

January 11, 2024

Via U.S. and electronic mail

The Honorable Jeff Duncan, Chairman,
Subcommittee on Energy, Climate and Grid Security
U.S. House of Representatives Committee on Energy and Commerce
c/o Kaitlyn Peterson, Legislative Clerk
2125 Rayburn House Office Building
Washington, DC 20515
Email: Kaitlyn.Peterson@mail.house.gov

Dear Chairman Duncan:

Thank you for the opportunity to appear before the Subcommittee on Energy, Climate and Grid Security on Thursday, September 28, 2023, to testify at the hearing entitled "Powering America's Economy, Security, and Our Way of Life: Examining the State of Grid Reliability."

Pursuant to the Rules of the Committee on Energy and Commerce, please find the attached responses to the questions submitted by Members.

Thank you again for your time and for allowing me the opportunity to deliver my testimony before the Subcommittee.

Sincerely,



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The Honorable Jeff Duncan

1. A historic benefit of wholesale markets is that they created competition and shifted financial risk from ratepayers to private investors.

a. Do you believe that state policies mandating the use of, or providing subsidies for, certain types of generation shift the financial risk back to ratepayers?

The Southwest Power Pool (SPP) region is a part of our nation's electric grid that is still comprised of vertically integrated utilities that are a part of SPP's wholesale electricity market.

Under this construct, our region's vertically integrated utilities are required to maintain generating resources to serve their load consistent with state and local requirements and the SPP region's planning reserve requirements. Individual utilities make their business decision on what generating resources to use to meet these requirements. SPP does not make this decision for utilities.

In addition to SPP's vertically integrated utilities with their self-owned or procured generation fleets, SPP has experienced significant investment in new generators that are unaffiliated with the local utilities in our footprint.

Collectively, SPP has had 6,700 megawatts (MW) of new generation added to our grid since 2021 and currently has an additional 19,500 MW of generation with interconnection agreements to connect.

As one of the seven U.S. Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) approved by the Federal Energy Regulatory Commission (FERC), SPP is fuel agnostic. We are policy takers and not policy makers.

As a RTO we are tasked with operating the electricity grid reliably, administering electricity markets designed to lower cost to end-use consumers, and performing transmission planning for the bulk electricity system. We perform these functions that help enable our members and load serving utilities to comply with both state and federal policies.

Our region has a number of policy goals set by local, state as well as public and private entities related to electric generation. With these goals, our region has seen investments in both ratepayer funded generation additions as well as non-vertically integrated investments.

2. Is there evidence that subsidies for grid scale battery storage, solar, and wind resources suppress energy market prices in your region? If so, please describe.

Observationally, energy prices have trended lower in the SPP region during the same period that newly interconnected renewable generation and other technologies that have Production

Tax Credits (PTCs) and other incentives increased in the region. Some of the decrease in energy prices are due to the increase in renewable generation, which can have zero fuel costs.

- a. In your opinion, have subsidies negatively affected market outcomes? Do subsidies for batteries, solar, and wind discourage investment for new dispatchable thermal generation? How much have these market conditions contributed to the retirement of existing dispatchable thermal resources?**

As stated above, the SPP region is comprised of vertically integrated utilities. These load serving entities are required to have operational and planning reserves to meet their customers' needs. Due to the SPP region's regulatory construct, we do not have the same challenges of some regions in regard to generation retirements.

Individual utilities that are required to meet the region's generation reserve margin make decisions on what generation they choose to retire or build based upon the individual utility's needs to comply with local and state laws and SPP's regional requirements. SPP does not make these decisions.

- b. Do these subsidies and their effects on markets make your system more reliable or less reliable?**

SPP maintains the reliability of our system by planning and building a transmission grid that complies with North American Electric Reliability Corporation (NERC) and FERC reliability requirements, by setting generation reserve margin requirements needed for reliability, and designing a market that incentivizes the right generation for reliability in both real time and for planning purposes.

With these tools, individual utilities make their own decisions on what types of generation they need to comply with local, state and regional requirements for reliability.

- c. What steps are you taking to ensure that these subsidies are not unduly discriminatory and preferential, and that rates remain just and reasonable?**

As a FERC-approved RTO, SPP does not set rates for utilities that are established by state commission or the local utilities' regulatory construct, or determine subsidies for its region.

SPP operates the wholesale market regardless of individual rate constructs with the purpose of delivering electricity reliably at market prices.

