

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Some public power utilities have not yet decided whether it makes economic sense to join the Midwest ISO (MISO) as a Transmission Owner. In most cases, these municipal agencies and generation and transmission cooperatives are already a Market Participant in the Day 2 energy market, but they have not yet turned over functional control of their transmission assets to MISO and become a Transmission Owner. Expiring grandfathered agreements and a desire to maximize full recovery of future transmission investments are now triggering municipal agencies and generation and transmission cooperatives to consider becoming a transmission owner in MISO. Evaluating whether to become a MISO Transmission Owner is a major strategic decision dealing with multifaceted issues requiring complex analysis. Deciding whether and when to pull the MISO transmission trigger can result in saving hundreds of thousands or potentially millions of dollars.

Surfacing Fundamental Issues

Many public power entities have grandfathered agreements (GFAs) with neighboring host investor owned utilities (IOUs), which have governed transmission service over the past few decades. The GFA rate IOUs charge municipal agencies or generation and transmission cooperatives (G&Ts) is often lower than the current rate dictated by IOU assets and costs. As these agreements expire or are potentially restructured (as IOU transmission assets are sold to Independent Transmission Companies), public power utilities are exposed to additional transmission costs, such as pancaked transmission rates or generation-related ancillary services costs. As a result, municipal agencies and G&Ts must decide whether it makes economic sense to become a part of the MISO Transmission Owner (TO) “club” or to remain a Market Participant (see Exhibit 1).

Other main drivers influencing whether to become a MISO Transmission Owner are the imminent construction of regional transmission lines (e.g., CapX 2020), transmission related to generation (e.g., Big Stone II) and the emergence of transmission service coordinators. These new developments leave public power entities wondering whether they should participate in transmission expansion as full MISO TOs, as non-MISO TOs or as “renters” of transmission facilities. As one senior vice president of a municipal agency said, “Becoming a MISO TO raises a fundamental strategic question of whether we want to be an owner of our fair share of regional transmission assets with our own revenue stream or continue to be an asset user paying IOUs for transmission service.”

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—SVP, Municipal Agency

The Transmission Fog

Like all major business decisions, senior management and the Board must have solid information to make and implement the best decision. Answering the simple question, “*Is it in the best interest of our members for our utility to join MISO as a Transmission Owner?*” requires anything but a simple analysis. Oftentimes, the analysis goes awry or is never-ending, so management and the Board do not act, and as a result, significant dollars are left on the table or flow out to third parties. As one VP of Transmission Operations for a G&T stated, “There is a lot of myth and confusion amongst our Board regarding the merits of joining MISO as a TO—we need to present a fact-based analysis to the Board that can be easily understood.” The typical challenges to the analysis are summarized below.

- The financial analysis does not present a clear picture of the “default” base case forecast ... thus, making it very difficult for the Board to understand what incremental costs and benefits are at stake
- Too many options are evaluated and the modeling often confuses genuinely different options with risk input variables that merely create variability in a given option ... a common misapplication of risk analysis
- The analysis fails to differentiate between sunk costs and truly incremental costs associated with becoming a TO ... unnecessarily complicating the analysis by loading in costs common to each option
- The customer base is varied ... municipal agencies may have some members or customers in MISO and others out of MISO

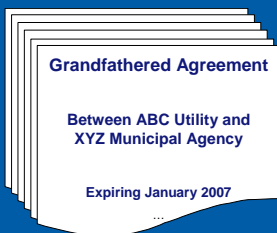
“There is a lot of confusion regarding the merits of joining MISO as a TO—we need to present a fact-based analysis to the Board that can be easily understood.”

—VP of Transmission Operations, G&T

Exhibit 1 Factors Driving the Need to Evaluate MISO Transmission Ownership

Triggering Event

Expiring GFAs



New Regional Transmission Investment



Impact

How exposed are we to additional MISO costs?

Rent or Own?

Analysis

Become a TO or remain a Market Participant?

