What will Inflation do to MISO Transmission Rates?

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From 2018 through 2021, the average zonal network transmission rates (Schedule 9) within MISO rose by a compound annual growth rate ("CAGR") of 9.6% per year compared to an average increase in the Consumer Price Index ("CPI") of only 2.9% over that timeframe. Much of that increase occurred in 2021 when the MISO systemwide average zonal network rate rose by a stunning 17.7%[1] to $4.07 per kW/month compared to a CPI of 6.4%. In 2022, the MISO system average network rate rose by 5.2%[2] to $4.22 per kW/month whereas the CPI is currently running at 8.6% with core inflation at 6%,[3] levels not seen in four decades. The increases in MISO transmission rates over the years are from consistently high levels of transmission capital spending driven by numerous factors such as wind and solar development, NERC requirements, aging transmission facilities, and retirement of dispatchable power plants. As one transmission owner ("TO") said, "every time you turn around, there is another reason to invest in transmission." Now, there is another factor that can significantly raise transmission rates: inflation.

Will this recent inflation surge provide additional fuel for already escalating transmission rates? Over the last three months, MCR met with 20 TOs (municipals, G&Ts, and joint action agencies) to discuss MCR's recent white paper[4] and the impacts of recent inflation on their current and anticipated O&M and capital costs. The general consensus is that O&M increases have been modest so far.

[1] In addition to a continued strong increase in transmission gross plant (increase of 7.2% in 2021 over 2020 and 8.6% in 2020 over 2019), other factors accounting for the large increase in MISO's 2021 average Schedule 9 rate included lower pandemic-related load, the wind down of refunds associated with the reduction of accumulated deferred income taxes from the reduction in the corporate income tax cut, and the related increase in rate base, as accumulated deferred tax balance (a credit to rate base) is lower.

[2] June 2022 MISO draft file.

[3] 12 months ending May 2022. Source: *U.S. Inflation Hit 8.6% in May*, Wall Street Journal, June 10, 2022.

[4] MCR white paper: *MISO Transmission Rates in Joint Zones, Will the Transmission Rate Express Train Continue?,* November 2021.

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However, on the capital side, the impact has been more significant. About half of the TOs with transmission projects have already experienced significant cost increases in 2022. For a about a quarter of the others, capital cost pressures are not anticipated to be felt until 2023 or 2024. How will these anticipated inflationary increases affect already rising network transmission rates and will these inflationary increases be sustained?

Inflation Forecasted to Come Down Significantly

The impacts of inflation on O&M have mostly been limited thus far.

Despite the alarmingly high CPI figure of 8.6% for the last 12 months ending May 2022, the financial markets believe inflation will settle down in the next couple of years as the economy slows. For example, the markets are predicting an average inflation rate of only 2.79% over the next five years,[5] as the markets believe that inflation will start to subside, dropping to the 3%-4% range in late 2023.[6] Despite a forecast of lower inflation, many TOs are feeling the impacts of the recent increase in inflation and are making decisions accordingly.

O&M Increases have been Modest

Much of transmission O&M is tied to existing labor contracts and TOs have most routine materials in stock, so the impacts of inflation on O&M have mostly been limited thus far. A few TOs, however, said they were vulnerable to O&M labor increases because they use contractors. One municipal TO cited paying premiums on labor due to a shortage of contract labor. Some other TOs are starting to see pressure on materials costs for future years. For example, two G&Ts were budgeting for higher O&M materials costs for 2023 and 2024 due to inflationary cost pressures.

Rising Capital Costs from Inflation

Nine TOs are already seeing inflationary impacts on capital costs in 2022.

Capital cost increases for this year have been modest for those few TOs who were fortunate enough to have negotiated their capital contracts before the recent surge in inflation and supply bottlenecks. For most other TOs, however, there have been substantial cost increases for recently negotiated capital contracts. Seventeen out of the 20 TOs[7] have transmission projects either being built or being planned. Of those 17, nine (53%) TOs are already seeing inflationary impacts on capital costs in 2022 and another four are forecasting significant impacts in 2023 or 2024. Of the remaining four TOs, three have not seen major impacts on their capital budget thus far, and one is unsure at this time, as they have partners that will be passing on transmission capital costs to them. (See Table 1 on the next page for results of MCR meetings with 20 TOs).

