BEFORE THE

LOUISIANA PUBLIC SERVICE COMMISSION

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATION AND APPROVAL OF THE ACQUISITION OF CERTAIN RENEWABLE RESOURCES AND NATURAL GAS CAPACITY CONTRACTS IN ACCORDANCE WITH THE MBM ORDER, THE 1983 AND 1994 GENERAL ORDERS	:	DOCKET NO. U-

DIRECT TESTIMONY OF

KAMRAN ALI

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

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TESTIMONY INDEX

GLOSSARY OF ACRONYMS

AEP	American Electric Power Company, Inc.
AEPSC	American Electric Power Service Corporation
ARR	Auction Revenue Rights
ATSS	Aggregate Transmission Service Study
ELCC	Effective Load Carrying Capacity
GI	Generator Interconnection
ITP	Integrated Transmission Planning
LMP	Locational Marginal Price
LRE	Load Responsible Entity
RFP	Request for Proposal
SPP	Southwest Power Pool
SWEPCO	Southwestern Electric Power Company
TARA	Transmission Adequacy and Reliability Assessment

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

A. My name is Kamran Ali. I am employed by American Electric Power Service Corporation (AEPSC), one of several subsidiaries of American Electric Power Company, Inc. (AEP), as VP of Transmission Planning and Analysis. AEP is also the parent company of Southwestern Electric Power Company (SWEPCO or the Company). AEPSC supplies engineering, financing, accounting, regulatory, and similar planning and advisory services to AEP's regulated electric operating companies, including SWEPCO. My business address is 8500 Smiths Mill Road, New Albany, OH 43054.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I received a Bachelor of Science – Electrical Engineering degree from the University of Alabama in Tuscaloosa, Alabama, and a Master of Science –Electrical Engineering degree from Kansas State University in Manhattan, Kansas. I also received a Master of Business Administration degree from Ohio University in Athens, Ohio.

Q. WHAT IS YOUR PROFESSIONAL BACKGROUND?

A. I started my career at SMC Electrical before joining AEPSC as an electrical engineer. I joined AEPSC as a Substation Engineer in 2006. In 2007, I transferred to Transmission Planning, where I advanced through increasing levels of responsibility. In January 2021, I assumed the position of VP of Transmission Planning and Analysis. I have been a registered Professional Engineer in the state of Ohio since 2009.

Q. WHAT ARE YOUR RESPONSIBILITIES AS VP OF TRANSMISSION PLANNING AND ANALYSIS?

A. My responsibilities include organizing and managing all activities related to assessing the adequacy of AEP's and its operating companies' transmission network, including within the Southwest Power Pool (SPP) Regional Transmission Organization region, to meet customers' needs in a reliable, cost-effective, and environmentally compatible manner.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE IN PROCEEDINGS BEFORE REGULATORY BODIES?

A. Yes, I have testified before the Public Utilities Commission of Ohio, the Kentucky Public Service Commission, the Indiana Utility Regulatory Commission, the Public Utility Commission of Texas, the Maryland Public Service Commission, and the Pennsylvania Public Utility Commission. I have also submitted testimony before the Michigan Public Service Commission, Louisiana Public Service Commission, Arkansas Public Service Commission, and the Oklahoma Corporation Commission on behalf of various electric operating companies of AEP.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony discusses the following analyses performed to assist in evaluating the bids received by SWEPCO in response to its wind and solar Requests for Proposals (RFPs): 1) the review of network upgrades identified by SPP in each RFP facility's generation interconnection process, 2) the deliverability analysis performed to

determine the cost of transmission upgrades required to obtain firm transmission service from each of the RFP facilities to the AEP West Zone (which includes SWEPCO and its sister company, Public Service Company of Oklahoma), and 3) the production cost analysis evaluating the transmission congestion and loss risk for each of the RFP facilities. More specifically, my testimony describes:

- the analytical framework employed for evaluating the RFP bids;
- the Aggregate Transmission Service Study (ATSS) performed to assess the transmission upgrades needed to acquire firm transmission service for the RFP bid facilities, referred to as the Deliverability Analysis in the RFPs; and
- the transmission congestion and loss analysis, referred to as Transmission Screening Analysis in the RFPs.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony addresses the transmission analysis that was performed for each of the RFP bid facilities, which included a firm transmission/deliverability analysis and a congestion/losses analysis. The firm transmission/deliverability analysis estimated the cost of network upgrades required for the RFP facilities to obtain firm transmission rights. The congestion/losses analysis evaluated the potential congestion and loss costs for the RFP bid facilities. Each of these analyses used updated SPP datasets and the costs for firm transmission service and congestion/losses costs for each of the RFP bid facilities were provided to Company witness James. F. Martin for use in the economic analysis of each of those facilities.