MISO Attachment O Analysis

Exhibit 2
Seven Steps to Evaluating MISO Membership

1. Determine the Dollars Potentially at Risk

2. Identify the Key Issues and Clearly Define the Company's Positions on These Issues

3. Identify Potential Options and Narrow Down to a Manageable Number

4. Determine the Base Case Forecast

5. Develop the Attachment O Analysis

6. Determine the Preferred Option

7. Utilize Risk Analysis to Understand the Downside Risk to the Preferred Option

- Issues inherent in the analysis are not fully understood and are often gray, rather than black and white ... requiring research and direct communication with MISO in order to make valid modeling assumptions
- In the interest of always trying to gain additional clarity on foggy issues, the analysis drags on for months and results in a project with no clear start and end dates ... trying to hit a moving target as the issues change over time
- The cost and revenue impact of a GFA versus the cost of new Transmission Service Agreements (TSAs) can be extraordinarily complex ... TSAs can contain new and complicated cost allocation and recovery mechanisms for newly built and planned facilities

Lifting the Fog – Developing a Clear Business Case

In order to respond to these challenges, the senior executive in charge of transmission operations must initiate a clearly defined business case project to evaluate TO membership. Developing an effective business case analysis is a multi-step process (see Exhibit 2).

1. **Determine the dollars potentially at risk.** Before developing a detailed base case forecast, invest the time up front to quickly calculate the approximate annual dollars that could be lost under a “do nothing” scenario. This step alerts the project team to the important variables in the analysis, the magnitude of the dollars at stake and the overall purpose of the project. It also provides an anchor in which to calculate the benefits of the preferred option. By taking time for this quick step, the senior executive can lift much of the early fog surrounding the business case. This step also enables the senior executive to establish clear project objectives, a vision for what is to be presented to the Board with

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Exhibit 3
Effects of Joining MISO as a Transmission Owner

Transmission Owner Pros

- Avoid pancaked rates
- Receive allocation of MISO drive through / out revenue
- Likely eligible for FERC-approved rate incentives (12.38% ROE or margin proxy)
- Gain a seat at the MISO Transmission Owner table
- Provides negotiating power through Attachment O formula

Transmission Owner Cons

- Requires possible additional internal staffing
- Subjected to exit fees if later withdraw

Unclear Impacts

(Benefits and costs unique to each situation)

- May provide higher revenue from Attachment GG on new qualifying network investment
- May provide some ability to recover revenue from assets on the seam
- May provide MISO system-wide subsidy for 345 kV and above network investment
- May reveal improvements in Attachment O accuracy for cost recovery
- May be subject to 7-factor test results for facilities inclusion
- May incur additional MISO schedule charges
- May incur additional RSG charges, congestion losses and marginal losses

an estimate of the dollars at stake, thus providing a backdrop for the proper level of staffing resources to further analyze the problem.

The issues around MISO TO membership are invariably complicated and are often unique to each company.

2. **Identify the key issues and clearly define the company's positions on these issues.** There are some clear pros and cons regarding MISO TO membership, but there are other issues that are invariably complicated and are often unique to each company (see Exhibit 3). To identify the key issues, the project team must develop key questions to be addressed by the analysis. Developing answers to key questions often requires input from outside experts, and correspondence with MISO and, in some cases, surrounding IOUs. It is very important to document answers to these questions in the form of an issue log; this "audit trail" reflects the thinking and assumptions made by the project team at the time they addressed the issue and incorporated it in the modeling analysis. The issue log avoids confusion in the future as issues, and thus, assumptions change. Some examples of key issues include:

- Questions regarding the applicability of certain MISO costs if a GFA were to expire or be cancelled versus remaining in place
- Analysis of "who pays" for the annual transmission revenue requirement (ATRR) if the company joins as a TO (amount of ATRR paid by members, surrounding IOUs and third parties)

- The likelihood of being able to negotiate a facilities credit with neighboring IOUs for new transmission investment in the absence of becoming a MISO TO
- Impact of being located on a MISO seam and the related matching of assets and load in determining the ATRR
- Eligibility of achieving a FERC-authorized 12.38% return on equity, achieving overall returns greater than the company's cost of capital and its potential impact on tax-exempt financing status
- Applicability of a standalone pricing zone versus a joint pricing zone and how the revenue will be distributed back from the host TO
- Interplay between Attachment O and Attachment GG for determining the ATRR of new transmission investment and the most appropriate timing for when to join MISO as a TO
- The inherent value to the company of having a credible and defensible Attachment O in negotiations with surrounding IOUs
- The likelihood of being able to successfully submit a variance to the standard MISO Attachment O template
- Satisfaction of the FERC's comparability standard and 7-Factor Test of facilities for recovery of lower level voltage lines in a MISO tariff
- Exit fee liability of the company if it becomes a Transmission Owner and then decides to withdraw

