2020 SPP Transmission Investment and Rate Analysis

The Seven Potential Threats to the Transmission Business

Is Transmission in SPP Still a Solid Business?

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Includes MCR's Transmission Investment and Rate Analysis for SPP Transmission Owners

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Is Transmission in SPP Still a Solid Business?

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Over the past decade, the transmission business has been lucrative for most transmission owners in SPP transmission. Transmission investment has been a driver of earnings growth for investor-owned utilities ("IOUs") and transmission companies ("Transcos"), while providing high returns for public power and cooperatives. On the horizon, however, there are numerous potential threats to the transmission business and to transmission owners' ability to sustain high levels of new investment. MCR believes that although some of these threats may eventually have an increasing impact on future investment opportunities, there are factors that mitigate these threats. Transmission will continue to be a strong business in SPP through at least the mid-2020s.

Seven Potential Threats to Transmission Investment

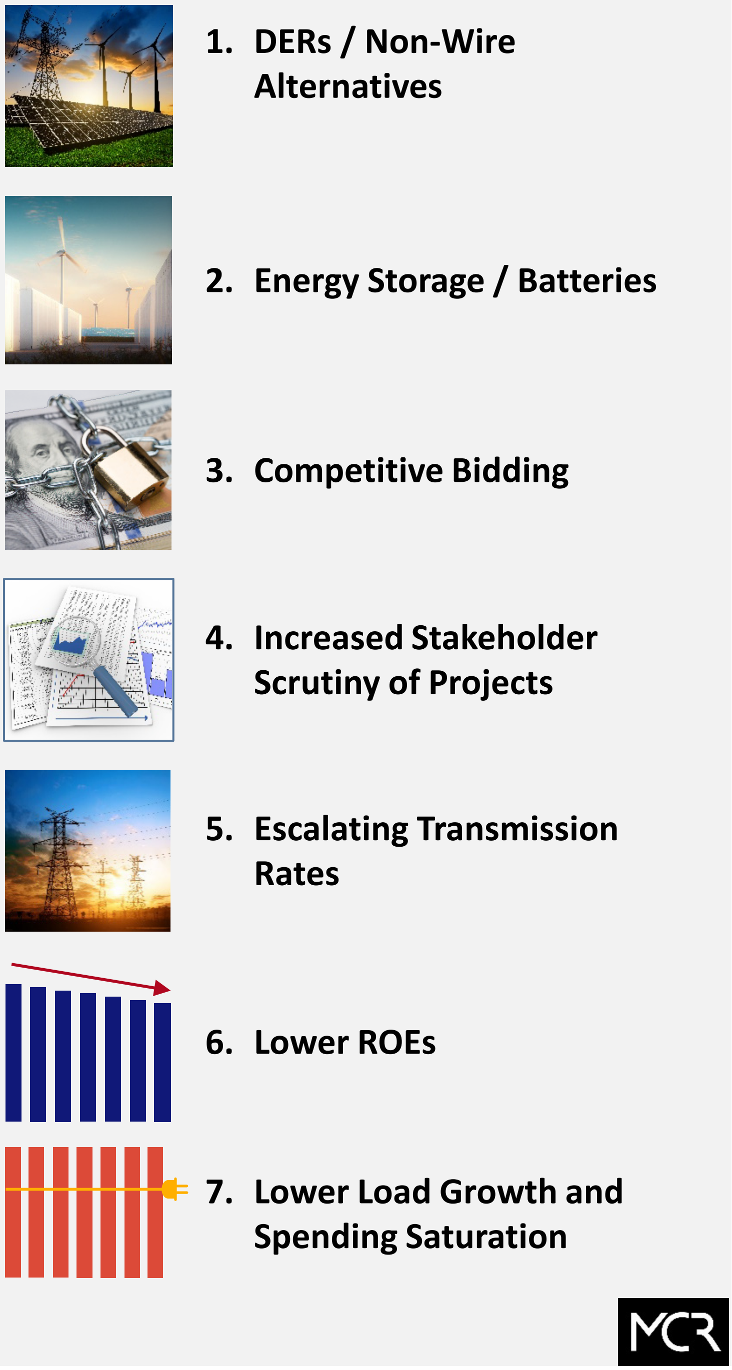
Figure 1 (on the next page) shows the seven areas MCR believes are potential threats to the transmission business.

1. Distributed Energy Resources and Non-Wire Alternatives. Some of the threats to new transmission investment garnering the most attention are the increasing roles of distributed energy resources ("DERs," e.g., rooftop solar) and other investments in non-wire alternatives ("NWAs"), such as energy storage,[1] demand response and energy efficiency that replace the need for traditional T&D investments. This threat is being driven by a combination of the relatively high cost of electricity in some parts of the country, declining costs of alternatives (think solar prices), regulatory mandates and financial incentives.

State commissions and regulators in several states are becoming more involved in T&D investment. States such as New York, California, Maine, Michigan and Minnesota are beginning to require an evaluation of NWAs or offer incentives

[1] Energy storage can include batteries, flywheels, compressed air, and pumped-hydro.

Figure 1
Potential Threats to
Future Transmission Business



for regulated utilities to implement NWAs in place of traditional T&D investments. They range from pilots in Michigan to more stringent oversight of proposed projects in Maine. There have been a few notable projects that are designed to eliminate T&D investment in favor of alternative investments such as energy efficiency, demand response and fuel cells. One example is the Consolidated Edison Brooklyn Queens Demand Management ("BQDM") Project that began in 2014 to defer costly T&D construction in New York City.[2] In January 2019, Con Edison outlined its updated plan to continue implementation of its BQDM program through 2021. The utility plans to continue procurement of additional load reduction.

In addition, growth of microgrids (standalone power systems) often driven by natural disasters such as wildfires and hurricanes, can reduce load on the grid and slow the need for traditional transmission investment.[3]

Although they are growing, the reality is that the impact of NWAs in SPP to date has been confined mainly to energy efficiency and demand response largely due to SPP's relatively low energy prices. So far, NWAs have mostly impacted distribution and thus have not put a significant dent in transmission investment.

One could expect that as transmission rates rise, the economics of NWAs will continue to improve. The general manager of an MCR public power client asked, "How long can these transmission rates continue to go up? At some point, there will be a backlash from utility customers, and they will use DERs to move behind the meter."

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[2] Per the 2014 New York PSC Order authorizing the initiative, 69 MW of overloading was projected in a defined area of ConEd's system by 2018. Given the complexities of ConEd's distribution network and the difficulties of construction in New York City, the estimated cost for the T&D upgrades was almost $1 billion. As of year-end 2018, BQDM spending totaled only about $95 million to achieve 50.7 MW of savings, with another 18.5 MW of relief planned through 2021. Most of the savings are coming from customer-side EE, demand response and fuel cells with the remainder from utility-side voltage optimization and DERs. The utility provided incentives for customer-side options.

[3] Source: "*Natural disasters could spark US microgrid surge*," Electric Transmission Week, September 23, 2019.

While reasonable to believe there could be some transmission price elasticity (backlash) in the transmission market, DERs and NWAs (other than energy efficiency) have so far not led to a perceptible loss of load in SPP.[4]

Even with continued high levels of investment and a corresponding increase in rates, it's still unlikely we'll see significant price resistance and a falloff of SPP transmission loads from NWAs, because there are multiple mitigating factors that soften the threat of NWAs on transmission. These factors include:

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- The market potential of rooftop/distributed solar is relatively small compared to total load. The 2020 SPP Integrated Transmission Plan ("ITP") Assessment Scope shows distributed and utility-scale solar capacity additions of only about 7 GW in 2029 compared to existing SPP load of 58 GW.[5] Assuming a 50-50 split of distributed and utility-scale, distributed solar is only about 5% of the total projected capacity in 2029.
- Remote utility-scale solar and wind still needs transmission to reach load centers and utilities have the right to build the required transmission interconnections.[6] Further, the trend toward "strategic electrification" (i.e., powering end-uses such as electric vehicles with electricity instead of fossil fuels to increase energy efficiency and reduce pollution and carbon) will largely be fueled by utility-scale renewables, such as wind and solar; these renewables will often require transmission.
- Rooftop solar will tend to be less prevalent in those states which utilize avoided costs or other valuation constructs rather than retail rates when determining customer credits.
- Transmission will likely still be needed to integrate various loads and supply resources bi-directionally across load centers and regions, regardless of whether supply resources are remote utility-scale or distributed locally.[7] Transmission's role will continue in diversifying peak load as electrification (e.g., electric vehicles, heat pumps) accelerates.
- NWAs tend to have a more direct impact on avoiding or deferring traditional distribution investment than transmission investment.
- To the extent NWAs do have some effect on transmission, their impact will be primarily on new transmission investment; existing transmission assets will be largely unaffected and will still be needed.

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4 For example, per the March 2018 and March 2020 SPP Revenue Requirements and Rates summary files, SPP load increased from 39.2 GW to 42.2 GW, a two-year growth of 7.6%. This excludes the load loss in 2020 due to the coronavirus. (See Schedule 11 PTP 12 CP load).

5 Source: "*Reference Case of ITP Assessment Scope*," page 4, published January 18, 2019, by SPP Engineering.

6 SPP Tariff Attachment V allows the utility to build the interconnection and recover costs from the generator customer(s) on a pro-rata basis for the positive incremental power flow impacts of the requested service.

7 Source: "*The Coming Electrification of the North American Economy,"* prepared by Brattle Group for the WIRES group, pages ii, iii, vi of Executive Summary and page 2 of report.

2. Energy Storage / Batteries

The second potential threat to transmission investment is the proliferation of energy storage systems such as batteries (a specific form of NWA). After many pilot projects, battery technology is rapidly improving; and battery storage systems have now moved into the commercial phase. This threat is being driven by declining battery prices, improved technology that increases discharge time and declining-priced solar that can be paired with storage. Battery storage can avoid or defer the need to invest in some types of transmission projects. Batteries can be placed closer to load centers, thus reducing transmission mileage or, if behind the meter, bypassing transmission entirely. Energy storage systems paired with solar can shave off peak demand, saving customers money, and reducing carbon emissions as compared to building new generation plants to meet system peaks.

Despite its high growth, nearly all energy storage to date has been as a supply resource rather than a direct replacement for transmission.

Energy storage as a supply resource will continue to grow at a high rate. Despite its high growth, nearly all energy storage to date has been as a supply resource rather than a direct replacement for transmission. A report from Wood Mackenzie and the Energy Storage Association says there was a 33% increase nationwide in energy storage deployments in the fourth quarter of 2019 when compared to Q4 2018.[8] Front-of-meter deployments in Q4 2019 were about 104 MW and the remaining 82 MW of behind the meter deployments were split between residential (40 MW) and non-residential (42 MW). Overall, U.S. energy storage deployments for all of 2019 were 523 MW. The market for new deployments is projected to grow from 523 MW in 2019 to 7,300 MW in 2025, a factor of 14. Most deployments have been in high-priced states such as California. Last year Wood McKenzie projected California to have 46% of the nearly 15,000 MW of cumulative deployments through 2024, followed by New York (9%), Hawaii (8%) and Arizona at (7%), with the rest of the U.S. comprising the remaining 30%.[9] If all of the significant energy storage projects seeking 2020 interconnection remain on track, the California ISO expects to have roughly 923 MW of battery storage online by the end of 2020.[10] Indeed, the Public Safety Power Shutoffs in California were and continue to be a significant driver of battery storage growth for the residential segment.

FERC Order 841 promotes integration of electric storage resources ("ESRs"), such as batteries, into the energy and capacity markets as a supply resource. Order 841 directed ISOs and RTOs to develop a model to integrate ESR participation in wholesale markets, including energy, capacity and ancillary market services. FERC granted SPP a delay due to SPP's ongoing delays in the development of a new market, and transmission settlement system and software changes associated with FERC's Order No. 841 reforms. In accepting SPP's deferral request, FERC ordered a new effective date of

[8] Source: "*Wood Mackenzie: Energy storage has 'found a foothold nationwide' in the US*," March 11, 2020 and "*US storage market sets power capacity record with Q4 2019 deployments*," Wood Mackenzie, March 10, 2020

[9] Source: "*U.S. Energy Storage Monitor*," Wood Mackenzie

[10] Source: "*Most powerful US battery system charges up in Calif. storage surge*," S&P Global Market Intelligence, June 24, 2020.

August 5, 2021, for SPP's underlying Order No. 841 tariff changes.[11]

As energy storage continues to become more economic as a supply resource, it can potentially displace some gas combustion turbines currently used to meet peak demand. There are currently 79 battery storage projects totaling about 7,270 MW in the interconnection queue in SPP, with in-service dates of 2020–2024.[12] To put this number in context, the total SPP interconnection queue of active projects totals about 134,000 MW (of course, not all projects will be implemented). In contrast, the total peak non-coincident load in SPP is about 55,000 MW. The Reference Case shown in the SPP 2020 ITP Assessment Scope shows storage to be only about 20% (or 1,400 MW) of solar's 7,000 MW by 2029. Thus, while the amount of battery storage is forecasted to proliferate in SPP from its current negligible amount, it is still quite small compared to the total SPP load. Although some of these storage projects could potentially be closer to load centers and reduce or even bypass transmission, the vast majority of storage solutions are meant to supplant new generation rather than displace new transmission.

Although the amount of battery storage is forecasted to proliferate in SPP, it is still quite small compared to the total SPP load.

A storage facility may be located on either the transmission system or a local distribution system. In addition to not yet having storage as a supply resource in its tariff, SPP does not currently have an approved FERC tariff for using storage as a transmission asset referred to as Storage as Transmission Only Asset ("SATOA").[13] SATOA can defer or replace transmission system upgrades as storage is placed along a transmission line and operated to inject or absorb power, mimicking transmission line flows. Instead of a threat, SATOA can also, however, be viewed as a potential new long-term (albeit small) source of cost-based revenue for transmission owners ("TOs"). SATOA solutions are in their infancy in RTOs and the SPP ITP does not list any storage projects in its forecast.[14]

The vast majority of storage solutions are meant to supplant new generation rather than displace new transmission.

Although battery storage is on the rise, the recent problems with lithium battery fires have been a bit of a setback for storage, as they will likely lead to the adoption of more stringent permitting and fire safety rules, which will increase project costs and render certain projects economically infeasible. Nevertheless, new non-lithium technologies with longer discharges and larger

[11] Source: "*FERC Permits SPP to Delay Implementing Storage Resource Participation Rules Until August 2021*," Washington Energy Report, March 10, 2020.

[12] Source: MCR analysis of SPP interconnection queue as of June 1, 2020.

[13] MISO has made a SATOA filing but it was rejected by FERC and a technical conference was conducted in May 2020. MISO will be refiling after addressing numerous issues in its filing. Per its previously proposed tariff, MISO will evaluate SATOA devices as solutions to transmission issues comparably to any other transmission (wires) solution. Considerations may include: 1) ability to address the transmission issue (e.g. loading, voltage, stability); 2) assurance of sufficient energy and/or reactive capability (MWh/MVar) to maintain injection capacity; 3) expected availability (forced outage rates) compared to alternatives; 4) life-cycle cost and 5) other considerations (e.g., lead-time, right of way or substation impacts, expandability, operational flexibility and system capacity).

Examples of specific SATOA applications: 1) after the second N-1 event the SATOA will be automatically dispatched to control voltage and thermal violations and/or 2) need for fast-acting energy storage to provide rapid injections pre- or post-contingency events to maintain reliability of the transmission system and to reduce congestion on key lines or interfaces.

[14] Source: "*2019 SPP ITP Assessment Report*," November 16, 2019, page 13, Table 2.1.

MW capacity are on the horizon and technical issues will be ironed out. Batteries will continue to drop in price, and storage will proliferate. Despite the advantage of teaming solar or wind with batteries to potentially bypass the transmission grid, there are factors that will limit the adverse impact of battery storage on the traditional transmission business, particularly in the near term:

There are factors that will limit the adverse impact of battery storage on the traditional transmission business, particularly in the near term.

- Energy storage (e.g., batteries) as a supply resource is not expected to be economically competitive with merchant generation (e.g., new combined cycle) until the mid-2020s.[15] Even if it does become competitive as a smaller resource, it will be paired with utility-scale solar, which may still require new transmission to move the power to load centers.
- Wholesale electricity prices tend to be relatively low in SPP,[16] so it will be more difficult for combination storage projects to obtain a large enough return on investment in a relatively short time period. Realistically, investors are more likely to continue to first focus on other higher-priced areas of the country, such as California. Thus, despite a substantial increase of battery storage in the SPP interconnection queue, storage is forecasted in SPP to be a very small part of its total capacity mix.
- In the near term, energy storage will mainly be acting as new peaker supply capacity with limited MW capacity and discharge time or mandated by some state regulatory commissions as part of integrated resource plans ("IRPs") rather than an explicit replacement for new transmission.[17]
- SPP does not have an approved tariff in place, so it will take several years before storage gains traction either as a supply resource or as a transmission asset.
- To the extent it eventually does have a direct transmission impact, energy storage primarily defers new transmission and has little impact on existing transmission assets. Behind the meter storage may bypass some transmission, but the existing transmission system will still be needed for other load.
- While some new traditional wires projects could be deferred or avoided by energy storage, transmission infrastructure can also be a required enabler of additional use of storage in the system.[18] About 50-60% of storage is expected to be "front of the meter;" thus, new transmission could be needed to facilitate some energy storage projects.
- Although they are in their infancy, SATOA projects can be a new-type of rate-based asset by the mid-20s, thus making this portion of the energy storage market a long-term opportunity for transmission owners.

[15] Source: "*2019 Storage Outlook: Utility procurement will drive deployments, analysts say,*" Utility Dive article quoting Ravi Manghani, Director, Energy Storage at Wood Mackenzie Power & Renewables and Timothy Fox, Vice President at ClearView Energy Partners, January 8, 2019, pages 4 and 5. Also see https://www.lazard.com/perspective/lcoe2019

[16] Source: "*FERC State of the Markets*," March 19, 2020, Figure 9.

[17] Source: "*2019 Storage Outlook: Utility procurement will drive deployments, analysts say*," Utility Dive article quoting Ravi Manghani, Director, Energy Storage at Wood Mackenzie Power & Renewables and Timothy Fox, Vice President at ClearView Energy Partners, January 8, 2019, pages 4 and 5. Also see https://www.lazard.com/perspective/lcoe2019

[18] See for example, "*Modernizing Minnesota's Grid: An Economic Analysis of Energy Storage Opportunities*," Energy Transition Lab, July 11. 2017, page 11.

3. Competitive Bidding

If you have your own service territory and are a net investor rather than net payer of transmission, a third potential threat to the transmission business is an increase in competitive bidding of projects, which will result in fewer available sole-source transmission opportunities for incumbents. This threat is driven by FERC's desire for more cost-effective transmission solutions and a push by major independent transmission developers to open the vast market for transmission to outside competition.

As in many other Regional Transmission Organizations ("RTO"), up to now, the impact of competitive bidding in SPP has largely been ineffective. In 2016, through its competitive bid process, SPP awarded the Walkemeyer project, a 21-mile, 115kV line from Walkemeyer to North Liberal in western Kansas. Despite having 41 qualified participants to bid on competitive projects in SPP as of January 1, 2020, there have been no additional projects awarded through this process.

Competitive bidding will not likely significantly affect the level of spending in the transmission business over the long term. Rather, it will continue to encourage new players to enter the market.

On July 18, 2019, SPP's Cost Allocation Working Group ("CAWG") released the results of an assessment into SPP's cost allocation in wind-rich areas within the RTO. Among the recommendations, the CAWG included an evaluation of the SPP cost allocation for projects of at least 100 kV but below 300 kV. In the SPP tariff, these projects are categorized as Byway projects and are cost allocated 33% regionwide and 67% to the local pricing zone. The concern is that these projects may be more regionally beneficial and should have more of their costs regionally allocated. Up to now, Byway projects have been owned by incumbents but if further evaluation of Byway projects results in SPP making these projects fully regionally allocated, more SPP projects above 100 kV could be eligible for competitive bidding.

Additionally, on October 17, 2019, FERC issued an order establishing an investigation under Federal Power Act Section 206 into whether ISO New England, PJM Interconnection and SPP may be inconsistently or more expansively implementing the immediate need reliability project exemption. This exemption allows RTOs to establish immediate need reliability projects exempt from the competitive bidding requirements. Although FERC ultimately found that SPP was not improperly applying the immediate need exemption in its planning process,[19] FERC's scrutiny into whether SPP was shielding projects from competitive bidding by applying the immediate need exemption too liberally could result in more projects exposed to bidding in the future.

