

Control Number: 49737



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### SOAH DOCKET NO. 473-19-6862 PUC DOCKET NO. 49737

APPLICATION OF SOUTHWESTERN§ELECTRIC POWER COMPANY FOR§CERTIFICATE OF CONVENIENCE§AND NECESSITY AUTHORIZATION§AND RELATED RELIEF FOR THE§ACQUISITIONOFWIND§GENERATION FACILITIES§

**BEFORE THE STATE OFFICE** 

OF

**ADMINISTRATIVE HEARINGS** 

### WORKPAPERS TO THE

### DIRECT TESTIMONY AND EXHIBITS OF JEFFRY POLLOCK

### ON BEHALF OF TEXAS INDUSTRIAL ENERGY CONSUMERS

January 15, 2020

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### PUC DOCKET NO.

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

**PUBLIC UTILITY COMMISSION** 

**OF TEXAS** 

### APPLICATION

Southwestern Electric Power Company (SWEPCO or the Company) files this Application for Certificate of Convenience and Necessity Authorization and Related Relief (Application) to acquire an interest in three wind generation facilities (the Selected Wind Facilities) as described below.

#### I. The Selected Wind Facilities

Through a Request for Proposals (RFP) process, SWEPCO and its sister company Public Service Company of Oklahoma (PSO) have contracted to acquire the project companies owning the following three Selected Wind Facilities, subject to receipt of regulatory approvals and satisfaction of other conditions:

Traverse	999 MW
Maverick	287 MW
Sundance	<u>199 MW</u>
Total	1485 MW

Each of the Selected Wind Facilities is owned by an affiliate of Invenergy LLC and located in Oklahoma. SWEPCO has contracted to acquire 54.5% of each Facility, for a total of 810 MW, and PSO will acquire the remaining 45.5% (675 MW) share.

SWEPCO's Integrated Resource Plans (IRPs) in Louisiana and Arkansas and PSO's IRP in Oklahoma provide for the addition of wind generation resources by 2023 to reduce energy costs and provide capacity benefits. Based on the IRPs, the two Companies issued coordinated RFPs for wind generation facilities in January 2019. Thirty-five bids representing nineteen (19) unique wind projects and totaling approximately 5,896 MW were submitted to the Companies in response to the RFPs. The RFP process is described in the testimony of witness Godfrey.

After analyzing the cost and deliverability of the energy from each proposed project to the AEP West load zone, the Companies chose the Selected Wind Facilities and negotiated turn-key fixed-price Purchase and Sale Agreements (PSAs) to acquire each of the Facilities. The total price for the Selected Wind Facilities including all interconnection and upgrade costs, payable at closing, is \$1.86 billion. Total project costs including PSA price adjustments and owner's costs are expected to be \$1.996 billion as discussed by witness DeRuntz. Closing is subject to regulatory approvals and other conditions, and there are no pre-closing progress or other payments. The Facilities are expected to qualify for production tax credits (PTCs) at the 80% level, except for Sundance, which is expected to qualify for 100% PTCs.<sup>1</sup>

As discussed below and in the Company's testimony accompanying this Application, acquisition of the Selected Wind Facilities will reduce customers' energy costs, defer future capacity additions, enhance renewable energy credit options for customers that desire it, and provide economic development benefits.

### II. Business Address/Authorized Representatives

SWEPCO's business address and telephone number are:

Southwestern Electric Power Company 428 Travis Street Shreveport, Louisiana (318) 673-3000 – telephone

<sup>&</sup>lt;sup>1</sup> In 2015, Congress enacted legislation to extend the PTC and to establish a phase-out schedule based on when wind facilities started construction. Subject to certain requirements, projects that started construction in 2016 receive 100% of the PTC and projects that started construction in 2017 receive 80%.

The Company's authorized representative for service of pleadings and other documents is:

Shelli A. Sloan Southwestern Electric Power Company 400 West 15<sup>th</sup> Street, Suite 1520 Austin, Texas 78701 Telephone: (614) 716-2383 Facsimile: (512) 481-4591

The Company's authorized legal representatives are:

William Coe	Rhonda C. Ryan
Kerry McGrath	American Electric Power Service Corporation
Duggins Wren Mann & Romero, LLP	400 West 15 <sup>th</sup> Street, Suite 1520
600 Congress Ave, Suite 1900	Austin, Texas 78701
Austin, Texas 78701	Telephone: (512) 481-3321
Telephone: (512) 744-9300	Facsimile: (512) 481-4591
Facsimile (512) 744-9399 wcoe@dwmrlaw.com kmcgrath@dwmrlaw.com	rcryan @aep.com