One municipal TO that has seen significant capital increases this year stated that multiple contractors that previously committed to certain prices have attempted to renegotiate these prices, citing their suppliers' increasing costs. Another two municipals stated that the price for substation transmission transformers have increased a whopping 100-125% compared to the price that was paid before the pandemic. In addition, conduit prices have skyrocketed. According to one

[5] As of June 28, 2022. See Federal Reserve 5-year breakeven inflation rate at https://fred.stlouisfed.org/series/T5YIE

[6] Source: *Inflation Should Peak This Summer at About 9%*, Kiplinger, June 10, 2022.

[7] 19 of the 20 transmission owners have transmission assets in MISO.

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Table 1
Number of Transmission Owners Seeing the Impacts on Capital Costs from Inflation[8]

	Seeing Inflation Impacts on Transmission Capital Projects in 2022	Seeing Inflation Impacts on 2023 or 2024 Planned Transmission Capital Projects	Not Seeing Inflation Impacts on Transmission Capital Projects thus far or is Unsure due to Partner Pass-Throughs	Do not have a Current or Planned Transmission Capital Project	Total
Number of TOs	9	4	4	3	20

municipal TO, conduit prices on some specialty items are going up "7% per month rather than 7% per year." Another TO said they received only two bids to do their capital work whereas they would normally get many more bids; the winning bid was within the realm of reason whereas the other bid was "laughably high."

Most TOs cited large capital cost increases in hard to obtain equipment, such as specialty transformers, and nearly all TOs cited large increases in delivery times. As one municipal TO said, "the delivery time for some transformers has risen to 60 weeks, and even that is not guaranteed." Moreover, some contractors are supplying only increments of delivery rather than the full amount due as suppliers cannot keep up with pent-up demand.

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Despite the financial markets expecting general inflation to settle down over the next couple of years, most TOs anticipate their transmission capital budgets will be under pressure in the near term. Whether the recent inflation trend as measured by the CPI will apply also to utility capital equipment and contract labor in the utility industry remains to be seen. Some TOs affected by increased capital costs anticipate cutting back on the number of capital projects to keep the overall capital budget under a target limit. For those who have their own capital project crews, rising capital costs could shift some costs to the O&M side as fewer capital projects are completed. In order to cope with their shockingly high capital cost increases on many capital items, another municipal TO who tends not to order well in advance, is deferring many capital projects and only doing essential new business projects.

By contrast, despite the cost increases, some TOs expect that they will not decrease the number of transmission capital projects, as these projects are highly lucrative due to the relatively high MISO return on equity ("ROE") of 10.52%.[9] These projects will either be funded with working capital or through

[8] Source: MCR white paper discussions conducted from April - June 2022.

[9] 10.02% base plus 50 basis point adder for RTO membership.

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rate increases if debt is not an option. Interestingly, one municipal TO cited that there is an economic incentive on the distribution side to delay a capital project subject to higher costs because its own municipal customers are paying for it. On the other hand, for transmission projects, the TO stated there is an economic incentive to get the projects completed on time, regardless of the cost increases, because the capital costs have no cap and are included in a joint pricing zone, thus largely recoverable from other customers.

Quantifying the Potential Impact of O&M and Capital Increases on Transmission Rates

How will these levels of O&M and capital increases linked to tight labor markets, supply chain bottlenecks, and pent-up demand affect transmission rates? MCR conducted an analysis of the impact of inflation on transmission rates by looking at three joint pricing zones in MISO: the Xcel-NSP, MidAmerican, and ITC-Midwest pricing zones. MCR first forecasted the base case zonal rate increase in each zone from 2023-2027 using the latest publicly available data[10] and then ran a sensitivity analysis with various assumptions for O&M and capital increases, reflecting the potential impact of inflation on the base case forecast.