- d. Would you consider state renewable mandates as out of market interventions? Would you consider the mandates as a form of market power?**

i. Would you consider state renewable mandates as out of market interventions?

Renewable mandates or goals serve as a means for a state to achieve policy directions or goals. Similar to many inputs, such as tax incentives, fuel costs or new emerging technologies, a renewable mandate or goal can impact a market. State mandates are generally a part of a state's authority to regulate businesses and state and local utilities.

In SPP's market footprint, most electric utilities are under public regulation by their respective state governing construct, whether it is a utility regulated by a state commission or a local government entity.

Some utilities are required to file Integrated Resource Planning (IRP) with their commissions demonstrating how the utility will meet the electrical demand of their customers. IRPs project consumer demand and needed capacity investment to meet that demand for transmission, generation and distribution. When utilities form their IRPs, they take into account their state or local government's renewable policy goals and mandates for compliance.

In RTOs and ISOs with centralized capacity markets, capacity accreditation rules for participating in capacity auctions and auction clearing prices will inevitably influence the renewable generation portfolio in that footprint. In the SPP market where there is no centralized capacity market, state IRPs are a mechanism within which capacity decisions are made. The SPP energy markets operate based on the outcome of IRP decisions made by individual states.

Therefore, from an SPP market perspective, renewable mandates are not necessarily market interventions, as capacity decisions are driven in part through IRP or similar processes controlled by the states, local governments and cooperatives, and not through a centrally administered market model run by the RTO.

ii. Would you consider the mandates as a form of market power?

SPP's market monitor views market power in this sense:

'The ability of a firm (or group of firms) to raise and maintain price above the level that would prevail under competition is referred to as market or monopoly power. The exercise of market power leads to reduced output and loss of economic welfare.' Glossary of Industrial Organisation Economics and Competition Law, OECD, 1993 (available at <http://www.oecd.org/regreform/sectors/2376087.pdf>).

Unilateral exercise of market power by market participants is economically undesirable and even prohibited mainly because it is used to extract unjust gains from their advantaged market positions. Renewable

mandates, on the other hand, cannot be considered as a form of exercise of market power primarily because they are implemented equally for all of the market participants within a state to establish a level playing field. Furthermore, in the context of SPP which does not operate a market for capacity, renewable mandates do not affect any centrally administered capacity market pricing outcomes, but rather remain a part of the state's administered IRP process. In SPP's energy markets, short-run marginal costs may be affected by PTC programs for renewable resources. However, in these cases, these programs typically result in the lowering of prices in SPP's energy markets as opposed to increasing prices.

SPP concurs with our market monitor's view.

3. Are changes to your resource adequacy construct needed to ensure that sufficient dispatchable thermal resources are, and remain, available to the system? How far in advance of that timeframe do you need to make changes to avoid resource adequacy and reliability issues?

Resource Adequacy in SPP, similar to all other areas in the country, is being challenged by the changing resource mix along with changing weather patterns and significant increases in electrical usage. SPP currently has several initiatives in development to address these challenges. One of these initiatives includes improvements to accreditation mechanisms for dispatchable thermal resources, wind resources, solar resources, and energy storage resources and programs to address the appropriate capacity value for demand response resources.

SPP has developed another set of initiatives to address resource adequacy issues caused by winter season extreme events. This set of initiatives includes: (1) a winter season resource adequacy requirement that requires load serving entities to have their resources qualified and accredited to meet a winter season planning reserve margin; (2) the inclusion of a specific winter planning reserve margin that addresses the performance of resources in the winter season as well as increases of load in the winter season due to increased electrification; and (3) fuel assurance and resource performance policies to address the most critical hours for capacity need in the winter season.

At this point, SPP's goal is to implement these initiatives in a manner that allows SPP and its load serving entities and generator owners to adapt to the evolving resource mix, extreme weather conditions, and increases in electrification in a timely and deliberate manner. SPP is planning to make several filings with FERC in 2024 as a first stage of implementing these policies and needs FERC approval to begin these important transitional initiatives.

Lastly, outside the initiatives discussed above, SPP is currently reviewing the need to update capacity and energy adequacy standards that will provide more accurate indicators of a reliable system. These new standards will be developed over the next couple of years.

a. Should changes to capacity accreditation go into effect before other changes to the resource adequacy construct?