### III. Jurisdiction

The Commission has jurisdiction over the Company's Application pursuant to Sections 37.053, 37.056, and 37.058 of the Texas Public Utility Regulatory Act (PURA).<sup>2</sup>

### IV. Relief Requested, Customers Affected, and Other Filings

<u>CCN Amendment</u>. SWEPCO holds CCN No. 30151. SWEPCO requests that its CCN be amended to include acquisition of its 810 MW share of the Selected Wind Facilities as described in this filing. SWEPCO has approximately 184,000 Texas retail customers, all of whom are affected by this Application. SWEPCO has filed separate applications for certification of the Selected Wind Facilities with the Arkansas Public Service Commission and the Louisiana Public Service Commission. PSO has filed for approval of rate recovery for the Selected Wind Facilities from the Oklahoma Corporation Commission.

Tex. Util. Code Ann. §§ 11.001-66.017.

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### PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

PUBLIC UTILITY COMMISSION OF

TEXAS

### JULY 15, 2019

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first ten years of operation, the facilities are projected to earn PTCs net of deferred tax asset carrying costs valued at approximately \$750 million. In a future filing, SWEPCO intends to request implementation of a Generation Investment Recovery Rider that will take effect on the date the Selected Wind Facilities begin providing service to customers, pursuant to newly-enacted Section 36.213 of PURA.<sup>3</sup> SWEPCO will also propose to flow the benefits of the PTCs to customers through the Rider.

As discussed in the testimony of witness Multer, the Company does not expect to fully use the PTCs in the tax years in which they are received. To the extent that the PTCs are not fully used by the Company in a given tax year, SWEPCO requests Commission approval in this case to include any unrealized PTCs in a deferred tax asset that will be included in rate base in subsequent rate proceedings.

### V. Benefits of the Selected Wind Facilities

The Selected Wind Facilities are expected to provide several benefits to SWEPCO's customers, including reduced energy costs, deferred capacity additions and associated costs, and increased availability of renewable energy credits for customers. The Selected Wind Facilities are expected to provide energy cost savings of approximately \$2.1 billion (\$588 million net present value), as compared to a baseline case without the Facilities. The Facilities provide customer benefits under a wide range of possible future conditions analyzed by the Company and would break even at future power and gas prices below the low range of plausible forecasts. These timesensitive Facilities take advantage of the federal Production Tax Credits (PTCs) for the benefit of customers to secure at least 80% of the value of the PTCs, and in the case of Sundance 100% of the value of the PTCs. The Company's analysis of cost savings from the Selected Wind Facilities,

<sup>&</sup>lt;sup>3</sup> PURA § 36.213 was recently enacted by the Texas Legislature and signed into law by the Governor. Acts 2019, 86<sup>th</sup> Leg., R.S., Ch. (H.B. 1397), Sec. 4, eff. June 14, 2019.

including its evaluation of potential costs and risks arising from transmission congestion, are described in the testimony of witnesses Torpey, Ali, Sheilendranath and Pfeifenberger.

The Selected Wind Facilities will also make more renewable energy credits available to customers that want them. Many of SWEPCO's customers are seeking or even requiring that increasing amounts of their energy be provided by renewable resources. This need arises from the fact that some of SWEPCO's largest customers have significant renewable energy targets or commitments. In order to meet the needs and desires of its customers, and to make its service territory more attractive to new economic development, it is important that SWEPCO increase the amount of energy that is produced from renewable resources, while at the same time remaining focused on the cost of providing service to customers. The Selected Wind Facilities provide an opportunity to do that.<sup>4</sup>

To secure the benefits of the Selected Wind Facilities, SWEPCO is offering the following guarantees as described in the testimony of witnesses Smoak and Brice:

### 1. Capital Cost Cap Guarantee

SWEPCO proposes a cost cap equal to 100% of the aggregated filed capital costs of approximately \$1.996 billion (SWEPCO share approximately \$1.09 billion), as outlined in Exhibit JGD-3 of Company witness DeRuntz's testimony. The Capital Cost Cap Guarantee has no exceptions, including for *Force Majeure* (FM).

### 2. Production Tax Credit Eligibility Guarantee

If PTCs are not received at the 100% level for Sundance and the 80% level for the other two Selected Wind Facilities because a Facility is determined to be ineligible, customers will be made whole for the value of the lost PTCs based upon actual production. The Production Tax Credit Eligibility Guarantee is subject to changes caused by a Change in Law that affects the federal Production Tax Credit.

