Exhibit No. 7

Evergy – Exhibit 7
Testimony of Cody VandeVelde
Direct
File No. EA-2025-0075

Exhibit No.:	
Issue:	Integrated Resource Planning and 2024 Preferred Plans of EMW and EMM
Witness:	Cody VandeVelde
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Evergy Missouri West and Evergy Missouri Metro
Case No.:	EA-2025-0075
Date Testimony Prepared:	November 15, 2025

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: EA-2025-0075

DIRECT TESTIMONY

OF

CODY VANDEVELDE

ON BEHALF OF

EVERGY MISSOURI WEST AND EVERGY MISSOURI METRO

Kansas City, Missouri
November 2025

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DIRECT TESTIMONY

OF

CODY VANDEVELDE

CASE NO. EA-2024-0292

I. INTRODUCTION

Q: Please state your name and business address.

A: My name is Cody VandeVelde. My business address is 818 S. Kansas Avenue, Topeka, Kansas.

Q: By whom and in what capacity are you employed?

A: I am employed by Evergy Kansas Central, Inc. and serve as Senior Director, Strategy and Long-Term Planning - Energy Resource Management for Evergy Metro, Inc. d/b/a as Evergy Missouri Metro ("Evergy Missouri Metro" or "EMM"), Evergy Missouri West, Inc. d/b/a Evergy Missouri West ("Evergy Missouri West" or "EMW"), Evergy Metro, Inc. d/b/a Evergy Kansas Metro ("Evergy Kansas Metro"), and Evergy Kansas Central, Inc. and Evergy Kansas South, Inc., collectively d/b/a as Evergy Kansas Central ("Evergy Kansas Central"). These are the operating utilities of Evergy, Inc. ("Evergy")

Q: Who are you testifying for?

A: I am testifying on behalf of Evergy Missouri West and Evergy Missouri Metro (together, the "Companies").

Q: What are your responsibilities?

A: My responsibilities include development of Evergy's corporate strategy and overseeing Evergy's long-term planning functions. Long-term planning includes Evergy's Energy Resource Management division which is responsible for completing the Company's Integrated Resource Plans ("IRP"). Specifically related to this testimony, Corporate

Strategy monitors the execution of Evergy's strategic initiatives, one of which is the advancement of transitioning Evergy's generation portfolio, including new resource development and preparation for future retirements.

Q: Please describe your education, experience, and employment history.

A: I hold a Bachelor of Business Administration from Washburn University. Since joining Evergy in 2007, I have worked in leadership roles across the power marketing, investor relations, and corporate strategy departments.

Q: Have you previously testified in a proceeding at the Missouri Public Service Commission ("MPSC" or "Commission") or before any other utility regulatory agency?

A: Yes. I have offered testimony before the MPSC, the Kansas Corporation Commission, and have previously testified at the Federal Energy Regulatory Commission ("FERC").

Q: What is the purpose of your direct testimony?

A: The purpose of my direct testimony is to describe how Evergy's IRP process and the recent 2024 Triennial IRP Preferred Plan filed on April 1, 2024 in Case No. EO-2024-1054 by EMW support this Application for Certificates of Convenience and Necessity ("CCNs") for two natural gas electric generating facilities, and how these generating facilities fit within the overall capacity plans for EMW.

Specifically, I will explain how Evergy Missouri West's proposed construction, installation, operation, ownership, and control of two new natural gas generating facilities will help advance EMW's Preferred Plan. These facilities are the Viola Generating Station ("Viola), a 710 MW combined-cycle natural gas ("CCGT") plant to be constructed in Sumner County, Kansas, and the Mullin Creek #1 Generating Station ("Mullin Creek #1"),

a 440 MW simple-cycle natural gas ("SCGT") generating plant to be constructed in Nodaway County, Missouri. I will explain the updated IRP analysis that Evergy performed to consider impacts of the natural gas resource cost increases and other changing dynamics that impact EMW's future capacity position.

I will also discuss the contingent need for the Commission to grant a third CCN for either EMW or EMM to construct, operate and own an additional natural gas generating facility known as the McNew Generating Station ("McNew"), a 710 MW CCGT plant to be constructed in Reno County, Kansas.

Q: Please summarize your testimony.

A: As reflected in the 2024 Triennial IRP, EMW has a need for future physical capacity, physical energy, and a hedge against the Southwest Power Pool ("SPP") energy market, which is expected to be met with a variety of supply-side and demand-side resources. Significant load growth, increased summer and winter reserve planning margin requirements mandated by SPP, and an aging coal fleet that includes facilities forecasted to retire within the 20-year IRP planning horizon are driving the need for EMW to develop new supply-side generation resources.

EMW has a need for both traditional dispatchable generation, as well as emission-free resources as environmental regulations affect fossil fuel generation. Over the next ten years, EMW expects to add approximately 1,500 megawatts ("MW") of new supply-side resources, with half of those resources planned to be fueled by natural gas and the other half of those resources planned to be renewables. This amount of generation development is a significant initiative for EMW that began with the acquisition of a portion of Dogwood

Energy Center.[1] These efforts have continued with the solar CCN applications for the Sunflower Sky and Foxtrot projects that were filed at the Commission on October 25, 2024.[2]

All of these initiatives will help to enable EMW to meet its customers' future capacity and energy needs. Delaying the development of Viola and Mullin Creek #1 would be detrimental to the needed build-out of generation and would put significant risk on EMW's ability to meet future capacity and energy requirements of its customers, as well as the new planning reserve margin requirements of SPP, the FERC-approved regional transmission organization of which Evergy's electric public utilities are members.

Additionally, as discussed in the 2024 Triennial IRP Preferred Plans of both EMW and EMM, their respective needs for future capacity combined with the recent projections of rapidly increasing load growth support the Commission's consideration of a possible third CCN for 50% interest in a CCGT generating station, based upon information that the Companies intend to file by February 2025.

II. THE IRP PROCESS AND EMW'S PREFERRED RESOURCE PLAN

Q: Please describe the IRP process in Missouri.

A: The IRP process is completed under the Commission's Electric Utility Resource Planning Rules are found in Chapter 22 of 20 CSR 4240. It results in the selection of a Preferred Plan, which reflects the combination of supply-side and demand-side resources that EMW and EMM will use to meet forecasted customer requirements for the next twenty years.

[1] See Order Approving Stipulation & Agreement and Granting Certificate of Convenience & Necessity, In re Application of Evergy Mo. West for an Operating Certif. of Convenience & Necessity related to Dogwood Nat. Gas Facility, No. EA-2023-0291 (Mar. 21, 2024).

[2] See Application of Evergy Mo. West for Certificates of Convenience and Necessity, In re Evergy Mo. West, Inc. for CCNs to Construct Two Solar Generation Facilities, No. EA-2024-0292 (filed Oct. 25, 2024).

Q: What is Evergy's objective in the IRP process?

A: Evergy is guided by the Section 22.010(2) which states: "The fundamental objective of the resource planning process at electric utilities shall be to provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies." To achieve this objective, Evergy's IRP is performed using "minimization" of the net present value of revenue requirements ("NPVRR") as the primary objective function, pursuant to Section 22.010(2)(B). The IRP process compares demand-side and supply-side resources on an equivalent basis.

Q: Why is the IRP process important to the Companies and their customers?

A: The robust IRP process evaluates significant risks and uncertainties to solve for reliability and affordability, and serves as the foundation for future resource planning decisions. Identifying Preferred Plans for EMW and EMM as a result of this process is integral to the Companies' strategy and planning across generation, transmission, and distribution.

Q: Please describe EMW's most recent Preferred Plan.

A: As presented in the 2024 Triennial IRP filed on April 1, 2024, EMW's Preferred Plan, known as Plan CAAA, is as follows:

Figure 1: EMW's Preferred Plan - Plan CAAA

Inservice Year	Wind (MW)	Solar (MW)	Battery (MW)	Thermal (MW)	Capacity Only (Summer MW)	DSM (Summer MW)	Retirements (MW)
2024	0	0	0	143	0	91	0
2025	0	0	0	0	0	140	0
2026	0	0	0	0	28	180	0
2027	0	150	0	0	0	211	0
2028	0	0	0	0	0	225	0
2029	0	0	0	325	0	240	0
2030	0	0	0	415	0	254	0
2031	150	0	0	0	0	268	212
2032	150	0	0	0	0	283	0
2033	150	0	0	0	0	295	0
2034	150	0	0	0	0	312	0
2035	0	0	0	0	0	325	0
2036	0	0	0	0	0	338	0
2037	0	0	0	0	0	352	0
2038	0	0	0	0	0	362	0
2039	0	0	0	0	0	377	0
2040	0	0	0	0	0	388	187
2041	150	0	0	0	0	399	0
2042	0	150	0	0	0	408	0
2043	0	0	0	0	0	417	0

Q: Are the Viola and Mullin Creek #1 projects case essential for EMW to implement its Preferred Plan?

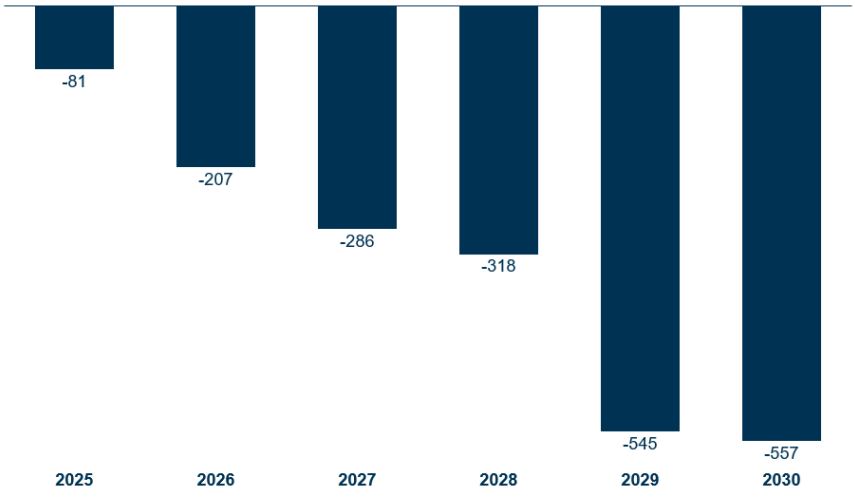
A: Yes, these projects are vital to meeting EMW's capacity and energy requirements as identified in the 2024 IRP Preferred Plan. EMW's proposed 50% share of the 710 MW Viola CCGT plant specifically corresponds to the 325 MW of thermal resources that is identified in the year 2029 in the Preferred Plan.

EMW's 100% ownership of the 440 MW Mullin Creek #1 SCGT plant specifically corresponds to the 415 MW of thermal resources that is identified in year 2030 in EMW's Preferred Plan.

Q: What is Evergy Missouri West's need for capacity resources, as related to the Viola and Mullin Creek #1 projects?

A: The table below reflects EMW's 2024 IRP near-term capacity need before adding any new supply-side or demand-side resources in the base load forecast scenario. As discussed in Section 2.1 of Volume 6 in EMW's 2024 IRP, EMW is forecasted to need summer capacity starting in 2025. Evergy Missouri West's capacity needs are expected to grow over time, primarily due to load growth, increasing SPP reserve margin requirements, expiring capacity contracts, and the retirement of coal resources.

Figure 2: EMW's Forecasted Position Before Resource Additions (MW)



As demonstrated by the IRP's analysis,[3] the natural gas projects included in this application are forecasted to reduce the costs for EMW customers and to meet their energy and capacity requirements over the twenty-year planning horizon. When they are fully operational, the Viola combined-cycle plant and the Mullin Creek #1 simple-cycle plant will help meet EMW's near-term requirement for capacity starting in 2029-2030. These

[3] See Volume 6: Integrated Resource Plan and Risk Analysis, EMW's 2024 Triennial IRP, No. EO-2024-0154 (Apr. 1, 2024).

dispatchable thermal projects will be a critical element in Evergy Missouri West's plan to address its near-term capacity needs, along with the previous addition of Dogwood and the future solar additions in 2027 outlined in Figure 1 above.

Q: What is the EMW's need for energy resources?

A: Capacity is essentially the capability to produce energy. Therefore, any time that a market participant is short on capacity, it is also short on energy capability. As a result, the forecasted reserve balance in the 2024 IRP is an indication of a current and ongoing need for energy generating resources for EMW customers. Evergy Missouri West's need for energy can and has been partially met by Southwest Power Pool's wholesale energy markets, but EMW's dependence on the energy market can create pricing risk if it covers a large portion of customer needs over the long-term.

Q: Given the price risks posed by the wholesale energy markets, does EMW need to hedge these risks?

A: Yes. Evergy Missouri West needs to own and operate generating capability in the form of energy resources, as well as to hedge market energy prices. EMW has been able to leverage available market capacity to meet its capacity needs and has relied on the wholesale market to provide sufficient physical energy. However, because SPP continues to increase its resource adequacy requirements[4] and because of the recent unprecedented growth in demand, today's bi-lateral capacity market is tightening and while there may be capacity to fill near-term needs, the capacity market is no longer a viable long-term option.

[4] In August 2024 SPP approved minimum requirements of a 36% winter-season planning reserve margin (PRM) and a 16% summer-season PRM. These requirements are effective with the summer of 2026 and the winter of 2026-2027. See SPP Media Release, "SPP Board approves New Planning Reserve Margins to Protect against High Winter, Summer Use" (Aug. 6, 2024). See also Order Accepting Tariff Revisions, Southwest Power Pool Inc., No. ER24-2397-000 (FERC, Nov. 4, 2024) (approving addition of a Winter Season Resource Adequacy Requirement).

Additionally, economic conditions are expected to cause the price of any available market capacity that may become available to be much higher than recent capacity market prices, making the wholesale capacity markets a less cost-effective option to meet customer capacity needs. A large portion of EMW's existing capacity (energy generating capability) consists of inefficient, high heat rate natural gas turbines which operate infrequently. As a benefit to being part of Southwest Power Pool, Evergy Missouri West can lean on the more economic wholesale energy market to provide energy when its units aren't dispatched due to being "out of the money." An energy hedge, like owning the new natural gas resources that are the subject of this Application, provides relatively low-cost energy, and can provide greater energy cost stability and security in an uncertain future.

Q: Why are Viola and Mullin Creek #1 the right resources to meet the Company's near-term energy needs?

A: As Evergy Missouri West (as well as Evergy's other utilities) plans for a future that relies less on coal generation, EMW needs to replace that generation with dispatchable capacity that produces cost-effective energy. Unfortunately, dispatchable resources that are both emission-free and affordable are neither commercially available or technologically feasible today. Natural gas is in the best position to provide a bridge to a clean energy future as the electric utility industry awaits other resource advances, including hydrogen, long-duration energy storage, and small modular nuclear reactors. CCGTs and SCGTs each have their own unique characteristics and there is value to EMW's customers of adding both technologies to the portfolio. CCGTs have highly efficient heat rates and are able to deliver very economically competitive energy. This technology can also supplement the loss of baseload coal as it is designed to be able to run at a higher capacity factor. SCGT's deliver

dispatchable capacity at a lower cost, but typically provide less energy due to having a less efficient heat rate and higher marginal cost when compared to CCGTs. Conversely, SCGTs deliver higher levels of flexibility in their ability to start up very quickly and ramp up and down at a rapid pace.

In particular, the addition of the combined-cycle gas turbine 710 MW Viola unit (as well as the McNew unit discussed in Section III) is generally aligned with the CCGT assumptions in the 2024 IRP Preferred Plan as far as MW nameplate size, heat rate efficiency, and flexible operating characteristics. Viola will have access to existing natural gas pipelines which will limit up-front infrastructure capital costs and be reasonably proximate to EMW's Missouri service territory.