**“It’s time to zero in
on the most
realistic option.”**

—VP of Utility
Operations, G&T

3. *Identify potential options and narrow down to a manageable number.*

Management needs to identify the various transmission options facing the municipal agency or G&T before the modeling analysis begins. However, after identifying the base case, it is critical to screen the options and narrow down to one or at most two options based on a qualitative analysis. Otherwise, the subsequent quantitative analysis becomes overwhelming and makes it difficult to accomplish the goals of the business case. As one head of Transmission Operations for a G&T said, “We have identified a lot of options—it’s time to zero in on the most realistic option.” Some factors to consider when deciding which options to evaluate include:

- Only evaluating the most likely tariff options (e.g., joint pricing versus standalone pricing zones)
- Only looking at options where a triggering event is likely to occur (e.g., sale of IOU assets)
- Only valuating options that are consistent with the standard MISO Attachment O template ... or consist of variances to the standard template that have a reasonable chance of MISO and FERC approval

Narrowing down to one or two options facilitates clear communication with the Board and allows the Board to make a concrete decision between options.

- 4. Determine the base case forecast.** Developing the base case forecast expands on the quick dollar at risk assessment from Step 1, quantifies the issues in Step 2 and calculates the present value of the costs and revenues. The base case can reflect, for example, the costs and revenues from taking limited defensive actions prompted by the expiration of a GFA or a desire to make a significant new transmission investment. The forecast period should incorporate these major events in the future. For example, if a major transmission investment is projected to go into service in 2014, the forecast period should be extended long enough (e.g., 2020) to reflect a significant portion of the revenues recovered from the investment. Developing the base case forecast will require modeling logic changes to reflect the issues unique to the company's business situation.
- 5. Develop the Attachment O analysis.** A key to ensuring cost recovery for any utility contemplating MISO membership as a TO is an associated MISO Attachment O analysis to determine the expected ATRR the company will receive by becoming a TO. The ATRR is used to calculate the rate and potential facilities credits used as inputs for the Attachment O modeling analysis of whether to become a TO. This analysis identifies the transmission-related costs and assets eligible for revenue recovery and determines the subtractions necessary to the ATRR based on transmission revenue from third parties. A key part of the Attachment O analysis is looking at the general ledger accounts to determine the proper amounts and percentage allocation to transmission (see Exhibit 4). In addition, this analysis involves understanding which MISO Attachment O template to utilize (cash flow debt service coverage ratio vs. non-levelized return on rate base) and whether it would ever make sense in the future to switch templates in order to optimize revenue to the company. Choosing the proper template often requires completing projected Attachment Os to determine which template will optimize long-term ATRR and the timing of when it may make economic sense to join MISO as a TO. Oftentimes, the standard Attachment O template is not set up to ensure full revenue recovery for municipal agencies and G&Ts; thus, it may be beneficial to apply to MISO and FERC for a template variance. Hundreds of thousands or potentially millions of revenue dollars for municipal agencies and G&Ts are "left on the table" without analyzing these accounts line-by-line, determining the optimal Attachment O template, thoroughly analyzing the allocation process results and making the required variance adjustments to the template. In addition, having a well-documented and well-planned Attachment O gives the company increased credibility and negotiating power with surrounding IOUs.

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6. Determine the preferred option. Determining the preferred option involves calculating the present value of the incremental revenues less incremental costs for the narrowed-down options, and choosing the option with the highest net present value. The preferred option is then compared to the results of the base case analysis to determine whether it makes economic sense to pursue MISO TO membership (and when) or to remain with the base case. This step involves analyzing the MISO revenues and costs to assess the incremental impact on the company and its members if the company joins MISO as a TO. For example, this step answers questions such as:

- What will be the company's new rate and revenue?
- Based on an allocated ATRR analysis, how much of the revenue requirement will be paid by our members/customers and how much will be paid by surrounding utilities?