<sup>&</sup>lt;sup>4</sup> Assuming this Application is approved, SWEPCO plans to seek approval of a Renewable Energy Credit (REC) rider program through which customers will be able purchase the RECs produced by the Selected Wind Facilities. The proceeds of the sales of the RECs would be credited as a further reduction to fuel costs. This program will allow customers to voluntarily satisfy their renewable energy goals and reduce their carbon footprint.

### 3. Minimum Production Guarantee<sup>5</sup>

Beginning in 2022, the Company is willing to provide a guaranteed minimum production level, in aggregate from the Selected Wind Facilities, of an average of 87% (P95 Capacity Factor Case) of the expected output of the Facilities over each 5-year period for 10 years average across all Facilities. This scenario represents a 38.1% capacity factor and 4,959 GWh per year, in the aggregate, for the Selected Wind Facilities. If the minimum production level is not achieved, customers will be made whole on an energy and PTC (if applicable) basis. There is an exception for FM and curtailment in SPP.

### VI. Identification of Witnesses and Subjects Addressed

Witness	Testimony Summary
Malcolm Smoak	Need for Selected Wind Facilities, Customer Benefits,
	and Company Guarantees
Thomas P. Brice	Wind Facilities, SWEPCO Policy, and Requested
	Relief
Jay Godfrey	RFP Process, Transactions with Developers, and
	Expected Wind Output
Joseph DeRuntz	Description of Selected Wind Facilities
Karl Bletzacker	Fundamentals Forecast
Akarsh Sheilendranath	Congestion Analysis and Value
Kamran Ali	Deliverability Assessment, Congestion Modeling and
	Mitigation
John Torpey	IRP, RFP and Economic Benefits Evaluation
Johannes Pfeifenberger	Reasonableness of the Company's RFP, Congestion
	Analysis and Economic Benefits Analysis
Joel Multer	Production Tax Credits, Intercompany Allocations and
	Deferred Tax Asset
Noah Hollis	Credit Metrics/Financing
John Aaron	Customer Impacts/Recovery Mechanisms/Accounting
	Treatment

The following witnesses support the Application in this case:

<sup>&</sup>lt;sup>5</sup> The Minimum Production Guarantee will be subject to *force majeure* events, which by definition are events the Company cannot control. A lack of wind velocity will not be considered a *force majeure* event. This guarantee is subject to curtailments in SPP. Payments made under this guarantee will be net of any make-whole payment made under the PTC eligibility guarantee.

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PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

DIRECT TESTIMONY OF

THOMAS P. BRICE

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 15, 2019

1		Create significant according how of the with the delivery of show how
2		• Create significant economic benefits with the derivery of clean, low- cost energy previously not available to SWEPCO customers, resulting
3		in estimated customer savings (SWEPCO total company) of
4		approximately <u>\$588</u> <u>\$567</u> billion NPV;
5		• Provide customer value through delivery of PTCs associated with
6		energy production at the Selected Wind Facilities;
7		• Provide capacity benefits by deferring future capacity additions;
8		• Continue SWEPCO's strategy of diversifying its generation portfolio,
9		including both owned assets and Power Purchase Agreements, and
10		mitigate fuel price volatility; and
11		• Advance customers' sustainability and renewable energy goals.
12		V. COMPANY GUARANTEES
13	0	IS THE COMPANY OFFERING GUARANTEES THAT ASSURE CUSTOMER
15	×۰	IS THE COMPACT OFFERING COMPANYLES THAT ASSORE COSTOMER
14		BENEFITS OF THE SELECTED WIND FACILITIES?
15	A.	Yes. The Company is providing guarantees related to the Facilities' energy
16		production levels, qualification for the PTC, and total cost. Witness Torpey's
17		testimony shows that the customer benefits of the Facilities, if they operated at these
1.0		
18		guaranteed levels at the base gas fundamentals price forecast with and without an
19		assumed carbon cost, would be \$1,470\$1,386 million (NPV \$350-\$330 million) and
20		\$964\$883 million (NPV \$199\$181 million) respectively over the life of the
20		$\frac{1}{9904}$ minimized in the first $\frac{1}{9199}$ minimized in the first of the fir
21		Facilities.
22	0.	PLEASE DESCRIBE THE GUARANTEES SWEPCO IS PROVIDING TO
	<b>C</b>	
23		CUSTOMERS ASSOCIATED WITH THE ACQUISITION OF THE SELECTED
24		WIND FACILITIES.
25	A.	SWEPCO is offering a suite of guarantees that, taken in total, are designed to ensure
•		
26		value to customers. These guarantees include:
27		1. Capital Cost Cap Guarantee
28		

SWEPCO proposes a cost cap equal to 100% of the aggregated filed capital costs of approximately \$1.996 billion (SWEPCO share approximately \$1.09 billion), as outlined in EXHIBIT JGD-3 of Company witness DeRuntz's testimony. The Capital Cost Cap Guarantee has no exceptions, including for *Force Majeure* (FM).