III. ANALYTICAL FRAMEWORK

Q. PLEASE DESCRIBE THE ANALYTICAL FRAMEWORK EMPLOYED FOR EVALUATING THE RFP BIDS.

A. SWEPCO's analysis consisted of the following steps:

- Generation Interconnection (GI) Process
  - Each of the wind and solar RFPs required that RFP bidders have completed the GI process with SPP, which determines the facilities necessary to interconnect the generation facility to the SPP transmission grid.
  - The GI process determines the need for two types of facilities to interconnect a generation facility – Interconnection Facilities and Network Upgrade Facilities.
    - Interconnection Facilities include all facilities between the Generating Facility and the Point of Interconnection that are necessary to interconnect the Generating Facility to the SPP Transmission System, often referred to as generation ties or "gen-ties."
    - Network Upgrade Facilities refer to upgrades required to the Transmission System beyond the point at which the Interconnection Facilities connect to the SPP Transmission System.
  - The cost of GI upgrades are assigned to the generator and were included in the Company's bid evaluation analysis.
  - The GI studies for each RFP bid facility were performed by SPP and SWEPCO reviewed those studies to identify the GI network upgrades required to reliably interconnect the facility.
- Firm Transmission/Deliverability Analysis
  - SWEPCO is obtaining the Selected Facilities to help meet its capacity requirements in SPP.
  - The firm transmission/deliverability analysis performed by the Company evaluated the transmission network upgrades required to deliver capacity from the RFP facilities to the AEP West Zone in accordance with SPP's procedures and processes.
  - The Company used the most recent ATSS model developed by SPP.
  - The cost of transmission network upgrades required to deliver capacity from each RFP facility to the AEP West Zone was added to the RFP bid amount as part of the Company's analysis of the RFP bids.

- Congestion and Loss Analysis
  - The Company used PROMOD models for 2026 and 2031 based on datasets developed by SPP to analyze the congestion and loss costs associated with transmission between each RFP facility location and the AEP West Zone.
  - The Company used these congestion and loss forecasts to develop anticipated congestion and loss costs over the 2024-2053 time period.
  - This information was provided to Company witness Martin for use in preparing the economic analysis of each of the RFP bid resources.
- Models and Datasets Used in the Analysis
  - The Company used SPP-developed network models as the foundational models to perform its assessments. SPP develops these models on a cyclical basis in consultation with stakeholders using the best available information to represent the topology of the electric grid.
  - The Company added the RFP bids and associated GI network upgrades if they were not already included in the foundational model datasets utilized for both the firm transmission/deliverability analysis and the congestion & loss analysis.
  - The transmission upgrades required for firm transmission were then included in the Company's congestion and loss analysis to evaluate congestion and loss costs.

IV. GENERATOR INTERCONNECTION PROCESS

Q. PLEASE DESCRIBE SPP'S GENERATOR INTERCONNECTION PROCESS.

A. A generator resource seeking to interconnect to SPP's transmission network must go through SPP's GI study process. The GI study process evaluates the impact of the proposed generator on the reliability of the transmission system and identifies Interconnection Facilities and Transmission Network Upgrades needed to ensure reliable operation of the transmission system. The scope, cost and timelines associated with the upgrades are identified and shared with stakeholders as part of the

study process. All GI upgrade costs are directly assigned to the generator resource and were included in each of the RFP bids.

Q. DOES THE GI STUDY PROCESS ENSURE DELIVERABILITY OF ENERGY FROM A GENERATOR TO A CUSTOMER'S LOCATION?

A. No. That is why SWEPCO conducted the firm transmission/deliverability analysis and the congestion and loss analysis described below.

V. FIRM TRANSMISSION (DELIVERABILITY) ANALYSIS OF RFP BIDS

Q. WAS FIRM TRANSMISSION TO FACILITATE CAPACITY DELIVERABILITY FROM THE RFP BID FACILITIES IMPORTANT TO SWEPCO?

A. Yes. Obtaining capacity credit for the RFP bid facilities was a primary goal of the Company's RFPs.

Q. PLEASE EXPLAIN THE TRANSMISSION ANALYSES PERFORMED BY SPP TO FACILITATE CAPACITY DELIVERABILITY FOR RESOURCE ADEQUACY WITHIN SPP.