The 440 MW simple-cycle gas turbine Mullin Creek #1 will be built in Evergy Missouri West's service territory near Maryville in Nodaway County. It will also have access to the existing natural gas pipeline operated by ANR Pipeline Company which will limit interconnection capital costs.

Q: Do the cost estimates for the Viola CCGT and the Mullin Creek #1 SCGT provided by Evergy witness Kyle Olson differ from the estimates used in EMW's 2024 IRP analysis?

A: Yes. As a result of inflation and today's significant demand for construction of natural gas generation, the cost to construct these resources has materially increased since the 2024 IRP analysis was performed earlier this year.

Regarding the CCGT, the IRP used an estimate of $1,271/kW in 2029. As Mr. Olson testifies, Evergy Missouri West's current estimate is that the cost of CCGT is **[redacted]**, an increase of approximately **[redacted]** percent.

Similarly, the IRP used an estimate of $1,294/kW to construct a SCGT in 2030. Today, EMW estimates that the cost would be **[redacted]**.

Q: How have you accounted for these cost increases to support Evergy Missouri West's CCN requests for the Viola CCGT plant and the Mullin Creek #1 SCGT plant?

A: Yes. We performed an updated IRP analysis using all of the same inputs that were used in preparing EMW's 2024 Triennial IRP report and compliance filing except that we changed the cost, heat rate, and installed size characteristics of the new plants to conform to the estimates provided by Mr. Olson. In order to more closely align with current negotiations, planning, and project timing feasibility, the updated analysis adjusted the first year that each of these natural gas resource technologies were available to construct. The updated analysis allowed the model to construct CCGT resources starting in 2029 and SCGT starting in 2030.

Q: Were there other adjustments that this updated IRP analysis considered?

A: Yes. Additional adjustments were made that reflect an updated assessment of demand side management ("DSM") programs. Since filing the 2024 IRP, Evergy has reached a stipulation and agreement pending Commission approval in its MEEIA Cycle 4, Case No. EO-2023-0369/0370. In the updated IRP analysis, for purposes of this CCN request, Evergy included a DSM profile for EMW that more accurately reflects the DSM potential resulting from the budgeted amount included in the MEEIA stipulation and agreement, which has approval for programs 2025 through 2027. The updated DSM profile reduces the capacity and energy benefit of DSM programs starting in 2028 when the MEEIA Cycle 4 period ends. The changes also reduce the overall EMW portfolio capacity position compared to what was selected as the RAP+ DSM scenario in EMW's Preferred Plan and

further bolsters the need for the capacity and energy provided by the Viola and Mullin Creek #1 Generating Stations. Figure 3 reflects the annual impact of summer and winter capacity accreditation resulting from this change in DSM input.

Additionally, in order to reflect Evergy's most current expectation of the wholesale capacity market, the updated IRP analysis relaxed market capacity constraints in 2026 through 2029 and allowed the model to select up to 100 MW of market capacity for this time period. We also adjusted the price of market capacity for this time period, changing to a market price more reflective of the current SPP wholesale capacity market (i.e., a higher price compared to what was used in the 2024 IRP earlier this year).

Figure 3: DSM Profile Comparison for Updated EMW IRP Analysis

Summer DSM Accreditation			
	RAP+	MEEIA	Difference
2024	-	-	-
2025	140	97	(43)
2026	180	139	(41)
2027	211	153	(58)
2028	225	153	(72)
2029	240	4	(236)
2030	254	4	(250)
2031	268	4	(264)
2032	283	3	(280)
2033	295	3	(292)
2034	312	3	(309)
2035	325	3	(322)
2036	338	3	(335)
2037	352	2	(350)
2038	362	2	(360)
2039	377	2	(375)
2040	388	1	(387)
2041	399	1	(398)
2042	408	-	(408)
2043	417	-	(417)

Winter DSM Accreditation			
	RAP+	MEEIA	Difference
2024	-	-	-
2025	-	-	-
2026	100	47	(53)
2027	124	78	(46)
2028	145	85	(60)
2029	156	85	(71)
2030	168	3	(165)
2031	178	3	(175)
2032	189	3	(186)
2033	200	2	(198)
2034	212	2	(210)
2035	223	2	(221)
2036	233	2	(231)
2037	243	2	(241)
2038	254	2	(252)
2039	264	1	(263)
2040	274	1	(273)
2041	284	1	(283)
2042	293	-	(293)
2043	300	-	(300)

Q: What were the results of the updated IRP analysis?

A: With these new inputs, the updated IRP analysis selected the same resources through 2030 that were selected as the Preferred Plan (Plan CAAA depicted as Figure 4 below) in the

2024 Triennial IRP. Specifically, the resource build plan selected in the updated IRP analysis (Plan GAAW depicted as Figure 5 below) chose 50% of a CCGT to be built in 2029, consistent with EMW's plan to own 50% of the Viola plant, and it also selected a SCGT to be built in 2030, consistent with the Company's plan to own 100% of the Mullin Creek #1 plant. The only change resulting from the updated IRP model run prior to 2030 was the selection of a higher amount of market capacity in 2026-2029 to offset the loss of capacity resulting from the DSM changes that I explained earlier. Beyond 2030, the updated IRP analysis includes an additional 50% of a CCGT in 2039, a small amounts of market capacity in 2038 and 2039, and swaps a wind resource in 2042 in place of a solar resource.

Figure 4: EMW's 2024 IRP Preferred Plan

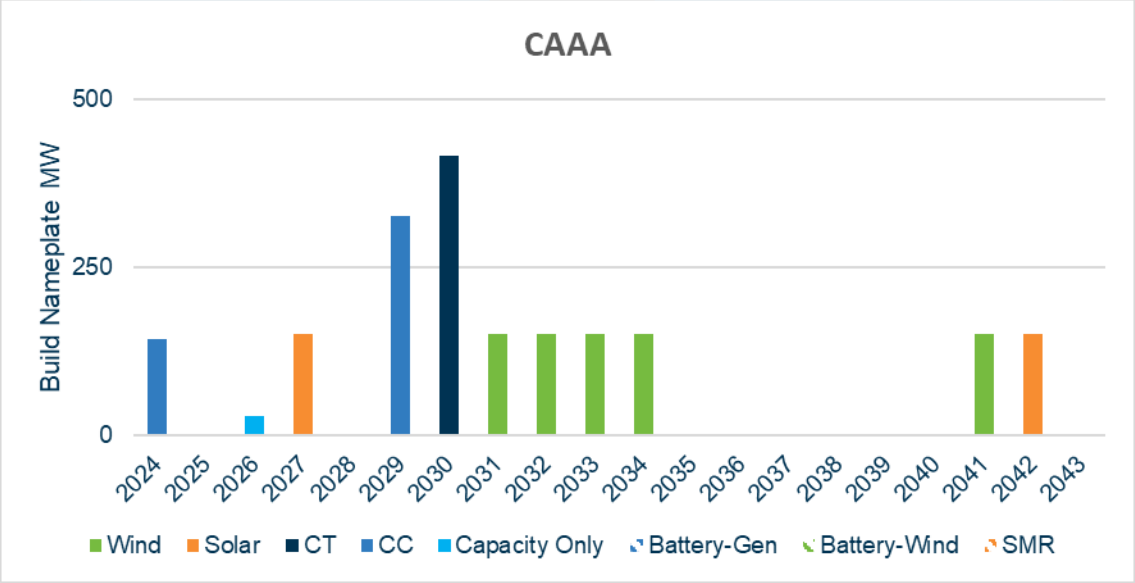
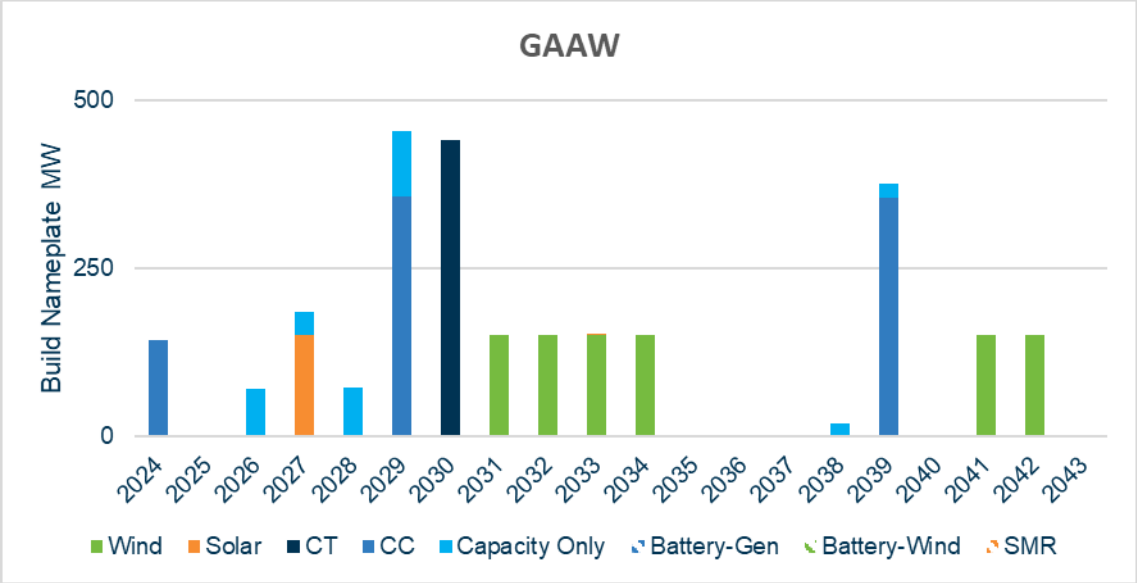


Figure 5: Updated EMW IRP Analysis



Evergy will continue to evaluate the impact of these and other changes that occur between now and our annual IRP update which is expected to be filed on April 1, 2025.

Q: Does the updated IRP analysis continue to support the Application's request that the Commission grant CCNs for Evergy Missouri West to construct, operate and own a 50% interest in the Viola CCGT plant and a 100% interest in the Mullin Creek #1 SCGT plant?

A: Yes. Even after adjusting the IRP analysis with the updated cost estimates and other details provided by Mr. Olson in his direct testimony, the Application's requests are still supported by the updated IRP analysis. As I discussed above, Evergy Missouri West must add generation that provides capacity and energy so that its system remains safe and reliable, that meets the needs of new and existing customers, and that complies with all SPP resource adequacy requirements.

III. CONTINGENT CCN REQUEST FOR A SECOND COMBINED-CYCLE COMBUSTION TURBINE UNIT FOR EVERGY MISSOURI WEST OR EVERGY METRO MISSOURI

Q: Why is EMW and EMM advising the Commission to be prepared to assess the need for either utility to be granted a CCN for a 50% interest in the 710 MW McNew CCGT facility to be constructed in Reno County, Kansas?

A: As described in the Direct Testimony of Evergy witness Kevin Gunn, Evergy has laid out a framework it will use to determine how to allocate the second 50% of the McNew plant. The Companies intend to present the findings of this effort to the Commission in testimony no later than February 19, 2025. There are a number of reasons for this updated analysis. Southwest Power Pool has revised its resource adequacy requirements with changes in its capacity accreditation methodology, and has increased its planning reserve margins, setting new margin requirements for both the summer and winter seasons. Missouri, as well as Kansas are experiencing record levels of economic development, both current and projected, from a variety of sources, including new manufacturing facilities and data centers, as well as local business expansion.

Based on our analysis, the addition of just one large customer, such as a Google or Meta data center, would create an additional capacity need for either EMW or EMM that would greatly exceed what is reflected in the Companies' respective 2024 Triennial IRP reports. Therefore, 50% of a second CCGT in the form of the McNew plant would be needed to meet this capacity need. Evergy believes that -- *within the next three years* -- it is highly likely that its electric utilities must be prepared to meet their obligation to serve these new customers when they request service. In order to encourage economic

development opportunities to locate in Missouri, Evergy must begin the three-year process to construct the necessary new generation in the very near future.

The direct testimony of Evergy witness Mr. Olson explains the economies of scale that can result from constructing these units in a comprehensive fashion, and Mr. Gunn proposes a framework of decision points that would guide the Commission's consideration of this request for a third CCN regarding the McNew CCGT plant.

IV. EVERGY MISSOURI WEST'S GENERATION PORTFOLIO

Q: In light of Evergy Missouri West's current generation resources, what value do the Viola and Mullin Creek #1 projects bring to that portfolio?

A: The table below reflects EMW's capacity portfolio by resource fuel type as of December 31, 2023.

Figure 8: EMW Capacity by Resource Type as of Year-end 2023

Jurisdiction	Capacity by Fuel Type	Capacity (MW)	Capacity (%)
Evergy Missouri West	Coal	463	18.9%
	Nuclear	-	-
	Natural Gas/Oil	1,190	48.7%
	Renewable*	791	32.4%
	Total[5]	**2,444**	**100.0%**
**Nameplate renewables capacity*			

Depicted as Table 2 at page 4, Vol. 1 of the 2024 Triennial IRP

EMW has approximately 2,444 MW of capacity, with approximately two-thirds fossil fuel resources and the remaining one-third renewables resources. Of the 791 MW of nameplate renewables resources, only 6 MW (<1%) are solar. The balance is predominantly wind resources. The Viola and Mullin Creek #1 natural gas projects, as well as the pending Sunflower Sky and Foxtrot solar projects will add energy resources

[5] As of April 2024, total capacity is 2,587 MW after including Dogwood Energy Center (143 MW).

that produce most of their power in peak summer conditions when demand and grid constraints are typically highest.

Adding the cumulative 795 MW of gas generation from these projects, and the 165 MW of solar projects included in EMW's solar CCN application filed on October 25, 2024 (No. EA-2024-0292) will further diversify EMW's generation portfolio and advance the Company's long-term goal to move toward sustainable generation resources. They will also help to reduce EMW's reliance on aging coal generation which continues to experience stringent environmental regulations and economic challenges.

Q: Will adding the Viola and Mullin Creek #1 projects in 2029 and 2030, along with the solar projects in 2027 address the resource needs that EMW faces today?

A: Yes. Evergy believes in an "all-of-the-above" approach to generation addition and that is reflected in our 2024 Preferred Plan which started with the acquisition of 22% of the Dogwood Energy Center. EMW's 2024 Preferred Plan identifies the need for the addition of 740 MW of dispatchable, natural gas resources in 2029 and 2030, as well as 150 MW of solar projects. Because EMW needs both renewables and natural gas generation, its customers will benefit from building a balanced and diversified generation fleet that doesn't rely on one fuel source, reducing risk.

Q: What are your key conclusions about the Viola and Mullin Creek #1 natural gas projects?

A: The Viola and Mullin Creek #1 natural gas facilities are being developed as part of EMW's 2024 IRP Preferred Plan which will produce economic benefits for customers above other alternative plans, and will meet their future capacity and energy needs. They provide the dispatchable generation called for by SPP's recent "Generational Challenge" report which

cites the critical need for such resources.[6] Finally, both Viola and Mullin Creek #1 will advance EMW's long-term, responsible energy transition by providing a hedge against risks associated with energy and fuel prices. The Commission should grant CCNs for each of these projects which meet the goals of the Commission's Electric Utility Resource Planning Rule because they will clearly serve the public interest.

Q: Does that conclude your testimony?

A: Yes, it does.