For the base case, we assumed that transmission O&M on existing plant would continue to benefit from economies of scale, with new transmission plant requiring O&M at a fixed carrying charge specific to what each TO has historically seen. The end result was an average compound annual O&M growth rate of 2.83% across the three pricing zones.[11] MCR's forecast of base case capital expenditures was developed using each TO's publicly available data; and of course, each TO's numbers assume some level of embedded inflation.[12] For example, MCR's base case and inflation sensitivity forecasts of O&M and capital for the Xcel-NSP zone are shown in Tables 2 and 3 on the next page.

In the sensitivity case, we then increased each O&M dollar amount in the base case by 3%, illustrating what would happen if O&M actuals came in 3% higher than budget. In our Xcel-NSP zone example, the O&M for 2023 is $119.4M * 1.03 = $123.0M, meaning that in 2023 inflation pressures would cause an extra $3.6M to be spent on O&M.[13] For capital, we increased the annual capital

[10] We utilized various publicly available sources for our base case rate forecasts for these three joint pricing zones, including MTEP Appendix A of approved projects; earnings call presentations and transcripts; 2022 projected Attachment Os; state-required capital plans; stakeholder presentations related to the formula rate; historical growth rates of expenses and capital from MCR's database; expected inflation; and the estimate of load growth from MISO. Using these sources as inputs, MCR applied its own modeling analysis to determine the forecast 5-year annual growth of the zonal rate for 2023 to 2027 for each joint pricing zone. The MCR analysis keeps rate of return constant (i.e., constant equity ratio, cost of debt and capital structure) unless the TO specifically indicates otherwise. The analysis also assumes 0.48% load growth across all MISO zones. Source: MISO forecast of Schedule 26 Indicative Annual Charges, July 9, 2021.

[11] The weighted average of the three zones. The base case O&M CAGRs for each pricing zone are Xcel-NSP 1.79%, MidAmerican 0.98%, and ITC-Midwest 4.75%.

[12] The TOs do not explicitly cite an inflation assumption they make when forecasting their capital expenditures. One could assume, however, that their 2022 capital budgets do not fully reflect the recent surge in inflation, as these budgets were developed in the fall of 2021 when inflation was running at about 5.4% in for the 12 months ending September 2021.

[13] MCR used a lower impact percent for O&M (i.e., 3%) in comparison to capital where we used 15% based on the assumption that CFOs have more levers to manage the impact of O&M inflation (hiring freezes, deferred maintenance, contractor reductions, etc.).

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Table 2
Xcel-NSP Zone[14] Base Case

Base Case	2023	2024	2025	2026	2027
O&M ($M)	$119	$122	$124	$126	$128
Capital ($M)	$490	$504	$520	$535	$551

Table 3
Xcel-NSP Zone Inflation Sensitivity Case

Base Case	2023	2024	2025	2026	2027
O&M ($M)	$123	$125	$127	$130	$132
Capital ($M)	$563	$580	$598	$615	$634

Table 4
Sensitivity of Network Transmission Rates to O&M and Capital Increases for Select MISO Pricing Zones

	Base Case			Inflation Sensitivity Case (O&M 3% Adder/Year, Capital 15% Higher Each Year)	
Transmission Zone	Current 2022 Schedule 9 Zonal Rate as of June 2022	MCR Forecasted 2027 Schedule 9 Zonal Rate Under Base Case	CAGR from 2022-27	MCR Forecasted 2027 Schedule 9 Zonal Rate Under Sensitivity Case	CAGR from 2022-27
Xcel-NSP	$4.95	$6.70	6.25%	$6.98	7.11%
MidAmerican Energy[15]	$2.92	$3.63	4.48%	$3.76	5.20%
ITC-Midwest[16]	$11.66	$15.84	6.31%	$16.40	7.06%

expenditures in the base case by 15% each year (e.g., for 2023, $490M * 1.15 = $563M which would cause $73M more to be spent).