If this FERC investigation serves to increase the number of competitively bid projects, the landscape of transmission builders and owners in SPP may be altered. Nevertheless, competitive bidding of more transmission projects will not likely significantly affect the level of spending in the transmission business over the long term. Rather, it will continue to encourage new players to enter the market and the market share of transmission spending will be spread across more players. With more competitive bidding, traditional TOs will obtain a smaller piece of the investment pie. Although the number of requests

[19] See Docket No. EL19-92, 171 FERC ¶ 61,213, June 18, 2020.

for new projects could expand as developers propose new projects, the cost of most competitive projects will likely be less as technology and competition has its intended effect. Thus on balance, competitive bidding is not a threat to the transmission business, but it will affect the business model of traditional TOs, changing how the spending pie is distributed and the types of projects to address network issues. The level of disruption to the traditional transmission business, however, will be moderated by several factors.

Competitive bidding is not a threat to the transmission business, but it will affect the business model of traditional transmission owners.

- Smaller TOs will likely partner with transmission developers to help ensure they gain at least a piece of the investment pie.
- Despite FERC's investigation, certain projects will still be categorized as Immediate Need Reliability Projects, exempt from the Competitive Developer Selection Process. These projects are owned by the incumbent.
- Incumbent TOs may have an incentive to design a project under the 100 kV threshold for cost-sharing, thereby avoiding competitive bidding. There are 17,000 69 kV miles of lines out of almost 67,000 total in SPP.
- Texas established a right of first refusal ("ROFR") in 2019 that serves to protect incumbent TOs. After a challenge by NextEra, the law was initially upheld in 2020. NextEra's appeal is pending. The success of the Texas ROFR may lead to discussion in more states about instituting a ROFR.
- If competitive bidding is expanded to Byway projects, it will take several years to fully implement as existing ITP projects are grandfathered and new ones must be proposed and evaluated.

4. Increased Stakeholder Scrutiny

The fourth potential threat to the transmission business is increased stakeholder scrutiny of potential projects. Stakeholders who see escalating transmission rates may demand even more input in the review and approval of ITP projects or to seek a non-wires alternative to the traditional transmission build-out. This scrutiny could lower the number and cost of the upcoming projects or even lead to requiring avoided cost calculations for T&D projects. This threat is driven by escalating transmission rates, continued opposition to obtaining permits and right of way, and a desire for increased transparency into an engineering-driven, often opaque process.

The recent challenges to transmission projects have been more focused on the larger, multi-state projects designed to transport wind and solar energy from generating sources to loads. The demise of American Electric Power's Wind Catcher project in Texas and the complete shutdown of Clean Line Energy in early 2019 illustrate the power of stakeholder scrutiny to frustrate large transmission ambitions. There have also been challenges to more local transmission buildout in SPP. For example, in 2018, Xcel led a group of intervenors to protest SPP's filing at FERC to integrate GridLiance's transmission assets into SPP. The intervenors claimed that SPP does not explain how the upgrades GridLiance made to its Oklahoma assets benefit existing SPP Zone 11 customers. Certain stakeholders questioned whether the transmission investments made by GridLiance were necessary to ensure reliability for the entire pricing zone and thus justify the corresponding zonal rate increases. Hearing procedures are pending (Docket ER18-2358). Thus, the threat of stakeholder scrutiny is real. However, there are factors that tend to moderate this threat, including:

- FERC and RTOs have traditionally recognized the rights of utilities to manage the reliability of their local systems.[20]
- Neighboring incumbent TOs may be wary of objecting to another utility's project for fear of attracting opposition to their own plans.
- Major stakeholders (e.g., state commissions) do not want to be viewed as causing a major outage by denying transmission projects that help ensure a reliable transmission system.
- The "Puerto Rico and PG&E effects," state renewable policy goals, and lower energy prices continue to give key stakeholders the political cover to look the other way regarding the big investments in transmission and their impacts on rates.

The "Puerto Rico and PG&E effects," state renewable policy goals, and lower energy prices continue to give key stakeholders political cover.

5. Escalating Transmission Rates

Escalating transmission rates, well above inflation, can lead to adverse price elasticity whereby demand starts to fall, and formula rates adjust upward, causing even further loss of demand. These rising transmission rates have been driven by continued large transmission investments, a major driver of earnings growth for IOUs/Transcos, and the increased ability of TOs to optimize their Annual Transmission Revenue Requirement ("ATRR") within the confines of their approved formula rate. Zonal network transmission rates (Schedule 9) in SPP have not moved uniformly up or down since 2015 (see Figure 32 on page 42). This is indicative of the reality of how different circumstances exist in the varying SPP pricing zones. However, tracking the region-wide rate (Schedule 11) shows a better overall perspective of the increasing cost of transmission in SPP. The Schedule 11 rate paid by SPP load in SPP has increased 37.1% since 2015. This rate is an additional transmission cost on top of the local, zonal rate (Schedule 9).

Despite the prospect of rising transmission rates from increased investment, there are factors that will mitigate the loss of load caused by higher transmission rates.

Despite the prospect of rising transmission rates from increased investment, there are factors that will mitigate the loss of load caused by higher transmission rates:

- Transmission is still a relatively small percentage of the customer's total bill (i.e., typically in the teens).
- Transmission has helped facilitate low energy prices in SPP through decreased congestion in most SPP regions and increased access to wind and solar, thus keeping the lid on overall customer bills.

[20] Although FERC Order 1000 focused mainly on regional planning, it also recognized the potential for local transmission facilities to be included in a regional transmission plan and not be cost-allocated across zones. Order 1000 defined a local transmission facility as "a transmission facility located solely within a public utility transmission provider's retail distribution service territory or footprint that is not selected in the regional transmission plan for purposes of cost allocation." Source: FERC Order 1000, Docket RM10-23, page 52.

- Transmission investment enhances reliability, a value to the customer.
- IOUs have been emphasizing T&D as part of "infrastructure" investment and "Smart Grid," resulting in increases to the distribution part of the bill, thus helping to masquerade the transmission increases.
- The economic viability of alternatives to detach from network transmission service remain limited and, in most cases, far from the tipping point where it is economically beneficial to "get off the grid" (e.g. capital and operating costs of behind-the-meter generation vs. network transmission service).

6. Lower ROEs

The sixth looming threat for transmission owners who are net investors (rather than net payers) of transmission, is a reduced return on equity ("ROE") that mutes the financial attractiveness of transmission investment. Lower and more "permanent" long-term interest rates can lead to lower ROEs.

Given past, current and planned transmission projects, IOUs and Transcos see transmission as a very attractive business, using transmission investment as a major driver of earnings growth at acceptable risk levels. Up to this point, ROEs have stayed relatively high despite much lower long-term interest rates, which tend to be a key component of ROE.

By using three methods to calculate ROE, FERC no longer needed the concept of anomalous interest rates to moderate the effects of very low interest rates.

Over the last several years, the historically low interest rates had been viewed as anomalous conditions, because the Federal Reserve intervened to lower rates to stimulate the economy. Due to the anomalous conditions, FERC had set the granted base ROE for RTOs at the midpoint of the mid and upper ends of the ROEs of the sample set of utilities (roughly the 75th percentile), rather than the midpoint. With Opinion 569/569-A, the MISO case that changed the methodology for determining ROE,[21] this argument of unusual interest rate conditions can no longer be made as FERC has developed a new methodology for determining an IOU's ROE.

In a low interest rate environment, the traditional discounted cash flow ("DCF") method can lead to relatively low ROEs as dividend-seeking investors bid up high-dividend paying stocks, thus lowering the current yield used in the DCF formula. FERC has decided to use a new ROE approach that addresses this market distortion issue by using three ROE methods instead of just DCF.[22] By using three methods to calculate ROE for RTOs or individual utilities, such as in SPP, FERC no longer needed the concept of anomalous interest rates[23] to moderate the effects of very low interest rates.

Another threat to ROEs and overall return levels is the potential loss of various incentives. FERC issued a Notice of Inquiry ("NOI") regarding incentives, including the RTO membership adder of 50 basis points, various Transco and ROE project adders, and the use of a hypothetical capital structure for new projects After receiving comments, FERC issued a Notice of

[21] Source: 169 FERC ¶ 61,129 Docket EL14-12-003, 11/21/19 and 5/21/20.

[22] Three methods include DCF, capital asset pricing model ("CAPM") and risk premium model.

[23] Source: Order 569, page 170 and Order 569-A, page 86.

Proposed Rulemaking ("NOPR")[24] that proposes to eliminate the Transco ROE adder, but largely confirmed other ROE incentives and created additional incentives for the most cost-efficient reliability projects and an increase in the RTO membership adder from 50 points to 100 points. Stakeholders recently provided comments to this NOPR and FERC will subsequently issue its order, which will likely be challenged. Despite the threat of lower long-term interest rates and their effect on ROEs, MCR believes transmission investment will remain very attractive because:

Investment analysts view transmission investment as providing relatively high returns with moderate risk in a very low interest rate environment and consistent with a utility's "back to basics" strategy.

- The proposed new FERC base ROE determination method uses the average of three methods (rather than just DCF). This new methodology, if it survives further rehearings and appeals, will tend to lean to more moderate or higher ROEs than what would be with the DCF method alone. In fact, the base ROE for MISO coming out of Opinion 569-A was a very healthy 10.02%.
- FERC has traditionally set transmission base ROEs at slightly higher than regulated state distribution ROEs. Even at a lower ROE, transmission will still provide a relatively attractive ROE with moderate risk compared to alternative investments and remain a major earnings driver for most utilities. In the first quarter of 2020, the average approved ROE of vertically-integrated state ROEs was a healthy 9.58%.
- Unlike MISO, where there is a standard RTO-wide ROE, each SPP TO has a fixed, approved ROE based on their last (or original) Section 205 filing. Thus, barring Section 206 complaints against each TO, the existing relatively high ROEs developed under higher or more anomalous conditions will remain very "sticky" and last for at least several more years.
- FERC released its NOPR on incentives and, to the surprise of many, is actually doubling-down on incentives. This includes increasing the RTO membership adder for all TOs to 100 basis points and providing very healthy project–specific ROE incentives that promote advanced technologies or enhance reliability with high benefit to cost ratios.
- Even if overall ROEs (base plus adders) were somewhat reduced, a lower ROE for SPP TOs will still have only a modest impact on the total revenue requirement of larger TOs. For example, lowering the Xcel-Southwestern Public Service ("SPS") total ROE by 50 basis points (e.g., assuming from 10.5% to 10.0%) reduces the total revenue requirement by only about 2.4%.[25] This is not nearly enough to discourage transmission investment.
- Investment analysts view transmission investment as providing relatively high returns with moderate risk in a very low interest rate environment. Transmission investment is consistent with a utility's "back to basics" strategy that appeals to the investment community.

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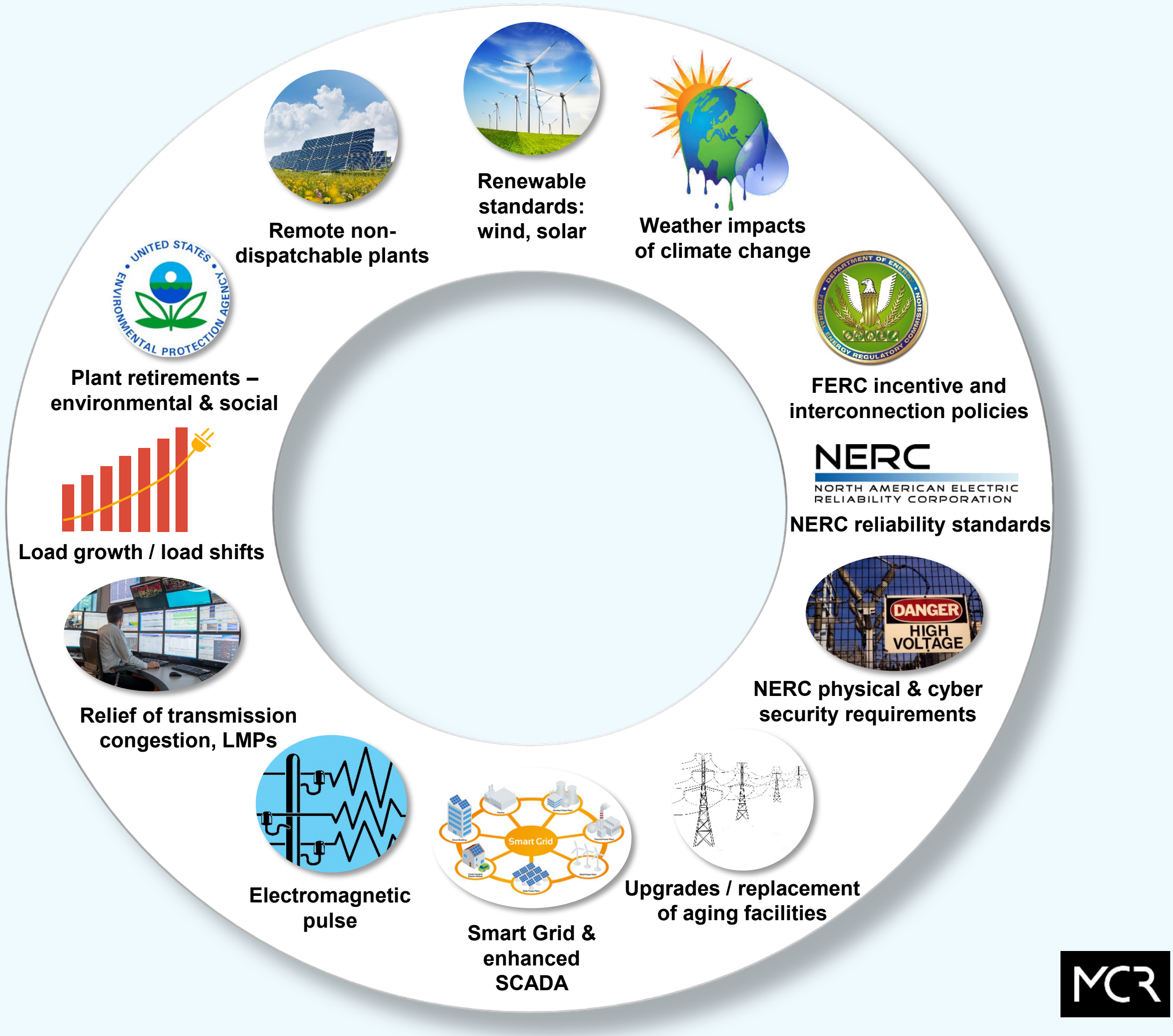
[24] Source: FERC Incentive NOI Docket No. PL19-3, March 21, 2019 and NOPR, March 20, 2020.

[25] MCR analysis of Xcel-SPS formula rate template, rate year 2020 Attachment H file.

Figure 2
Drivers of Transmission Investment



7. Lower Load Growth and Spending Saturation

The final looming threat to the transmission business is slowing load growth due to energy efficiency and demand response, and a saturated transmission market. Prior to the coronavirus, which was estimated in mid-May to drop SPP average load by about 7% to 10% on a weather-normalized basis,[26] SPP was forecasting load growth of only about 1% per year.[27] Given the low growth rate, the concern is transmission investment will reach saturation and there will be fewer projects that are needed for reliability and/or economic reasons. The threat of investment saturation, however, has not yet materialized because the factors driving transmission investment are numerous, expanding and diversified, with load growth being only one of many drivers. (See Figure 2 above for the factors MCR believes are driving transmission investment.) Recent transmission investment continues

[26] See *SPP Covid-19 Response Update,* SPP website, May 14,2020.

[27] Source: *2019 SPP ITP Assessment Report*, November 6, 2019, page 10.

to be strong and MCR does not expect a near-term significant slowdown in SPP transmission investment because:

- There are many factors driving transmission investment. Recent drivers include “hardening” of the transmission system to withstand natural disasters, cybersecurity, smart grid and enhanced SCADA systems, and additional transmission to reach remote non-dispatchable renewable resources. For example, FERC is currently contemplating incentives to encourage additional investment in cybersecurity to meet potentially higher standards beyond the current Critical Infrastructure Protection.[28]
- The recent transmission investment in SPP continues to be strong, albeit slowing. For example, since 2016, total transmission gross plant for all SPP TOs has increased by 46%.[29] The year-to-year growth rate has slowed in recent years; 2017 growth over 2016 was 9%, 2018 growth was 7%, 2019 growth was 7% and 2020 shows an increase of 5%. Though slowing, recent growth remains healthy.[30]
- Looking to the future, the 2020 SPP Transmission Expansion Plan (“STEP”) shows a robust pipeline of 78 newly approved projects with Notices to Construct ("NTC") costing $545 million compared to 65 newly approved projects in the 2019 STEP costing $387 million and 71 projects totaling $263 million in the 2018 STEP (see Figure 3 below). The 2020 STEP forecasts about $780 million of projects with expected in-service dates in the next three years. This is about the same level as the 2019 STEP but down from the 2018 and 2017 STEPs of about $1.1 billion and $1.5 billion, respectively. The larger 2017 and 2018 amounts were influenced by the large amount of NTCs issued in 2017 and the expanded SPP footprint resulting from the 2015 incorporation of the former Integrated

The threat of investment saturation has not yet materialized, because the factors driving transmission investment are numerous, expanding and diversified.

Figure 3
Approved New Projects by STEP Year [31]

STEP Year	Newly-Approved Projects ($ Millions)	Number of Newly-Approved Projects	Estimated Amount of Projects with In-service Dates in the Next Three Years ($ Millions)
2020	$545	78	$780
2019	$387	65	$805
2018	$263	71	$1,130
2017	$992	138	$1,495
2016	$520	50	$1,545

[28] See Notice of Inquiry, Docket No. RM20-12.
[29] Excludes TOs without the full five years of Attachment H data available.
[30] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Includes IOUs/Transcos, G&Ts, T&Ds and municipals in existence for all sample years.
[31] Source: SPP Transmission Expansion Plans for years 2016-2020 showing NTCs and estimated upgrade cost by in-service year for the three years following the current STEP year.

System, including a couple of large Basin Electric projects. While the forecasted SPP investment is down from several years ago, it has stabilized at sizable levels, highlighted by the high number of newly-approved projects (NTCs) in the 2020 STEP. Despite the 2020 STEP forecasting a tail-off of projects with in-service dates of 2022 and 2023, we would expect that the pipeline will be largely refilled as in prior years.

- IOUs and Transcos in SPP have an average net plant to gross plant ratio of 78%, or conversely, are about 22% depreciated across all assets (some higher and some lower), indicating that there is still some room for additional investment to replace aging systems (see Figure 21 on page 32). This net plant to gross plant ratio has decreased by about 1% since 2016. Similarly, G&Ts have even older plant with a ratio of 68%.

Evidence points to strong SPP investment for at least the next several years as the drivers of investment continue. Just when one driver of investment seems to run its course, another picks up the slack or entirely new drivers emerge.

What are the Mitigating Offsets to the Seven Threats to Transmission Investment?

Figure 4 (on the facing page) shows a summary of the seven potential threats to future transmission investment and the mitigating factors that tend to neutralize or moderate the threat. Although shown separately, the seven threats and the solutions can overlap, as a mitigating factor can address more than one threat. Despite the multiple potential threats to the transmission business and continued transmission investment, there are numerous counteracting factors for each of the threats. Though we've seen some slowing of the growth rate of spending in the past few years, the preponderance of evidence points to continued strong investment in SPP for at least the next several years as the drivers of investment continue. Just when one investment driver seems to run its course, another picks up the slack or entirely new drivers emerge. Further, when NWAs and battery storage start to make a dent in transmission investment, it will primarily affect distribution and to the extent it does affect transmission, it will largely only affect new transmission. The existing transmission assets already in place will continue to gain cost recovery at healthy levels of return. Remaining service lives of existing assets are on average about 20 to 30-plus years, so there is little or no threat to those returns barring a dramatic (and unlikely) change in FERC cost recovery policy.