[6] See Schedule CV-1, Southwest Power Pool, "Our Generational Challenge: A Reliability Future for Electricity" at 3 ("We need dispatchable generation for times when the wind isn't blowing and the sun isn't shining …"), 8, 12 and 34 (Summer 2024).

fBEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Evergy Missouri West, Inc. d/b/a Evergy Missouri West and Evergy Metro, Inc. d/b/a Evergy Missouri Metro for Permission and Approval of a Certificate of Public Convenience and Necessity For Natural Gas Electrical Production Facilities	)))))))	Case No. EA-2025-0075

AFFIDAVIT OF CODY VANDEVELDE

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Cody VandeVelde, being first duly sworn on his oath, states:

1. My name is Cody VandeVelde. I work in Topeka, Kansas and I am employed by Evergy Metro, Inc. as Senior Director, Strategy and Long-Term Planning - Energy Resource Management.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Evergy Missouri Metro and Evergy Missouri West consisting of eighteen (18) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

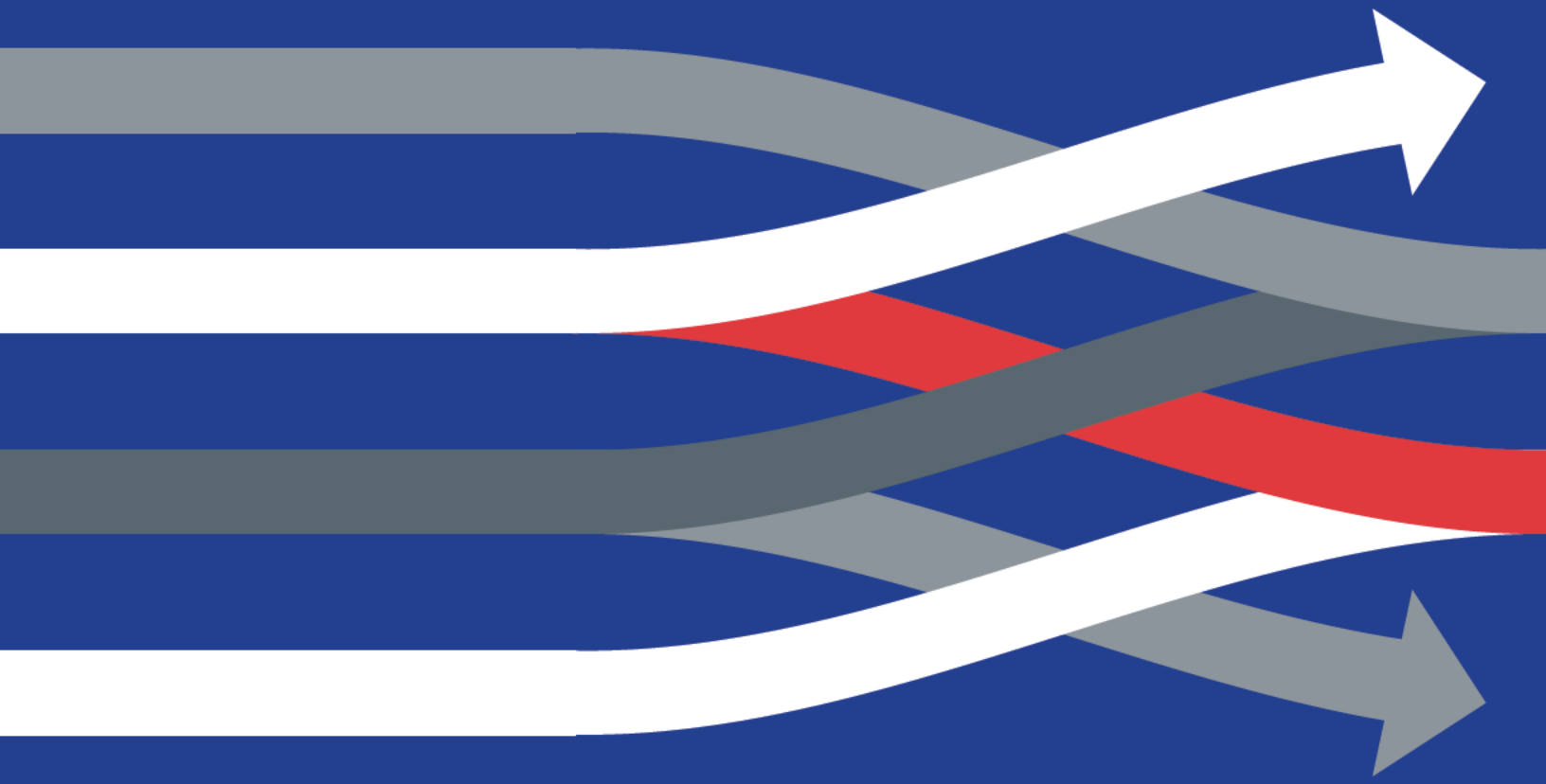
Cody VandeVelde

Subscribed and sworn before me this 15th day of November 2024.

Notary Public

My commission expires: 4/26/2025

ANTHONY R. WESTENKIRCHNER
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES APRIL 26, 2025
PLATTE COUNTY
COMMISSION #17279952



Our Generational Challenge

A Reliable Future for Electricity

Summer 2024

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A MESSAGE FROM THE CEO

I am concerned now more than ever about the future of our shared electric grid and our ability to provide the reliable and affordable service consumers expect. Our energy system is in the midst of radical change. **Changes in supply, demand, and extreme weather conditions are stressing the limits of energy reliability.**

Demand for electricity is outpacing supply from our generation fleet. Residential and commercial energy use is expected to increase at an unprecedented pace as our nation becomes more electrified and large data centers are added. While a tremendous amount of renewable energy has been added in the SPP region, which provides significant environmental benefits, renewable energy is not always available. We need dispatchable generation for times when the wind isn't blowing and the sun isn't shining, but many of these generators are aging or facing retirement. We also need more transmission to connect new generators to the grid, increase grid security, and get lower-cost energy to consumers.

We are facing an increase in extreme weather events that are causing grid emergencies, tight operating conditions, and risks to human health and safety. In the past, there were only a few weeks in summer when SPP risked running out of energy. Now, we are issuing grid alerts throughout the summer as well as during winter. Our risk of having inadequate supply to meet demand has greatly increased, and grid emergencies are likely to last longer, cause more damage, and increase risks to human health and safety.

While SPP always focuses on affordability, we need continued investment to add the generating and transmission facilities needed to mitigate risks and keep the lights on. **SPP — along with our members, regulators, policymakers, regional transmission organizations, and consumers —must form a coalition to meet our critical mission of responsibly and economically keeping the lights on.**

As the real-time grid operator and transmission planner for a 14-state region, our job is to ensure electric reliability for millions of consumers. We've been successfully doing this work since 1941. But we can't do it alone. A concerted, collective effort is needed to ensure we have a reliable power grid today and in the future.

Barbara Sugg

SPP President and CEO

OUR GENERATIONAL CHALLENGE

EXECUTIVE SUMMARY

We are concerned about our ability to maintain the affordable and reliable electric service that consumers expect.

SPP — along with other grid operators across the U.S. — is facing a once-in-a-generation challenge. Our mandate to ensure we have sufficient generation to meet demand has become harder to satisfy.

Our region is at a pivotal moment with a rapidly changing generation mix. Wind generation, the fastest growing resource type in our region, provides low-cost, carbon-free energy, yet its variability requires generators of other energy sources to increase production, sometimes rapidly, when wind stops blowing. Coal and gas generators are typically dependable sources of energy during non-extreme weather conditions. However, plants are being de-commissioned due to aging equipment, increasing environmental restrictions, and higher operational costs. These plants also need to improve their performance during stressful weather conditions. Gas generation can quickly respond to changing demand, yet gas price volatility impacts energy costs and the threat of incremental environmental restrictions poses significant future financial and operational uncertainty. In the future, we expect to see continued retirements of gas and coal units and additions of new wind, solar, and battery resources.

SPP's peak demands could be as much as 25% higher by 2030 for winter and summer.

Demand for electricity is increasing while generation is falling short. We are entering a new era of electrification with electric vehicles, data centers, artificial intelligence, and other new sources of demand. Extreme weather events are stressing our grid more than ever as consumers continue to set records for electricity use.

While demand is increasing, generators being added are not sufficiently replacing generation being retired. As a result, the amount of excess generating capacity available in the SPP region is shrinking to dangerously low levels.

Our transmission infrastructure isn't ready for the grid of the future. It can take a significant amount of time to install new transmission facilities with delays often caused by a variety of hurdles utilities face in regulatory approval processes. While SPP members have invested over $12 billion in transmission upgrades since 2006, we need significantly more transmission to ensure a reliable and resilient power grid capable of delivering more affordable electricity. In fact, SPP's most recent transmission plan calls for three times the amount of new transmission infrastructure than the largest plan we've ever previously recommended. The ability to timely construct transmission is also challenged by increasing equipment lead times.

From 2017 to 2023, our projected risk of inadequate supply to meet demand increased 30+ times.

Our reliability risks are increasing and shifting. Our risks of experiencing inadequate supply are drastically increasing and also becoming relatively higher during the winter season. In the past, SPP experienced its highest reliability risk during peak summer conditions. Now, winter electricity consumption is rising quickly, driven primarily by a growing gas-to-electric heating transition and extreme winter weather such as 2021's winter storm Uri — which cost human lives and billions of dollars. Such high magnitude, long duration outages are increasingly likely due to higher electricity consumption, changing weather patterns, and supply/demand constraints.

We must mobilize and act now to ensure a reliable energy future. In close collaboration with our members and state regulators, SPP has been hard at work on numerous policies to protect grid reliability while focusing on affordability. However, there is only so much SPP can do. It will take a coalition of people focused on this mission critical challenge to successfully keep the lights on today and in the future.

We must build more generation and transmission to maintain reliability.

State Utility Commissioners are extremely important in developing responsible cost allocation and resource adequacy policies and in supporting prudent investments in infrastructure expansion.

Federal Regulators and Policymakers can approve regulations that facilitate reliability improvements and enact laws that promote reliability while balancing affordability and environmental goals. They can also support collaboration across multi-state regions.

Utilities and Developers can upgrade aging infrastructure and bring new generation and transmission to the grid.

Regional Transmission Organizations can work together to provide visionary leadership within our regions while working across our boundaries to exchange energy and collaborate on interregional projects.

Consumers can stay informed about and support utilities' efforts to build infrastructure needed to provide reliable and affordable electric service. They can participate in demand response and energy efficiency programs and voluntarily reduce consumption during emergencies.

SPP: WHO WE ARE

Southwest Power Pool (SPP) is an independent, non-profit regional transmission organization[1] (RTO) responsible for reliably and efficiently operating and planning the power grid across much of the central U.S. We don't own generators and transmission lines, although we direct construction of transmission needed to maintain a reliable and affordable grid. Similarly to how air traffic controllers manage the flow of aircraft, we monitor the grid 24/7 and take corrective actions to ensure power lines operate within limits.

SPP's mission statement

SPP is focused on reliability. Our mandate is to protect the grid and ensure electric power is being supplied to meet demand at all times. In addition to real-time monitoring, we establish requirements for how much generating capacity should be available to meet future needs, and we plan the transmission system to reliably and economically deliver electricity in the future.

SPP collaborates with our members. SPP is more than the staff who work in our offices and operations centers. We have 114 member organizations with thousands of employees who serve millions of people in our region in their roles as power producers, transmission providers, market participants, distributors, agencies, and advocates for their members and the public.

SPP is based on trusted relationships. Working together we tackle the biggest challenges facing the energy sector and our region. The needs and interests of more than a dozen states and 100+ companies are never exactly the same, but the relationships forged among our members allow us to make progress. We derive great strength from this diversity. Every member has a voice and the opportunity to vote in our stakeholder process. Our willingness to work together allows us to collectively address the opportunities and challenges that we all face in a much stronger way than if we addressed these challenges by ourselves.

SPP is affordable. SPP operates wholesale energy markets where customers can buy and sell power flowing from a diverse generation fleet. We have the lowest wholesale energy prices of any RTO. In 2023, our members derived $3.62 billion in benefits (a 20-to-1 return) from their membership in the SPP RTO. Studies of our region's investments in transmission show $5.24 in benefits have been provided for every $1 of new transmission built.

SPP is an industry leader. We aspire to lead our industry to a brighter future while delivering the best energy value. We lead in collaboration with the entire SPP ecosystem to create a future with more accessible, reliable, sustainable and affordable power. SPP strives to deliver grid services and energy better than any available alternative.

[1] There are seven regional transmission organizations (RTO) or independent system operators (ISO) managing the electric grid in the United States. These terms are often used interchangeably.

WHY IS IT A CHALLENGE?

OUR INDUSTRY IS AT A PIVOTAL MOMENT

Our grid was built for an energy system that is nearly unrecognizable today. Historically, large controllable resources like coal, nuclear, and gas plants were built near population centers, operated for long periods of time, and produced a centralized, one-way flow of energy as needed to meet demand changes. A utility would build generation and transmission, connect it to their customers, and operate in a mostly closed system.

Our generation resources are more diverse and decentralized than ever.

Today, the power system is much more networked, and our generation resources are more diverse and decentralized than ever. An increasing number of resources are built by independent power producers rather than the utilities responsible for serving electric consumers.

Wind has been our fastest growing generation resource, and it is growing faster in SPP than almost anywhere in the U.S. SPP had only 80 MW of wind resources in our region in 2001. As of July 2024, we have more than 33,700 MW. Wind provides low-cost, carbon-free energy. Availability of this energy and enabling transmission infrastructure has helped reduce energy prices in the SPP region while also contributing to CO2 emission reductions in SPP by 30% since 2014. Wind also brings challenges. Wind energy varies in its availability, serving anywhere between less than 1% up to 95% of SPP's needs, which requires other responsive generation to fill the gap when wind becomes unavailable.

Coal, historically the generating workhorse of American electricity, is experiencing declining capacity as many plants have been de-commissioned over the last decade. New coal resources are no longer coming online, and existing coal plants are some of SPP's oldest infrastructure that require significant upgrades or are facing looming retirement. Increasing demand and tightening supply conditions leave less time for maintenance outages, creating reliability challenges.

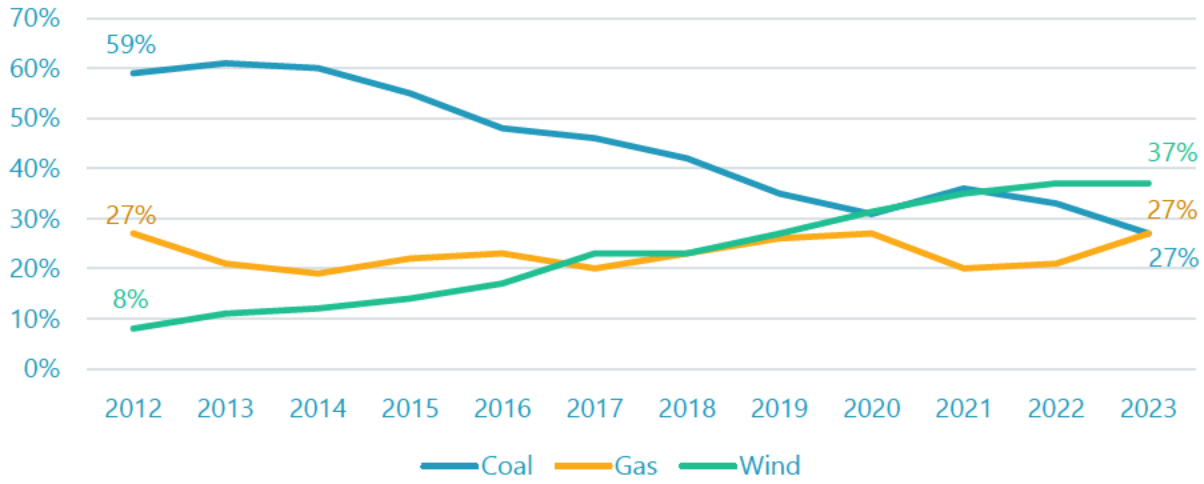
Natural gas is beginning to replace coal as SPP's top thermal generating resource. Gas generation has been called on more and more to quickly respond to demand changes and the increasing wind production variability, and as such, often sets the clearing price in our wholesale energy market. The historically observed close ties between gas prices and wholesale energy prices means events that disrupt global gas supply can cause spikes in U.S. energy prices.