A. SPP requires a Load Responsible Entity (LRE), such as SWEPCO, to maintain capacity to satisfy its resource adequacy obligations, which include load and planning reserve margins. LREs must obtain firm transmission service to ensure reliable deliverability of capacity from a generator resource for the load portion of its resource adequacy requirement. LREs are required to go through SPP's ATSS process to obtain firm transmission service. Resources without firm transmission can be used to satisfy the reserve margin requirement, but only resources with firm transmission can be used to satisfy the baseline load resource adequacy requirement.

Q. PLEASE EXPLAIN THE SPP'S CAPACITY ACCREDITATION PROCESS FOR WIND AND SOLAR FACILITIES.

A. Effective June 1, 2023, the accredited capacity of wind and solar facilities will be established using Effective Load Carrying Capability (ELCC) methodology. SPP's ELCC analyses demonstrate that while the total capacity available from wind resources increases, the accredited capacity value of each individual resource will decrease. For that reason, SPP studies wind and solar resources in three tiers and resources with firm transmission service can be applied to Tier 1 and Tier 2. Tier 3 consists of solar and wind resources that do not have firm transmission service. Tier 1 has a priority in the study queue with the ELCC capacity value determined first and receives the highest capacity accreditation with the accreditation value progressively decreasing for Tier 2 and 3. As a result, it is important for the Selected Facilities to obtain firm transmission in order to receive the maximum achievable capacity accreditation.

Q. PLEASE PROVIDE AN OVERVIEW OF THE FIRM TRANSMISSION/DELIVERABILITY ANALYSIS PERFORMED BY THE COMPANY.

A. The Company performed a deliverability assessment to determine the capacity that can be delivered from the RFP bids to the AEP West Zone to meet its resource adequacy obligations. SPP's ATSS process determines capacity deliverability by evaluating transfers from generator resources to load within the SPP Region. The study is designed to aggregate all the requests for service received through SPP's annual open season windows. SPP analyzes transmission system needs and

determines transmission upgrades needed to facilitate these requested transfers while maintaining transmission system reliability.

Pursuant to Section 9.2.1.1 in the RFPs,[1] after the eligibility and threshold review (RFP section 9.1), the Company performed deliverability analysis for all of the RFP bids based on the ATSS process used by SPP for evaluating requests for firm transmission service.

Q. PLEASE DESCRIBE THE MODEL DATASETS SWEPCO USED AND THE DELIVERABILITY ANALYSIS IT PERFORMED TO ASSESS THE RFP BIDS.

A. SWEPCO used the model datasets and supporting files developed by SPP for the 2020-Aggregate Study 2 ATSS assessments to identify transmission upgrades required to facilitate transfers from the RFP bids to the AEP West Zone. Specifically, SWEPCO used datasets for summer, winter, and light load seasons for two years – 2026 and 2031. The RFP bids and associated GI network upgrades were added and dispatched in the models in accordance with the ATSS process established by SPP. Additionally, the models were updated to incorporate the Company's unit retirements discussed in the testimony of Company witness A. Malcolm Smoak, which were not announced until after SPP's model build process was completed. The PowerGem Transmission Adequacy and Reliability Assessment (TARA) tool was used to perform this study. The Company evaluated the transmission needs based on SPP's criteria and methodology and identified transmission network upgrades necessary to obtain firm transmission rights for the RFP bid facilities. Identified network upgrades and associated costs were provided to Company witness Martin for further evaluation

[1] See Exhibits AEJ-1 and AEJ-2 to the testimony of Company witness Amy E. Jeffries.

and inclusion in the economic analysis of the RFP bid facilities. Additionally, the identified upgrades were included in the congestion & loss analysis discussed below.

VI. TRANSMISSION CONGESTION & LOSS SCREENING ANALYSIS

Q. PLEASE PROVIDE AN OVERVIEW OF THE MARKET SIMULATIONS PERFORMED BY THE COMPANY TO ANALYZE CONGESTION AND LOSS COSTS ASSOCIATED WITH THE RFP BIDS.

A. Pursuant to Section 9.2.1.1 in the RFPs, the Company performed a Transmission Screening Analysis to evaluate the cost of congestion and losses associated with delivery of power from the RFP facilities to the AEP West Zone. The Company used PROMOD, an integrated electric generation and transmission market simulation software tool primarily employed for forward-looking locational market price simulations. PROMOD is also used by SPP to perform an hourly chronological security constrained unit commitment and economic dispatch of the entire SPP footprint and neighboring regional markets subject to transmission constraints for the assumed market conditions. PROMOD market simulations produce the locational marginal price (LMP) at various pricing nodes on the SPP system. PROMOD also reports the hourly marginal congestion cost and marginal loss charge components of the LMP for each pricing node. This analysis allowed the Company to evaluate congestion and loss costs associated with delivery of power from the RFP bid locations to the AEP West Zone.