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### 2. Production Tax Credit Eligibility Guarantee

If PTCs are not received at the 100% level for Sundance and the 80% level for the other two Facilities because a Selected Wind Facility is determined to be ineligible, customers will be made whole for the value of the lost PTCs based upon actual production. The Production Tax Credit Eligibility Guarantee is subject to changes caused by a Change in Law that affects the federal Production Tax Credit.

14

### 3. Minimum Production Guarantee<sup>1</sup>

15 Beginning in 2022, the Company is willing to provide a guaranteed minimum 16 production level, in aggregate from the Selected Wind Facilities, of an average of 17 87% (P95 Capacity Factor Case) of the expected output of the facilities over each 18 five-year period for 10 years average across all facilities. This scenario represents 19 a 38.1% capacity factor and 4,959 GWh per year, in the aggregate for the Selected 20 Wind Facilities. If the minimum production level is not achieved, customers will 21 be made whole on an energy and PTC (if applicable) basis. There is an exception .22 for FM and curtailment in SPP.

- 23 Q. PLEASE DISCUSS HOW THE GUARANTEES THAT SWEPCO OFFERS
- 24 ENHANCE THE VALUE TO CUSTOMERS OF SWEPCO'S ACQUISITION OF
- 25 THE SELECTED WIND FACILITIES.

A. The Capital Cost Cap Guarantee helps to ensure customer benefits even if the Selected Wind Facilities cost more than projected and insulates the customer from the risk of any *Force Majeure* event. The PTC eligibility guarantee helps to ensure customer benefits even if the Selected Wind Facilities fail to qualify for PTCs at the

<sup>1</sup> The Minimum Production Guarantee will be subject to *force majeure* events, which by definition are events the Company cannot control. A lack of wind velocity will not be considered a *force majeure* event. This guarantee is subject to curtailments in SPP. Payments made under this guarantee will be net of any make-whole payment made under the PTC eligibility guarantee.

80% level for Traverse and Maverick or at the 100% level for Sundance for any
 reason other than a change in law specific to the federal PTCs, as discussed further by
 Company witness Multer. In addition, the minimum production guarantee helps to
 ensure customer benefits even if the Selected Wind Facilities, over each five-year
 period for the first ten years, perform at the P95 Net Capacity Factor, which is lower
 than the expected net capacity factor.

# Q. IN REGARDS TO THE OUTPUT OF A WIND FACILITY, PLEASE EXPLAIN THE DIFFERENCE BETWEEN A P50, THE EXPECTED OUTPUT, AND P95 LEVEL.

10 The "P" refers to the probability that the wind will blow with the stated wind profile, A. 11 at a specific velocity, at a percentage of the time. The P-number value defines how 12 many megawatt hours will be produced from the wind facility. A P50 scenario is 13 indicative of the expected output (number of megawatt hours) that will be produced 14 over the life of the project. In other words, the facility will produce more megawatt 15 hours than the expected output 50% of the time and fewer megawatt hours than the 16 expected output 50% of the time. It is the middle probability and is the most likely 17 and expected outcome. A P95 level means that ninety-five percent of the time the 18 facility will produce more megawatt hours than the indicated number of megawatt 19 hours.

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### VI. RFP AND SUPPORTING IRP

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### APPLICATION OF

### SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

DIRECT TESTIMONY OF

### JOHANNES P. PFEIFENBERGER

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 15, 2019

1		additions and transmission upgrades. As explained in the testimony of Company
2		witness Sheilendranath, these PROMOD congestion and loss-related costs had to be
3		scaled to the various AURORA-based market fundamentals forecasts in proportion to the
4		difference between (1) the SPP Central prices in the PROMOD simulations and (2) the
5		SPP Central prices from the AURORA-based market fundamentals cases listed earlier.
6	Q.	WHY WAS IT NECESSARY AND REASONABLE TO COMBINE MULTIPLE
7		MODELS-PROMOD, AURORA, AND PLEXOS-TO ESTIMATE CUSTOMER
8		BENEFITS ASSOCIATED WITH THE THREE SELECTED WIND FACILITIES?
9	А.	PROMOD, AURORA, and PLEXOS are simulation tools that can be employed to
10		perform the type of forward-looking market simulations necessary to assess the benefits
11		of the Selected Wind Facilities. However, in this case, all three simulation tools were
12		necessary for a number of reasons.
13		The Company has been relying on AURORA to project long-term trends of multi-
14		regional market prices and PLEXOS for analyzing the market performance of their
15		individual Company resources and for evaluating expected market revenues and dispatch
16		outcomes for resource planning and customer impact purposes. Relying on AURORA
17		for projecting long-term trends of regional market prices is advantageous because
18		AURORA employs a consistent set of market fundamentals assumptions, such as natural
19		gas and coal prices, for the full range of long-term wholesale power market and fuel price
20		scenarios that AEP companies use for all their long-term planning purposes across all of
21		their service areas. The Company uses these AURORA-based fundamentals forecasts
22		for a variety of resource planning purposes as explained by witness Bletzacker.