SPP believes that a measured strategy for implementing all of the policies described above is necessary to ensure continued resource reliability in the SPP footprint.

b. Are you concerned that there will be a recurring need to defer retirements or enter into contracts to retain generators if subsidies persist and the markets do not change to correct inefficiencies?

SPP is currently working to implement policies to properly accredit capacity to ensure that the correct resources continue to provide capacity in SPP's footprint. See the policies described above in response to Question 3. Although SPP believes these proposed policies ensure that the correct capacity stays online, the authority over whether a generator retires or not rests solely on the relevant electric retail regulatory authorities that have jurisdiction over the load responsible entities.

c. Are forward looking markets like capacity markets needed to procure enough resources that can provide essential reliability services?

SPP does not have a capacity market. SPP is unique in that there are no states in its footprint that provide Retail Open Access, as its region remains vertically integrated. As a result, the obligation to serve has remained with the utilities and is managed through the requirements of the local regulatory authorities. SPP has analyzed the need for capacity and is able to reduce each utility's requirements based on coordination and cooperation as well as the diversity within the SPP footprint. These obligations result in the utilities entering into contracts for capacity or to build generation. These costs are paid directly by the end-use customers of each utility based upon the utility's approved rates. These local regulatory obligations decrease the need for capacity payments as the majority of capacity in SPP's footprint is funded by local utilities via their state, local and cooperative regulatory constructs.

d. Do all resources with counted towards resource adequacy constructs have a must-offer requirement in the day-ahead market? If not, why not? What effect does not having a must-offer requirement have on the day-ahead and real-time markets?

SPP's Integrated Marketplace includes a day-ahead must-offer provision intended to incentivize generation assets to participate. Market participants with generation assets that serve load are required to offer enough generation to cover most of their load plus reserve obligations. Asset owners can fulfill the requirement without necessarily offering all of their resources or available capacity, so long as their load plus reserve obligations are met. The SPP Market Monitoring Unit monitors the requirement, and non-compliant market participants are assessed a penalty based on the amount of capacity available in the day-ahead market relative to the market participant's peak hourly real time load.

4. Please describe your generator retirement process. Are current retirement processes that retain resources while transmission upgrades are implemented sufficient to prevent the scale of retirements facing RTOs/ISOs?

See response to Question 4.a. below. The decision of generator owners to retire their facilities is typically driven by the economics, policies and business interest of the generator owner. SPP is tasked with ensuring reliability of the bulk power system regardless of the fuel source of generators in our service territory.

a. Do you consider issues other than reliability violations on the transmission system when assessing the impacts of proposed generator retirements?

SPP's Generator Retirement process is focused exclusively on reliability violations of the transmission system. As stated above, SPP has no authority over whether a generator retires or not. If a generator owner notifies SPP of a planned retirement, SPP only has the authority to ensure that the retirement does not affect the reliability of the transmission system and to assign upgrade costs to that generator owner if the retirement requires reliability mitigation.

i. For example, should violations of other reliability criteria, shortfalls of FERC-approved resource adequacy requirements, or need for essential reliability services be considered when a generator proposes to retire?

SPP believes that if certain generators are needed for the reliability of the system, then it may not be good utility practice to retire those generators. If there are new reliability rules that are imposed on generators, those should be applied to the criteria when determining the reliability impacts of a proposed retiring generator. As an important note, SPP does not approve or deny generator retirements. Those decisions are in the hands of the relevant electric retail regulatory authorities that have jurisdiction over the load responsible entities or generator owners.

b. Should RTOs/ISOs be able to retain generators until the capacity, energy, and essential reliability services they provide are replaced?

It is a generator owner's decision whether to retain or retire a generator. Under this construct, SPP's generating fleet has undergone significant changes in recent years. SPP has adapted its market design, operations processes and transmission planning practices to keep pace with the changing resource fleet. Since 2014, SPP has experienced the retirement of over 7,600 MW of thermal resources. SPP saw over 2,796 MW of thermal generation retire from 2019 to 2022, and an additional 809 MW retire in 2023 by approximately August 8, 2023. It is not just a matter of the remaining thermal fleet playing a more critical role. As the thermal fleet shrinks without comparable replacement in fuel-assured, ramp-able capacity, the remaining fleet carries the additional burden the recently retired resources once supported.

FERC has approved an RTO's ability to enter into Reliability Must Run (RMR) contracts for generators needed for reliability to continue to run. SPP has not made an RMR filing at FERC.