Exhibit 4

Are You Leaving Dollars on the Attachment O Table?

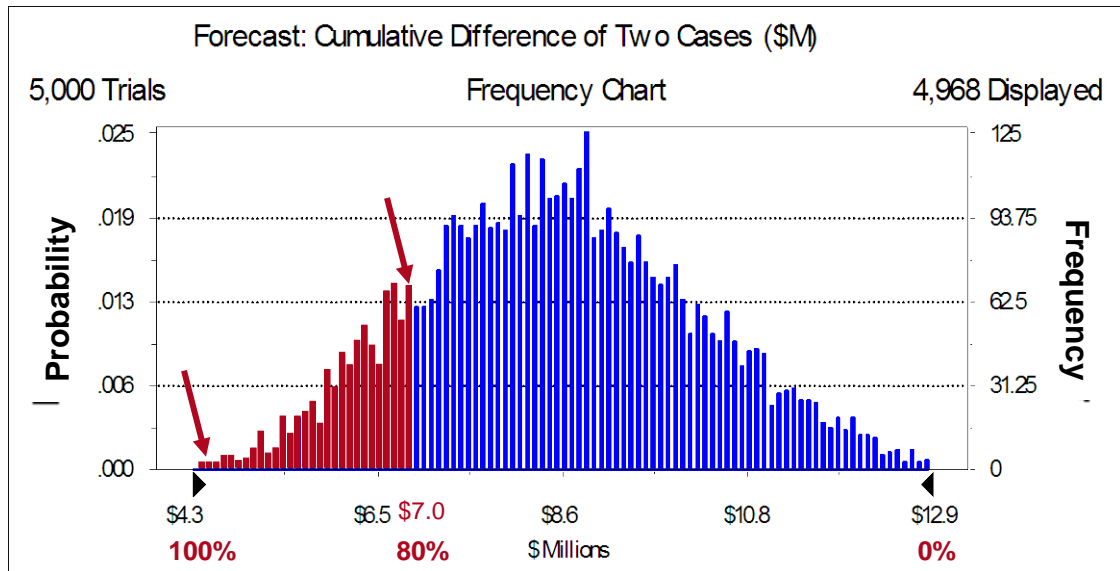
The process for developing an Attachment O should reflect full and fair recovery of costs, which involves:

- Evaluating general ledger accounts to determine the proper amounts and percentage allocation to transmission; oftentimes, transmission-related costs are incorrectly buried in distribution accounts
- Determining which MISO Attachment O template to utilize (cash flow debt service coverage ratio vs. non-levelized return on rate base) and whether it would ever make sense in the future to switch templates in order to optimize revenue to the company
- Determining the subtractions necessary to the ATRR based on transmission revenue from third parties; these subtractions often are a "gray" area where proper interpretation can result in additional (and defensible) ATRR
- Matching transmission assets and load in determining the ATRR; and matching costs (numerator) with the appropriate load (denominator) in determining the rate
- Determining variances to the standard MISO template. Oftentimes, the standard Attachment O template is not set up to ensure full revenue recovery for municipal agencies and G&Ts; thus, it may be beneficial to apply to MISO and FERC for a template variance
- Allocating the company's ATRR to the proper pricing zones; if the company is in multiple pricing zones, properly allocating ATRR is critical to defending the Attachment O from interveners

Exhibit 5

Comparison: Joining MISO as a Transmission Owner vs. Remaining a Market Participant 10-Year Cumulative Present Value Advantage of Becoming a TO

—Illustrative—



In this illustrative case, there is an 80% probability the cumulative 10-year present value advantage of becoming a MISO Transmission Owner is greater than ~\$7M. Even if the input assumptions were less favorable, it would still make economic sense to become a Transmission Owner because the value is still greater than zero in 100% of the cases.