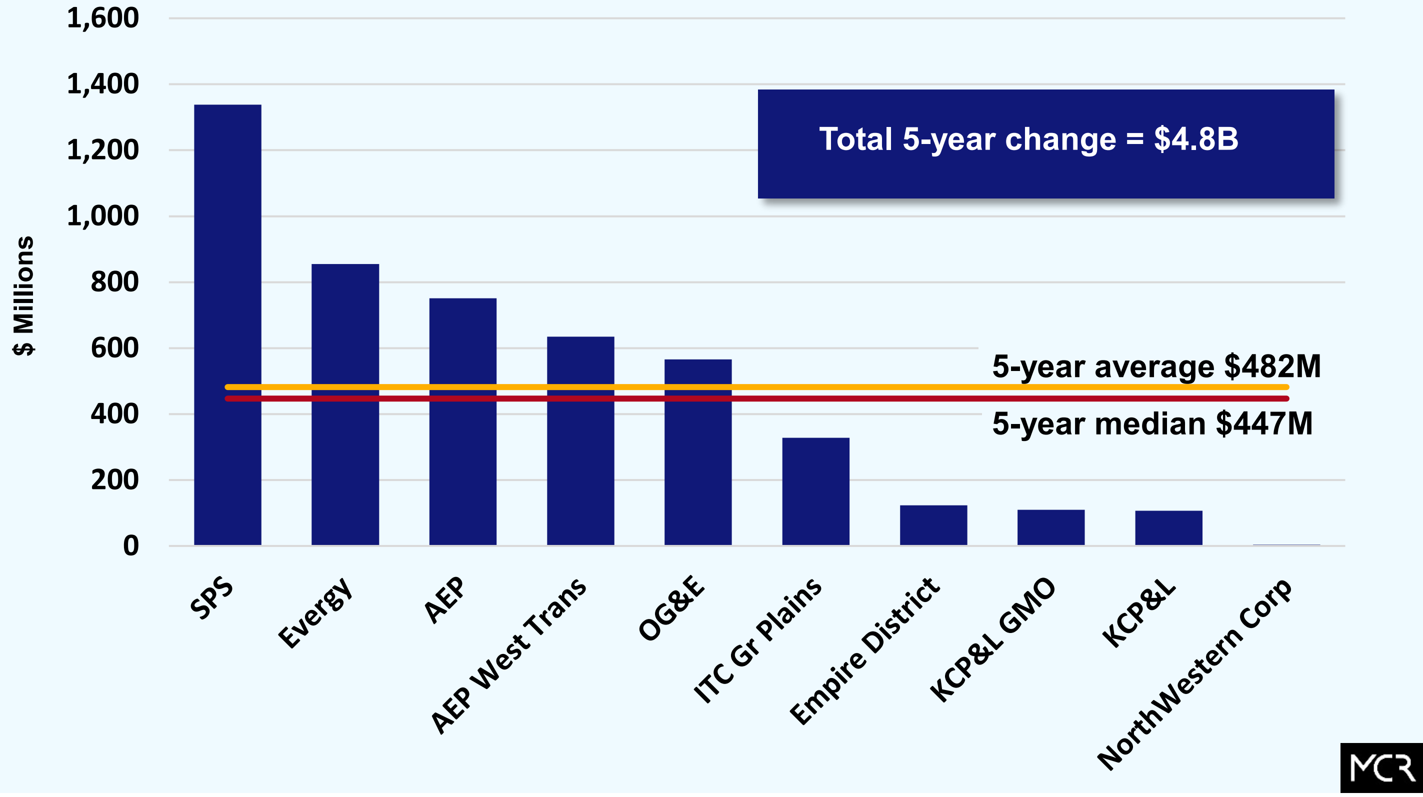
Which Transmission Owners have been Investing over the Last Five Years?

Looking at the change in gross transmission plant over the past five years in the Attachment H formula rate templates provides a good proxy for the absolute levels of transmission capital investment in SPP for IOU/Transcos, G&Ts, T&D cooperatives, and municipals filing formula rates. Joint action agencies ("JAAs"), public power districts and government agencies like WAPA are not included due to the small sample size for these segments. Those TOs with stated rates are also excluded.

Figure 4—Mitigating Offsets to Transmission Threats

Potential Threat to Transmission Investment	Mitigating Offsets to Threat
Distributed Energy Resources / Non-Wire Alternatives	■ Low wholesale energy prices in SPP ■ Limited market of distributed solar compared to total load ■ Utility-scale solar & wind to be ~50% of total solar and wind—remote solar and wind will still need transmission ■ Transmission is needed to integrate loads and supply resources bidirectionally across load centers and regions as strategic electrification (e.g., electric vehicles) accelerates ■ NWAs more directly impact distribution and, if at all, affect new transmission, not existing transmission
Energy Storage/ Batteries	■ Battery storage not expected to be competitive with newer merchant gas generation until mid-2020s; low SPP prices ■ Energy storage is being used as a supply peaker rather than a replacement for transmission; small percent relative to total load ■ If at all, energy storage will impact new, not existing transmission ■ SATOA can be a new cost-based revenue source over the long term
Competitive Bidding	■ Smaller TOs will partner with developers to get a piece of the pie ■ TOs may have incentive to define projects in own zone under the kV threshold for cost-sharing so not competitively bid ■ Certain projects may be Immediate Need Reliability; no bid ■ Certain states (e.g., Texas) have a ROFR for the incumbent ■ Existing projects grandfathered; bidding will take time to implement
Increased Stakeholder Scrutiny of Projects	■ Order 1000 recognized a utility's right to manage local reliability ■ Neighboring utilities' reluctance to challenge others to protect own ■ Regulator reluctance to jeopardize reliability—political cover of state renewable goals, low prices and "PG&E and Puerto Rico effect"
Escalating Transmission Rates	■ Transmission rates are still a relatively small percent of total bill and improved transmission facilitates lower energy prices ■ IOUs spend heavily in distribution; T&D rates up in tandem ■ Costly to go "behind the meter"
Lower ROEs	■ New ROE method moderates/raises ROEs; "sticky" IOU ROEs ■ ROEs still attractive to investors; > distribution ROEs & mod. risk ■ FERC incentive NOPR doubling down on ROE incentives ■ Lower ROEs cause small percent reduction in ATRR for most TOs
Lower Load Growth and Spending Saturation	■ Load growth is only one of many factors driving spending; healthy transmission spending growth: 2020 = 5%; 2019 = 7%; 2018 = 7% ■ STEP project pipeline strong compared to '18 & '19; 78 new projects ■ Older transmission plant still exists for many TOs

Figure 5
5-Year Change in Gross Transmission Plant Balance for SPP IOUs and Transcos (2015-2020)[32]



The graph in Figure 5 above shows the total change in gross transmission plant for SPP IOUs and Transcos was $4.8 billion over the last five years. The average change for the ten IOUs and Transcos over the five years was $482 million (about $96 million per year) with a slightly lower median of $447 million. One of the ten IOUs/Transcos, Southwestern Public Service or SPS, had over $1.0 billion in transmission investment over the last five years.

The SPP total increase of $4.8 billion represented a 43% weighted average increase in transmission gross plant over the five years (see Figure 6 on next page). For comparison, the MISO IOU/Transco segment increased their investment by 55% over the same timeframe.

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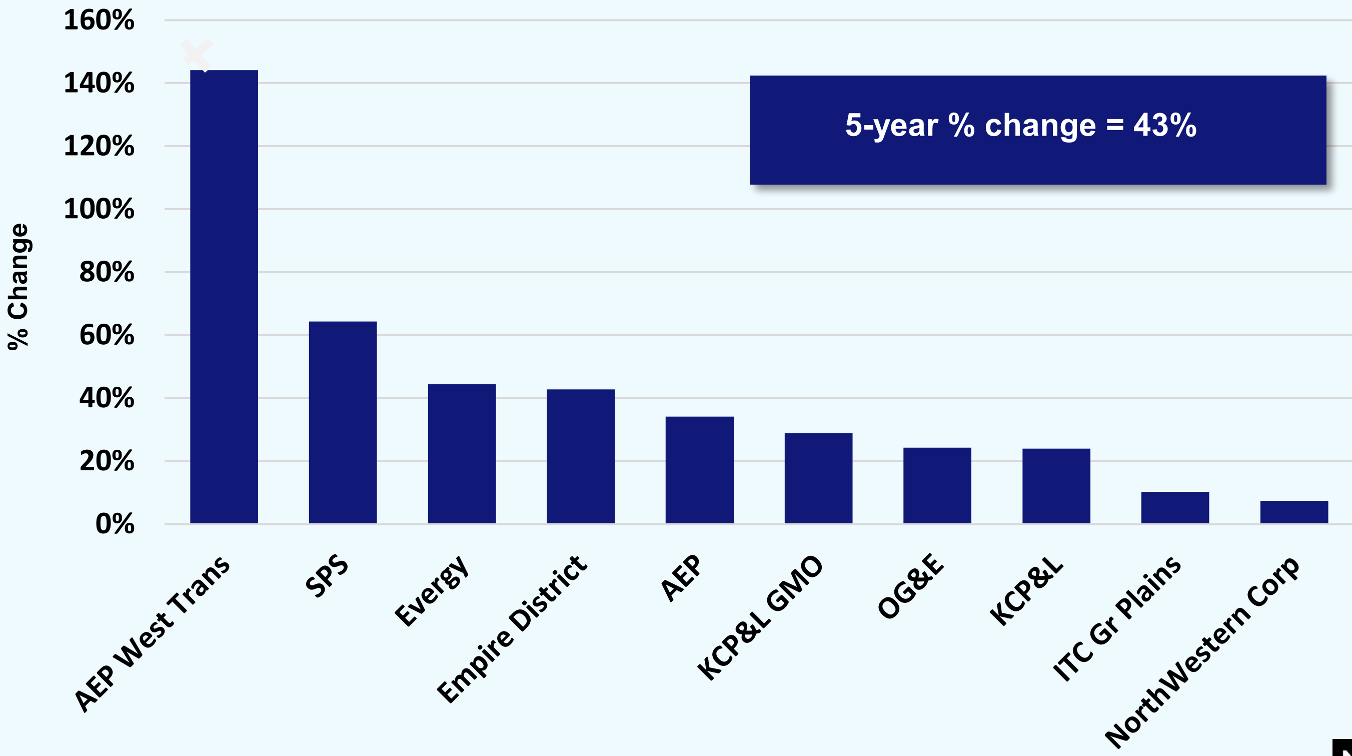
[32] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs, which show gross transmission plant. Covers all transmission investments including Schedules 9 and 11. For those companies using a projected test year, captures the change in projected data for each year. For those companies using an historical test year, captures the change in previous end-of-year data for each year. IOUs and Transcos are categorized together, because the SPP Transcos are mostly owned by IOUs and/or are profit-making entities. Transmission gross plant compared rate year 2015 vs. rate year 2020 (i.e., the changes from 2015 to 2016, 2016 to 2017, 2017 to 2018, 2018 to 2019 and 2019 to 2020). Formula for investment = change in gross plant + change in CWIP in rate base. Does not match annual capital expenditures, because it includes transfers and retirements. Transfers could, for example, include a reclassification of distribution plant as transmission. Does not include any change in CWIP that is not in rate base. Excludes Prairie Wind and Transource Missouri due to making single upfront investments and no investments in additional projects.

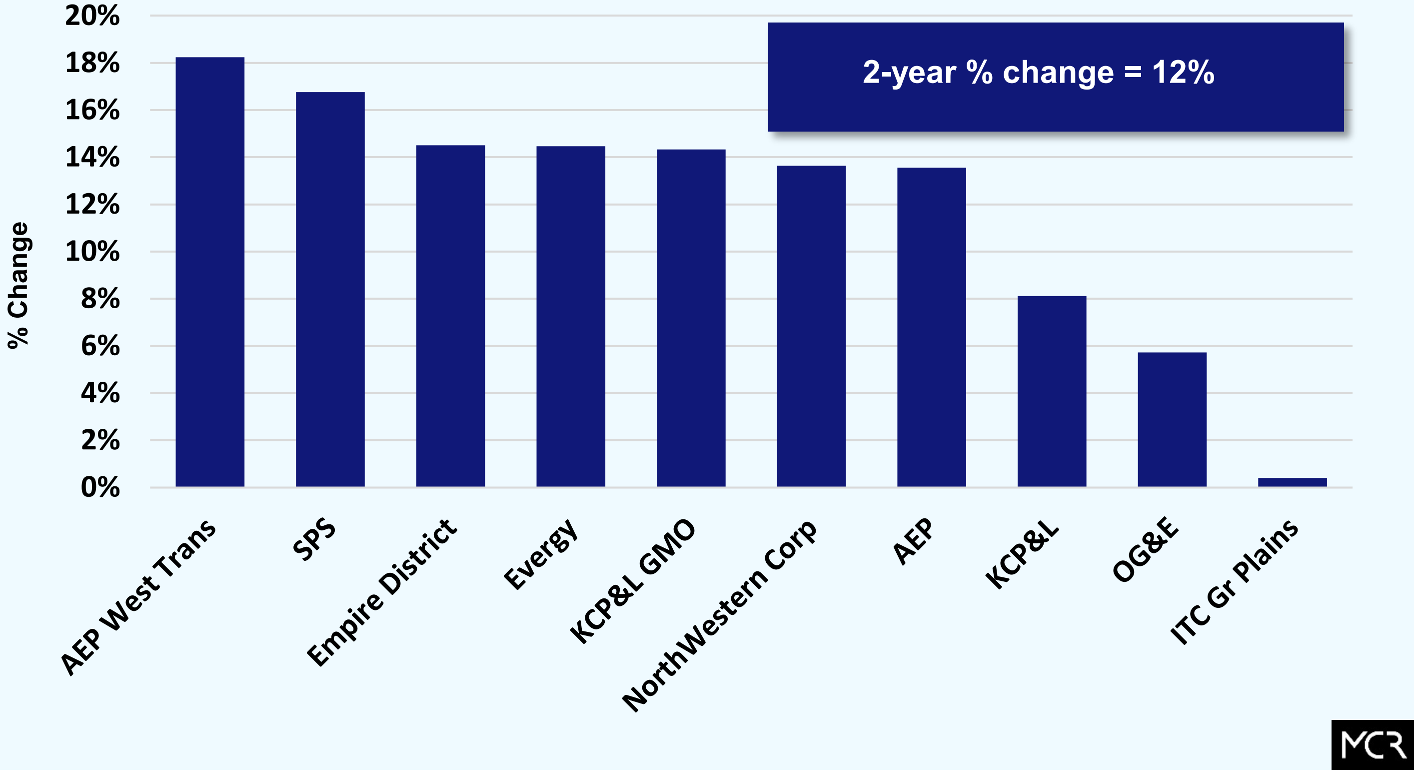
Figure 6
5-Year Percentage Change in Gross Transmission Plant Balance for SPP IOUs and Transcos (2015-2020)[33]



AEP West Transmission Companies had the largest increase by far, increasing its transmission plant by 144% over the past five years. SPS, Evergy (formerly Westar), and Empire District have all increased their gross transmission plant by at least 40% over this timeframe. At the low end of growth were NorthWestern Corporation at 7% and ITC Great Plains at 10%. The median increase was 31%. American Electric Power ("AEP") grew its gross transmission plant over the last five years by 34%, which amounted to a $751 million increase due to their large base and was the third largest dollar increase among the ten IOUs/Transcos.

[33] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs.

Figure 7
2-Year Percentage Change in Gross Transmission Plant Balance for SPP IOUs and Transcos (2018-2020)[34]

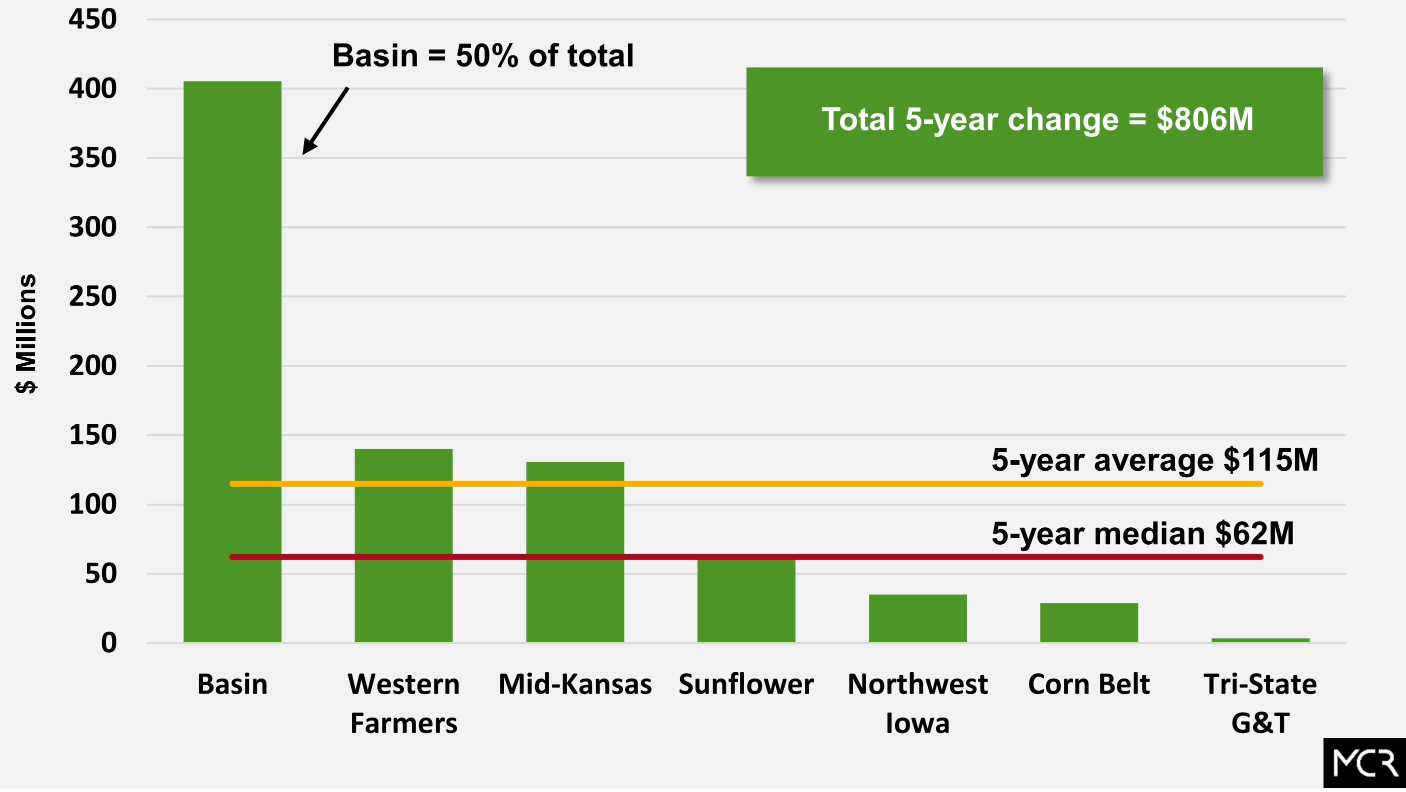


Looking at just the last two years, the percentage change in transmission investment for all IOUs/Transcos was 12% (see Figure 7 above) with a median of 14%. The two-year segment average was brought down by Kansas City Power & Light ("KCP&L") with an 8% increase, Oklahoma Gas and Electric ("OG&E") with a 6% increase, and ITC Great Plains with less than a 1% increase. KCP&L may have dialed back its investment in light of its merger with Westar that was approved in 2018 and rebranded as part of Evergy in late 2019. OG&E slowed down to more historically normal levels after completing significant investment in 2017 and 2018. ITC Great Plains' investment has slowed due to the completion of projects in the 2015 through 2017 timeframe.

The TOs with the largest percentage change in 2020 compared to the ending 2018 balance were AEP West Transmission Companies (18%) and SPS (17%). On a dollar basis, the large investors in 2019 and 2020 were unsurprisingly big established players: SPS, AEP, and Evergy.

[34] Source: MCR PTIL database based on rate year 2018-2020 SPP Attachment Hs.