5. Electrification of the heating and transportation sectors has the potential to greatly increase electric demand and capacity needs. The nation's top reliability organization, the North American Electric Reliability Corporation (NERC), and leaders from the Federal Energy Regulatory Commission (FERC), have testified that the bulk power system is confronting a potential reliability crisis caused by the potential loss of dispatchable thermal generation. This issue grows greater with the proposed EPA rules that will discourage coal and natural gas-fired generation. When do you anticipate reliability concerns materializing, or have they already materialized? What are you doing to solve this resource adequacy crisis and potential reliability crisis?

Over the last several years, SPP has seen an increase in risks associated with inability to meet energy consumption needs. SPP recently experienced our winter peak record increase from 43,661 MW to 47,157 MW, while our summer record increased from 53,243 MW to 56,184 MW.

As the cost of renewable energy has declined and environmental emissions standards have risen, SPP has witnessed an increase in the retirement of aging fossil fuel units. At the same time, the capacity available on the system has gradually decreased. The decrease in capacity has been composed almost entirely of fossil fuel generation. Reductions in excess capacity coupled with the need to balance larger levels of variable energy have increased the times when there are slim margins of available resources to meet load. Because of these changes, SPP is working on a variety of policy changes to increase available capacity from which to operate the system. These initiatives include, among others, reforms in the speed at which new generation can be interconnected and increased requirements on planning capacity for times of the year beyond summer peak periods.

Thermal resources continue to play a critical role in managing the variability of renewable resources and preserving system reliability. As more thermal resources experience retirement or reduced output, operational challenges will increase unless resources with similar ancillary capabilities are available. In addition, replacement generation of any type may not come online when needed due to regulatory and economic issues including siting processes and supply chain costs and delays. Additional generation requires additional transmission infrastructure and replacement of existing, aging infrastructure. After a generator interconnection is approved, it takes additional years to plan, approve, and construct transmission facilities that would be required for new generation. Therefore, even with ongoing improvements to queue processing times, SPP is concerned that sufficient generation may not be constructed or connected within the time contemplated by the proposed rule the Environmental Protection Agency (EPA) published in the Federal Register on May 23, 2023 (the "Proposed Rule"): EPA Docket Number: EPA-HQ-OAR-2023-0072 - New Source Performance Standards for Greenhouse Gas Emissions From New, Modified, and Reconstructed Fossil Fuel-

Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions From Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule.

SPP is concerned that an impactful risk to electric system reliability is introduced with every incremental conventional resource retired until such time as appropriate levels of accredited and essential reliability service attributes are available as needed to maintain regional reliability. SPP's concerns regarding retirement and insufficient replacement of generation are heightened because of the current and anticipated trends of growing demand. SPP sees no slowing of electricity demand as typical load growth trends combine with the growth in its footprints of new load types such as data centers, cryptocurrency mining and electric vehicle adoption.

SPP currently places resource adequacy requirements upon each load serving entity and has accreditation policies that account for the variability of resources being relied upon to meet those minimum requirements. The assessments currently performed by SPP for resource adequacy purposes consider implications of a changing resource mix and how that mix is expected to perform. These assessments are then used to determine the minimum amount of capacity needed in the region to meet reliability needs and to establish how much capacity can be accredited to individual resources.

SPP's Resource Adequacy process reviews and will continue to review in more detail how increased penetration of renewables impacts the accreditation of those renewable resources and how the planning reserve margin of the system is impacted. Additionally, increased retirements of conventional generation will be more closely reviewed in upcoming planning reserve margin studies.

a. How do you plan to retain existing dispatchable generation and incent new entry of dispatchable generation?

As discussed above in response to Question 3, SPP has several policies being developed that will help address the reliability of the system and to incentivize the proper generation remains online.

As a FERC approved RTO that administers an Open Access Transmission Tariff, SPP is required to be agnostic regarding the types of resources that connect to our transmission system, and therefore, cannot dictate which generation resources connect to the transmission system. Additionally, SPP has no authority whether a generator retires or remains online within the SPP footprint. That authority remains with the individual generator owner.

b. If your system is already facing resource adequacy issues without electrification and demand increase, how will the system be able to sustain large growth amidst significant thermal resource retirements?

See response to Question 3 above.