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Relying on PLEXOS to estimate customer impacts for individual operating companies has several advantages. The model is set up to simulate many years of future market performance quickly and to link and provide input to customer rate impact assessments. Most importantly, unlike PROMOD, the PLEXOS model is set up to simulate PSO and SWEPCO individually, and therefore is able to assess changes in production costs, market purchase costs, off-system sales revenues, and other customer cost items at the operating-company level.

8 Unlike PROMOD, the AURORA and PLEXOS models are not set up to simulate 9 transmission constraints or losses within the SPP footprint, which means they are unable 10 to assess the extent to which wholesale power prices, congestion costs, and loss-related 11 costs affect the delivered costs of generating resources, including the Selected Wind 12 Facilities.

13 SPP's PROMOD models, as described earlier, simulate the entire SPP system (and surrounding market areas), including the full SPP transmission network and 14 15 associated transmission constraints and losses. As stated previously in my testimony, 16 transmission constraints have a significant effect on optimal SPP-wide market dispatch 17 outcomes and the associated locational prices. Given that the large levels of wind 18 generation are expected to grow further in the SPP region, it is important to capture the 19 congestion and loss impacts of the transmission network on locational prices when evaluating the delivered costs of wind facilities. SPP's PROMOD model is, however, 20 21 limited by the fact that it has been set up to analyze load-related impacts only for 22 individual SPP transmission zones-such as the AEP West load zone, which aggregates 23 both AEP companies (PSO and SWEPCO) as well as other public power entities-and

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1 without the level of detail that is required to separately assess customer impacts for each 2 of the two AEP operating companies. In addition, SPP's PROMOD models are not 3 conducive to quickly analyzing various sensitivities such as under varying long-term gas 4 and coal price forecasts, and/or sensitizing with future carbon tax assumptions. The 5 Company's AURORA model produces long-term regional price trends under varying 6 sensitivities. Assessing the customer benefits under various market fundamentals 7 sensitivities is essential for a comprehensive evaluation of the costs and benefits of the 8 Selected Wind Facilities. Therefore, to assess the full benefits of the Selected Wind 9 Facilities over the entire 30-year design lives and for each of the two companies, 10 AURORA and PLEXOS were employed in conjunction with SPP's PROMOD models 11 to capture the impact on the individual operating companies and to estimate the delivered 12 cost and customer impact of the facilities.

Q. HOW HAS THE COMPANY DEVELOPED THE NECESSARY PLEXOS LOAD
AND GENERATION MARKET PRICE INPUTS FROM ITS AURORA-BASED
FUNDAMENTALS PROJECTION FOR SPP?

A. The Company's AURORA market fundamentals forecasts are for the AURORA-defined
"SPP Central" zone. The PROMOD simulations were then used to estimate the extent
to which the wholesale market prices for the AEP West load zone, PSO conventional
generation, and SWEPCO conventional generation differed from market price
projections for the SPP Central zone.

As explained in Company witness Sheilendranath's testimony, this was accomplished by scaling the PROMOD-based wholesale market price differences between SPP Central and the AEP load and generation locations based on the extent to