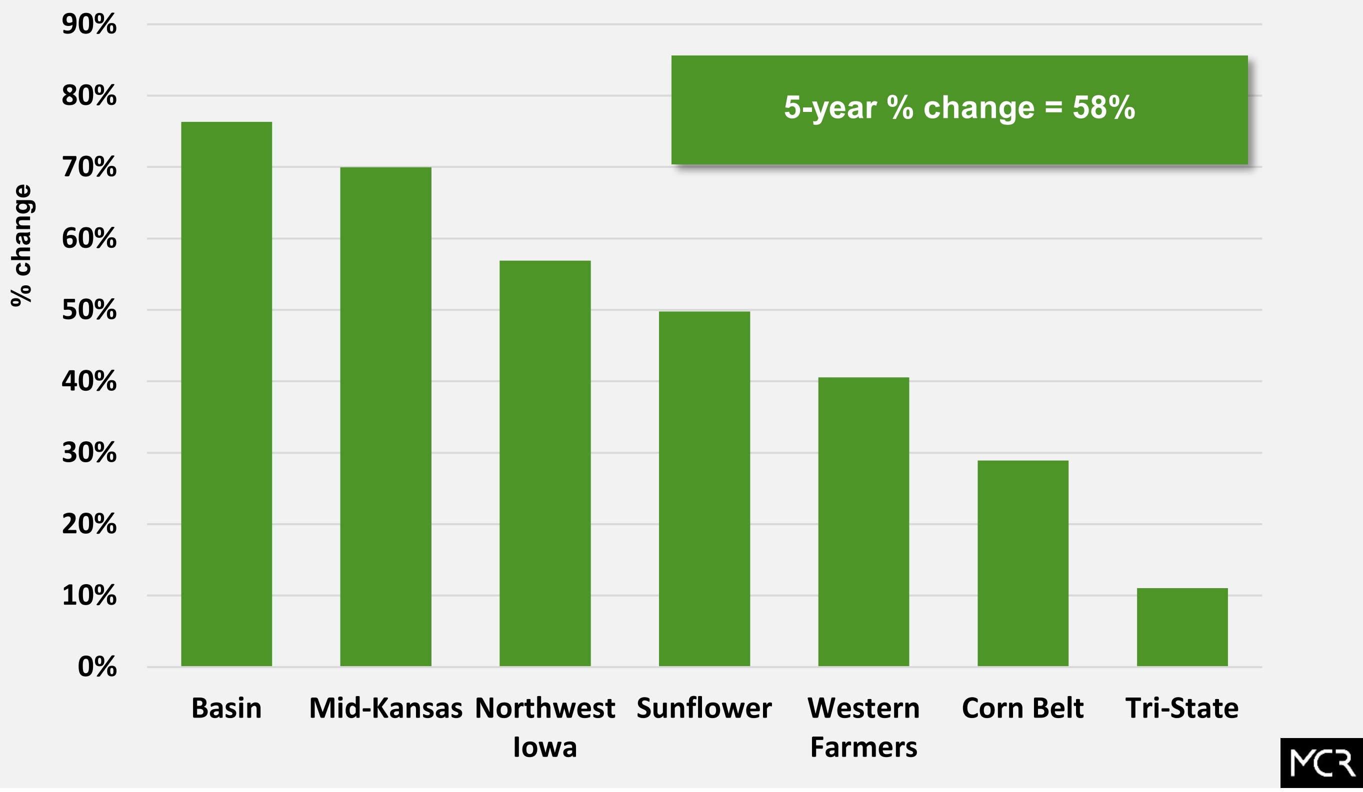
Figure 8
5-Year Change in Gross Transmission Plant Balance for SPP G&Ts (2015-2020)[35]



Figures 8 through 17 show the dollar change and percentage change in gross transmission plant over the last five years for G&T, T&D, and municipal TOs, respectively. Figure 8 above shows that the seven G&Ts filing formula rates had a five-year dollar change of $806 million. The five-year average for the G&T group was $115 million with a median of $62 million (about $12 million per year), reflecting a large spread between mean and median led by Basin Electric Power Cooperative. Excluding Basin, the G&T segment had an average five-year investment of $67 million and a median of $49 million, reflecting a more balanced picture of investment across the group. The median annual investment for a SPP IOU/Transco of $89 million is over seven times the G&T median annual investment of $12 million. If excluding Basin, the median annual IOU/Transco investment becomes more than nine times that of the median annual G&T investment. Basin alone accounted for 50% of the segment's investment, with Western Farmers comprising another 17% and Mid-Kansas another 16% over the last five years.

[35] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Excluded Arkansas Electric Cooperative ("AECC") due to its relatively small ownership of plant in SPP and lack of publicly-available load data. The vast majority of AECC transmission plant is in MISO.

Figure 9
5-Year Percentage Change in Gross Transmission Plant Balance for SPP G&Ts (2015-2020)[36]



The G&T segment's percentage change of 58% outpaced that of the IOUs/ Transcos of 43% over the past five years.

Figure 9 above shows the overall five-year weighted percentage change in gross transmission plant for all G&Ts was 58% with a median increase of 50%. Basin led the segment with a 76% increase. They were followed by Mid-Kansas Electric Company (70%), Northwest Iowa Power Cooperative ("NIPCO") at 57%, and Sunflower Electric Power Corporation (50%). The G&T segment's overall percentage change of 58% (48% excluding Basin) outpaced that of the IOUs/Transcos of 43% over the past five years.

[36] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs.

Figure 10
2-Year Percentage Change in Gross Transmission Plant Balance for SPP G&Ts (2018-2020)[37]

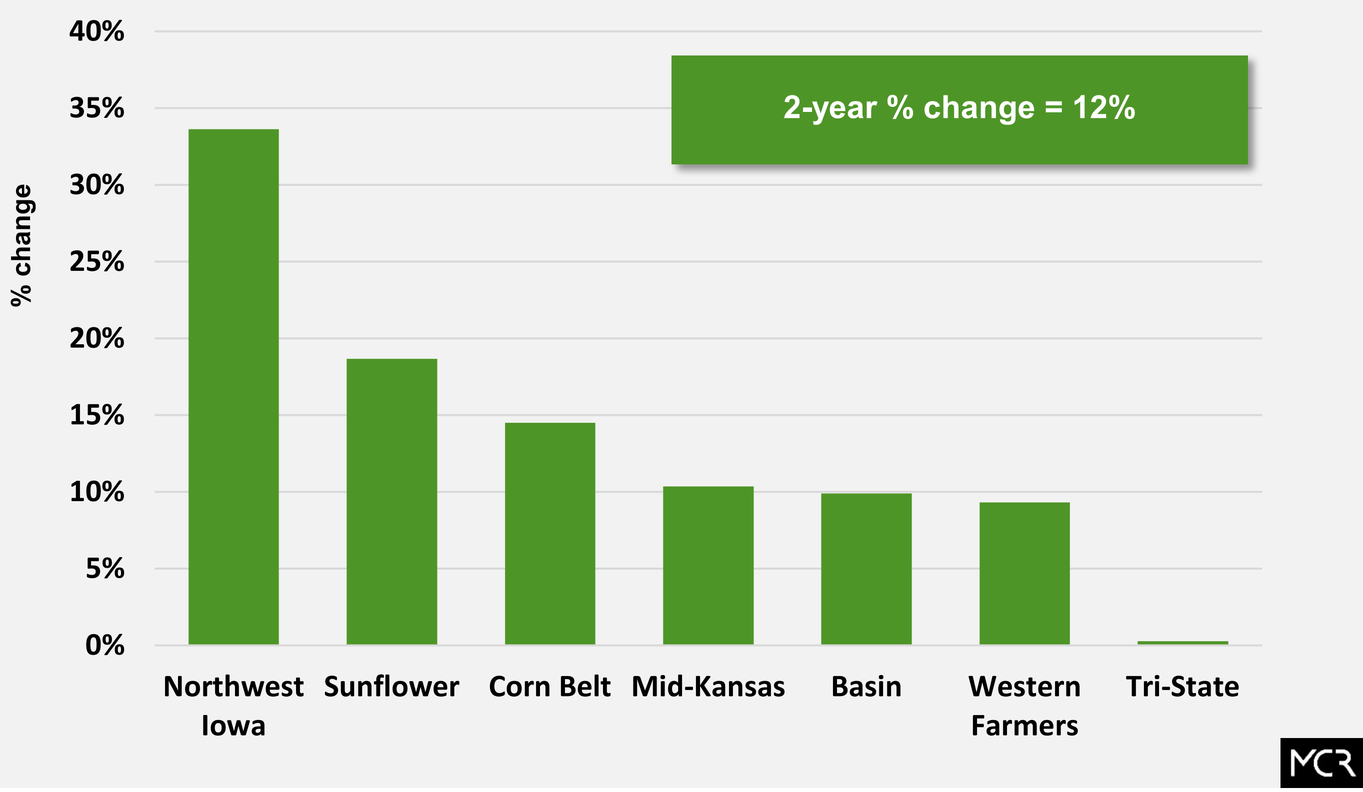


Figure 10 above shows the two-year percentage change in gross transmission plant for G&Ts was 12%. G&Ts as a segment matched the percentage change of the IOUs/Transco segment over the past two years, indicating there was a significant slowdown in G&T transmission spending versus the past five years. Despite the overall slowdown, both NIPCO (34%) and Sunflower (19%) had significant increases, leading the G&T segment over the last two years. On a dollar basis, the largest G&T investors in 2019 and 2020 were Basin at $84 million and Western Farmers at $41 million.

There was a significant slowdown in G&T transmission spending versus the past five years.

[37] Source: MCR PTIL database based on rate year 2018-2020 SPP Attachment Hs.

Figure 11
5-Year Change in Gross Transmission Plant Balance for SPP T&Ds (2015-2020)[38]

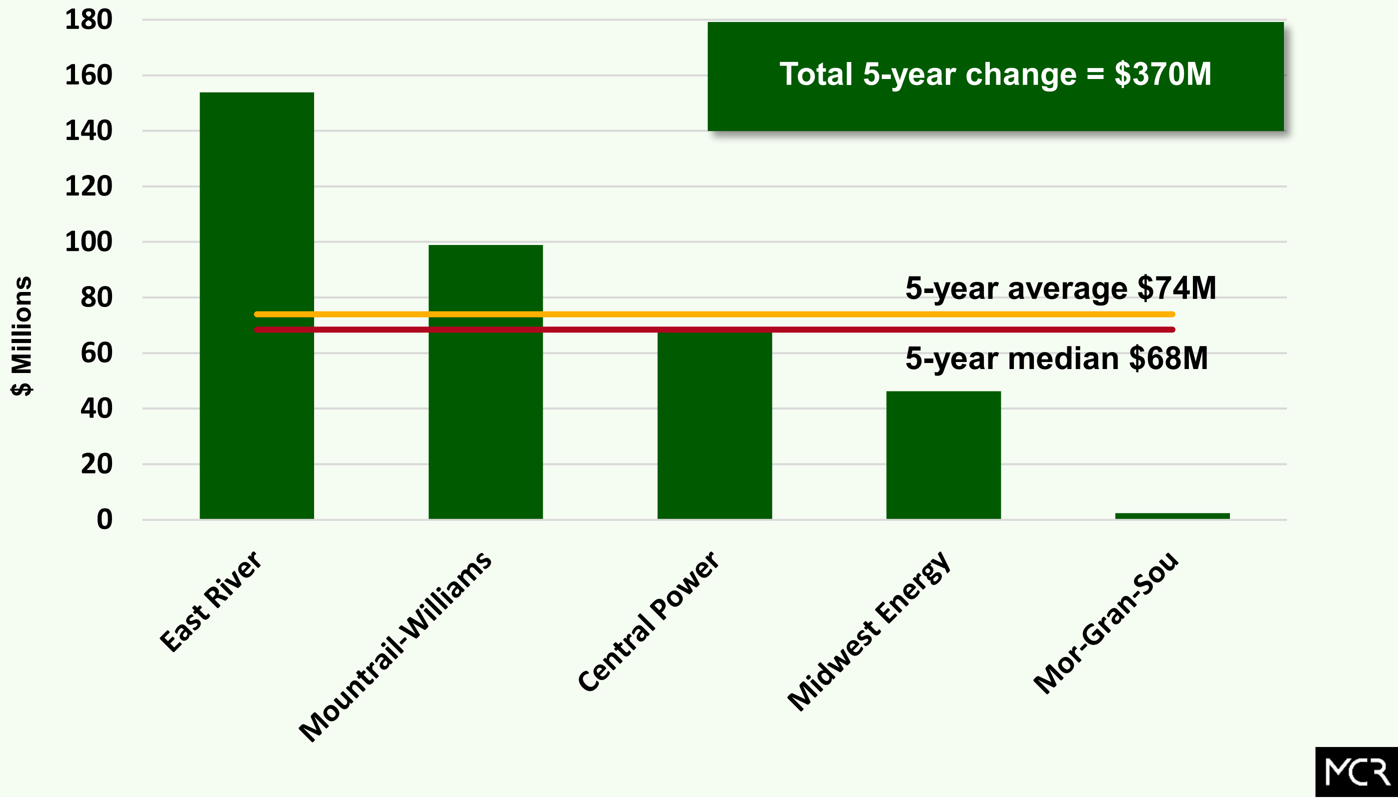


Figure 11 above shows the five-year dollar change in gross transmission plant of $370 million for the five T&D cooperative transmission owners in SPP with formula rates. East River Electric Power Cooperative alone comprised 42% of this investment, and when combined with Mountrail-Williams makes up over two-thirds of the T&D segment investment. The five-year segment average was $74 million with a median increase of $68 million.

[38] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Mor-Gran-Sou estimated for 2016 through 2018 and Mountrail-Williams estimated for 2016 and 2017 based on MCR's analysis of financial statements and recent investment trends.

Figure 12
5-Year Percentage Change in Gross Transmission Plant Balance for SPP T&Ds (2015-2020)[39]

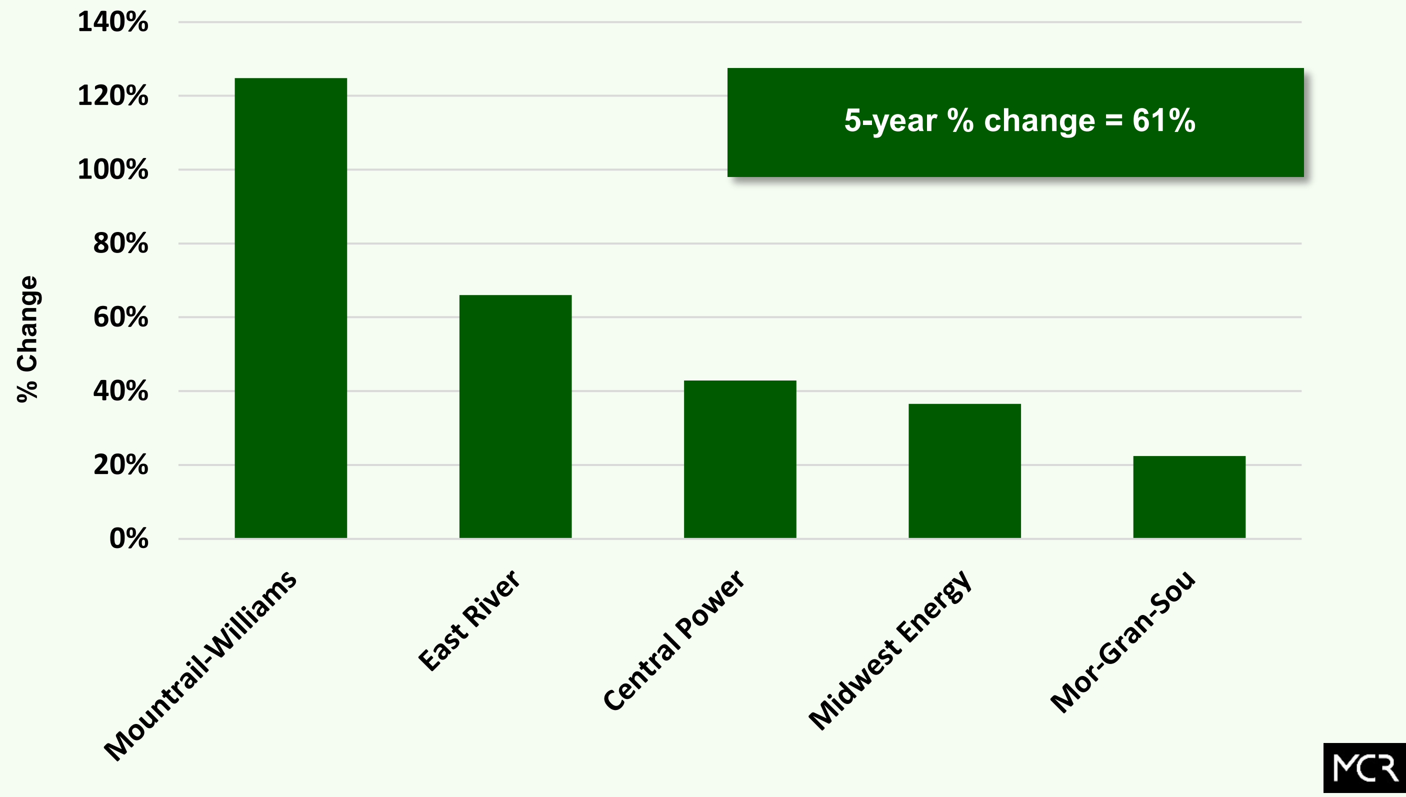
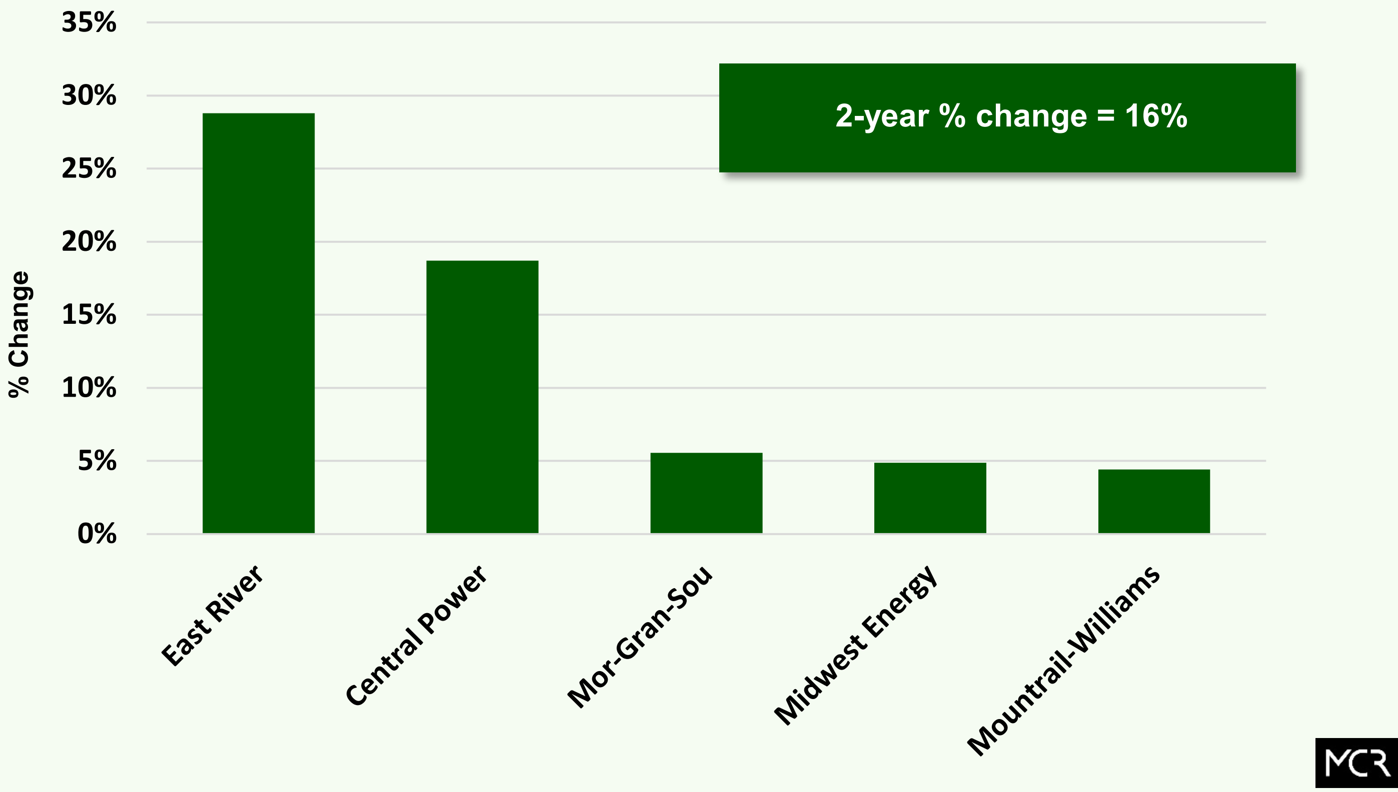


Figure 12 above shows the five-year weighted percentage change for T&D cooperatives was 61%, led far and away by Mountrail-Williams with 125%. The T&D cooperative segment's percentage increase was the highest among all segments over the past five years thanks largely to Mountrail-Williams and East River (66%). The average and median percentage increases over this timeframe were 59% and 43%, respectively, indicating significant investments across the five transmission owners.

The T&D cooperative percentage increase was the highest among all segments over the past five years.

[39] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Excludes Roughrider Electric Cooperative due to it being a new transmission owner and therefore its lack of sufficient data. Roughrider is a relatively small transmission owner compared to the rest of the segment, with a gross transmission plant balance of $29.6 million, just 3% of the total segment balance of $975 million in 2020.