Unlike conventional power plants, which normally have sufficient fuel to produce electricity on demand, **variable resources** including wind and solar are dependent on weather conditions to produce energy. This complicates the management of electricity supply and demand, which must be continuously balanced.

Because of renewables' variability, **dispatchable resources**, such as coal and natural gas, are increasingly used to counteract that variability. For example, as wind generation decreases, gas generators are needed to immediately increase to offset the lost wind energy. Most conventional generators were not designed to turn off and on or ramp up and down in this manner. This ramping requirement creates additional wear and tear, leading to more frequent maintenance, more outages, and reduced reliability.

New technology, state and national policies, consumer preference, and economic viability have led to an exponential growth of renewable power resources on SPP's grid. Similarly, aging equipment, increasing environmental restrictions, and increasing operational costs have led to numerous retirements of coal and gas generation.

Chart: SPP's top three energy producers – 2012 to 2023



Solar and wind resources are often built at geographic locations far from population centers. These remote locations can create **congestion** or "too much traffic" on existing transmission lines, thus requiring massive investment in new transmission to connect and deliver power from these generating resources.

Reliable transfer of energy is also challenged by the growth of **distributed energy resources** installed in homes and businesses. Coordinating thousands of small-scale generators installed on local distribution systems that have fluctuating outputs poses significant technical and regulatory challenges. Ensuring compatibility and interoperability among diverse energy assets, such as rooftop solar panels, battery storage systems, and electric vehicles, requires standardized protocols, improved grid operator visibility and smart grid technologies.

Utility customers are also able to participate in the power grid more actively through **demand response programs**. Such programs incentivize consumers to change their electricity use during peak hours or under emergency conditions. The one-way street of utility-to-customer is turning

into a two-way street where customers can contribute energy back to the grid or reduce their consumption either by choice based on price signals or on demand during emergencies.

Some technological solutions we believe will help us through this historic change are not yet a reality. Battery energy storage, or less common solutions like compressed air energy storage, are not yet to the commercial scale needed to offset low energy production from variable resources, particularly when that low production occurs over long periods of time. Advanced nuclear technology is feasible but faces regulatory, permitting and high-cost investment challenges. It will take significant investment and collaboration to close the gap between our rapidly changing demand and the system we need to serve it.

At the peak of the space race, the U.S. spent $7 billion a year on NASA, roughly $64 billion in today's dollars. A modernized grid could cost between $300 billion and $2 trillion
The energy transition is our generation's moonshot.

Our transmission infrastructure is not yet ready for this rapidly changing future. The National Renewable Energy Laboratory (NREL) has estimated that a $50 billion transmission investment could convert the three divided interconnections into a single "macrogrid," allowing for a more effective flow of power across the entire system.

A Princeton study[2] found that more than $300 billion will need to be invested in the American transmission system to fully integrate and utilize new renewable resources. Some experts believe the U.S. power grid needs up to $2 trillion[3] to fully update our aging infrastructure

Each RTO is projecting a need to rapidly grow generation capacity. This will require investment in generation including new technologies such as grid-scale batteries. This level of investment grows when we consider the need for grid enhancing technologies and replacing aging infrastructure.

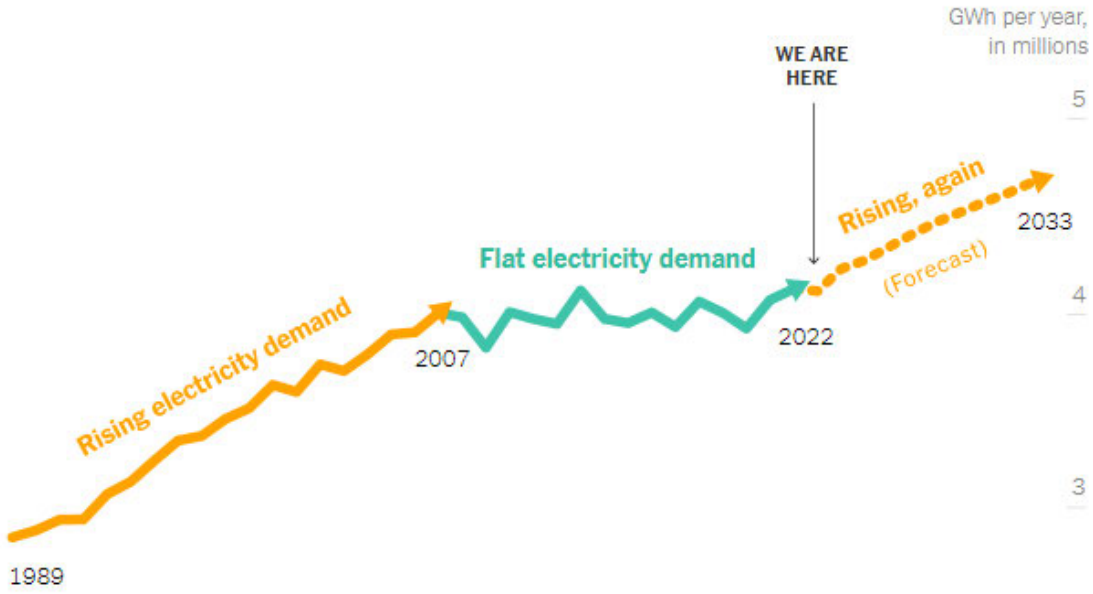
[2] www.princeton.edu/news/2020/12/15/big-affordable-effort-needed-america-reach-net-zero-emissions-2050-princeton-study
[3] https://www.reuters.com/investigates/special-report/usa-renewables-electric-grid/

OUR DEMAND FOR ENERGY IS INCREASING

How many devices do you plug into the wall today compared to 10 or 20 years ago? Our world is becoming more electrified at home, on the road, and in commercial operations. During the early 1900s, demand was driven by rural electrification. In the second half of the century, demand grew with the population and a proliferation of electric appliances and devices.

But since the early 2000s, and until recently, demand for power has been relatively flat. Population growth in the U.S. slowed, and energy efficiency and other technological advances led to an industry-wide recognition that the demand growth of the 20th century had stalled. That has begun to change.

Chart: "End of Flat Electricity Era[4]" New York Times[5] (2024)



Data Sources: New York Times graphic based on NERC analysis of historical data from NERC's 2023 Electricity Supply & Demand (ES&D) report[6], and projected future growth of demand based on NERC's 2023 Long-Term Reliability Assessment[7] (Dec. 2023).

In recent years we've seen new types of demand added to the grid. In addition to electric cars, large companies like Google have built data centers in our region due to SPP's optimal wind resources to provide their power. According to the International Energy Agency's Electricity 2024 report, "Electricity consumption from data centers, artificial intelligence (AI) and the cryptocurrency sector could double by 2026. After globally

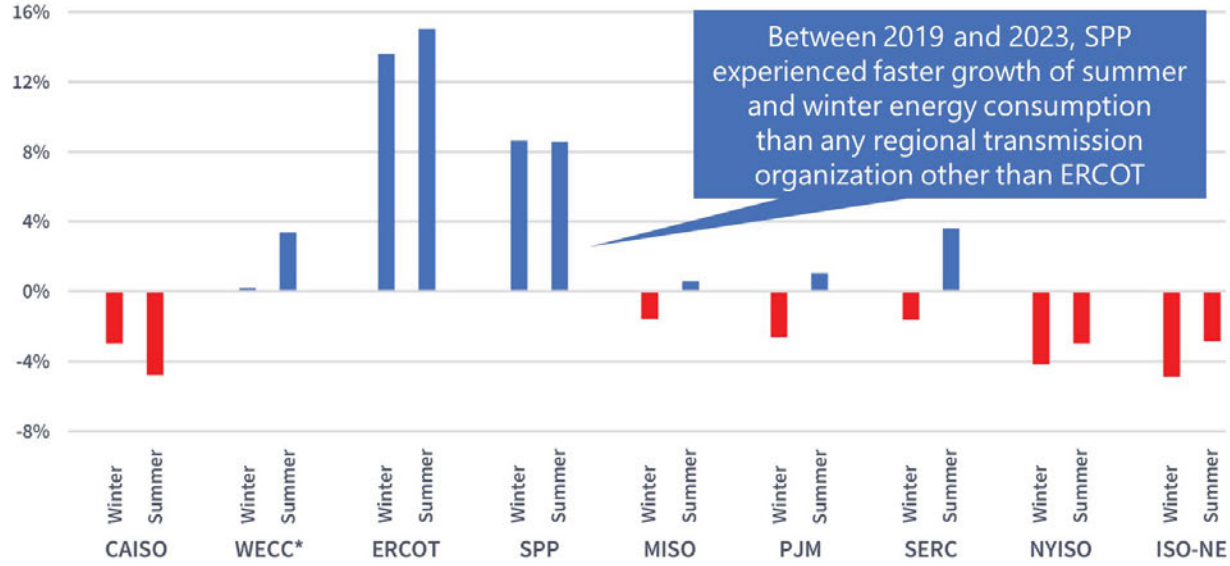
A ChatGPT search consumes almost 10 times the amount of electricity as a Google search.

[4] nytimes.com/newsgraphics/2024-02-12-end-of-flat-electricity-era/14c15849-e45d-45e2-b769-cfe63b574b7e/_assets/nerc_chart-Artboard-600.png
[5] www.nytimes.com/interactive/2024/03/13/climate/electric-power-climate-change.html
[6] www.nerc.com/pa/RAPA/ESD/Pages/default.aspx
[7] www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2023.pdf

consuming an estimated 460 terawatt-hours (TWh) in 2022, data centers' total electricity consumption could reach more than 1,000 TWh in 2026."[8] A recent article in The Washington Post[9] noted that a new Meta data center in Salt Lake City consumes as much power as can be generated by a large nuclear reactor.

Other large new demand sources are crypto-mining operations, microgrids, hydrolyzers, natural gas production, energy storage resources, artificial intelligence computing, and battery plants. Grid Strategies reports[10] that the U.S. may see $630 billion in near-term investment in new "large loads" like factories and data centers, with a growth in demand of 38 GW through 2028. Electric powered manufacturing is growing, and homes are converting from gas to electric heating.

Chart: Electricity Demand has Grown in the Central United States – Total Electricity Consumed by Season, 2014-2018 compared to 2019-2023 (FERC – State of the Market[11])



Data Source: Hitachi ABB Power Grids Velocity Suite based and EIA-930. Note summer includes June, July, and August. Winter includes December, January, and February. Data for SERC and WECC is limited to the years 2015-2023. WECC refers to WECC excluding CAISO. SERC data includes balancing authority areas that were members of the Florida Reliability Coordinating Council prior to 2019.*

Our peer organizations are projecting rapid growth. PJM, an RTO in the Northeast, expects to add new demand equivalent to that of New York City by 2030[12]. The independent system operator in California projects peak demand to grow from its 2022 record of 52,000 to nearly 60,000 MW by 2035[13], and it expects electric vehicles to account for as much as 10% of peak demand by 2030. The 2024 long-term forecast for ERCOT, the independent system operator in Texas, increased 40,000 MW over 2023[14]. It has seen electricity use rise by 29% over the last 10

[8] iea.blob.core.windows.net/assets/6b2fd954-2017-408e-bf08-952fdd62118a/Electricity2024-Analysisandforecastto2026.pdf
[9] www.washingtonpost.com/business/2024/06/21/artificial-intelligence-nuclear-fusion-climate/
[10] gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf
[11] https://www.ferc.gov/media/2023-state-markets-presentation
[12] https://insidelines.pjm.com/pjm-publishes-2024-long-term-load-forecast/
[13] https://gridstrategiesllc.com/wp-content/uploads/2023/12/National-Load-Growth-Report-2023.pdf
[14] https://www.ercot.com/news/release/2024-04-23-ercot-enters-new

years, with the increase driven by bitcoin mining, oil and electric energy for gas production, and rising summer heat mixed with extreme winter weather.

Our own data shows that demand is growing faster than previously anticipated. SPP's peak demand reached an all-time high in August 2023 which was 10% higher than the peak observed just two years earlier. SPP's projections show the levels of peak demand experienced in 2023 could be as much as 25% higher by 2030 for both winter and summer seasons.

OUR GENERATION COULD SOON FALL SHORT

A significant portion of our grid infrastructure is getting older and wearing out. Aging generation resources, particularly those facing stricter environmental limitations, are being retired. This means that the remaining power plants, both thermal (like coal or natural gas) and renewable (like wind and solar), have to step up and provide more energy, especially during emergencies when the grid is under strain.

Our region is increasingly reliant on variable resources. These are generation types, often renewable energy, that vary in how much energy they can provide due to reliance on as-available fuel. While these resources provide environmental and cost benefits when available, they also pose a challenge for grid operators when they are not. Solar power is dependent on time of day and year, and it is reduced by cloud cover or low sunlight.

The growth of renewable energy has brought lower wholesale prices and reduced carbon emissions. It has also added volatility to real-time grid operations

Wind power is dependent on weather patterns, which can shift wildly, and can even be at risk when wind speeds are too high to safely operate. Hydro power is reduced during times of drought or in extreme freezing conditions. All this means renewable output can vary widely. For instance, in just 4 hours, we have seen wind power go from providing over 16,000 megawatts (MW) of energy to less than 2,200 MW[15]. We have also experienced a period in June 2023 when only 110 MW of energy was produced by the 32,000 MW of nameplate wind capacity existing at that time in the SPP region.

When this happens, other sources of electric energy must be available and quickly ramp up to meet the demand. This is when SPP relies most heavily on **dispatchable generation**: power sources that have available fuel and can be quickly adjusted to meet the needs of the power grid. Dispatchable power plants can be turned on or off, or their power output can be increased or decreased on demand. This allows them to provide more electricity when demand is high, or less when demand is low.

[15] On Feb. 18, 2024, SPP's available wind capacity in the Real-Time Balancing Market went from 16,263 MW at 5:50 a.m. to 2,190 MW at 9:50 a.m., a change of –14,073 MW in four hours.

Some resources can quickly respond, while others require longer periods of time to reach full output. In 2020 the U.S. Energy Information Administration estimated[16] that only about 25% of U.S. power plants can start up within an hour, while 33% took more than 12 hours, though the number of fast-start resources have increased some since that study. Extreme weather conditions can also have an impact on dispatchable generation, as SPP experienced during Winter Storm Uri, when coal piles and gas production facilities or generating equipment froze. Extreme drought or flood conditions could also impact coal and gas energy production, which rely on a large amount of water.

Natural gas generators are generally able to respond most quickly. Coal generation can adjust output up and down when already running, but it may take several hours if starting from "cold." Nuclear plants take multiple days to go from zero output to full capacity. Battery energy storage is available at scale in some parts of the country and is expected to grow, but the amount of energy it can provide, and the duration of its operation, is still extremely limited to four hours or less.