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DIRECT TESTIMONY OF

JOSEPH G. DERUNTZ

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 15, 2019

1		Major Maintenance Activities: Major Maintenance Activities such as blade
2		replacements, gearbox repairs, and switchgear repairs as well as the procurement of
3		replacement parts used under the O&M Agreement will be managed by AEP in
4		coordination with Invenergy Services, the O&M support service provider.
5	Q.	WILL THE COMPANIES HAVE AN ON-SITE PRESENCE AT EACH OF THE
6		WIND FACILITIES?
7	A.	Yes. The Companies plan to hire a full-time manager for the Traverse site and a
8		separate full-time manager will be responsible for both the Sundance and Maverick
9		sites. The managers will be responsible for the overall O&M of the Selected Wind
10		Facilities and directly manage and provide oversight of Invenergy Services.
11	Q.	WHAT ARE THE ESTIMATED ONGOING O&M AND CAPITAL COSTS FOR
12		THE SELECTED WIND FACILITIES?
13	A.	The ongoing O&M and capital forecast for years 1-10 are included in EXHIBIT JGD-
14		5 for each of the facilities.
15	Q.	HOW DID THE COMPANIES DEVELOP THE ONGOING O&M AND CAPITAL
16		FORECAST?
1 <b>7</b>	A.	For the period from Year 1 through Year 10, the Companies developed the ongoing
18		O&M and capital forecast using (1) actual O&M contract costs extracted from the
19		Invenergy Services agreement for the Selected Wind Facilities; (2) estimates of parts
20		and major maintenance repairs; and (3) other O&M costs specific to each of the wind
21		facilities including environmental programs (including avian and environmental
22		studies), insurance, land lease costs, forecasting services, AEPSC Support, Ongoing IT

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DIRECT TESTIMONY JOSEPH G. DERUNTZ

1		and Telecom, Company site labor, etc. The Companies used a 2.0% annual escalation
2		factor to forecast O&M and capital costs for the period from Year 11 through Year 30.
3	Q.	HAVE THE COMPANIES CONSIDERED THE COST OF DECOMMISSIONING
4		THE SELECTED WIND FACILITIES?
5	A.	Yes, decommissioning cost estimates for the Selected Wind Facilities are considered
6		in the economic analysis of Company witness Torpey. AEPSC, as agent for the
7		Companies, has contracted with Burns and McDonald to perform detailed
8		decommissioning studies. These studies and costs will be finalized when the design of
9		each of the Selected Wind Facilities is further refined.
10		
11		VII. DESIGN LIFE OF THE SELECTED WIND FACILITIES
12	Q.	WHAT IS THE DESIGN LIFE OF THE SELECTED WIND FACILITIES?
13	A.	As I stated earlier in my testimony, the Selected Wind Facilities will be engineered to
14		have a 30-year design life. A 30-year design life was a requirement to bid projects into
15		
		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses
16		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses (MLA) utilizing wind data and turbine siting provided by Invenergy for each of the
16 17		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses (MLA) utilizing wind data and turbine siting provided by Invenergy for each of the Selected Wind Facilities to determine the wind turbine and hub height suitability for
16 17 18		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses (MLA) utilizing wind data and turbine siting provided by Invenergy for each of the Selected Wind Facilities to determine the wind turbine and hub height suitability for each of the Selected Wind Facilities. The loads were found within the design loads
16 17 18 19		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses (MLA) utilizing wind data and turbine siting provided by Invenergy for each of the Selected Wind Facilities to determine the wind turbine and hub height suitability for each of the Selected Wind Facilities. The loads were found within the design loads envelope of the turbine. The analysis also determined the loads are within the design
16 17 18 19 20		the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses (MLA) utilizing wind data and turbine siting provided by Invenergy for each of the Selected Wind Facilities to determine the wind turbine and hub height suitability for each of the Selected Wind Facilities. The loads were found within the design loads envelope of the turbine. The analysis also determined the loads are within the design loads for the 30-year design life.
<ol> <li>16</li> <li>17</li> <li>18</li> <li>19</li> <li>20</li> <li>21</li> </ol>	Q.	<ul> <li>the RFP. From a technical perspective, GE has completed Mechanical Loads Analyses</li> <li>(MLA) utilizing wind data and turbine siting provided by Invenergy for each of the</li> <li>Selected Wind Facilities to determine the wind turbine and hub height suitability for</li> <li>each of the Selected Wind Facilities. The loads were found within the design loads</li> <li>envelope of the turbine. The analysis also determined the loads are within the design</li> <li>loads for the 30-year design life.</li> <li>DOES THE ONGOING CAPITAL INVESTMENT AND O&amp;M SUPPORT A 30-</li> </ul>

DIRECT TESTIMONY JOSEPH G. DERUNTZ

1	А.	Yes. The Selected Wind Facilities ongoing O&M and capital forecast is based on
2		maintaining the availability and performance of the turbines over 30 years of operation.
3		This will be achieved through condition monitoring systems, routine preventative
4		maintenance, planned corrective maintenance, and major maintenance and overhauls.
5	Q.	IS A 30-YEAR DESIGN LIFE REASONABLE?
6	А.	Yes it is. Given AEPSC's experience in the development, engineering, and design of
7		other large complex projects, the RFP bidder requirement, and the O&M commitment
8		discussed above, a 30-year design life for the Selected Wind Facilities is reasonable.
9		In addition, the MLAs support the 30-year design life of the Selected Wind Facilities
10		with proper inspections and maintenance.
11		
12		VIII. CONCLUSION
13	Q.	DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?
14	A.	Yes, it does.