Figure 13
2-Year Percentage Change in Gross Transmission Plant Balance for SPP T&Ds (2018-2020)[40]



When looking at the change in gross plant from 2018 to 2020 (two years of investment), Figure 13 above shows more of a difference between the five T&Ds, suggesting that East River and Central Power have maintained high levels of investment while Mor-Gran-Sou, Midwest Energy, and Mountrail-Williams have slowed their transmission investment. The two-year change in spending was only 16% segment wide, with East River and Central Power changing by 29% and 19%, respectively. Mor-Gran-Sou, Midwest Energy, and Mountrail-Williams invested at significantly lower rates, with just 6%, 5%, and 4% increases over the two-year period, respectively.

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[40] Source: MCR PTIL database based on rate year 2018-2020 SPP Attachment Hs.

Figure 14
Change in Gross Transmission Plant Balance for SPP Municipals (2015-2020)[41]

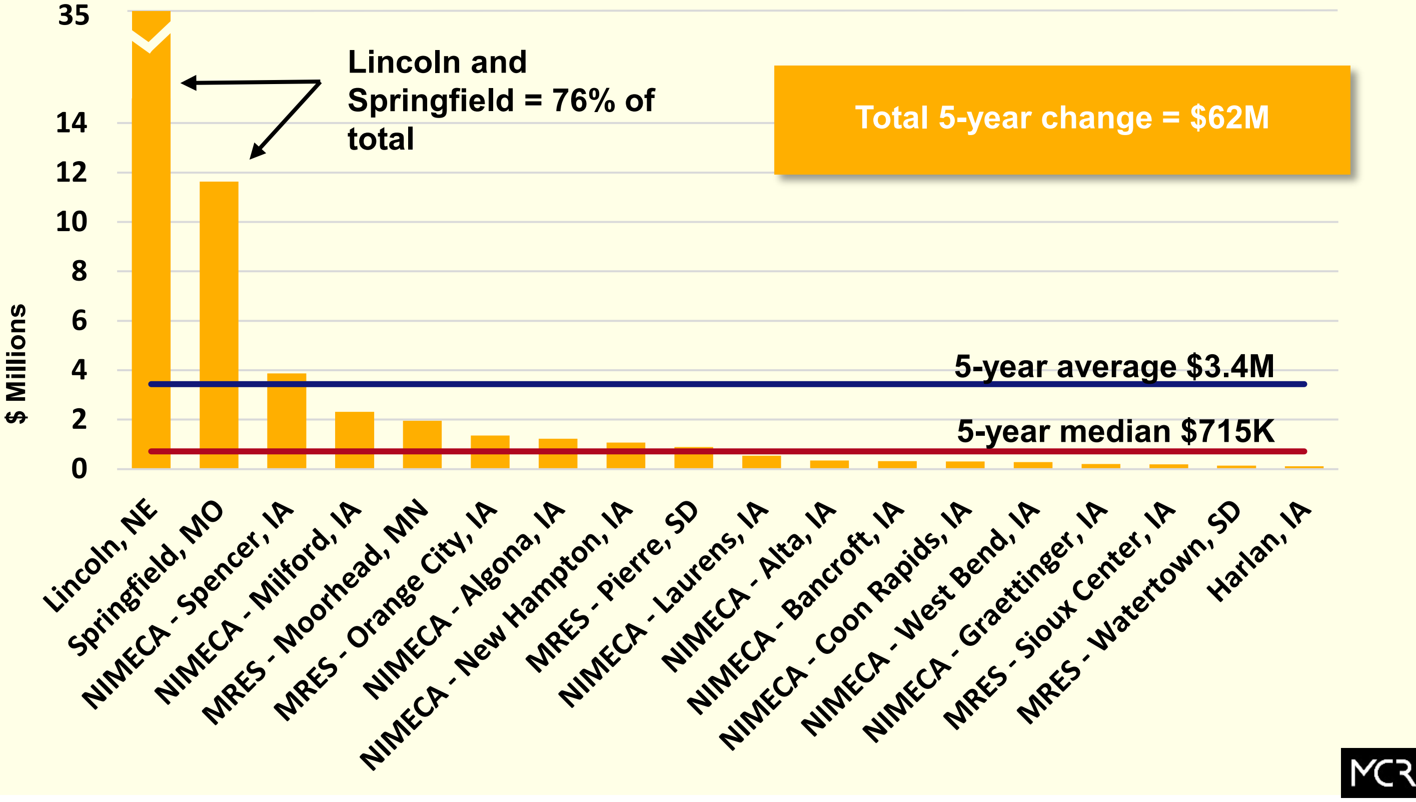
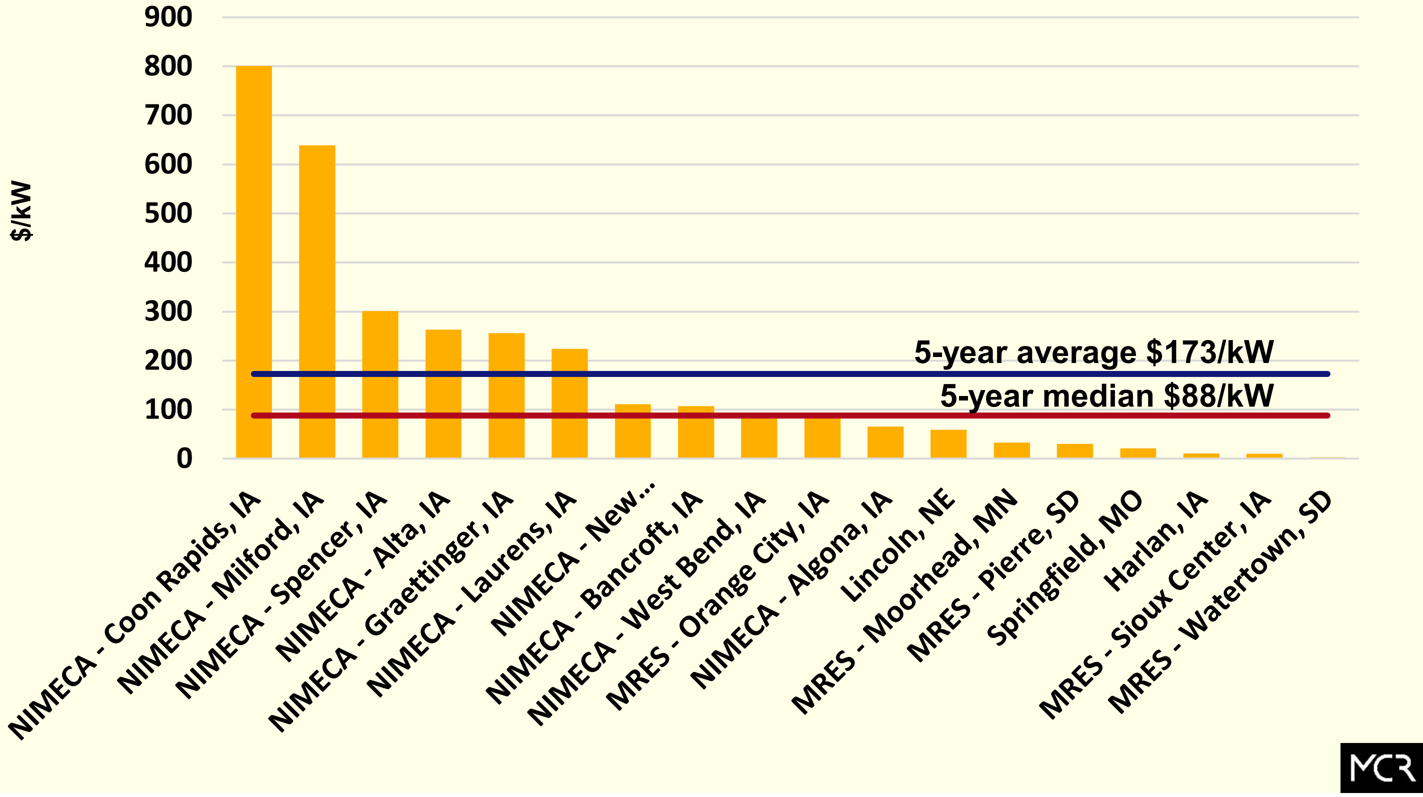


Figure 14 above shows the total five-year dollar change in gross transmission plant of $62 million for 18 municipal owners of transmission in SPP that have formula rates. Lincoln, NE and Springfield, MO account for nearly $47 million or a whopping 76% of the municipals' dollar change. The disparity between these large cities and the others is best highlighted by noting that while the average five-year change across municipals was $3.4 million, the five-year median was only $715,000 or about $143,000 per year for the five-year period ending 2020. This compares to the five-year median of $592,000 or about $118,000 per year for the MISO municipals for the period ending 2019. The figures include the NIMECA members' owned, respective portion of investment in the Common Transmission System ("CTS") which reflects the Corn Belt and NIMECA region.

[41] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Excludes TOs with stated rates. Excludes NIMECA members Grundy Center and Sumner, and MRES members Vermillion and Denison due to having less than five years of available investment data from the Attachment H. Does not include any investment done at the agency level by NIMECA or MRES.

Figure 15
Change in Gross Transmission Plant Balance for SPP Municipals per kW (2015-2020)[42]



Many smaller municipals in SPP invest more on a per kW load basis than the larger cities.

The disparity in investment levels among municipals reflects the dominance of larger cities in absolute dollar terms, but Figure 15 above shows that many smaller municipals in SPP invest more on a per kW load basis than the larger cities. Lincoln and Springfield are both below the median investment per kW while nine NIMECA members are in the top ten investing TOs on a per kW basis.

[42] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs. Uses load reported or calculated for rate year 2020.

Figure 16
5-Year Percentage Change in Gross Transmission Plant Balance for SPP Municipals (2015-2020)[43]

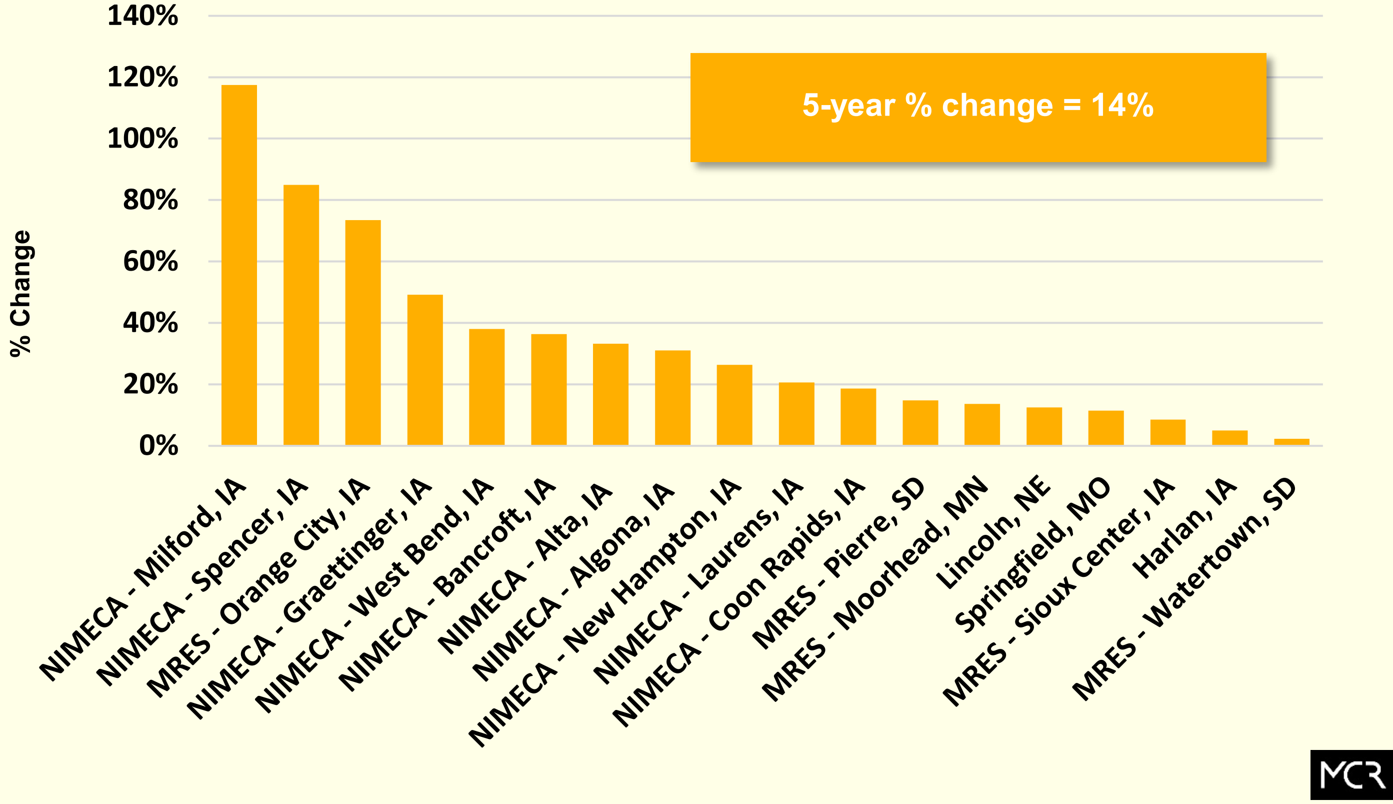


Figure 16 above shows the five-year weighted percentage change for SPP municipals was 14%, significantly below all other segments. The municipals with the largest percentage increases over the last five years were Milford (117%), Spencer (85%), and Orange City (73%). The segment's average was weighted down by the relatively small percentage increases of the largest players, Lincoln and Springfield, who had increases of only 12% and 11%, respectively. The median percentage increase was higher, however, at 23%, reflecting a more balanced increase across the 18 municipals in the sample, but still well below the other segments.

The five-year weighted percentage change for SPP municipals was 14%, significantly below all other segments.

[43] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs.

Figure 17
2 Year Percentage Change in Gross Transmission Plant Balance for SPP Municipals (2018-2020)[44]

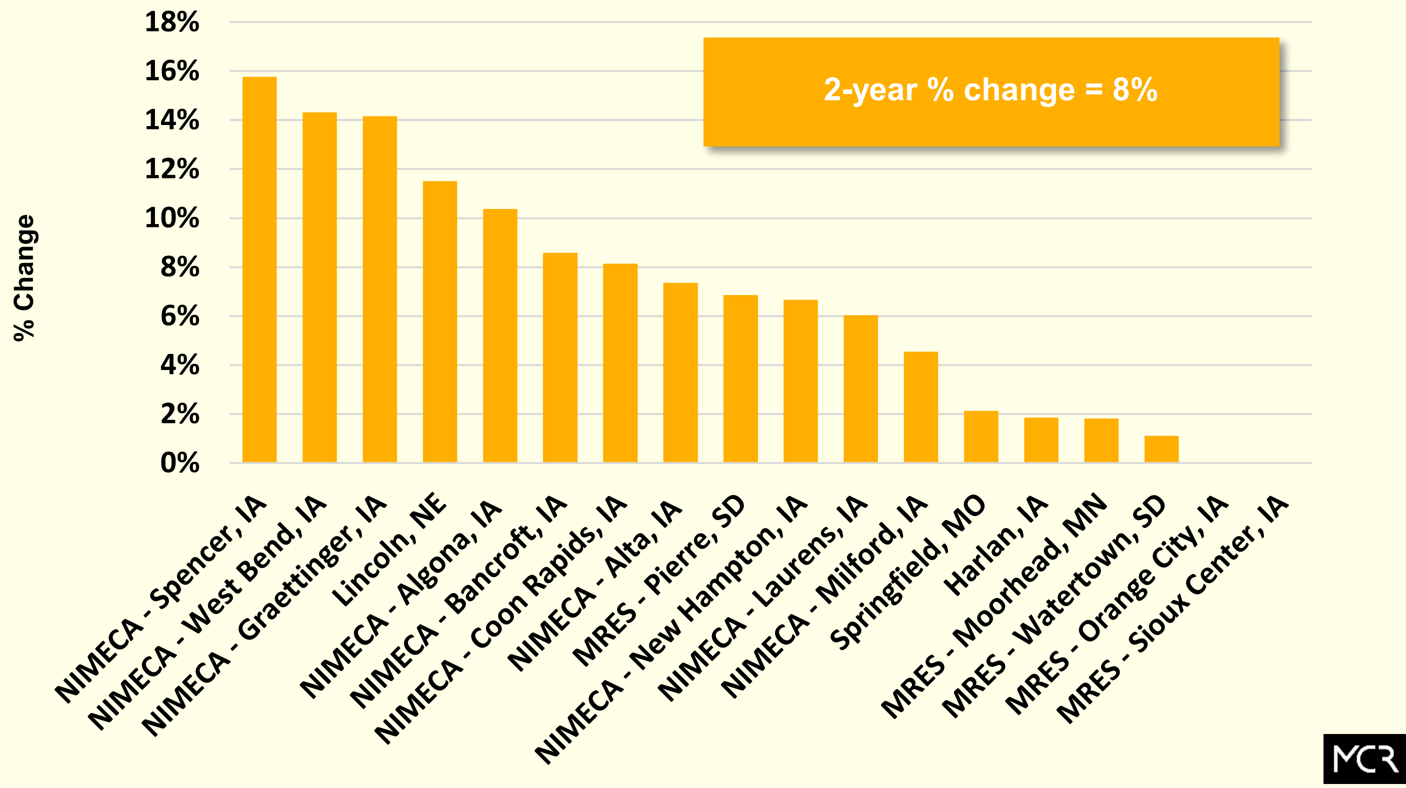
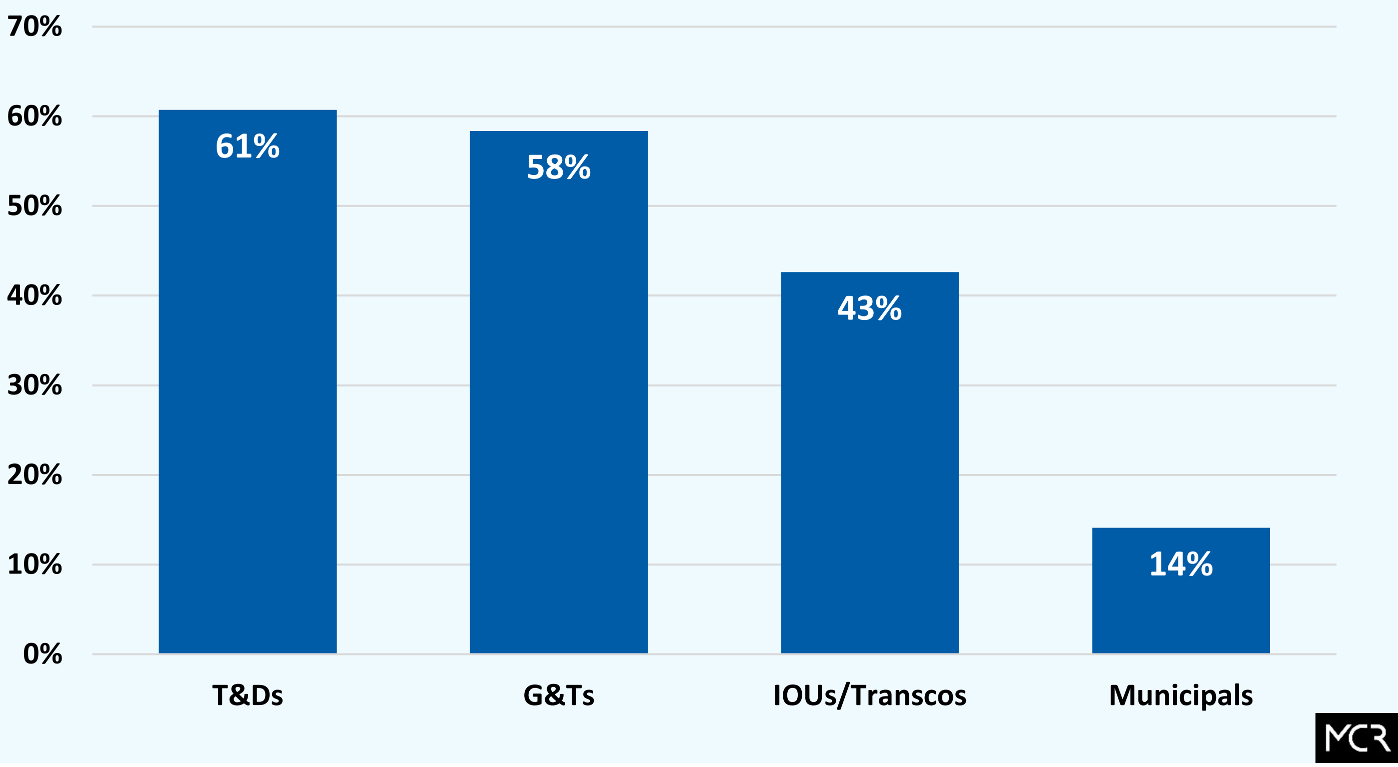


Figure 17 above shows the two-year weighted percentage change for SPP municipals was only 8%. Over the past two years, the segment's average and median were both 7%. Despite a few NIMECA municipals making healthy investments, the municipal segment as a whole still significantly lags all other segments throughout SPP over the last five and two years.