Since the amount of renewable energy in our region has increased, the availability of energy has become more variable. At the same time, demand for energy is steadily rising. The supply of available generation is not keeping pace with the growth of new energy demand.

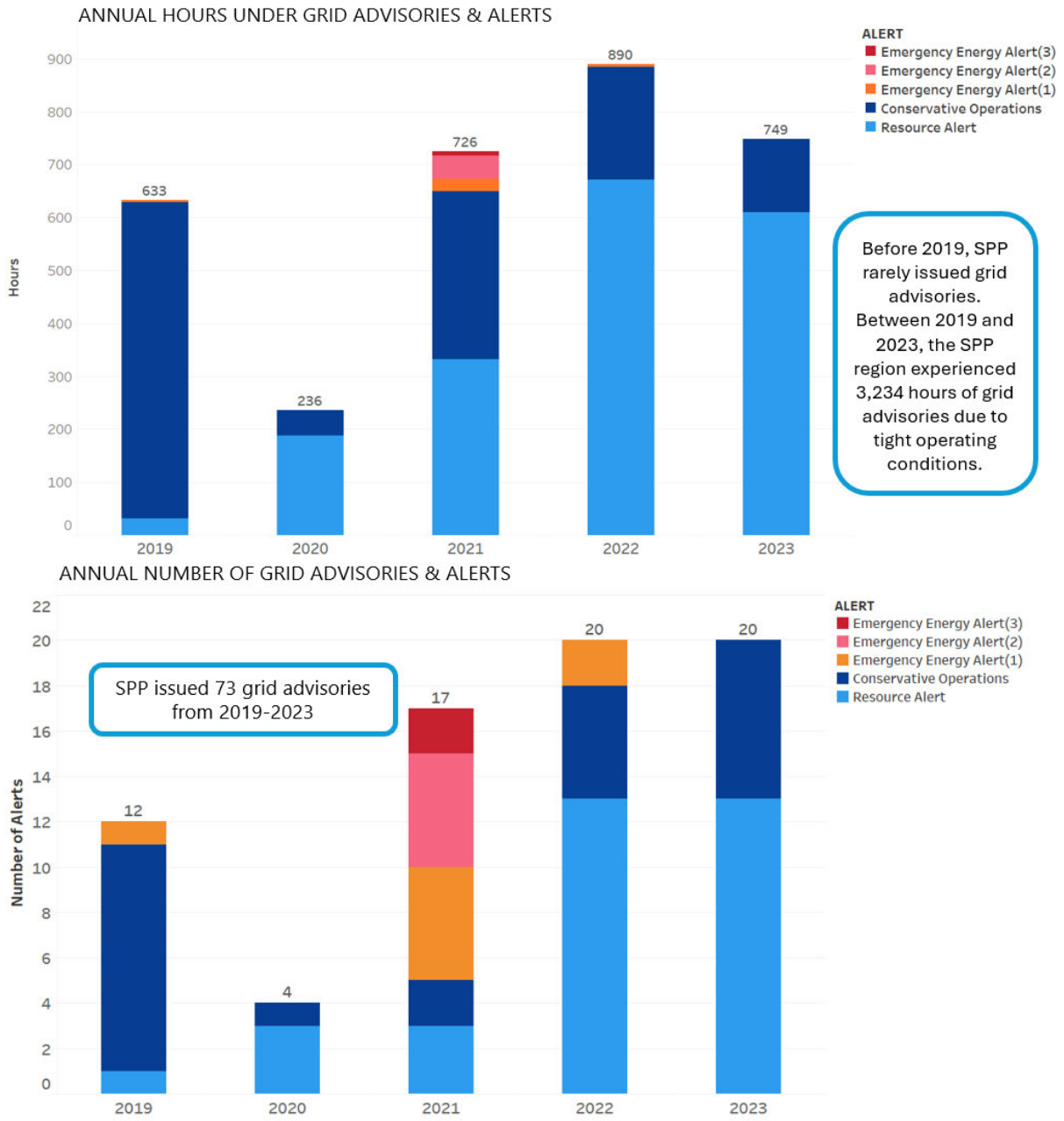
Reserves are resources that are held back, standing by to provide additional energy when needed. **Reserve margins** are the amount of unused available capability of an electric power system (during peak demand for a utility system) as a percentage of total capability needed to meet peak demand. These margins are shrinking in SPP and across the country. Tighter reserve margins mean there's less room for error when we experience unexpected events or emergencies, increasing the risk of forced outages.

Over the last few years, SPP has experienced an increasing number of energy alerts in both summer and winter alerting regional grid operators about tightening conditions. The hours the region has been under alert since 2019 have greatly increased compared to prior years.

Overall, grid operation is becoming more challenging, with the risk to its stability as high as it has been in recent history.

[16] https://www.eia.gov/todayinenergy/detail.php?id=45956

Charts: SPP Energy Advisories & Alerts, 2019-2023



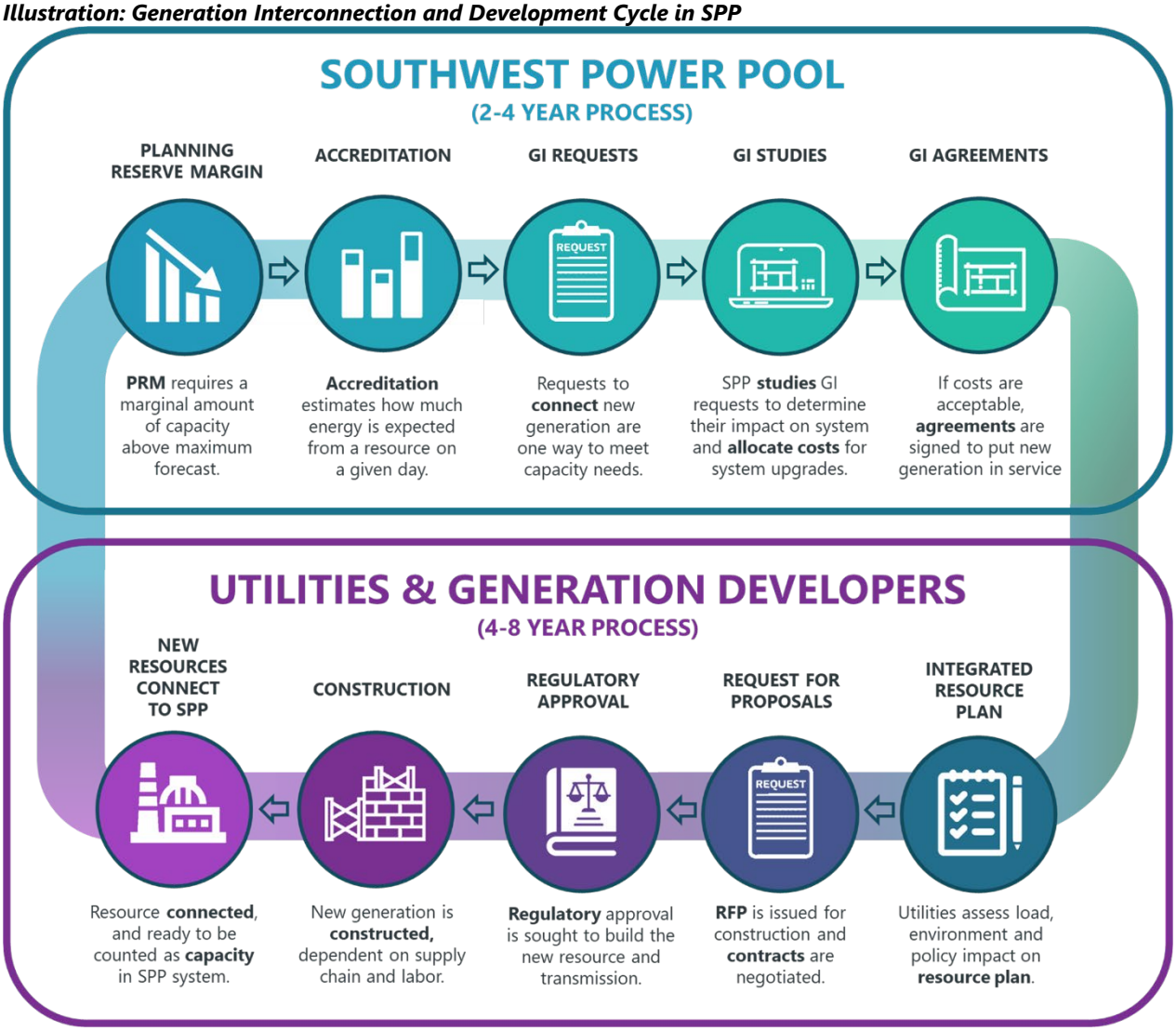
What are the challenges to adding more generation and increasing our energy supply? Years ago, adding new generation meant building a limited number of very large power plants, often located near urban centers. The future of new generation is expected to mostly consist of smaller, distributed, variable resources often located far from cities and requiring new investment in transmission.

Our members can't just add new generation anywhere. Any new power plants or new areas of high electricity supply and demand need to be carefully studied. Too much energy flowing over

lines in the same location can overload the system.

The process of studying and approving requests to connect new generation takes time and is complicated by both the volume of requests and iterative changes to the mix of requests being studied. Once SPP approves a generator to be added to the grid, it can take years for the generator to go into service

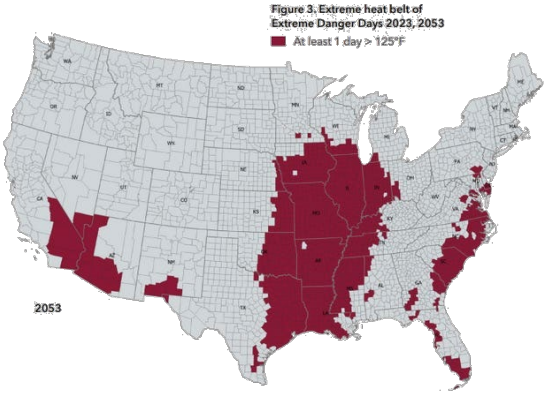
Illustration: Generation Interconnection and Development Cycle in SPP



Grid operators are constantly working to manage these challenges and ensure a reliable supply of electricity to homes, businesses, and communities throughout the SPP region.

OUR REGION HAS MORE FREQUENT EXTREME WEATHER

The National Oceanic and Atmospheric Administration (NOAA) predicts the likelihood of extreme weather events such as heat waves, tornadoes, and hurricanes. It projects more frequent and extreme summer heat waves in the West in this decade and extending to the northern and southern Plains by the 2050s and 2070s[17].

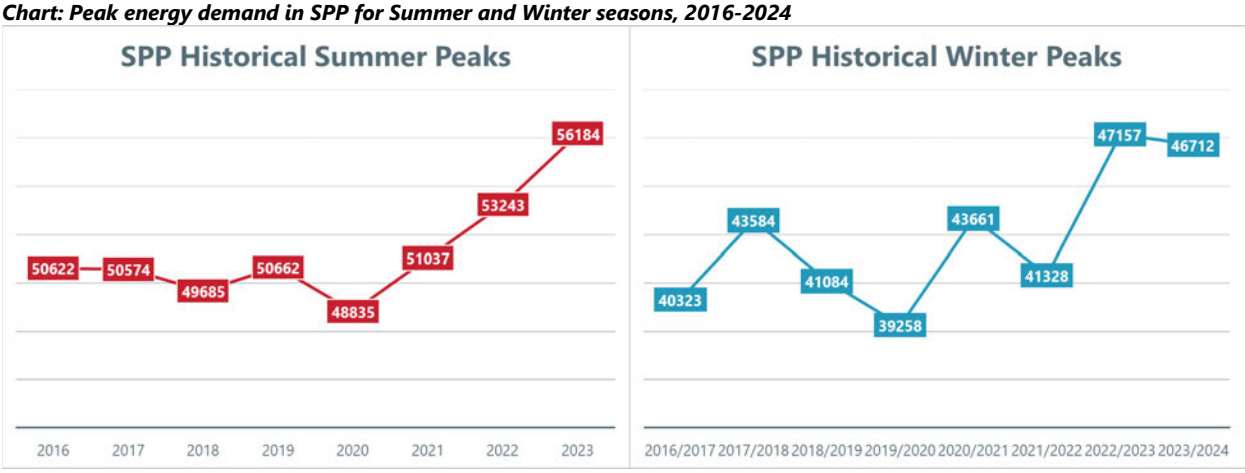


Map: Extreme Danger Days - First Street Foundation

A 2022 study by the First Street Foundation, the Extreme Heat Model[18], projected the counties at greatest risk of experiencing "Extreme Danger Days" (>125° heat index) between 2023 and 2053. Hundreds of those counties are in the heart of SPP's region.

Heat isn't the only issue. Historically, SPP's riskiest season — the season where demand for energy got closest to outpacing supply — was summer. A large portion of SPP's region experiences high summer heat, and air conditioning requires a large amount of energy. However, the balance of seasonal risk is increasingly shifting to winter, driven by periods of extreme weather setting record low temperatures and record high winter-season demand for electricity. FERC projects arctic storms to have the potential to significantly impact system reliability and with increasing frequency.

Chart: Peak energy demand in SPP for Summer and Winter seasons, 2016-2024



2021's Winter Storm Uri and 2022's Winter Storm Elliott had significant impacts on SPP's region with new record cold temperatures recorded in multiple locations across our entire footprint during those events.

[17] https://www.aoml.noaa.gov/heat-waves-in-the-united-states/
[18] https://firststreet.org/research-library/heat-model-methodology

Extreme weather affects both sides of our electric system: supply and demand. During Winter Storm Uri, every type of energy resource was impacted by freezing conditions: wind turbines, coal piles, gas production, and even icing of hydro power. Extreme heat or cold also increases demand for energy, as the need to heat or cool homes, businesses, and livestock shelters or to pump water for crops becomes critical.

This risk is multiplied by two trends. First, a national shift from gas-fueled to electrified home and business heating, which is accelerating winter electricity demand. Second, more restrictions on planned outages and maintenance. Historically, after summer peaks, some generators would go offline for preventative maintenance, but increasing extreme weather risk is resulting in fewer available days for maintenance, prolonged up times, and more risk of infrastructure failure. The oldest generation requiring the most maintenance tends to be thermal, dispatchable generators which are critical for response to extreme demand.