### PUC DOCKET NO. 49737

### SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS INDUSTRIAL ENERGY CONSUMERS' SECOND REQUEST FOR INFORMATION

### Question No. TIEC 2-15:

Will SWEPCO provide a guarantee on the amount of future capital expenditures and O&M expense for the wind facilities? If yes, please provide the level of guarantee that SWEPCO is willing to provide. If not, please explain why not.

**Response No. TIEC 2-15:** 

SWEPCO continues to support the capital cost, PTC eligibility, and minimum production guarantees described in the Direct Testimonies of Company witnesses Brice and Smoak, because these are reasonable guarantees to provide in the context of this case.

Prepared By: Christopher N. Martel

Title: Regulatory Consultant Sr

Prepared By: Jonathan M. Griffin

Title: Regulatory Consultant Staff

Sponsored By: Thomas P. Brice

Title: VP Regulatory & Finance

PUC DOCKET NO.

### PUBLIC UTILITY COMMISSION OF TEXAS

### APPLICATION OF

### SOUTHWESTERN ELECTRIC POWER COMPANY

FOR

### CERTIFICATE OF CONVENIENCE AND NECESSITY

### AUTHORIZATION, A PUBLIC INTEREST FINDING, AND RELATED RELIEF FOR

### THE WIND CATCHER ENERGY CONNECTION PROJECT

DIRECT TESTIMONY OF

### MICHAEL L. BRIGHT

### FOR

### SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 31, 2017

1 Group and the Advanced Environmental Technology & Controls organization, where 2 I was responsible for optimizing power plant environmental control equipment, providing operations liaison services, and developing environmental compliance 3 4 strategies. In 2006, I was promoted to Project Director. As Project Director, I was responsible for the successful execution of major capital projects including the 5 construction of new coal, gas, and solar power plants, the installation of 6 7 environmental retrofits, and the complete and partial demolition projects performed at 8 coal-fired power plants.

9 In 2017, I was promoted to my current position of Managing Director
10 Projects.

### 11 Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES?

12 As Managing Director Projects, I am responsible for directing and providing A. leadership and guidance to the Projects group within AEP Generation's Projects, 13 14 Controls, and Construction Organization. My responsibilities include direct 15 accountability for the successful completion of a wide range of projects varying in 16 size, complexity and capital investment. I provide leadership and direction to the 17 organization to ensure all projects are initiated, planned, executed, monitored, 18 controlled, and closed in a safe, efficient, and effective manner.

19 Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY20 COMMISSIONS?

A. Yes. I have submitted testimony before the Oklahoma Corporation Commission in
Cause No. PUD 200700012 in regards to the Red Rock Generating Facility.

DIRECT TESTIMONY

1		II. PURPOSE OF TESTIMONY
2	Q.	WHAT IS THE PURPOSE OF YOUR TESTIMONY?
3	A.	The purpose of my testimony is to: (1) provide an overview of the Wind Catcher
4		Facility (Wind Facility); (2) present milestones for additional construction activities
5		and the estimated commercial operation date (COD) of the Wind Facility;
6		(3) describe the Companies' role in project management, or the oversight of
7		engineering, procurement, and construction; (4) describe the Companies' O&M plan
8		for the Wind Facility; and (5) provide O&M and ongoing capital estimates for the
9		Wind Facility.
10		
11		III. WIND CATCHER FACILITY
12	Q.	PLEASE PROVIDE AN OVERVIEW OF THE PROPOSED WIND FACILITY.
13	A.	The 2000 MW nameplate (1900 MW delivered) Wind Facility is currently under
14		construction in Texas and Cimarron counties, Oklahoma. The Wind Facility will
15		consist of 800 General Electric (GE) 2.5 MW wind turbine generators (WTG) with a
16		hub height of 88.6 meters and a rotor diameter of 127 meters. The Wind Facility will
17		be engineered to have a design life of 25 years.
18		The energy from the turbines will flow into a 34.5kV underground Collection
19		System to five substations where the energy will be transformed from 34.5kV to
20		345kV. These five 345kV substations will then be connected via overhead
21		transmission lines into the Western 765kV Substation in the eastern portion of the
22		project area where the voltage is stepped up from 345kV to 765kv for transmission.
23		The Wind Facility will be connected to the electric grid via the Wind Catcher

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1 Generation Tie Line (Gen-Tie Line or Gen-Tie), the Western Terminus being the 2 Western 765kV Generation Substation, a dedicated extra high voltage (EHV) line 3 approximately 350 to 380 miles long that ends at the existing PSO Tulsa North 4 345kV substation. The Gen-Tie Line is further detailed in direct testimony of 5 Company witness Robert W. Bradish. The Western 765kV Generation Substation 6 also serves as the point at which the energy output from the Wind Facility is metered 7 for tax and land lease royalty purposes. The Wind Facility will also have access 8 roads to the turbines and two operations and maintenance buildings.