Q. PLEASE DESCRIBE THE PROMOD DATASET USED BY THE COMPANY TO PERFORM ITS CONGESTION AND LOSS ANALYSIS.

A. The PROMOD datasets used for this analysis were developed by SPP and its stakeholders for SPP's 2021 Integrated Transmission Planning (ITP) Assessment that was completed in December 2021. Specifically, the Company utilized the PROMOD datasets reflecting expected future conditions in 2026 and 2031. These models incorporate the most up-to-date topology of the grid as well as planned and/or needed future resources, including wind and solar resources at levels and locations that were vetted and approved by SPP and its stakeholders.

Q. DID THE COMPANY UPDATE THE SPP-DEVELOPED PROMOD DATASET FOR THE PURPOSE OF THE RFP BID EVALUATION?

A. Yes. As stated above, the Company used SPP's PROMOD dataset for 2026 and 2031 as a starting point. The Company added the RFP bid facilities and associated GI network upgrades if those facilities were not already included in SPP's PROMOD dataset. The Company also incorporated the network upgrades identified in the ATSS deliverability assessments to the PROMOD modeling dataset. Additionally, the models were updated to reflect the Company's unit retirements and transmission topology changes that were not known when assumptions were being finalized by SPP for its 2021 ITP Assessment. This produced datasets that reflected the expected transmission topology for the RFP facilities.

Q. WHAT ANALYSIS DID THE COMPANY PERFORM ON THESE UPDATED PROMOD DATASETS?

A. The Company performed further analysis on the updated PROMOD datasets to determine new transmission constraints caused by adding the new solar and wind RFP bids to the datasets. These new transmission constraints were added to the list of

flowgates identified by SPP for its 2021 ITP Assessment. The Company performed market simulations utilizing updated model datasets and lists of constraints to report the hourly marginal congestion cost and marginal loss charge components of the LMP for each RFP bid injection pricing node and the AEP West Zone for 2026 and 2031.

Q. PLEASE PROVIDE AN OVERVIEW OF THE METHODOLOGY USED TO PERFORM THE CONGESTION & LOSS ANALYSES FOR THE BID EVALUATION ANALYSIS.

A. The hourly marginal congestion and marginal loss components of the LMP for the RFP bid injection pricing node and AEP West Zone were used to calculate annual generation-weighted congestion and loss costs[2] between the individual bid locations and AEP West Zone for 2026 and 2031. The generation-weighted congestion and loss costs for years 2027-2030 were estimated by linearly interpolating between the previously calculated 2026 and 2031 generation-weighted congestion and loss costs. For years 2024 and 2025, the generation-weighted congestion and loss costs were estimated by linearly extrapolating backward the 2026 generation-weighted congestion and loss costs calculated based on PROMOD results. Gen-weighted congestion and loss costs were kept constant for 2032 through 2053 – which assumes that as congestion costs increase, SPP's planning process will identify transmission solutions to address transmission congestion and prevent congestion costs from increasing further. The congestion and loss costs associated with each RFP bid were compiled for 2024 – 2053 and provided to Company witness Martin for use in the

[2] For loss costs, one-half of the difference in marginal loss components at the AEP West Zone and at RFP bids injection pricing nodes is used. This is because average loss costs are half of the marginal loss costs, and approximately one-half of marginal loss charges collected by SPP are refunded back to the loads.

economic analysis of each of the RFP bid resources. As described earlier in this testimony, the Company will need to obtain firm transmission service to ensure reliable deliverability of capacity from a generator resource to Company Load. LREs with firm transmission service are entitled to Auction Revenue Rights (ARRs) and the Company determined the value stream of these ARRs based on historic performance.

VII. SUMMARY AND CONCLUSION

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My testimony addresses the transmission analysis that was performed for each of the RFP bid facilities, which included a firm transmission/deliverability analysis and a congestion/losses analysis. The firm transmission/deliverability analysis used SPP-developed ATSS datasets, updated as necessary to include SPP-determined Generation Interconnection facilities for the RFP bid facilities as well as SWEPCO generation unit retirements, to estimate the cost of network upgrades required for the RFP facilities to obtain firm transmission rights. The congestion/losses analysis used SPP-developed PROMOD datasets, updated as necessary to include the RFP bid facilities and related Generation Interconnection facilities, the Company's unit retirements, the network upgrades identified in the Company's firm transmission/deliverability analysis, and other known grid topology changes to evaluate the potential congestion and loss costs for the RFP bid facilities. The grid upgrade costs for firm transmission service and the congestion/loss costs for each of the RFP bid facilities were provided to Company witness Martin for use in the economic analysis for each of those facilities.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.