Image: Utility crew responds to infrastructure affected by winter weather (Getty)

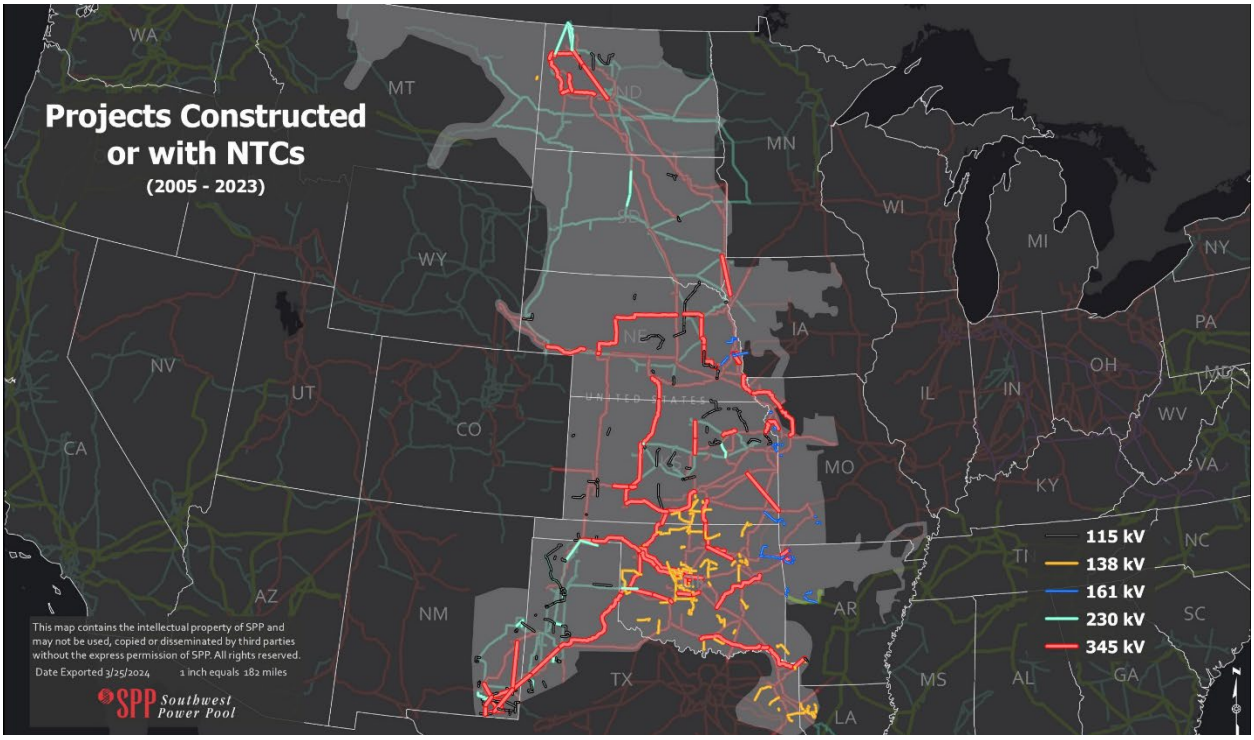
OUR TRANSMISSION INFRASTRUCTURE ISN'T READY FOR THE FUTURE

America's transmission infrastructure is aging and is inadequate for a more electrified future grid. The Department of Energy's National Transmission Needs study[19] found that "by 2040 there is a significant need for new interregional transmission between nearly all regions" with some estimates of a national need for 47,000 gigawatt-miles (GW-mi) of high voltage lines by 2035.

SPP is authorized by the North American Electric Reliability Corporation to serve as a **regional transmission planner**. We've been actively working to plan and direct construction of new infrastructure. SPP's members have responded by putting significant "steel in the ground." Between 2006 and 2023, SPP's members constructed $12.4 billion in transmission upgrades. As of January 2024, $3.5 billion of additional transmission upgrades are in progress.

SPP's members have invested over $12 billion in transmission infrastructure, but more is needed to meet our generational challenge.

Map: High-voltage transmission projects constructed, or with notices to construct, in SPP, 2005-2023



[19] energy.gov/gdo/national-transmission-needs-study

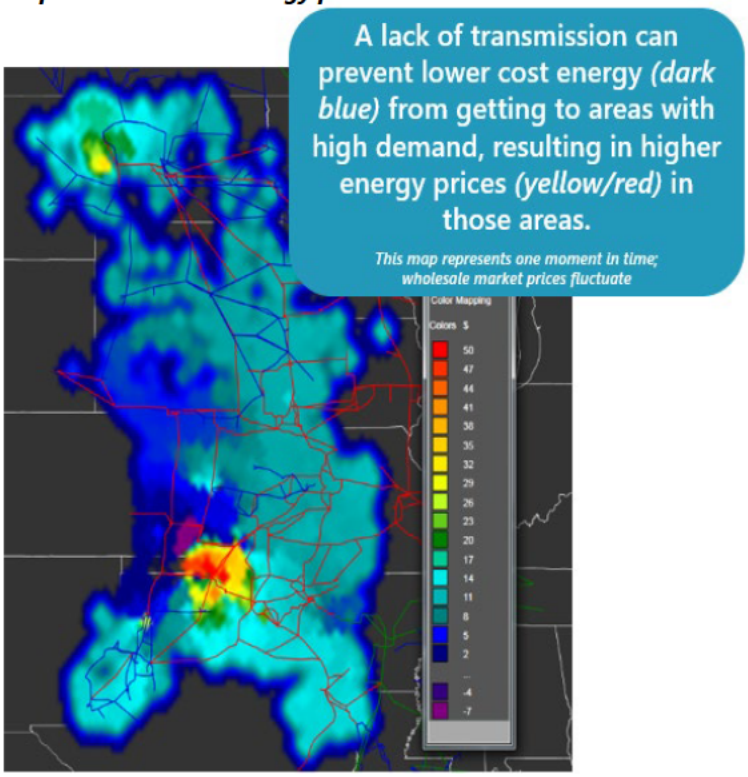
Even with these huge investments, we need more transmission to ensure a reliable, resilient and affordable power grid. From 2006 to 2023, the average annual cost of SPP's integrated transmission plan (ITP) for needed new transmission was about $328 million. As of July 2024, SPP's annual ITP projected a need for up to $6 billion in new transmission infrastructure. This is six times more than our previous largest study and 18 times larger than the long-term average.

SPP routinely performs studies to identify transmission upgrades needed to connect new generators and new demand centers to the grid. Renewable energy sources, such as remote wind facilities, are often located far from demand centers with no available transmission infrastructure. Building high voltage transmission can be prohibitively expensive and can be an obstacle to interconnecting new generators and demand centers.

In the post-COVID economy, power producers face the same inflation and supply chain issues as other industries. Many utilities are facing years-long delays in getting new power transformers needed to complete interconnections. Other challenges to creating transmission pathways include "not in my backyard" resistance to new construction, permitting barriers, and environmental concerns.

Transmission enables SPP's wholesale energy markets by allowing inexpensive generation to connect to our system and bid into our market. However, without enough transmission, less expensive generation gets "bottlenecked," creating congestion that prevents lower-cost energy from getting to consumers.

Map: SPP wholesale energy prices



If a utility cannot access lower-cost energy, such as wind from remote areas, it will have to run more local expensive generation. Areas of the region not able to access low-cost generation pay higher prices in our energy market.

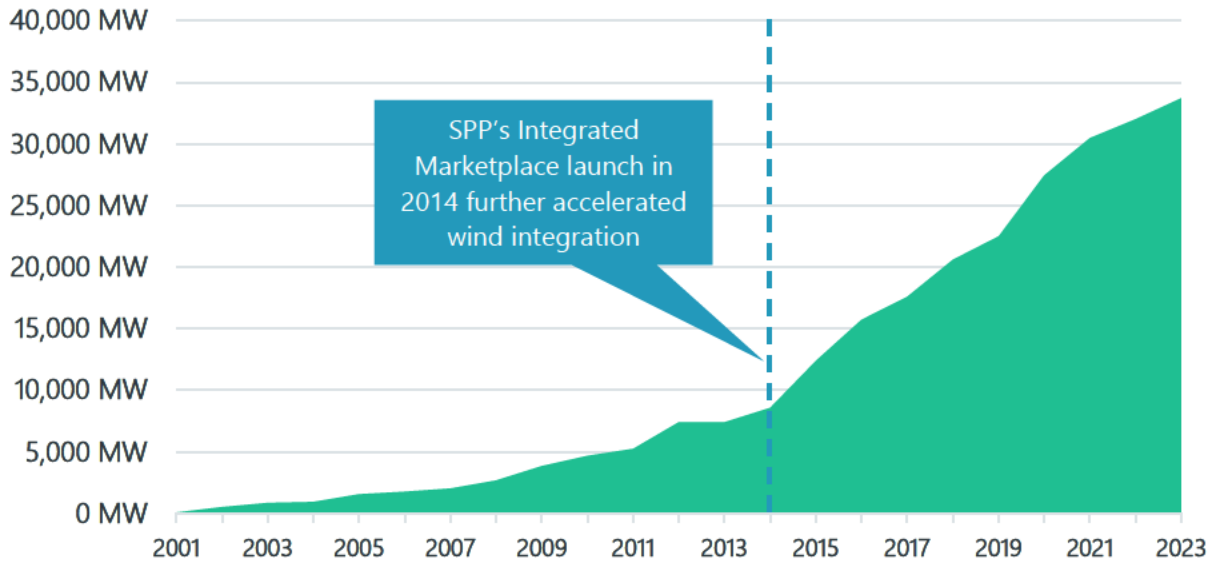
Upgrading the transmission and grid management systems is essential to accommodate a diverse, distributed, affordable, and reliable resource mix. Building out the transmission system enhances grid flexibility and resilience.

OUR CHALLENGES ARE BOTH UNIQUE AND UNIVERSAL

While learning from obstacles other grid operators face, SPP has many positives that set us apart. We are the only grid operator that works in both the Eastern and Western power grids. SPP has interconnected vast amounts of renewable energy and, at moments in time, we power the grid primarily with renewables.

Our wind generator fleet is the largest in the nation, and SPP has had the most rapid growth of wind energy in the country. We maintain a generator fleet fueled by diverse energy resources — wind, natural gas, coal, nuclear, hydro, solar and more — to ensure our customers can count on a reliable and affordable supply of energy day in and day out.

Chart: Installed Wind Capacity in SPP by Year, 2001-2023



SPP's **wholesale energy markets**, where utilities can buy and sell power, along with enabling transmission infrastructure, have helped reduce region-wide wholesale electricity prices, which is paramount for industrial and residential customers. For the past few years, we've had the lowest market prices in the nation.

Another unique aspect of SPP is our open and transparent stakeholder process. SPP staff and hundreds of stakeholders regularly meet in committees and working groups where we make decisions on important grid issues and set region-wide policies.

WHAT HAVE WE DONE ALREADY?

While the challenges we face are complex, and our collaborative work to address them is unfinished, we haven't been standing still. Working together with our members, regulators, market participants, and other stakeholders, we have accomplished multiple milestones over the past few years.

WE HAVE MITIGATED ADEQUACY RISKS

OUR RESOURCE ADEQUACY CONSTRUCT

Resource adequacy is the assurance that utilities will have sufficient generating resources to meet peak customer demand during circumstances when generation is lower or demand is higher than expected. SPP, as the entity responsible for continuously balancing electricity supply with demand for its region, must be able to continuously meet the ever-changing customer demand under all conditions.

Today, our grid can't store large amounts of energy, so energy must be generated in the exact amount needed for each second of the day. It's critical to accurately predict how much generating capacity we need and can count on to meet demand during normal and emergency conditions. SPP only requires the amount of generating capacity needed to meet its resource adequacy requirements. We do not decide which types of generation should be built by the utilities.

Utility resource planners look years into the future to predict supply and demand and determine how to meet their company goals. Availability of generating capacity informs very important business decisions.

*The planning reserve margin addresses changes in demand, while accreditation addresses changes in supply. Both are components of SPP's **resource adequacy requirement**.*

Accreditation is a determination of the amount of energy we can expect from a resource during times in which the energy is most needed. Water, sun and wind are not always available. Coal and gas generation depend on a finite supply of fuel. Nuclear resources can take days to ramp up to full power. All these generators require maintenance. It's critical to properly accredit generators or other energy resources to understand how much energy will be available when we need it. During recent winter storms, both conventional and renewable generation underperformed.

The **planning reserve margin (PRM)** is the amount of accredited capacity utilities must have in in excess of that needed to supply peak consumption, accounting for unexpected variations in predicted demand and generation. To set the PRM, SPP performs a probabilistic study at least every two years to analyze our ability to reliably serve forecasted peak demand.

This study, called the "**loss of load expectation (LOLE)** study," uses data submitted by members to model the power system under different conditions and determine the probability of different loss-of-load events ("load" is an industry term for energy demand). Stakeholders work with SPP to establish the study's assumptions and inputs.

Between 2017-2023, our projected risk of experiencing inadequate supply to meet demand increased by 30+ times. The projected number of customers impacted increased 500+ times.

SPP is required to plan to a level of reliability that does not exceed a one-day-in-10-years loss-of-load expectation. The "one day" represents 24 total hours over 10 years, or an average of almost 2.4 hours per year. Grid operators use this metric to evaluate power system adequacy. Put simply, it is how often we predict our supply won't be adequate to meet all demand, requiring operators to temporarily shut off portions of the system to reduce demand and prevent a collapse of the electric power grid.

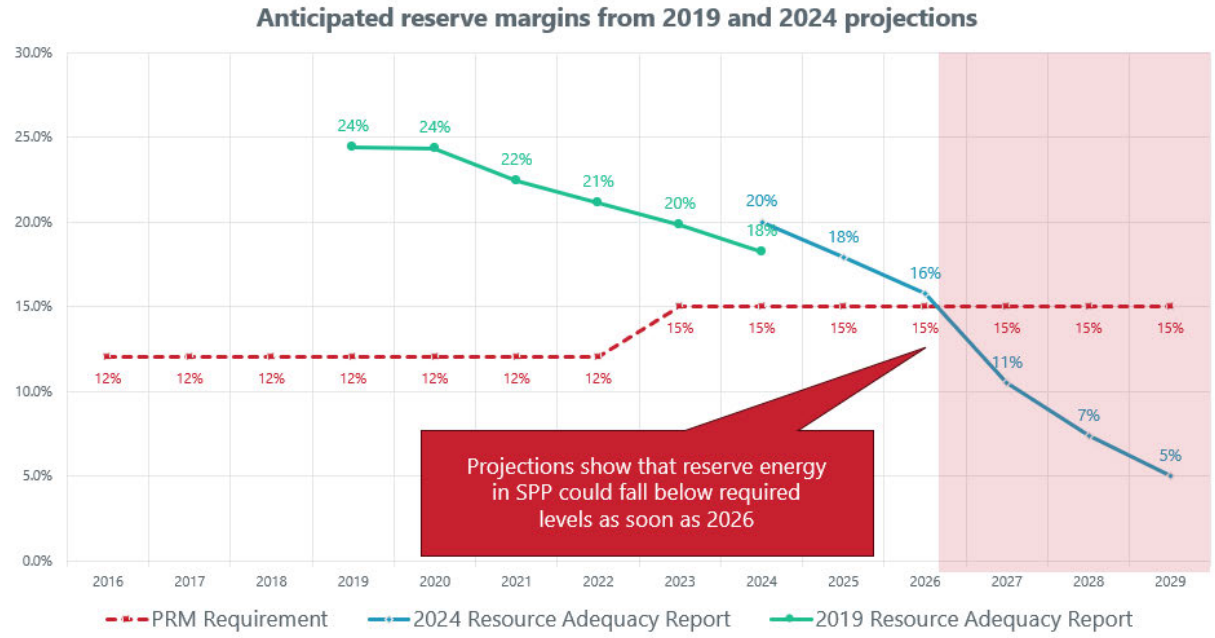
In 2022, SPP increased the summer PRM from 12to 15%, effective beginning with the summer of 2023. This decision was necessary to meet our reliability requirement described above. Without making this change, our risk of experiencing a loss-of-load event would have increased by more than 30 times and the expected magnitude of such an event would have increased by over 500 times since 2017.

There are multiple ways utilities can meet an increasing PRM requirement, although some can be difficult to achieve in a short period of time:

- Purchase existing excess generation from other entities or from the region.[20]
- Reduce power sales to other entities.
- Defer planned generator retirements.
- Defer connecting new large sources of energy consumption.
- Develop or increase demand response programs.
- Build and interconnect new generation.

[20] Excess generation within the region can be retained for regional usage if procured through collection and distribution of a "deficiency" payment.

Chart: SPP's Planning Reserve Margin and Comparison of Reserve Projections in 2019 and 2024



SPP periodically assesses each utility's ability to meet the PRM requirement based on submitted resource and peak demand information. If a utility does not expect to have enough generation to meet the PRM, it is subject to being charged a deficiency payment.