- c. It appears that resource adequacy obligations and performance requirements fail to reduce the impacts of winter storms. Does your market structure provide incentives for winterization of natural gas infrastructure or firm fuel supplies? What steps is SPP taking to incentivize weatherization of natural gas infrastructure or firm fuel supplies?**

SPP disagrees that resource adequacy obligations and performance requirements fail to reduce the impacts of winter storms. SPP's existing resource adequacy obligations are in place to ensure reliable and sufficient generating capacity through various projected conditions. SPP is also pursuing various impactful enhancements in the Resource Adequacy and Marketplace constructs, including incentivizing winterization activities on accredited generating resources. Items include ensuring capacity critical hours are captured when appropriately accrediting resources susceptible to extreme weather, as well as exploring market mechanisms to further enhance performance through economic incentives.

SPP has no authority over natural gas pipeline infrastructure winterization. Such authority would come from state legislatures or the U.S. Congress.

- d. While the interconnection queue is large, not all resources in the queue get built. What percentage of the generation queue has historically come onto the system? How much from the existing queue do you expect to be built?**

The SPP generator interconnection (GI) queue process provides a means for generation planners and developers to submit new generation interconnection projects into the queue for validation, study, analysis and, ultimately, execution of a generator interconnection agreement.

Historically, about 40% of the SPP GI request queue has come onto the system. On January 4, 2024, SPP's GI request queue contained 518 projects totaling 106.3 gigawatts (GW). These numbers change continuously as existing requests are withdrawn or result in a GI agreement, and as new requests enter the queue. SPP has added more than 6,700 MW of nameplate capacity of generation that is in service since 2021. SPP has also issued GI agreements for more than 19,000 MW of generation capacity that is not yet in service.

- e. Can you provide an estimate of the gross cost of all the additional renewable capacity you expect to get built?**

As stated above, historically, 40% of the SPP GI request queue has come onto the system. For the assumptions of gross cost, it may be difficult to accurately predict which requests currently in the GI queue would be included in the approximately 40% that end up going forward.

Assuming that the requested gross cost is limited to renewable resources and includes the total cost to interconnect and average assigned upgrade costs for the Definitive Interconnection System Impact Study (DISIS), the estimate would be approximately \$2.8 billion. This figure was calculated using the average assigned upgrade costs per MW based on the last three restudies and then multiplied by 40% of the MW amounts for active renewable requests. (Active being anything not withdrawn or in commercial operation.)

f. Can you elaborate on the projects that are delayed or canceled due to cost increases?

While individual project developers are in a better position to answer this question, SPP understands that projects may be delayed or canceled due to a number of factors, such as cost, supply chain, construction provisioning, etc.

i. What is the reliability impact of these delays and cancellations if they force retirement of existing dispatchable thermal resources but no new capacity is added?

SPP is concerned that the current pace of new generation development will be insufficient to offset current and projected resource retirement trends. SPP has improved its GI process and continues to facilitate, to the extent it is able, development of new generation. However, issues remain with the ability of new generation to replace the conventional generation being lost. Although SPP is on schedule to clear its GI queue by the end of 2024, uncertainty in fuel and emission regulation may negatively impact the ability to meet the SPP footprint's needs for adequate resource diversity in new GI requests.

ii. Are these projects subject to financial penalty if they are unable to meet their obligations? Should project financiers and sponsors be required to pay for any out of market actions to retain dispatchable thermal resources?

Currently, delayed projects are not subject to financial penalty if they are unable to meet their obligations. SPP is able to provide a deficiency notice and ultimately deem the project withdrawn, unless the deficiency is cured. These deemed withdrawn projects may forfeit financial security if there is an adverse impact to equally or lower queued interconnection requests. Projects that are canceled by the interconnection customer unexpectedly may be subject to forfeit financial securities if there is an adverse impact to equally or lower queued interconnection requests.

g. Can you describe how much additional dispatchable thermal generation capacity you will need to balance the system if renewables are added to meet state goals? Is it financially sensible to add significant amounts of generation to meet state goals only to need to add more dispatchable thermal generation to maintain balance on the system?

SPP and utilities serve the public interest and are engaged with the implementation of policy rather than the creation or modification of policy by legislative, regulatory and government bodies. SPP's goal is to support the achievement of resource adequacy by ensuring there is enough capacity available to meet the needs of all end-use customers in SPP. SPP staff and the Supply Adequacy Working Group (SAWG) are responsible for the development and implementation of policies and processes to ensure the reliable supply of capacity necessary to meet demand and supply adequacy requirements/methodologies in SPP, and ensuring that these policies and processes meet the compliance obligations of NERC Reliability Standards.

h. Can additional natural gas-fired generation capacity be served by the current pipeline infrastructure or is additional pipeline infrastructure needed?