[44] Source: MCR PTIL database based on rate year 2018-2020 SPP Attachment Hs.

Figure 18
Cumulative 5-Year Percentage Change Compared to 2015 Ending Balance for SPP Transmission Owner Segments[45]



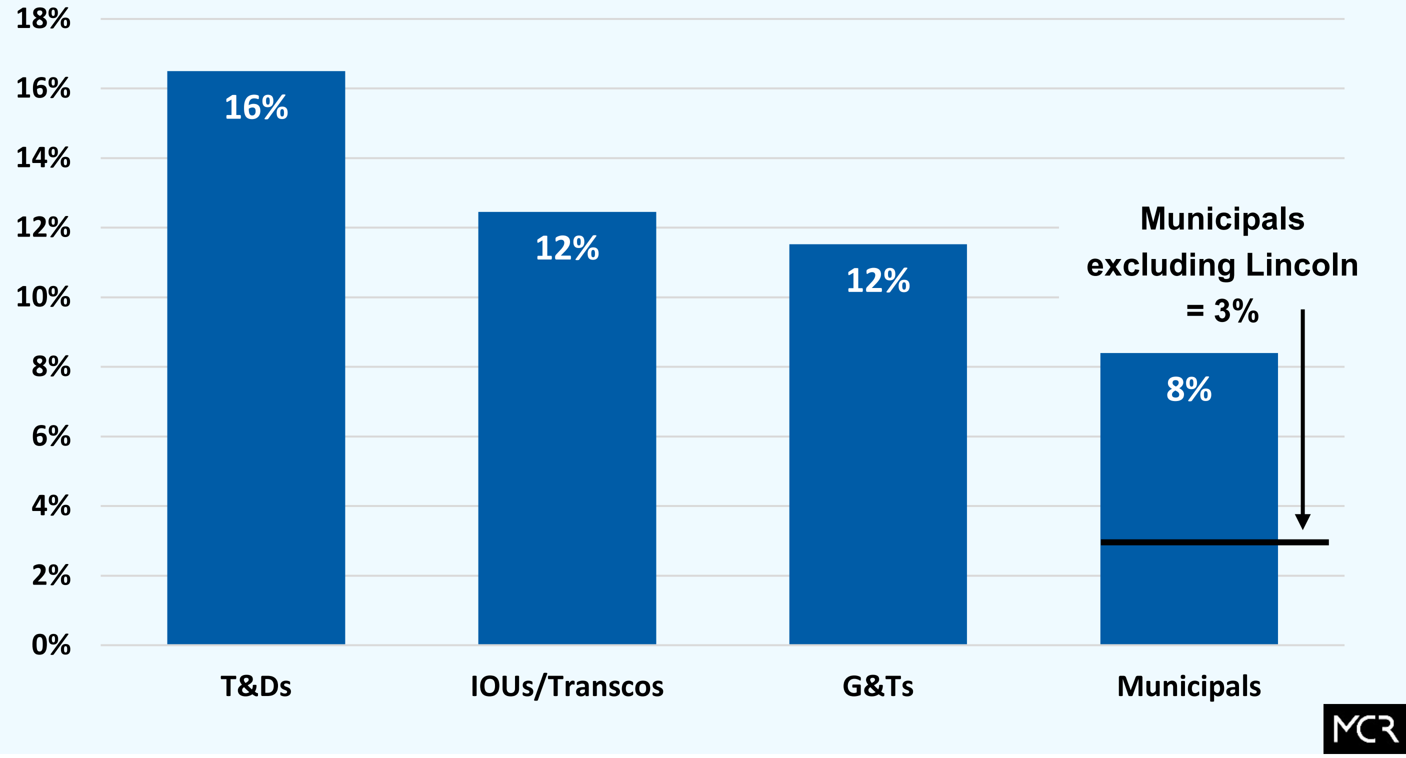
What is the Difference in the Growth Rate of the Groups?

Figure 18 above compares the weighted percentage change in gross transmission plant for the various groups over a five-year period. T&Ds led the five-year change at 61%, followed by G&Ts with 58%, IOUs/Transcos at 43%, and municipals significantly lower at just 14%. In each of the T&D and municipal segments, a single transmission owner had large dollar investments that significantly increased the segments' figures (East River in the T&D segment and Lincoln in the municipal segment). In contrast, compared to the five-year period ending in the rate year 2019, both IOUs/Transcos and G&Ts showed a slowing of their 5-year cumulative growth rates in the rate year 2020.

Compared to the five-year period ending in the rate year 2019, both IOUs/Transcos and G&Ts showed a slowing in their 5-year cumulative growth rate in the rate year ending 2020.

[45] Source: MCR PTIL database based on rate year 2015-2020 SPP Attachment Hs, which show gross transmission plant. Represents weighted averages for each group. Companies must be in entire 5-year period to be included. T&Ds and municipals had sufficient data to compute a five-year change for the period ending 2020 but not enough data to calculate the change for the period ending 2019.

Figure 19
Cumulative 2-Year Percentage Change Compared to 2018 Ending Balance for SPP Transmission Owner Segments [46]



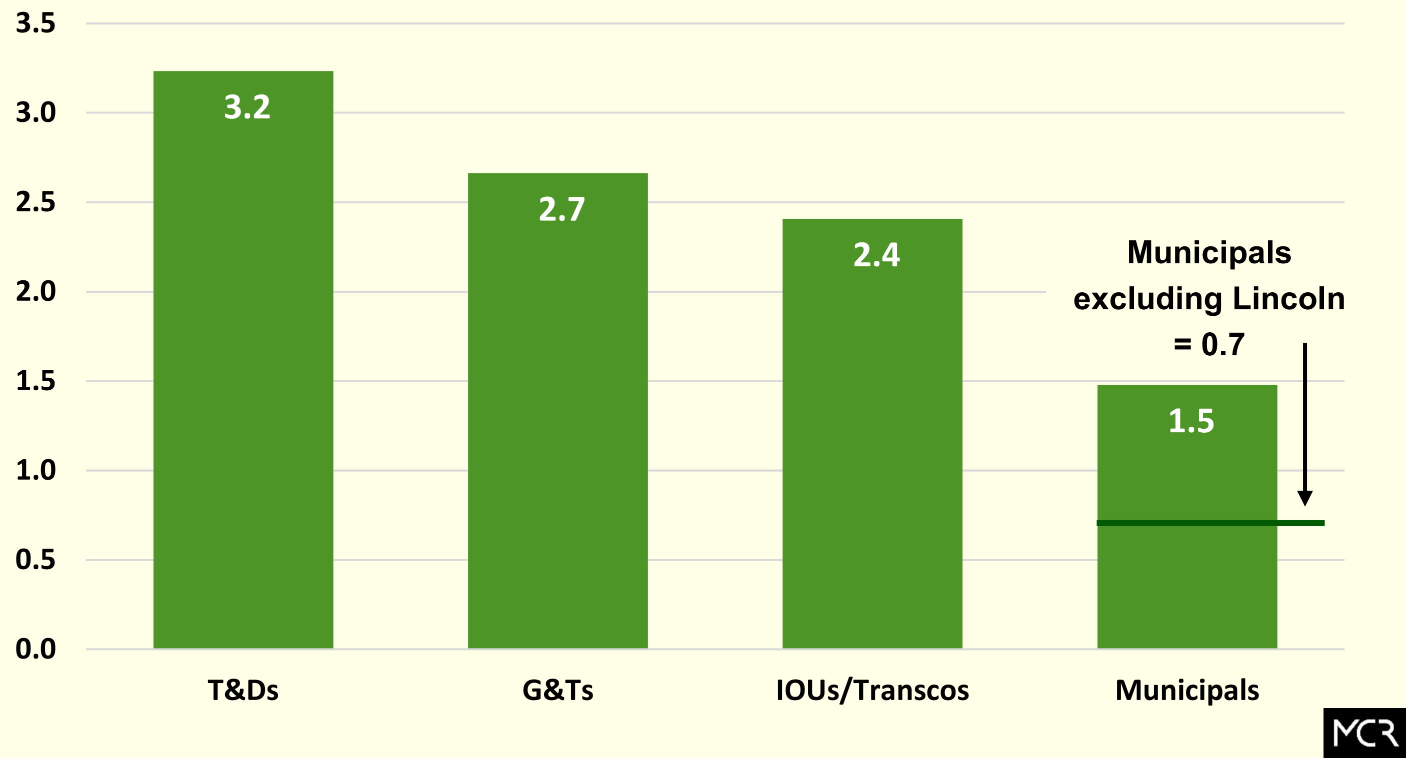
Municipal transmission investment in SPP significantly lags the increases in other SPP segments.

When looking at only the last two years in Figure 19, T&Ds grew 16%, followed by IOUs/Transcos and G&Ts at 12%, and municipals at 8%. Excluding Lincoln, municipals grew by only 3% over the last two years, due to Lincoln owning 61% of the segment's gross plant at the beginning of the two-year period and being responsible for 84% of the segment's investment over the two-year period. The data continue to show that municipal transmission investment in SPP significantly lags the increases in other SPP segments. Transmission dollar investment is concentrated in a limited number of larger municipals. On a per kW basis, however, the data show a more balanced number of municipals are investing, albeit at relatively low rates of increases.

Looking at recent growth rate differences from a different angle, Figure 20 on the next page shows that over the last two years, SPP T&Ds are making transmission investments at an average of 3.2 times their transmission depreciation expense. This is a very healthy investment rate that significantly exceeds the G&T rate of 2.7 times and IOU/Transco rate of 2.4 times transmission depreciation expense. Four of the five T&Ds are in a joint pricing zone, the Upper Missouri Zone, so it is lucrative to invest given their very small load ratio share. Municipals, by contrast, are investing at a rate significantly below all other segments, at just 1.5 times transmission depreciation expense.

[46] Source: MCR PTIL database based on rate year 2018-2020 SPP Attachment Hs, which show gross transmission plant. Represents weighted averages for each group.

Figure 20
Change in Gross Transmission Plant Balance Compared to Depreciation Expense for SPP Transmission Owners (2019-2020)[47]



It is important to note the impact that Lincoln has on the municipal segment ratio. Lincoln's large 2020 investments (almost 90% of the entire segment's investment in 2020) significantly inflate the municipal gross transmission plant to transmission depreciation expense ratio. Excluding Lincoln, the municipal segment invested at just a 0.7 ratio over the past two years, indicating many municipals are not even replacing their annual depreciation with new investment. Seven of the remaining 17 municipals in the sample had ratios less than 1.0. When looking at the last five years, excluding Lincoln, municipals did a bit better with a ratio of 1.0. Municipals often invest less for a variety of reasons, including lack of transmission planning experience, internal competition for capital funds with other utility divisions like water or gas, and different risk profiles and ability to withstand debt service.

Many municipals are not even replacing their annual depreciation with new investment.

In comparison to the corresponding MISO segments, the IOU/Transco segment in SPP invested at a much lower level of 2.4 times depreciation expense compared to 4.0 times for MISO IOUs/Transcos. The G&T segment, in SPP however, invested at a ratio of 2.7 compared to MISO's 2.0. The municipal segments in both SPP and MISO are investing at 1.5 in aggregate.

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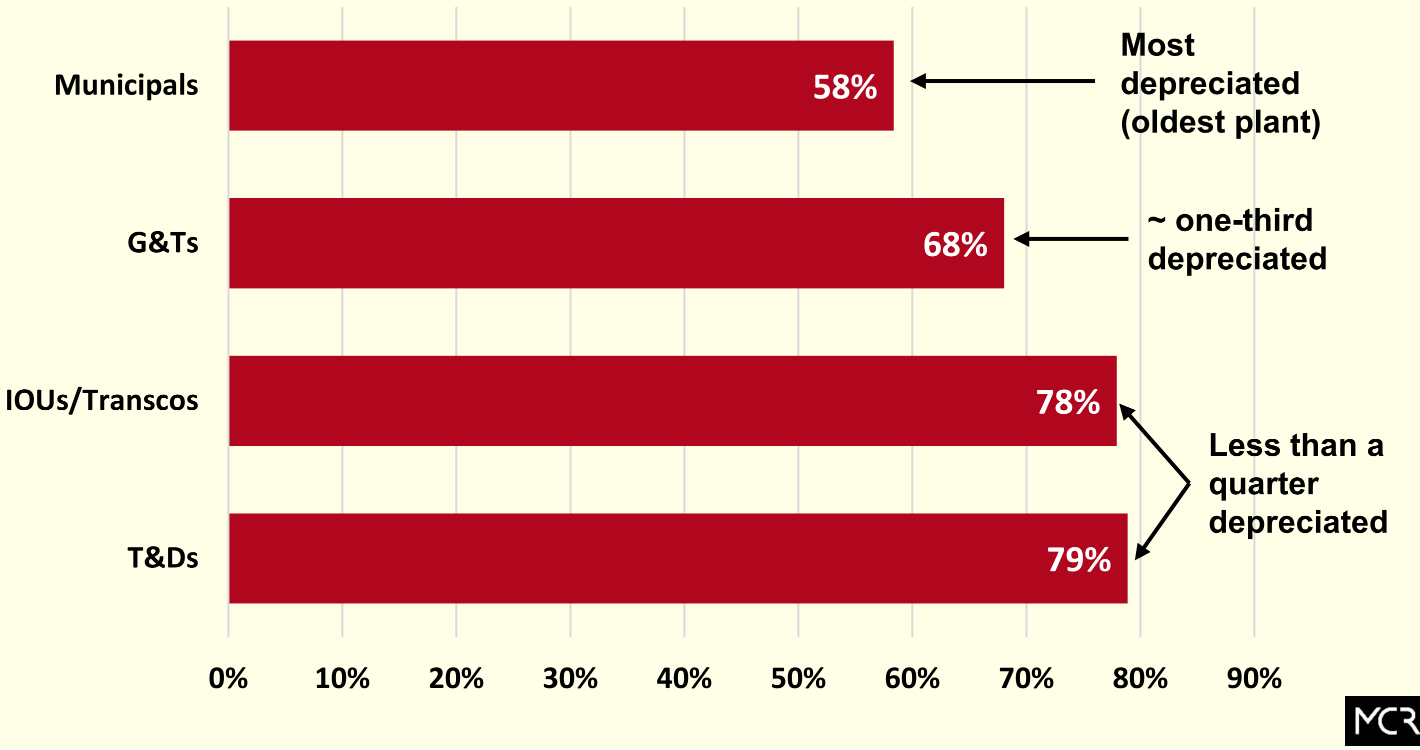
[47] Source: MCR PTIL database based on rate year 2019-2020 SPP Attachment Hs. For those TOs with missing depreciation data (i.e., for TOs using the cash flow template missing depreciation expense), data was estimated based on annual Financial Statements. Represents weighted averages for each group. Shows total change in transmission gross plant in last two years divided by two years of depreciation expense.

Figure 21
2020 Net Transmission Plant as a Percent of
Gross Transmission Plant for SPP Owners of Transmission[48]



Which Transmission Owners have the Newest Plant?

Municipals have the oldest transmission plant.

Figure 21 above provides an indicator of which segments have the "newest" aggregate transmission facilities by showing the ratio of net transmission plant to gross transmission plant. Generally, the higher the ratio, the newer the transmission plant (i.e., less depreciated). As a group, T&Ds have the newest transmission assets with their combined net transmission plant equaling 79% of their gross transmission plant, followed by IOUs/Transcos with an almost equal 78%. IOUs/Transcos have held steady at 78% since 2018, when the segment had increased from 77% in 2017, indicating that on average, transmission has gotten slightly newer for the IOU/Transco group over the past few years.

On average, G&Ts are somewhat lower than the T&Ds and IOUs/Transcos at 68%. Municipals have the oldest transmission plant with a net plant to gross plant ratio of only 58% (42% depreciated), a slight increase from last year's 57%.

[48] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs. Percentages in the graph are weighted averages of utilities in each group, e.g., total IOU and Transco transmission net plant divided by total IOU and Transco transmission gross plant.

Figure 22
2020 Net Transmission Plant as a Percent of Gross Transmission Plant for SPP IOUs and Transcos[49]

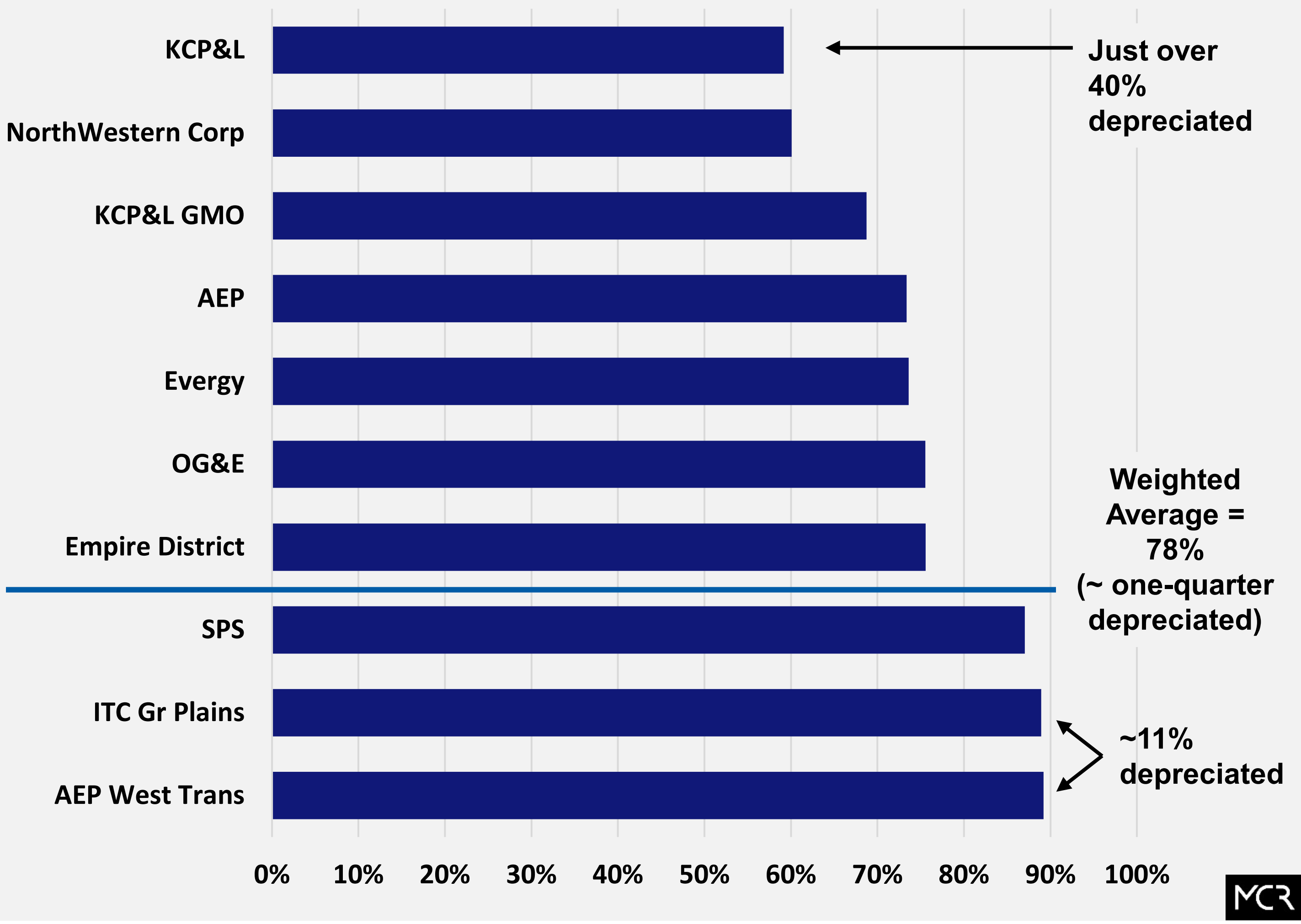
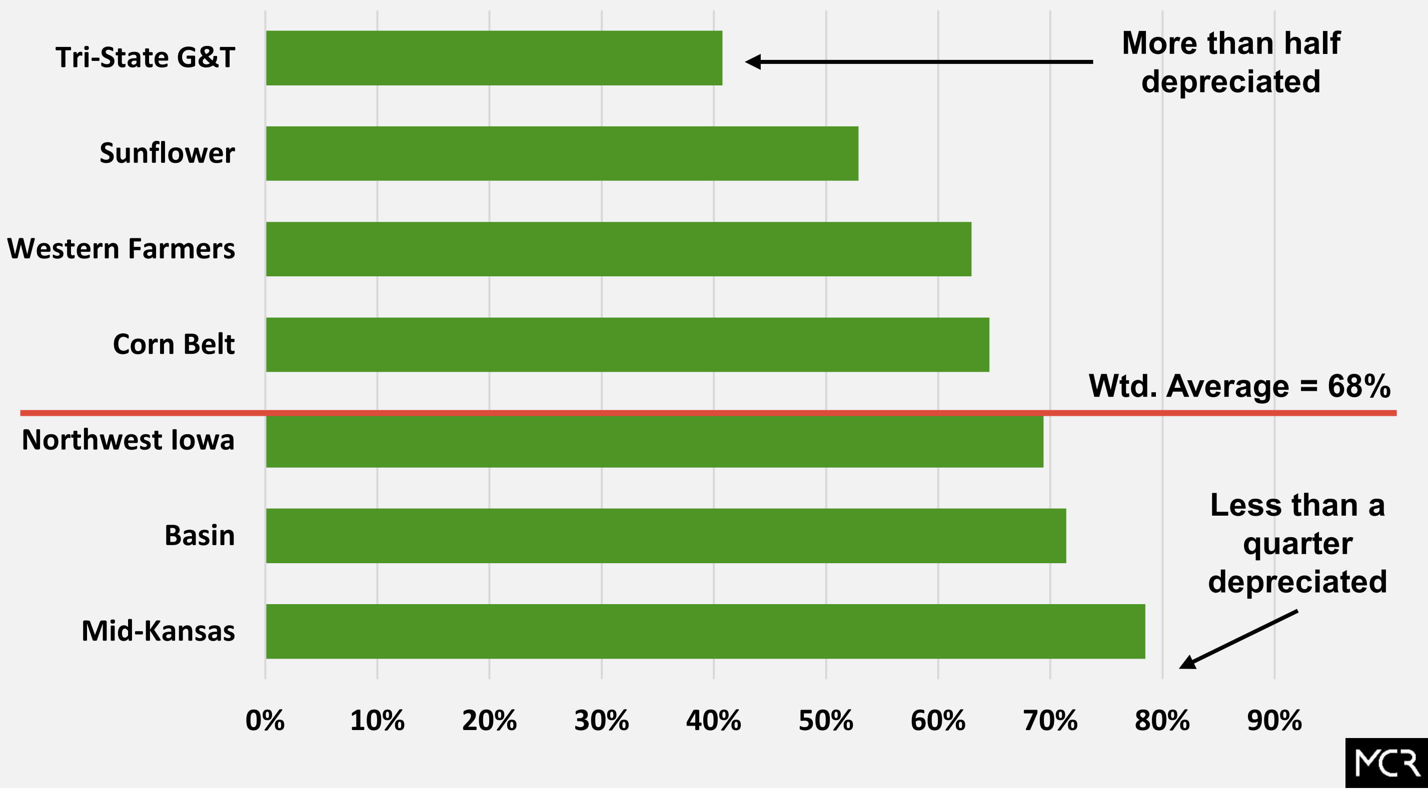