SPP and its member utilities must also meet the applicable North American Electric Corporation's mandatory reliability standards. Non-compliance can result in federal sanctions, as much as $1,000,000 per day per violation. SPP seeks not just to meet, but to exceed, these standards.

Eliminating all resource adequacy risk is nearly impossible and would be extremely costly, so SPP must strike the right balance: we mitigate risk to an acceptable level while we facilitate the delivery of affordable energy.

RESOURCE ADEQUACY IMPROVEMENTS

In 2023 — in a joint effort with our Regional State Committee of state regulators, Board of Directors, and stakeholders — SPP created the **Resource and Energy Adequacy Leadership (REAL) Team** to expeditiously address strategic resource adequacy policies. The team developed a multi-year work plan and has already led development of several resource adequacy improvements:

- Established a framework for a separate winter season resource adequacy requirement.
- Approved a policy that clarifies expectations for generator availability.

- Developed a recommendation for summer and winter PRM requirements to be in effect for the 2026 summer and 2026/2027 winter seasons.
- Created policies to improve how we accredit conventional and renewable generators to better ensure energy is available when we need it.
- Improved generation outage policies to allow additional days when maintenance outages can be reliably taken.
- Created a **fuel assurance policy** that recognizes generating capacity based on performance during critical hours and incentivizes increased fuel certainty.
- Developed an estimate for the "**value of lost load**" within the region along with appropriate use cases for application of the metric[21].

The REAL team's work continues with an ambitious workplan to implement further policy improvements.

WE HAVE STREAMLINED OUR GENERATOR INTERCONNECTION QUEUE

Before connecting new generation to the grid, we must study its impact. The U.S. has a backlog of generators awaiting interconnection.

More energy will need to be made available on the grid to power the electricity needs of today and tomorrow. When developers propose potential new sources of energy, such as a new wind or solar farm, we must evaluate their viability before they can be connected to SPP-facilitated transmission lines. Unfortunately, it's not as simple as flipping a switch. We integrate new generating capacity in a responsible manner to ensure a reliable and economic contribution to our footprint.

New generation and transmission can only connect to our region's existing system after careful study and approval by SPP. The list of new generator projects "in line" to be studied represents the **generator interconnection queue**. According to the Lawrence Berkeley National Laboratory, the amount of new capacity in RTO queues is growing dramatically, yet most projects that apply for interconnection are ultimately withdrawn. Those that are built take longer on average to complete the required studies and become operational. The lab reports, "Interconnection wait times are also on the rise: The typical duration from connection request to commercial operation increased from <2 years for projects built in 2000-2007 to over 4 years for those built in 2018-2023 (with a median of 5 years for projects built in 2023)." [22]

We have made significant strides in managing the SPP generator interconnection queue. Of note, the time from submission to approval has declined from six years to four years. For more recent applications, it's down to two years and we expect to reduce this time down to 12

[21] Value of lost load represents how much customers would be willing to pay to avoid an outage.
[22] https://emp.lbl.gov/queues

months beginning in 2025. In 2017, there were 1,139 pending generator requests. By 2024, the number dropped to 421, a clear illustration of our progress.

How did we do it? We increased staff and hired highly effective consultants to perform generator interconnection studies. We clearly set out and documented our generator interconnection process in SPP's business practices to ensure we are on the same page with customers. We introduced modeling and study efficiencies. We also formed an advisory group that meets regularly so developers and transmission owners can collaborate on how to further improve the process.

The review process is quite intensive as many issues must be analyzed including cost, how the new electricity will meld with the existing system, and how well transformers can handle the new power source. Our generator interconnection team focuses intently on the task with top quality staff dedicated to expeditiously, but safely, bringing new generating sources online.

SPP's generator interconnection process enables us to reliably facilitate the addition of new generation to our regional grid. Maintaining a diverse and sufficiently large generation portfolio by facilitating the addition of wind, solar, battery storage, and natural gas generating resources helps SPP reliably manage the electric system.

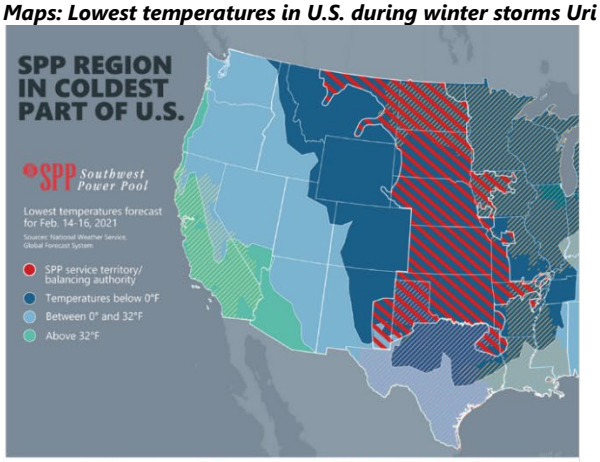
WE HAVE PREPARED FOR EXTREME WEATHER

In February 2021, much of America experienced a historic weather event: Winter Storm Uri. The widespread and severe nature of the storm, and the response it required from SPP and its stakeholders to preserve the reliability of the grid, created a need for a comprehensive assessment of performance.

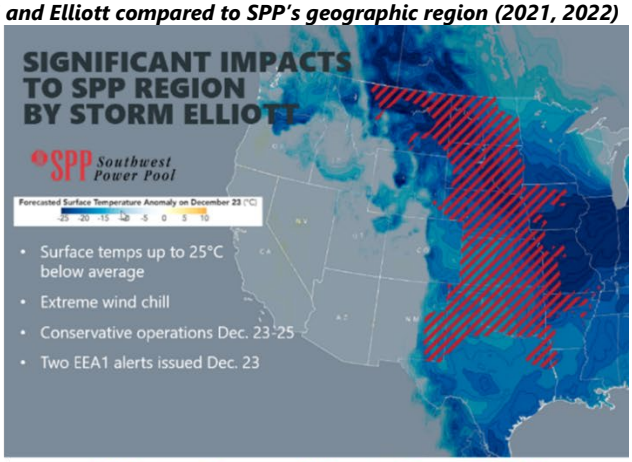
SPP worked with its members to analyze the storm response and published a report outlining 22 improvement actions, policy changes, and calls for future assessments. The key findings we have worked to address or build on include:

- A lack of available generation was the primary cause of the event's reliability impacts.
- A lack of fuel was the biggest cause of generation unavailability.
- Extremely high natural gas prices exacerbated issues.
- A rapid spike in market prices created challenges.
- Interconnections with neighboring systems helped.
- Congestion limited full use of available generation.
- SPP's emergency communications and information sharing helped.

Maps: Lowest temperatures in U.S. during winter storms Uri and Elliott compared to SPP's geographic region (2021, 2022)



Winter Storm Uri: Feb. 2021



Winter Storm Elliott: Dec. 2022

The following year, in December 2022, another historic storm, Winter Storm Elliott, created extreme blizzard, wind, snowfall, and temperature conditions across the majority of the United States. After a review of SPP's performance, staff identified an additional 11 recommendations to help SPP and its stakeholders be better prepared for future extreme events.

Following historic winter storms Uri and Elliott, SPP implemented numerous policy and operational improvements.

As of July 2024, SPP has completed or addressed 75% of the recommendations that came from Winter Storm Uri and all recommendations from Winter Storm Elliott. These recommendations cover a wide range of focus areas including:

- Emergency response processes and planning
- Fuel assurance
- Generator resource planning and availability
- Grid operator tools
- Emergency communications
- Emergency assistance between neighboring regions
- Market design
- Transmission planning
- Credit and settlements
- Public communications

We have incorporated extreme weather scenarios and resiliency conditions into our transmission planning studies and participated in the NERC standards planning process to inform a future NERC weatherization standard that could apply to all RTOs and their members.

Our members have also been conducting their own efforts to harden the grid for both extreme cold and extreme heat. This is no simple task and is once again a question of balancing costly investments in infrastructure with value received from a resulting reduction in risk. It may not

always make sense to prepare equipment to operate in extreme cold when it predominantly operates in warmer temperatures, or vice versa. Some infrastructure changes needed to allow equipment to operate in extreme conditions could also reduce its efficiency during typical operation. Our members balance risk, cost, and efficiency as they make decisions to improve the resilience of their existing assets.

WE ARE LEADING TRANSMISSION POLICY INNOVATION

SPP's most notable effort to advancing transmission policy launched in 2020. Our biggest transmission planning challenges were tackled in a year-long effort by the SPP's Strategic and Creative Reengineering of Integrated Planning Team (SCRIPT), a group of 16 stakeholder representatives who developed recommendations to improve transmission planning and applicable cost-allocation processes, including SPP's generator interconnection study process.

In 2021, SPP's board approved the SCRIPT's report of 35 recommendations and 11 sub-recommendations. Implementation of these policies is expected to reduce administrative costs, create more equitable cost sharing, increase value of transmission investment, facilitate access to new markets for energy, create more timely processes, and enhance reliability and grid resiliency.

Of those recommendations and sub-recommendations, 20 were for SPP to deconstruct and reassemble some planning processes that were happening independently; create a consolidated, streamlined process that would provide more optimal solutions; synergize analyses; improve cost sharing; and increase planning efficiencies.

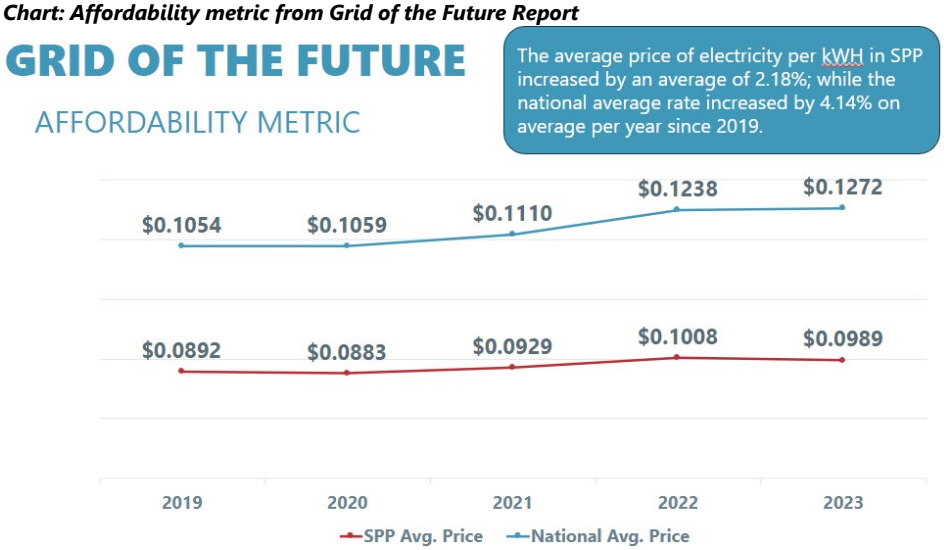
That work is currently being carried on by SPP's Consolidated Planning Process Task Force (CPPTF), which has produced a framework that FERC has already called "a potentially promising initiative."[23] The task force has also received an overwhelming endorsement from SPP's member-led Markets and Operations Policy Committee to build out the policies for its "entry fee" framework for generator interconnection: a groundbreaking change in how costs to connect for new generation are assigned that will provide fairer cost allocation and earlier cost certainty for developers.

[23] https://www.ferc.gov/news-events/news/e-1-commissioner-clements-concurrence-order-no-2023-improvements-generator

WE ARE PLANNING FOR THE "GRID OF THE FUTURE"

Given the rapidly changing nature of the energy industry, SPP leaders concluded that intense and detailed evaluation of future needs is paramount to our success. Our goal is to develop the future grid in a way that maintains sufficient reliability and continues to ensure affordable service can be provided.

Chart: Affordability metric from Grid of the Future Report



We embarked on a plan to identify systemic and industrywide trends that risk disruption to regional grid operations if left unaddressed. Other trends could pose positive opportunities for SPP to facilitate our grid management and growth of our business model in service of our members and the 18 million people they serve.

We've committed to expediting identification of these challenges with far-reaching and feasible plans. SPP's board formed the Future Grid Strategy Advisory Group (FGSAG) and charged it with two tasks: to explore how the grid will change over the next 15 years and to recommend how to prepare for those changes.

SPP's "Grid of the Future" assessment was released in April 2023. The 21-page report followed deliberations of subgroups focusing on these themes: consumer trends, policy implications and transmission possibilities. To guide SPP in the future, those subgroups produced 32 recommendations grouped into five categories:

1. Energy adequacy, modeling, and planning
2. Grid services, market designs, and operations
3. Transmission
4. Demand-side resources
5. Innovation and collaboration

The FGSAG continues to advise SPP on the capabilities we will need in the future, and it is tracking progress toward achieving the group's objectives.

WE ARE COORDINATING WITH OUR NEIGHBORS

As a regional grid operator, SPP understands there are significant issues facing our industry today that we won't be able to resolve by ourselves. In the spirit of cooperation to protect the largest machine in the world, the U.S. bulk electric system, part of our job is to coordinate with neighboring grid operators and utilities along the edges of our footprint. We share energy across our boundaries as needed during emergencies. We implement market enhancements to promote the most economic use of generation across multiple markets. And we work together on interregional transmission expansion projects that provide mutual benefits.

Working together, SPP and MISO are building mutually beneficial large-scale transmission projects.

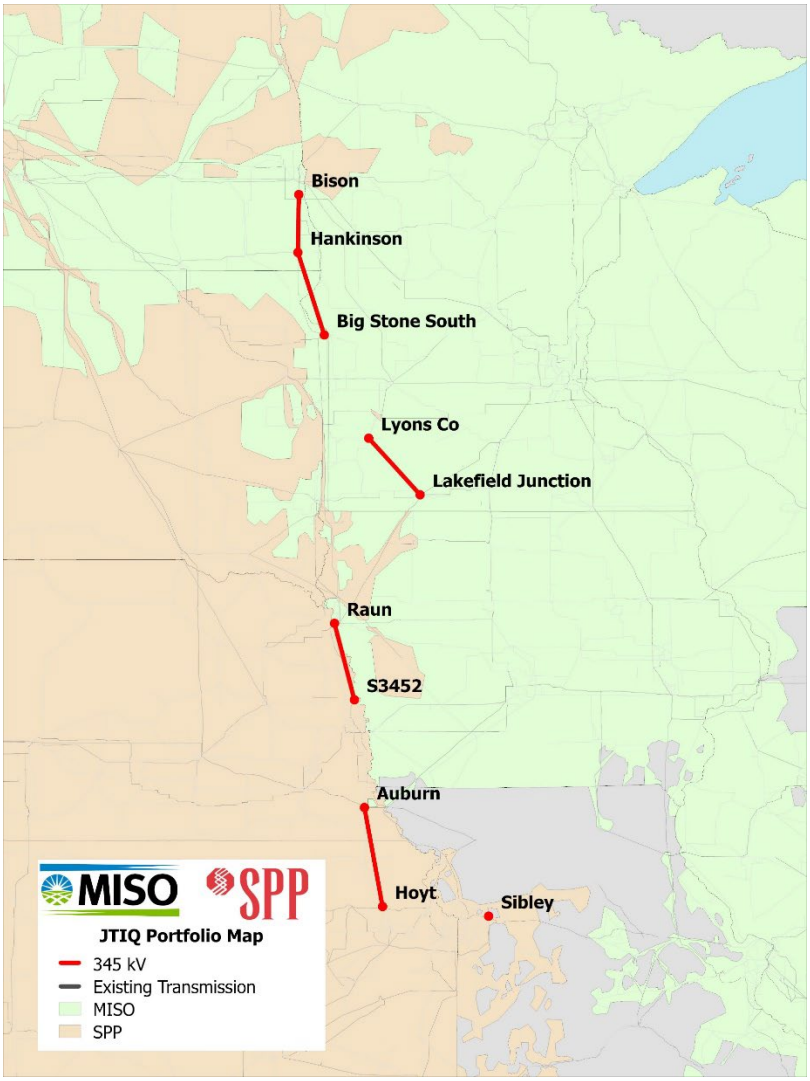
Strategically, SPP endeavors to pursue additional means of optimizing transactions with neighboring entities. We have developed plans with each neighbor that identify improvement initiatives we have agreed to jointly pursue.