Based on these scenarios, we then calculated how sensitive the transmission rate was to the impacts of these potential O&M and capital increases. The results for the three pricing zones can be found in Table 4 above.

[14] The Xcel-NSP zone includes GRE, Blue Earth, CMPAS, Delano, East River, Glencoe, Marshall, MMPA, MRES, Rochester, SMMPA, WPPI and Xcel.

[15] The MidAmerican zone includes Atlantic, Cedar Falls, Ames, Eldridge, Pella, Indianola, IPPA, MidAmerican, Montezuma, MEAN, Tipton, and Waverly.

[16] The ITC-Midwest zone includes GRE, ITC-M, Mountain Lake, SMMPA, Tipton, and Worthington.

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The results show that the additional O&M and capital increases (simulating inflation) have a relatively muted impact on transmission rates.

- Xcel-NSP pricing zone: the forecasted 2027 Schedule 9 (zonal) rates increased from $6.70/kW/month in the base case for 2027 to $6.98/kW/month in the inflation sensitivity case, only a 4.2% increase over the 2027 base case rate (the related CAGR increased from 6.25% to 7.11%).
- MidAmerican pricing zone: the forecasted 2027 Schedule 9 (zonal) rates increased from $3.63/kW/month in the base case to $3.76/kW/month in the inflation sensitivity case, only an 3.6% increase over the 2027 base case rate (the CAGR increased from 4.48% to 5.20%).
- ITC-Midwest pricing zone: the forecasted 2027 Schedule 9 (zonal) rates increased from $15.84/kW/month in the base case to $16.40/kW/month in the inflation sensitivity case, a 3.5% increase over the 2027 base case rate (the CAGR increased from 6.31% to 7.06%).

We estimate that a 15% increase in the capital expenditures in 2025 for the Xcel-NSP zone would increase the zonal rate in 2025 by 2.7%.

So, even though the base case forecasts are showing significant increases (e.g., Xcel-NSP zone rising an average 6.25% per year from $4.95/kW/month in 2022 to $6.70/kW/month in 2027), the assumed inflationary O&M and capital adders in our sensitivity case for the three zonal examples do not have a major impact on the 2023-2027 zonal rates. For example, we estimate that a 15% increase in the capital expenditures in 2025 for the Xcel-NSP zone would increase the zonal rate in 2025 by 2.7%.[17]

How to Address the Impacts of Inflation

It remains to be seen whether these modest inflationary increases will be realized or whether even these increases will be muted by TOs who decide to defer some capital projects in order to keep their capital spending consistent with their target capital structure and/or in line with the long-term forecasts previously shared with the investment community. In addition, supply chain bottlenecks could delay some capital spending, which could also mitigate the short-term impacts of inflation. On the other hand, if the contractor labor and supply chain bottlenecks do not resolve in the next year, the capital and O&M increases could

[17] With a 15% increase in capital expenditures in 2025, the projected incremental capital expenditures in the Xcel-NSP zone is $78M ($598M-$520M). Assuming the Xcel rate of return of 7.53% (Xcel is the largest member of the zone), the incremental return in the Xcel-NSP zone from these incremental expenditures is therefore $78M * 7.53% = $5.87M. Thus, the rate impact purely from the return component is $5.87M divided by the projected 2025 zonal load of 7,939,658 kW, or $0.74 per kW year or about $.06 per kW/month. This is of course does not include the incremental impact of depreciation expense, property taxes, O&M and income taxes. Assuming Xcel itself made these incremental capital expenditures, the incremental depreciation expense using Xcel's blended average depreciation rate of 2.2% would be $1.72M. Property taxes would be about $78M * 3.9% = 3.0M. Incremental O&M is estimated at about $78M * 3.0% = $2.3M. The related income taxes would be $78M * 7.53% * 29.1% effective FIT/SIT rate grossed up for incremental taxes = $1.7M. Thus, the total ATRR impact from the 15% increase in capital expenditures in 2025 in the Xcel-NSP zone is estimated as $5.87M + $1.72M + $3.0M + $2.3M + $1.7M = $14.7M, which translates into an incremental rate impact of $0.15 per kW/month. This is about a 2.7% increase over the projected base case Xcel-NSP zonal rate in 2024 of $5.75 per kW/month. Again, these calculations use Xcel's input assumptions, as Xcel is by far, the largest member of the Xcel-NSP zone.