Figure 22 above shows the detail of net transmission plant as a percent of gross transmission plant for each IOU/Transco. The segment's two Transcos, AEP West Transmission and ITC Great Plains led the group with 89% (only 11% depreciated). Though the segment remained unchanged at a weighted average of 78% year-over-year, there was some movement among the individual members. Empire District and KCP&L GMO increased their ratios by at least 1% (newer) while AEP West Transmission, ITC Great Plains, and OG&E each decreased by at least 1% (older). Despite the overall segment maintaining its "age" in this indicator, Figure 22 shows there is still considerable room for several IOUs to replace aging infrastructure.

There is still considerable room for several IOUs to replace aging infrastructure.

[49] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

Figure 23
2020 Net Transmission Plant as a Percent of Gross Transmission Plant for SPP G&Ts[50]



For G&Ts, Figure 23 shows that Mid-Kansas, Basin, and NIPCO have the newest transmission plant on average, with systems newer than the segment's weighted average. NIPCO increased its ratio the most year-over-year, rising from 65% in 2019 to 69% in 2020.

The G&T average fell from 70% in 2019 to 68% in 2020, indicating that G&Ts are on average aging. Three of the seven G&Ts had decreasing percentages year-over-year and another two had essentially no increase (increases of less that 0.25%), thereby contributing to the overall aging of the segment.

[50] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

Figure 24
2020 Net Transmission Plant as a Percent of Gross Transmission Plant for SPP T&Ds[51]

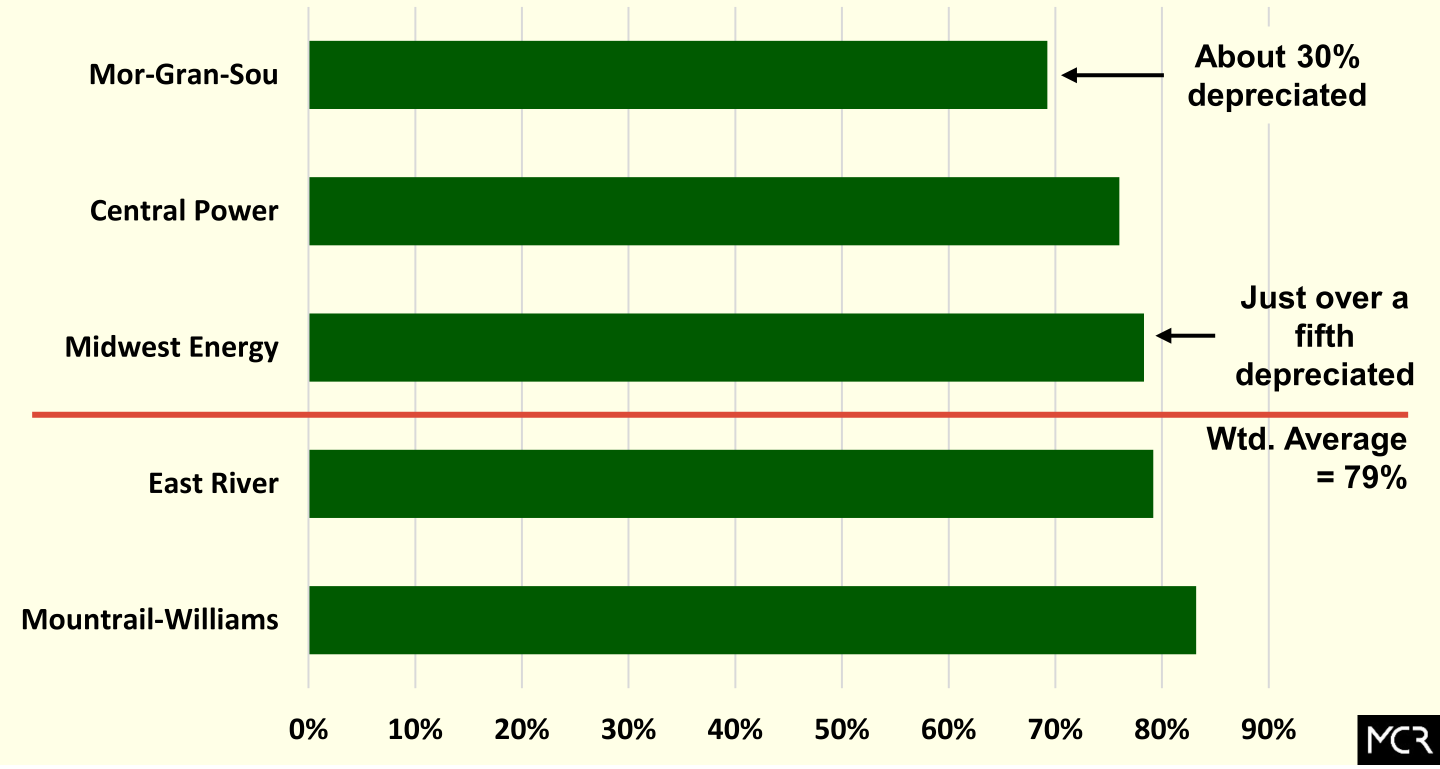
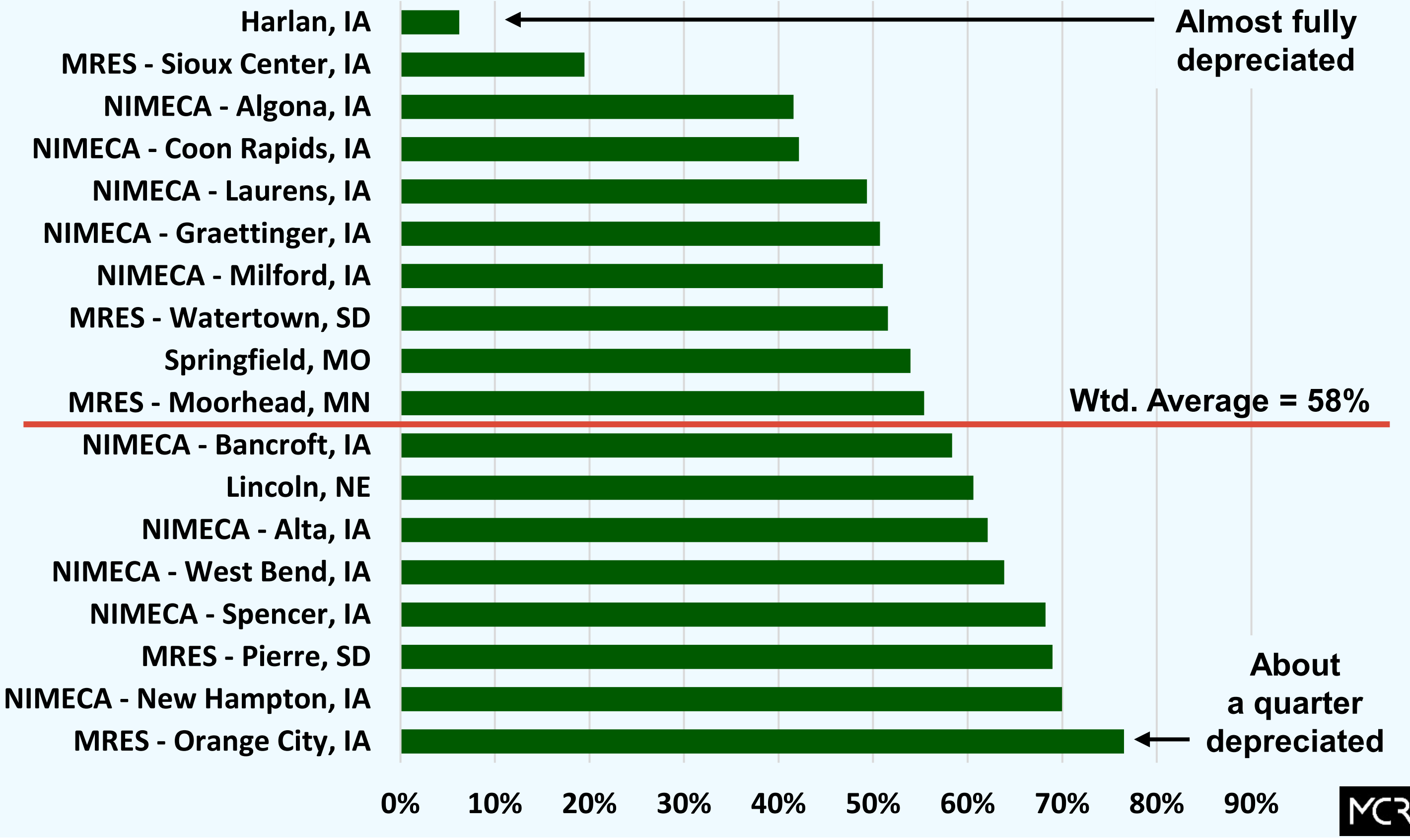


Figure 24 above shows that the five SPP T&Ds have a weighted average ratio of 79%, just slightly newer than IOUs/Transcos. The segment's weighted average is up from 78% in 2019, indicating a slight year-over-year reduction of age, consistent with the strong investment figures exhibited in other metrics. Mor-Gran-Sou has the oldest system on average with a ratio of 69% versus Mountrail-Williams, the newest system on average, with a ratio of 83%. The relatively small difference between the oldest and newest systems, combined with the nearly identical simple average and median figures (77% and 78%, respectively), exhibit a high uniformity of system age among the sampled T&D transmission owners.

[51] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

Figure 25
2020 Net Transmission Plant as a Percent of Gross Transmission Plant for SPP Municipals[52]



Many municipals are facing the possibility of replacing or upgrading their facilities in the near future.

In the municipal segment (see Figure 25 above), there is wide variability in the age of transmission facilities. The chart demonstrates that some municipals have far older systems on average than do their peers. In 2019, only two of 18 municipals increased their net plant to gross plant ratio. That number increased to seven of 18 in 2020, indicating some movement toward newer systems this year when compared to last year. However, the two municipals with the oldest systems saw decreases in their ratios year-over-year. Harlan's average age slipped from 7% in 2019 to 6% in 2020, while Sioux Center decreased from 22% in 2019 to 19% in 2020.

Despite some progress, 11 of 18 municipals own older transmission facilities on average than the "oldest" IOU, Kansas City Power & Light, which has a ratio of 59%. This reinforces that many municipals are facing the possibility of replacing or upgrading their facilities in the near future.

[52] Source: June 2020 Attachment Hs.

Figure 26
Comparison of Change in Gross Transmission Plant Balance to Current Load Ratio Share for SPP IOUs/Transcos, G&Ts, T&Ds and Municipals (2018-2020)[53]

	2-Year Change in Trans. Gross Plant Balance (Proxy for Cap Expenditures) ($ Millions)	% of Total Gross Plant Change	Estimated 12 CP Load (MWs)	Estimated % of Total Load
IOU, Transcos	1,682.4	84.1%	25,605.7	80.8%
G&Ts [54]	141.4	7.1%	3,013.7	9.5%
Municipals	38.7	1.9%	1,391.3	4.4%
T&Ds	138.6	6.9%	1,677.4	5.3%
Total	2,001.1	100.0%	31,688.1	100.0%

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Which Groups are Investing Commensurate with their Load?

When looking at the last two years of transmission investment, the G&T segment (excluding Basin) and the municipal segment in SPP are investing at a lower rate than IOUs/Transcos and T&Ds, relative to their load. G&Ts represent about 9.5% of the 2020 load in the sample but only had about 7% of the new transmission investment (see Figure 26 above). Similarly, municipals represent 4.4% of the sample load but represent 1.9% of the new transmission investment over the last two years.

The G&T segment and the municipal segment in SPP are investing at a lower rate than IOUs/Transcos and T&Ds, relative to their load.

[53] Source: 2018-2020 SPP Attachment Hs. Sources also include MCR estimates based on FERC Form 1, page 400, column e, “firm service for self” and RUS Form 12. Does not include joint action agencies (most JAAs do not have load themselves and their member’s load is addressed in the municipal group). The source of load data (12 CP) for most municipals is the Attachment H. In some cases, where a municipal’s load is not reported in its Attachment H, the municipal’s load was estimated based on publicly available sources such as the EIA Form 861 peak demand data adjusted with a 75% factor to obtain 12-month coincident peak load.

[54] Excludes Basin Electric Power Cooperative as an outlier. due to their high level of investment and their relatively low amount of Basin-only load.

Figure 27
Comparison of Total Gross Transmission Plant Balance to Current Load Ratio Share for SPP IOUs/Transcos, G&Ts, T&Ds and Municipals (2020)[55]

	Existing Gross Transmission Plant ($ Millions)	% of Total Gross Plant	Estimated 12 CP Load (MWs)	Estimated % of Total Load
IOU, Transcos	15,195.4	84.9%	25,605.7	80.8%
G&Ts[56]	1,232.0	6.9%	3,013.7	9.5%
Municipals	500.3	2.8%	1,391.3	4.4%
T&Ds	975.0	5.4%	1,677.4	5.3%
Total	17,902.7	100.0%	31,688.1	100.0%

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What is the Current Level of Assets Compared to Load?

Many G&Ts and municipals in SPP have not historically invested to keep up with their load ratio share of assets.

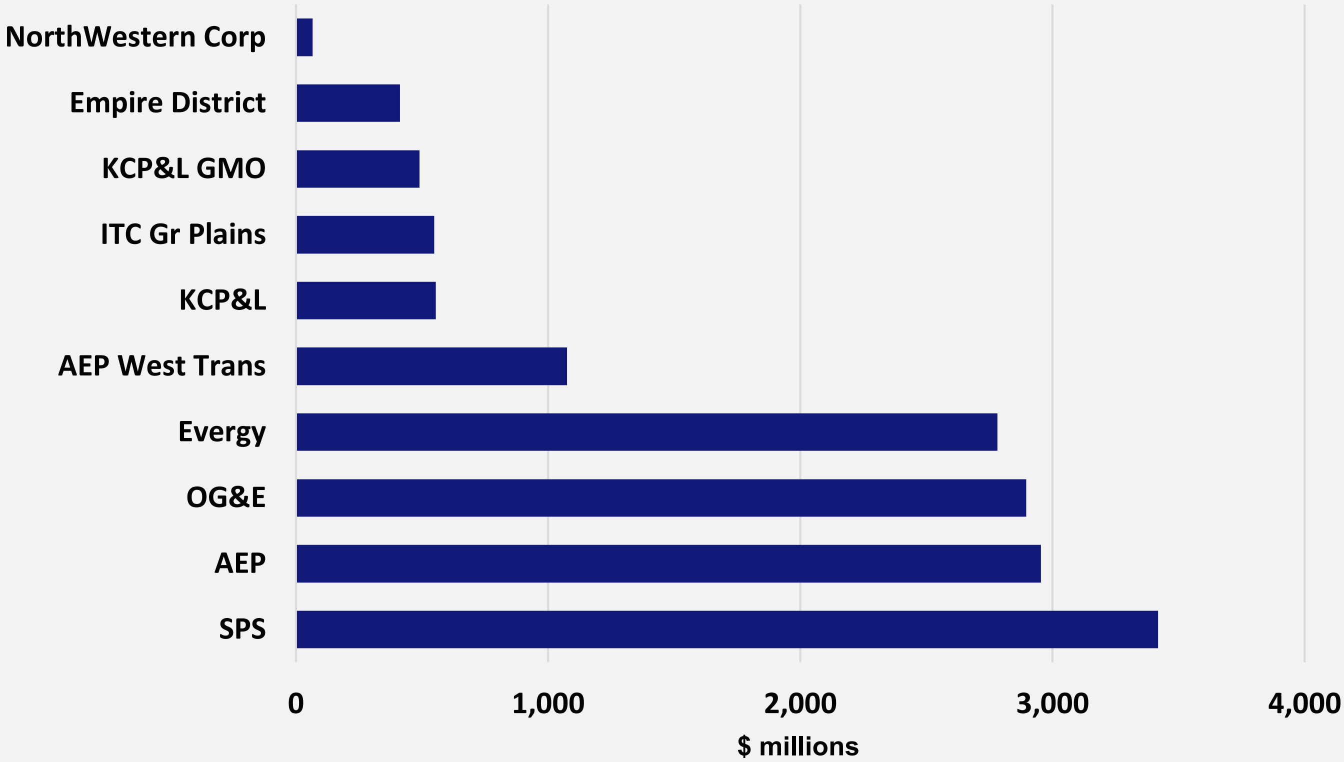
Instead of looking at recent investment, Figure 27 above examines the level of total existing transmission assets relative to load ratio share. G&Ts fare worse in this measure though municipals come out slightly ahead of the previous table related to recent investment. However, the message remains: many G&Ts (excluding Basin) and municipals in SPP have not historically invested to keep up with their load ratio share of assets. G&Ts represent about 7% of the existing transmission assets compared to their 9.5% load. Municipals have 2.8% of the assets, compared to about 4.4% of the load. T&D cooperatives, however, have total transmission plant consistent with their load ratio share.

By not investing at higher levels relative to their load ratio share, many G&Ts and municipals have not been producing a sufficient level of transmission revenue to mitigate their escalating transmission tariff costs. This discrepancy is amplified in joint pricing zones with IOUs/Transcos having a higher revenue requirement per dollar of investment, thus a level of load ratio share is still an insufficient level of investment for cooperatives and public power. In joint zones with an incumbent IOU/Transco, achieving a load ratio share of investment (or total assets) is a good start, but may still be inadequate because the tariff paid by the municipal or cooperative will often be higher than their tariff revenue received, because IOU/Transcos are taxable.

[55] Source: 2020 SPP Attachment Hs.