One such example of an improvement initiative was a recent transmission planning study performed jointly with the Midcontinent Independent System Operator (MISO), our largest neighboring region located on our eastern border, to identify transmission upgrades to facilitate interconnection of new generation and provide other benefits such as increased reliability and energy cost savings.

Justified by the results of that study, the U.S. Department of Energy (DOE) approved a $464 million grant in 2023 to help fund construction of five high-voltage transmission lines that will span seven states: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. The federal grant is expected to spur over $1 billion in additional private sector investments, to reduce investment costs to ratepayers across the region, and to provide communities with a range of benefits including reduced energy costs and increased reliability and resilience. In 2025, SPP expects to issue notices for the companies to begin their construction processes for this portfolio of transmission lines.

SPP CEO Barbara Sugg and MISO CEO John Bear at the GCPA MISO-SPP Forum (RTO Insider)

Map: Projects from SPP and MISO's Joint Targeted Interconnection Queue (JTIQ)



Through the ratification of the Fiscal Responsibility Act of 2023, Congress gave NERC a directive to evaluate the amount of power that can be moved or transferred reliably from one area to another area of the interconnected transmission system. SPP is actively participating in this NERC Interregional Transfer Capability Study effort by engaging as a member of the advisory committee for the study.

WHAT IS LEFT FOR US TO DO?

TOGETHER WE CAN MITIGATE RISKS TO ADEQUACY

The REAL team has a multi-year plan to continue improving resource adequacy policies.

SPP's REAL Team is continuing to address resource adequacy with several ambitious initiatives remaining in its workplan. As of summer 2024, the team aims to:

- Provide longer-term projections of future planning reserve margin requirements, giving utilities more time to better prepare for future investment decisions.
- Implement a **demand response** policy that properly values the capacity of demand response programs, load aggregators, and industrial demand response.
- Implement an **expected unserved energy** policy (EUE) to impose an additional reliability standard to limit the amount of demand not expected to be met by available supply over a specific period.
- Improve already approved polices on generator availability and outages.
- Develop improved market mechanisms to ensure pricing reflects the value of generators' reliability attributes and to incentivize generators to be available for the maximum amount of time.
- Implement a **ramping policy** to ensure utilities have enough generation with the ability to ramp up and down as necessary to maintain frequency and meet demand.

TOGETHER WE CAN BE READY FOR EXTREME WEATHER

Addressing many of the recommendations that followed what we learned from Winter Storms Uri and Elliott have made both SPP and our members more resilient. Together, we are better prepared for extreme weather conditions. While we will continue to learn from future extreme weather events, we are confident the improvements we have already made and the ones still in progress will help us weather future storms.

Of the 22 winter storm recommendations that came out of Winter Storm Uri and 11 recommendations from Winter Storm Elliott, most have been completed. Others that are in progress will require collaborative effort between SPP and its stakeholders.

Preparing for extreme weather involves markets, transmission planning and real-time operations.

One pending action directly tied to our winter storm experiences is seen in the 2024 ITP Assessment, which includes the first-ever evaluation of extreme winter conditions in an SPP transmission planning study, using model sets from Winter Storm Uri and Winter Storm Elliott. SPP staff will use these models to identify transmission projects that can support the system during extreme winter weather. The main goal of this first step is to improve SPP's voltage profile. Additional effort will be required to fix other needs identified by the study.

SPP is working with members to develop a compensation mechanism associated with our generation retirement process to incentivize continued operation of resources until associated reliability impacts can be mitigated.

We're working on improving our ability to commit more resources in advance of extreme demand. In SPP's system, 34 GW of generation is unable to participate in economic commitment in our Day-Ahead Market because of the advance notice required to start. To participate, they currently have to self-commit to run, which can result in startup costs for resources that aren't used or prices for their energy that do not meet their costs.

SPP and its members are working on a new market process – **multi-day economic commitment** – to assess and commit these long-lead resources to ensure the most economical energy mix for our region. This change will give resources incentives and more assurance to be available and to secure fuel in advance. Our members approved these policy changes in 2024, and they are being considered by FERC before SPP can implement them.

During energy emergencies, energy prices can spike suddenly. SPP's stakeholder groups are working on detangling processes to calculate how energy is dispatched and how wholesale prices are set, while reducing the need for out-of-market action during an emergency to balance supply and demand. Our stakeholders have reached consensus at a high-level for how to set prices and settle costs during emergency situations, and SPP's stakeholder groups are working in 2024 to finalize the policies to implement.

SPP expects to close out remaining recommendations from SPP's winter storm Elliott and Uri reports in 2024, but we know the work to address all types of extreme weather will continue. It will take collaboration and innovative ideas from our members and other stakeholders to be ready for a future impacted by more extreme environmental conditions.

TOGETHER WE CAN OPTIMIZE THE GENERATOR INTERCONNECTION QUEUE

We have streamlined the current generator interconnection process. Now we're reinventing it: the generator interconnection queue has been reimagined as an integrated part of SPP's annual transmission planning process[24]. This will result in fairer sharing of costs for upgrades, more cost certainty for developers of new generation, better transmission solutions to connect and supply generation to consumers, and more reliable and affordable sources of energy to power the grid of the future.

SPP's goal is to study new generator requests in just 12 months, down from an average study time of 7 years.

Our generator interconnection team has done amazing work and has already reduced the average study time for new generation applications from seven to four years. Our ultimate goal is to reduce the review process to 12 months.

TOGETHER WE CAN REIMAGINE TRANSMISSION POLICY

We know we need to build more transmission and connect more generation to the grid. For a number of years, diverse teams of SPP stakeholders have closely collaborated to determine how we can streamline transmission planning processes, optimize transmission grid expansion, and equitably allocate these significant costs.

We are continuously assessing who benefits from new transmission and who pays to build it. We are creating new geographic divisions to maximize customers' access to a broad range of generation assets and equitably share costs of transmission needed to provide that access. These improvements will better align transmission planning with our real-time wholesale energy markets.

We are also working on a novel approach to cost allocation for generation interconnection customers. Under this new approach, all generator interconnection customers will pay a fee to contribute to the overall transmission system build-out. This construct will bring regional planning and interconnection studies together, making both processes more efficient and leading to more optimal transmission system expansion. This new process will move us to an approach where cost-causers pay to one where beneficiaries pay for new transmission.

[24] SPP's current transmission process considers future scenarios over a 10–20-year horizon to determine transmission system expansion needed to address reliability needs, reduce system congestion, and provide a variety of other benefits to customers within our region. Costs for upgrades identified from this process are generally shared by ratepayers in the region. The generator interconnection study process is currently performed separately, using vastly different assumptions with upgrade costs assigned directly to generator interconnection customers driving the upgrade need.

WHAT DOES THIS MEAN FOR YOU?

This generational challenge is a mission critical moment. SPP has a responsibility to work with its members and regulators to assure adequate generation and transmission is being planned for the future. But we can't do it alone.

We need more high-voltage transmission to connect more supply to increasing demand and to allow regions to exchange more electricity during extreme situations. Transmission also enables our wholesale energy markets to be more efficient by allowing lower-cost energy to be available across the region.

Here's how you can help address our generational challenge:

Regulators play a huge role in helping SPP and its members fulfill our common mission of keeping the lights on. SPP already has active engagement from representatives of our region's state utility regulatory bodies.[25] We will need a broader coalition of state and federal regulators to continue to engage in SPP's stakeholder processes and approve appropriate resource adequacy and cost allocation policies:

- State regulators can support development of diverse energy resource portfolios, new transmission infrastructure, and investments in grid modernization.
- Federal regulators can advocate for reliability-focused policies, influence or approve regulations that facilitate reliability improvements, and increase awareness of similar challenges being faced across the country. We need timely approvals of policies that support our collective efforts to improve reliability.

Policymakers can promote reliability while balancing affordability and provide funding for research and development of new technologies that support grid modernization. Recognizing that power doesn't stop at state borders, policymakers can support collaboration among states and regions, which is critical for national energy reliability and can result in real value to states and districts. Specific types of policies that can help create a more reliable grid include:

- Policymakers can balance policies that promote or require carbon-free energy with policies that maintain a reliable supply of energy. Without additional development of and investment in emerging technologies, we cannot maintain energy reliability with renewable generation alone. We need the critical reliability attributes that a diverse mix of generation resources provides.
- Policymakers can support policies that prevent critical resources from retiring without necessary replacements in place. Some existing and planned environmental requirements will cause reliability-critical, dispatchable resources to retire prematurely or alter their operations in ways that jeopardize reliability.

[25] The primary forum for state regulators to engage is SPP's Regional State Committee where they collaborate to protect the interests of consumers, balance trade-offs between cost and reliability, and determine SPP's regional resource adequacy approach.

- Policymakers can utilize the entities tasked with ensuring the reliability of the grid as resources for information. The grid is more complicated than ever, and collaboration is needed to ensure new policies support a rapidly changing grid.

SPP's members are on the front lines of delivering electricity to consumers by managing generation, transmission, and distribution assets; participating in energy markets; supplying new infrastructure; and advocating for consumer interests. SPP members can continue upgrading aging infrastructure, integrating grid-enhancing technology, and bringing new transmission and generation to our grid. Maintaining a reliable and affordable grid requires tackling challenges that are difficult in the short-term but will provide long-term benefits for the entire region.

Regional transmission organizations like SPP lead the industry in managing the power grid, serving as a higher line of defense to protect large regions. As independent grid operators, we must maintain trust with and be accountable to our member companies and the people they serve. While working individually to address our unique challenges, we need to work together to solve the common challenges we all face. The coming years will require collaborative investment and coordination to build interregional transmission, connect new generation to the grid (including on our borders), enhance real-time cross-regional coordination during energy extremes, and advocate for interests supporting our shared missions.

Consumers should stay informed about and support utilities' efforts to ensure a reliable grid:

- Consumers can support utilities' efforts to build infrastructure needed to provide reliable and affordable electric service, including both new generation and transmission.

- Consumers can participate in demand response programs and adopt energy efficiency measures to help reduce peak demand and ease the strain on the grid. A more electrified future with advanced technologies will offer consumers more options to simultaneously save money and increase reliability.

- Consumers can impact the grid in real time by voluntarily reducing energy use during extreme situations, which has helped in previous grid emergencies. Consumers in SPP's region can subscribe to SPP's email alerts, follow us on social media, or download the SPP Go mobile application. These alerts notify the public when we need them to reduce consumption to keep the lights on for everyone.

If all of these groups collaborate, we can together solve our generational challenge. We know there will be costs — and not insignificant ones — to ensure we have a reliable system with the right balance of risk. In addition to reliability, these investments often produce significant economic benefits. These costs are worth the investment.

Working together to build more transmission and generation will ensure a reliable and resilient grid for our shared future.

RESOURCES

The following reference documents contain more information about SPP's resource adequacy efforts, along with research and activities from other industry organizations.

SPP REPORTS

ASPIRE 2026: SPP's 2021-2026 Strategic Plan (July 2021)
In April 2020, Southwest Power Pool launched a process with stakeholders to develop a five-year strategic plan, resulting in the definition of five guiding aspirations for the organization, five strategic opportunities to lead the regional transmission organization into the future, and six enabling capabilities to be invested in to achieve SPP's strategic goals.

Comprehensive Review of SPP's Response to the Feb. 2021 Winter Storm (July 2021)
In February 2021, America experienced the historic winter storm Uri. The widespread and severe nature of the storm and the response it required from SPP and its stakeholders to preserve our regional grid created a need for a comprehensive assessment of performance. SPP's analysis of its response to the storm resulted in 22 actions, policy changes and calls for future assessments.

Grid of the Future Report (April 2023)
SPP's Grid of the Future Report identifies trends and strategic pathways that could be disruptive and game changing for SPP and its members in the next 10-15 years.

Holistic Integrated Tariff Team Report & Recommendations (June 2019)
SPP's stakeholders reviewed SPP's cost allocation model, transmission planning processes, Integrated Marketplace and real-time operations and created a set of 21 recommendations to ensure reliability amidst a changing generation mix, align transmission planning and cost allocation with SPP's market and consolidated Balancing Authority, and enhance the Integrated Marketplace to reliably deliver low-cost energy.

SPP Future Energy and Resource Needs Study (FERNS) (February 2024)
This Brattle Group study will consider the most cost-effective future resource mix to meet system needs through 2050 and investigate costs and shortcomings of the current framework.

SPP's Response to the December 2022 Winter Storm (April 2023)
The winter storm of December 2022 created extreme blizzards, wind, and temperature conditions across the majority of the United States. After a review of SPP's performance, staff identified 11 recommendations to help SPP and its stakeholders be better prepared for future extreme events.

SCRIPT Report & Recommendations (September 2021)
In 2020, concerns about the amount, nature, and funding of transmission investment amid rapid industry changes led SPP to launch the Strategic & Creative Re-Engineering of Integrated Planning Team (SCRIPT) to strategically consider broader, strategic changes to SPP's transmission planning

process. Over the course of 61 meetings, staff facilitated a stakeholder-driven process that resulted in 35 recommendations and 11 sub-recommendations.

REPORTS AND RESOURCES FROM OTHER ORGANIZATIONS

2023 State of the Markets Report (March 2024) Federal Energy Regulatory Commission

2023 Long-Term Reliability Assessment (December 2023) North American Electric Reliability Corporation (NERC).

2024 Long Term Load Forecast (January 2024) PJM

2024 State of Reliability Report (June 2024) NERC.

"A new surge in power use is threatening U.S. climate goals." (March 14, 2024) *New York Times*, Brad Plumer and Nadja Popovich. Note: This article is the source of the New York Times' / NERC graphic illustrating energy demand growth from 1989-2033.

Annual Energy Outlook 2023 (March 2023) U.S. Energy Information Administration.

"Big but affordable effort needed for America to reach net-zero emissions by 2050, Princeton study shows." (December 2020) Princeton University Andlinger Center for Energy and the Environment, Molly Seltzer.

Electricity 2024 (January 2024) International Energy Agency.

Electricity Supply & Demand (2023) North American Electric Reliability Corporation (NERC).

MISO's Response to the Reliability Imperative (February 2024), Midcontinent Independent System Operator.

National Transmission Needs Study (October 2023) Department of Energy.

"Summer has long stressed electric grids. Now winter does, too." (Feb. 5, 2024) *New York Times*, Ivan Penn.

The Era of Flat Power Demand is Over (December 2023) Grid Strategies, John Wilson and Zach Zimmerman

What We Must Do Better to Meet the Future of Winter Energy Demand (February 2024) University of Texas News, Hugh Daigle and Joshua Rhodes

Evergy Metro, Inc. d/b/a Evergy Missouri Metro and
Evergy Missouri West, Inc. d/b/a Evergy Missouri West

Docket No.: EA-2025-0075
Date: October 25, 2024

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