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end up being much larger than what we simulated in our sensitivity case. It is very possible, for example, that both capital and O&M increases could exceed the 15% and 3% inflation adders, respectively used in our analysis. To the extent that O&M is higher than what we showed in the sensitivity, the impact on rates will be direct and "immediate," as transmission O&M is fully recoverable in the current year.

Although the rate increases from inflation are likely to be modest, even modest increases in inflation will still put upward pressure on transmission rates over the next several years, supplying another factor for the rise in transmission capital spending. These inflationary rate increases will be on top of the underlying long-term trend in MISO of strong transmission capital spending, which recently has been growing at 7%-8% per year and primarily driving the long-term trend of escalating transmission rates. Thus, transmission rates in MISO will continue to increase and perhaps even will gain additional momentum from inflation in the next few years.

As a municipal or cooperative in a joint pricing zone, there are two tools to mitigate or partially hedge these transmission rate increases. First, generate transmission revenue by investing in transmission projects to enhance the reliability of your customers and the broader network. Second, optimize the existing Attachment O transmission formula rate to maximize transmission revenue. These two tools of investment and revenue optimization provide badly needed "insurance" against the prospect of continued escalation in transmission rates. MCR

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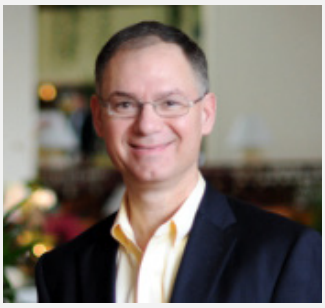
MCR Transmission Strategy Practice Leadership



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"Jim has a way of getting to the core concept; he's able to present it in a way that's understandable. He has a confidence when he's presenting, which is quite valuable." —Transmission Planning Manager, G&T

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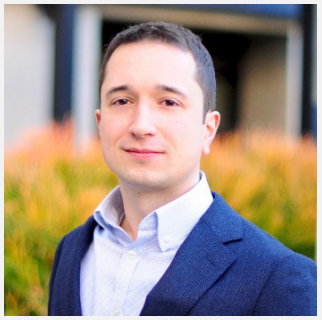
"Ron knows those FERC accounts like the back of his hand." —Vice President, JAA



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"Chris is incredibly responsive and knows what questions to ask." —*GM, municipal*

About MCR's Transmission Strategy Practice

MCR provides services to members of various RTOs across the country. Our clients, public power, cooperatives and independent transmission developers have a goal of optimizing the value of their current and future investments in electric transmission. We help them realize the full revenue potential from these assets. Our Transmission Strategy practice provides the following services:

Transmission Formula Rate Analysis

- Formula Rate Review for Existing Transmission Owners
- Development of Annual Transmission Revenue Requirements ("ATRR") for New Transmission Owners
- Review/Challenge to Incumbent Formula Rate Costs
- Staff Education Workshops on Formula Rates

FERC Filings

- Section 205 Rate Filings and Testimony
- Transmission Incentive Rate Filings and Testimony
- Cost of Capital Expert Testimony
- Intervention and Settlement Support

Strategic Economic Analysis

- Development of Transmission Business Plans
- Economic Evaluation of New Transmission Projects
- RTO Membership Evaluation
- Analysis of Joint Zone Investment and 7-Factor Tests
- Analysis of the Potential Purchase or Sale of Assets

Transmission Cost/Rate Competitiveness

- Peer Cost Comparison by FERC Account
- Rate Strategy and Transmission Revenue Forecasting
- Transmission Capital Investment and Metric Comparisons

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