SPP, as a reliability coordinator, is keenly focused on the critical need for effective gas/electric coordination as the generation resource mix needed to ensure reliability is becoming increasingly dependent on both natural gas infrastructure and well-functioning gas markets. SPP is seeing growing load demand as well as an increased need for gas-fired generation to keep the grid in balance given the intermittent nature of an ever-increasing fleet of renewable generation. These demands on the electric system require increased flexibility and efficiency from gas supply and pipeline operations. Unfortunately, despite this rising demand for increased throughput and more flexible use of the pipeline system by thermal generation, the pipeline system is becoming further constrained due to the difficulties in building new infrastructure. In short, the need for new flexible gas-fired generation is clashing with both the level of new infrastructure needed and the traditional rules as to how pipelines and gas markets are regulated. There is no doubt that additional natural gas infrastructure (transportation and storage) is needed, yet faces significant headwinds due to increased state and federal environmental regulation, permitting issues and local opposition.

i. Have you been consulted by EPA or FERC on the proposed power sector regulations?

SPP has communicated with EPA and FERC on proposed power sector regulations.

j. If the EPA rules are enacted, will you be able to reliably operate your system?

On August 8, 2023, SPP submitted individual and joint comments in response to the EPA's Proposed Rule (referenced in response to Question 5). SPP is concerned that the Proposed Rule will create a conflict between a generator's requirements under the Proposed Rule and SPP's regulatory requirements for maintaining reliability if an adequate allowance for transition is not provided. Despite SPP's portfolio of renewable generation in its footprint, generation from its thermal resources continues to be a key tool for managing the variability of renewable resources and preserving system reliability. SPP asks that the EPA take into consideration provisions of the Proposed Rule that will jeopardize, through accelerated retirement or

reduced output, SPP's ability to utilize that tool until such time as adequate clean alternatives are available. Even without the impacts of the Proposed Rule, SPP has experienced scarce supply conditions and is predicting that those conditions will worsen over the coming planning horizon.

Because of SPP's extensive experience operating a grid with significant numbers of weather-dependent, variable energy resources, SPP is keenly aware of the need for a diverse resource mix of renewable and thermal generation for maintaining reliability with currently available technology. Until technological development and regulatory processes have adequately adapted, operating the grid will continue to require thermal generation. As SPP continues to strive to implement policies that facilitate the grid of the future, including adoption of policies that encourage the use of storage and hybrid resources, SPP requests that the Proposed Rule provide the flexibility to use adequate levels of thermal generation to operate reliably.

With proper consideration of the need for organizations like SPP to have adequate generation available to be operated and the provision of appropriate emergency-use exceptions or allowances, SPP's ability to maintain adequate system reliability will be improved while EPA's goals to reduce emissions are also being supported.

SPP is concerned that the Proposed Rule could exacerbate the already serious challenges posed by generator retirement, inadequate generation replacement, and increasing demand. As discussed below, SPP requests that the requirements set forth in the Proposed Rule be amended to provide adequate flexibility in the near term to allow proper integration of the resources envisioned by the rule in order for SPP to maintain electric reliability in its region. SPP has also considered more specific solutions and joined other organizations in the joint comments to propose more detailed amendments to the Proposed Rule aimed at mitigating the severity of potential reliability impacts.

k. Should nuclear play a larger role in reliably operating the system and meeting state emission targets?

SPP does not make decisions on the types of generation to be built in its region. Those decisions are made by an individual utility, generator owners and policy makers. SPP is tasked with ensuring reliability of the bulk power system regardless of the fuel source of generators in our service territory.

6. What is the expected cumulative cost of the transmission needed to integrate renewables?

SPP is unable to provide a specific cumulative cost number.

The SPP GI process assigns the cost of interconnecting new generation to the grid, including renewables, to the individual interconnection customers. The cost of interconnecting any

particular generator can vary greatly depending on the size, type and location of the proposed new generator.

The results of recently completed generator interconnection studies can be found at:
<https://opsportal.spp.org/Studies/Gen>.

a. Can you describe your coordination efforts with neighboring RTOs/ISOs?