[56] Excludes Basin Electric Power Cooperative as an outlier due to their high level of investment and their relatively low amount of Basin-only load.

Figure 28
2020 Gross Transmission Plant Balance for SPP IOUs/Transcos[57]

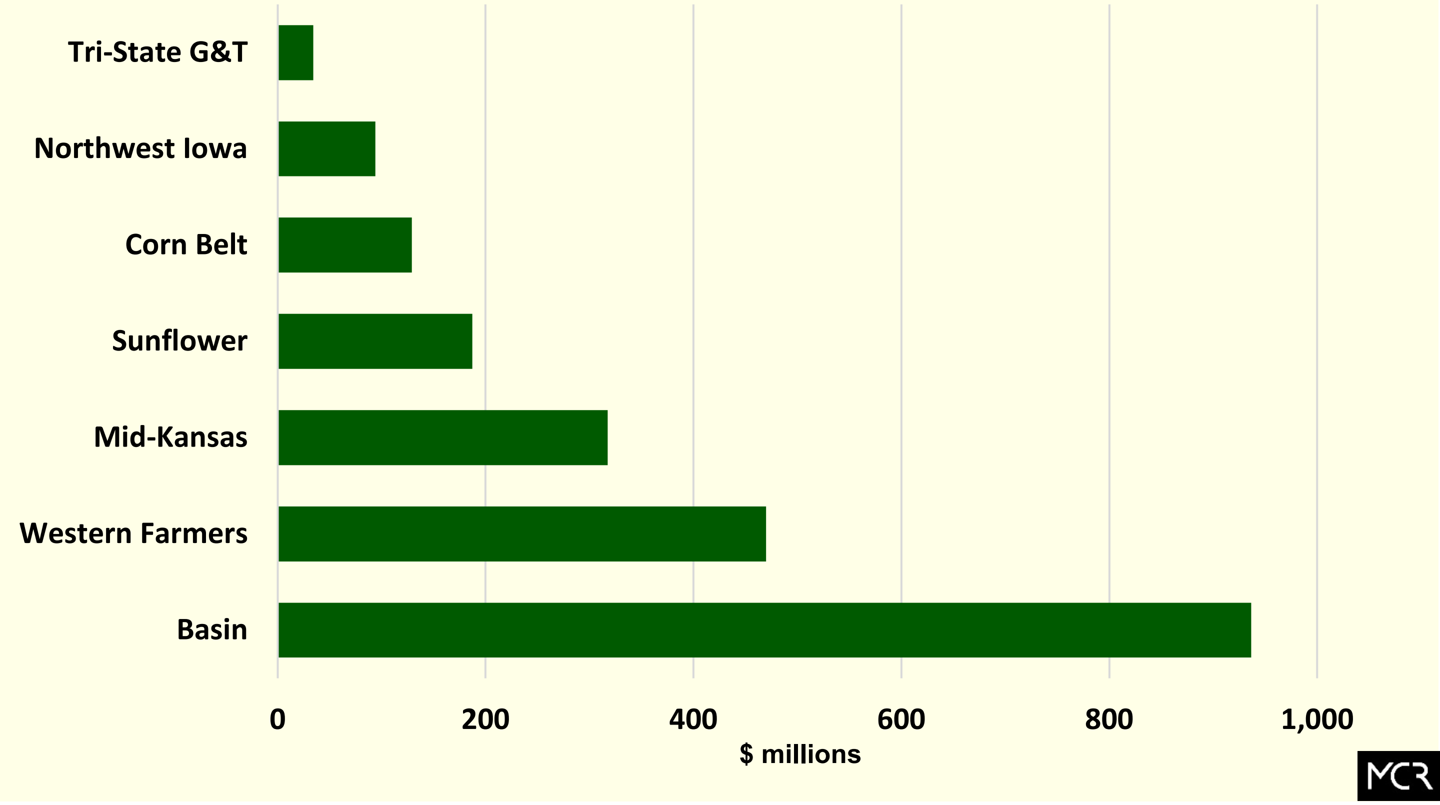


Who are the Largest Transmission Owners in SPP?

In each of the three groupings, there are TOs who dominate the pricing zone and thus comprise a large portion of the ATRR. Figures 28-31 show the size of SPP transmission owners ranked by total company gross transmission plant recorded on their 2020 Attachment H formula rate templates. Figure 28 shows the gross transmission plant of IOUs/Transcos. The top four are SPS at $3.4 billion (growth of 9% over 2019), AEP at $3.0 billion (4%), OG&E at $2.9 billion (3%), and Evergy (formerly Westar) at $2.8 billion (6%). These one-year growth rates for the largest players compare with a median increase of 5% for the entire segment in 2020.

[57] Source: MCR PTIL database based on rate year 2020 SPP Attachment H formula rate templates.

Figure 29
2020 Gross Transmission Plant Balance for SPP G&Ts[58]



For G&Ts, Basin dominates the group with $936 million, the next largest being Western Farmers with $470 million, just 50% of Basin's size. The remaining transmission owners total $762 million of gross transmission plant in service, just 54% of the combined total for Basin and Western Farmers. Sunflower and NIPCO had the largest growth in 2020 over 2019 at 12% and 10%, respectively. The median was just 3%.

Figure 30 on the next page shows a large difference in size between the five T&Ds. East River is easily the largest with $386 million of gross transmission plant followed by Central Power with $227 million.[59] The majority of 2020 growth in the T&D segment came from East River at $81 million, an annual growth of 27% versus 9% for Central. For municipals, Figure 31 (also on the next page) shows the largest two municipal TOs are the cities of Lincoln, dwarfing the group with $316 million (11% increase over 2019) and Springfield with $114 million (1%).[60] The municipals with the largest one-year growth rates were Graettinger and West Bend, both at 14%. The median municipal growth in 2020 was 6%, indicating a recent uptick in investment.

[58] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

[59] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

[60] Source: MCR PTIL database based on rate year 2020 SPP Attachment Hs.

Figure 30
2020 Gross Transmission Plant Balance for SPP T&Ds

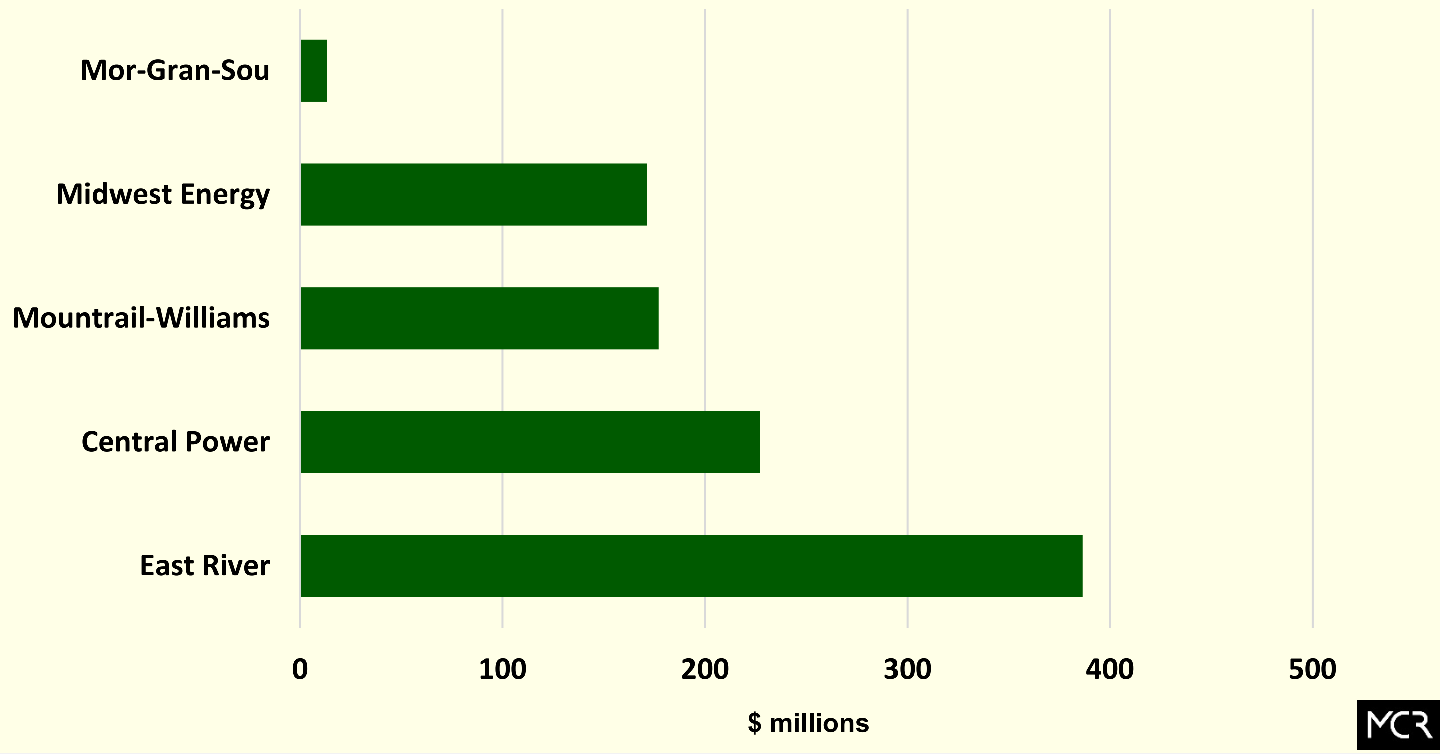


Figure 31
2020 Gross Transmission Plant Balance for SPP Municipals

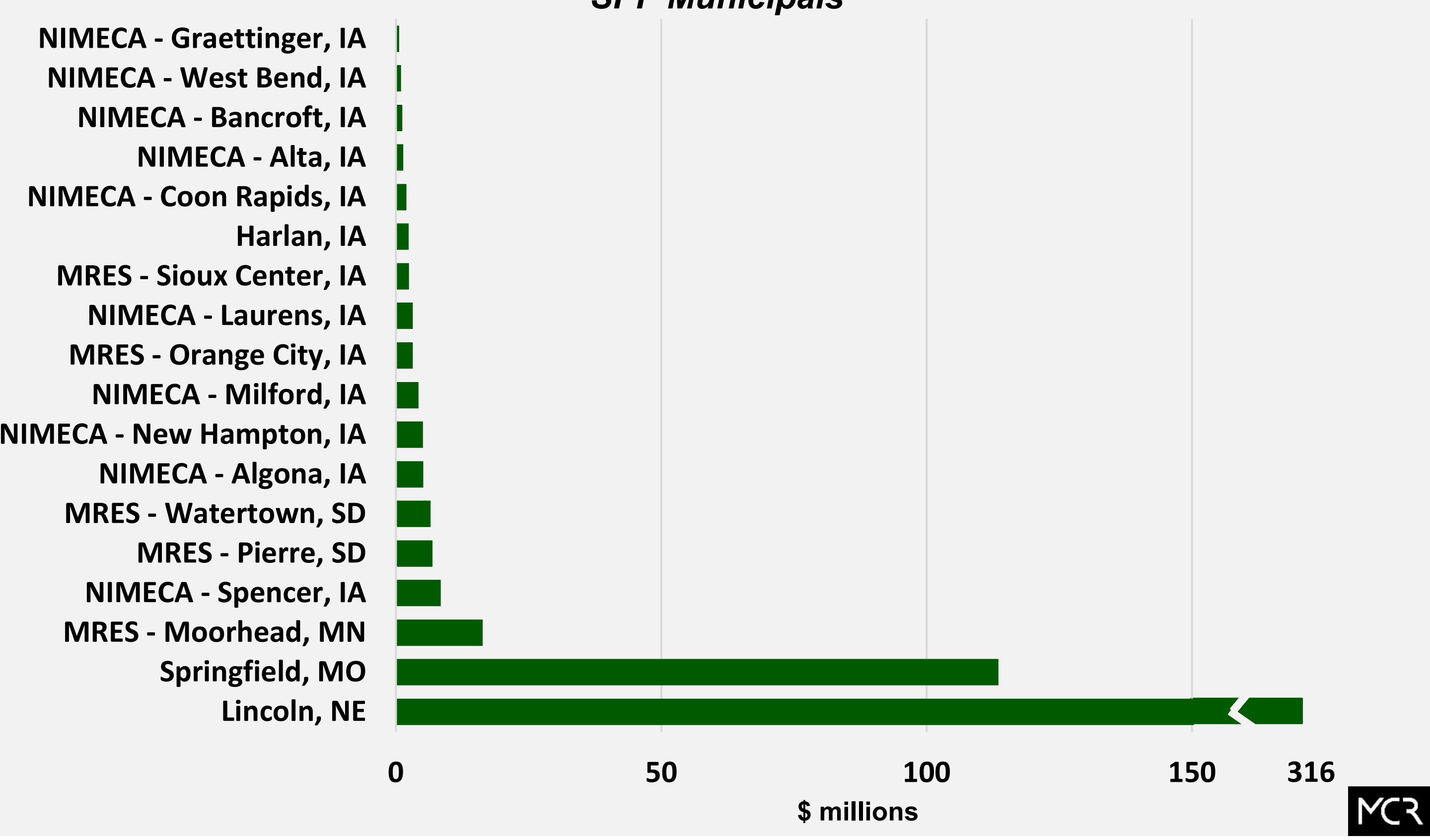


Figure 32
2015 – 2020 Transmission Schedule 9 & 11 Rate Increases in SPP[61]

Index/Pricing Zone	$/kW/Month—Sch. 9						% Change 2019-20	Total % Change thru 2020	Compound Ann % Inc thru 2020
	2015	2106	2017	2018	2019	2020			
CPI									**1.9%**
SPP Schedule 11 Regional Rate	**$0.91**	**$1.14**	**$1.41**	**$1.45**	**$1.28**	**$1.25**	**-2.1%**	**37.1%**	**6.5%**
Median of All Pricing Zones (Schedule 9)	**$2.14**	**$2.39**	**$2.35**	**$2.24**	**$2.48**	**$2.50**	**0.8%**	**16.5%**	**3.1%**
OG&E	$1.27	$1.50	$1.62	$1.78	$0.91	$0.89	-2.9%	-30.5%	-7.0%
KCP&L	$1.02	$1.03	$1.19	$1.35	$1.15	$1.14	-1.2%	11.5%	2.2%
Western Farmers	$1.25	$1.61	$0.82	$1.56	$1.16	$1.16	-0.7%	-7.9%	-1.6%
NPPD	$2.04	$2.38	$2.13	$1.69	$1.64	$1.49	-9.0%	-26.8%	-6.0%
Springfield, MO	$1.24	$2.14	$2.02	$2.21	$2.11	$2.13	1.0%	72.7%	11.5%
OPPD	$1.45	$1.63	$1.85	$2.13	$2.17	$2.23	2.9%	53.7%	9.0%
KCP&L GMO	$1.66	$1.72	$2.30	$2.19	$1.98	$2.29	15.7%	37.9%	6.6%
SPS	$2.29	$2.41	$2.28	$2.14	$2.36	$2.48	5.2%	8.3%	1.6%
Empire District	$2.25	$2.93	$3.27	$4.21	$2.48	$2.50	0.8%	10.9%	2.1%
Grand River Dam Authority	$3.41	$3.26	$3.83	$2.56	$2.74	$2.69	-2.1%	-21.4%	-4.7%
AEP –West	$1.90	$2.23	$2.44	$2.79	$2.66	$2.77	4.1%	45.9%	7.8%
Sunflower Electric	$3.26	$4.51	$2.39	$2.24	$2.54	$2.82	10.9%	-13.5%	-2.8%
Westar (Evergy)	$3.32	$3.80	$3.16	$3.38	$3.26	$3.38	3.7%	1.7%	0.3%
Midwest Energy	$3.31	$3.86	$3.90	$3.86	$3.68	$3.99	8.4%	20.7%	3.8%
Lincoln Electric	$2.61	$3.42	$3.01	$3.30	$4.13	$4.11	-0.7%	57.3%	9.5%
Upper Missouri	$4.97	$4.88	$5.23	$4.65	$4.72	$4.72	-0.1%	-5.1%	-1.0%
SPA	NR	NR	NR	$7.38	$6.67	$6.66	-0.1%	NA	NA

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[61] Source: MCR Analysis based on June 2015 through 2020 RRR file posted by SPP. Pricing. zones represent the Schedule 9 rate only.

Regional Transmission Rates Resume their Rise

Figure 32 on the prior page shows that although the SPP Schedule 9 zonal rates are not moving uniformly higher, the SPP regional transmission costs are escalating rapidly. Regional transmission costs are recovered in Schedule 11 and have increased by 37.1% or a compound annual growth rate of 6.5% from 2015 to 2020. These regional transmission projects have largely been the domain of IOUs and Transcos, and this is reflected in these TOs having the newest plant. In aggregate, IOU and Transco plant is only 22% depreciated (see Figure 21 on page 32). Interestingly, this investment pace is masked in many IOU dominated pricing zones. For example, the 2015-2020 compound annual growth rates of the zonal rates for OG&E was a negative 7.0%; SPS was 1.6%; and Empire District was 2.1%. These and other IOU rates were dampened by the impacts of the corporate tax cut and refunding of deferred taxes. At first glance, this might indicate that public power and cooperative transmission ratepayers are not experiencing the rate impacts of IOU's pursuit of transmission investment returns. However, this impact is felt from the Schedule 11 regional rate paid on a load ratio basis by ratepayers in SPP, so the march of increasing transmission rates carries on. The Schedule 11 rate was about 42% of the median zonal rate (Schedule 9) in SPP in 2015, growing rapidly to 65% in 2018 and then falling to 50% of the median zonal rate in 2020 due to the tax cut. In order to help offset these rate increases, public power and cooperatives in joint pricing zones can invest in transmission to gain a healthy return.

In order to help offset these rate increases, public power and cooperatives in joint pricing zones can invest in transmission to gain a healthy return.

Investment Continues Despite Threats on Horizon

As discussed previously, the seven potential threats to transmission provide some clouds on the horizon. They pose, however, little threat to the health of the transmission business in SPP in the near term, as there are numerous factors that will mitigate the threats. Some of the non-wires and storage threats will likely begin to put a dent in new transmission spending in the mid-2020s timeframe as they become more cost competitive supply options that lessen the load on the existing transmission system and reduce the need for some new transmission. Further, several years from now, competitive bidding could dampen investment spending of traditional TOs not covered by a ROFR. Nevertheless, the transmission business in SPP continues to be very attractive in the near term as evidenced by the continued healthy transmission investment covered in this whitepaper. The factors driving transmission investment continue to expand and evolve. Transmission rates will resume their upward march because: 1) investment will be strong for many SPP TOs over at least the next couple of years; 2) there will be little or no load growth in many regions; and 3) the impacts of the tax cut will unwind. As demonstrated by the success stories discussed previously, some T&Ds, G&Ts and municipals have significantly increased their transmission assets. However, more public power and cooperative transmission owners must continue to actively seek out opportunities to invest in local transmission to enhance reliability and to help mitigate the transmission rate increases that are sure to follow the continued increases in IOU/Transco transmission investment.

Transmission rates will resume their upward march because investment will be strong for many SPP TOs over at least the next couple of years, there will be little or no load growth, and the impacts of the tax cut will unwind.

MCR Transmission Strategy Practice Leadership

Jim Pardikes is a Vice President at MCR and leads the Transmission Strategy Practice. He has 35 years of experience consulting to the utility industry. His expertise includes providing expert testimony for Section 205 and incentive filings, including cost of capital for public power, and cooperatives. Jim regularly presents to Boards and senior teams and has written extensively on the drivers of transmission investments and the case for transmission incentives. Jim can be reached in the office at 847-504-2549, on mobile phone at 847-226-2084, or by email at jpardikes@mcr-group.com.

"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

Ron Kennedy is a Director with MCR. He has over 20 years of experience in consulting to the utility industry. His expertise includes transmission formula rates, Section 205 rate changes, transmission rate incentives, economic evaluation of RTO membership and financial evaluation of transmission projects. Ron is experienced in presenting to executive teams and Boards of Directors. Ron can be reached at rkennedy@mcr-group.com.

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

Chris Nagle is a Manager with MCR. He has 14 years of experience in transmission, rates and regulatory affairs. His MCR expertise includes conducting reviews of existing formula rates, developing new formula rates/testimony and evaluating economics of transmission projects. His previous experience includes rate development and cost allocation for a multi-jurisdictional electric utility, including testifying as an expert witness before various PSCs. Chris can be reached at cnagle@mcr-group.com.

"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 and cooperatives—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 transmission 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

Through our consulting assignments, MCR has created millions of dollars in value for our clients and broken new regulatory ground for our client base with landmark FERC decisions.

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