- What will be the company's incremental revenues from MISO's allocation of drive-through and drive-out revenues; how will these revenues affect future Attachment Os as gross plant levels change?
- To what extent will there be incremental MISO schedule charges (e.g., costs from Schedules 1, 2, 3, 5, 6, 10, 16, 17 and 24)?
- How will MISO's system-wide postage stamp cost recovery for high voltage network upgrades (Schedule 26) impact the analysis?
- Will the company avoid pancaked rates if it joins MISO as a TO?
- How will MISO's Revenue Sufficiency Guarantee costs affect the company?
- What are the incremental impacts of congestion costs and marginal losses (net of Financial Transmission Rights)?
- Will becoming a MISO TO facilitate improved access to MISO's Day 2 energy markets as compared to the status quo? Can the same access be gained through other means?
- What are the internal staffing requirements for the company if it becomes a MISO TO?

Risk analysis
allows the Board to
see the impact on
the preferred option if all
key inputs
take a nosedive under the
worst case scenario.

During the analysis of the preferred option, the issue log should be updated with the key assumptions. In addition to the quantitative analysis, there might be other harder to quantify factors influencing which option to pursue. These factors include gaining a seat at the "MISO Transmission Owner Table," no

longer being viewed as a “renter” and no longer being treated as a second-class citizen by surrounding IOUs in regional transmission planning and related revenue recovery mechanisms.


7. Utilize risk analysis to understand the downside risk to the preferred option. The preferred option has a certain set of assumptions and inputs, which can vary, sometimes significantly. For example, these assumptions can include the level and timing of new transmission investment, MISO’s allocation of drive-through and drive-out revenue, the level of MISO administrative costs and the likelihood of negotiating facilities credits, etc. Each utility typically has six to nine key risk variables with their own unique symmetric or asymmetric distributions that are modeled together using Monte Carlo risk analysis to determine the downside risk. This analysis is more than a simple sensitivity analysis because it models the concurrent impact of the variables. In the simplest form, the project team defines the minimum, maximum and most likely values for the key risk variables. The outcome of the risk analysis allows the project team to communicate its confidence level of the recommendation to the Board. Exhibit 5 provides an illustration of the results format used to communicate to the Board: “Given the distribution of inputs, there is an 80% probability the 10-year cumulative present value advantage of joining MISO as a Transmission Owner is greater than \$7 million.” In addition to calculating any particular confidence level, risk analysis also allows the Board to see the impact on the preferred option if all key inputs take a nose-dive under the worst-case (i.e., “perfect storm”) scenario.

“We are now actively influencing regional transmission expansion planning discussions rather than being an onlooker.”

—Director of Utility Operations
for a Municipal Agency

The Benefits and Payback

Regardless of whether the results of the analysis show the utility should join MISO as a TO or not, there are still significant benefits to completing the analysis. The multi-step business case process allows the project team to become much more educated on key issues in the market. This education enables the company to more confidently negotiate with surrounding IOUs when it comes to joint tariffs, facilities credits and new regional transmission investments. As one Director of Utility Operations said, “Developing this MISO membership business case has significantly elevated our knowledge of the issues, so we can now educate our Board and members. We are now actively influencing regional transmission expansion planning discussions with neighboring utilities rather than being an onlooker.”

Providing a systematic method to analyze whether to join MISO as a Transmission Owner allows municipal agencies and G&Ts to finally be able to cut through the fog of issues and confidently “pull the trigger” with regards to MISO transmission ownership. Making the right decision can save significant dollars for the company and provide the knowledge to confidently negotiate with neighboring IOUs to achieve reasonable and fair transmission pricing and full cost recovery. 

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Jim is a Vice President with MCR. He has more than 20 years consulting experience with utilities, including project evaluation and economic evaluations of RTO membership. Jim works with clients to develop business case evaluations, including quantitative risk analysis, and is experienced in presenting to senior teams and Boards of Directors of Municipal Agencies and G&Ts.

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Ron is a Manager with MCR. He has worked with clients to develop the MISO Attachment O, Schedule 2 and supporting work papers. He also has supported the required FERC testimony to seek variances in the standard template filings with MISO. In addition, Ron has modeled transmission tariff designs to assess potential revenue allocation and cost shifting among participants forming a transmission service coordinator.

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