SPP has extensive planning and coordination processes in place with its neighboring RTOs and ISOs, as well as non-RTOs and ISOs. SPP and our neighbors have agreements that are designed to improve interregional coordination and maximize the efficient use of Interregional Transfer Capability among the RTO/ISO regions. These agreements provide for coordinated planning and also utilize market-to-market tools to maximize the efficient use of the system based on real-time conditions.

SPP's coordination agreements with its neighboring entities can be found at:
<https://www.spp.org/spp-documents-filings/?id=18378>.

b. What is your position on a minimum transfer requirement between planning regions?

SPP believes that any minimum transfer capability requirements between planning regions should be based on robust analysis of system needs and benefits. If properly implemented, additional transmission between regions could provide a number of benefits to our nation's electric grid.

c. Would a minimum transfer capability requirement undermine the autonomy of the various RTOs/ISOs and their planning processes?

A properly designed and coordinated interregional planning construct could be developed that maintains autonomy with individual planning processes.

The Honorable Kelly Armstrong

1. Weather-dependent generation is penetrating the generation mix at an increasing rate.

a. Has your organization evaluated accreditation processes for these resources?

Yes, SPP has evaluated accreditation processes for weather-dependent generation.

i. If so, does this accreditation consider the weather risks associated with weather-dependent generation?

As stated in response to Question 3 submitted by Chairman Jeff Duncan, SPP has developed policies related to accreditation for weather dependent generation. Weather dependent generation can be wind or solar resources, as well as dispatchable thermal resources that may have operational issues when operating in extreme weather conditions.

b. Is your organization evaluating seasonal accreditation effective load carrying capacities for weather-dependent generation, including wind and solar?

Yes, SPP has developed policies for using Effective Load Carrying Capability (ELCC) for accrediting wind resources, solar resources and energy storage resources. SPP plans to file this policy with FERC in 2024.

c. Does your organization have the same reliability standards for weather-dependent generation as it does for dispatchable resources?

SPP's policy for ELCC for wind and solar resources appropriately measures the capacity value for wind and solar resources by considering their ability to provide capacity to the system. It is important that SPP considers the differences in dispatchable thermal resources and wind and solar resources for its proposed accreditation methodology to be able to maximize the value that each type of resources can bring to the reliability of the SPP transmission system.

d. Should changes to capacity accreditation go into effect before other changes to the capacity market?

SPP does not have a capacity market.

2. Traditional load forecasting tools rely on customer history and interactions to approximate demand needs, including peak consumption.

a. To what extent does your organization consider external studies or critiques of load forecasting models when acquiring capacity?

See response to Question 3.c. submitted by Chairman Jeff Duncan.

The Honorable Kim Schrier

1. Thank you for answering my question on your working proposals for a day ahead market. As I mentioned in my remarks, Northwest utilities in my district, including the Bonneville Power Administration, are evaluating both CAISO's

Extended Day Ahead Market and SPP's Markets Plus. If both of these day ahead markets are operating at the same time, how are you working to assure energy trading and transmission operations continue smoothly?

See response to Question 6.a. submitted by Chairman Jeff Duncan.

SPP has decades of experience working with neighboring entities, including other RTOs and ISOs like Midcontinent Independent System Operator (MISO). To assure that energy trading and transmission operations function efficiently and economically, SPP uses joint operating or coordination agreements with MISO, Public Service Company of Colorado, Associated Electric Cooperative Incorporated, Electric Reliability Council of Texas, Southwestern Power Administration, Tennessee Valley Authority and SaskPower to guide the coordination of transmission service provider, balancing authority, reliability coordinator and other functions in the Eastern Interconnection.

SPP has had a reliability coordinator coordination agreement in place with the California Independent System Operator (CAISO) since 2019. A copy of this agreement can be found at: https://www.spp.org/documents/60263/caiso-spp%20rc%20coordination%20agreement_20190715.pdf.

SPP's Markets+ will facilitate relationships with other market operators and provide well-managed seams. Markets+ is being developed with seams in mind, including potential market seams with CAISO. SPP has vast experience operating markets in coordination with our neighbors to support improved energy trading and transmission operations, and plans to incorporate that knowledge and expertise into Markets+ services. The presence of more than one energy markets provider in the West can enable improvements to market products via healthy competition of services, and this can lead to improved efficiency and economics of energy production throughout the region to the benefit of customers.