# 9 Q. PLEASE PROVIDE A DESCRIPTION OF THE WIND FACILITY SITE10 LOCATION.

11 A. The Wind Facility will be located to take advantage of one of the best wind resources 12 in North America within the western portion of the Southwest Power Pool (SPP) in 13 the Oklahoma Panhandle, which is discussed in more detail in the testimony of 14 Company witness Jay F. Godfrey. The Wind Facility will cover a very large area 15 encompassing over 300,000 acres of land. The terrain is considered relatively simple 16 with some areas consisting of more complex gullies. The highest elevation is at the 17 west edge of the site with decreasing elevation to the east.

### 18 Q. WHAT IS THE CURRENT STATUS OF THE WIND FACILITY?

A. Continuous construction activities are ongoing and include excavating turbine
foundations and the installation of concrete seal slabs for approximately 150 WTG
locations. The continuous construction activities for the Wind Facility will continue
until regulatory approval is granted and the Companies issue a Notice to Proceed
(NTP) to allow additional major construction activities to commence unconstrained.

### DOCKET NO.

# APPLICATION OF SOUTHWESTERN§PUBLIC UTILITY COMMISSIONPUBLIC SERVICE COMPANY FOR§AUTHORITY TO CHANGE RATES§OF TEXAS

### DIRECT TESTIMONY of MARK LYTAL

### on behalf of

### SOUTHWESTERN PUBLIC SERVICE COMPANY

(Filename: LytalRRDirect.doc)

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VI.	USEF	UL LIVES OF OTHER GENERATING UNITS

### 1 Q. Why is a synchronous condenser needed?

- 2 A. As explained in more detail in the testimony of SPS witness Jarred J. Cooley, when
- 3 Tolk is taken offline as a generating unit, synchronous condensers are needed to
- 4 address voltage stability issues that will arise.

1		VI. <u>USEFUL LIVES OF OTHER GENERATING UNITS</u>
2	Q.	Is SPS proposing to change the useful lives of any generating units besides the
3		Tolk generating units?
4	A.	Yes. SPS is proposing the useful life of Plant X Unit 2 be reduced by one year, from
5		2020 to 2019, so that its approved useful life in Texas is consistent with the useful
6		life already approved by the New Mexico Regulation Commission, which provides
7		consistency for planning purposes. SPS is also proposing the Commission adopt a
8		25-year useful life for the Hale Wind Project.
9	Q.	Why is SPS requesting a 25-year useful life for the Hale Wind Project?
10	А.	SPS is proposing a 25-year service life based on an estimate of the average service
11		life of a turbine provided by Vestas, the turbine manufacturer. That is also the
12		service life that other Xcel Energy affiliates have used for Vestas turbines in other
13		wind projects.
14	Q.	Does this conclude your pre-filed direct testimony?
15	A.	Yes.



Independent Statistics & Analysis U.S. Energy Information Administration

### Annual Energy Outlook 2019 Case Descriptions

January 2019

Independent Statistics & Analysis www.eia.gov U.S. Department of Energy Washington, DC 20585

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### Oil and natural gas resource and technology cases

Estimates of technically recoverable tight/shale crude oil and natural gas resources are particularly uncertain and change over time as new information is gained through drilling, production, and technology experimentation. Over the past decade, as more tight/shale formations have gone into production, the estimate of technically recoverable tight oil and shale gas resources has increased. However, these increases in technically recoverable resources are based on many assumptions that might not prove to be true over the long term and over the entire tight/shale formation. For example, these resource estimates assume that crude oil and natural gas production rates achieved in a limited portion of the formation are representative of an entire formation, even though neighboring well production rates can vary by as much as a factor of three within the same play. In addition, the tight/shale formation can vary significantly across the petroleum basin with respect to depth, thickness, porosity, carbon content, pore pressure, clay content, thermal maturity, and water content. Technological improvements and innovations may also result in developing crude oil and natural gas resources that have not been identified yet and, as a result, are not included in the Reference case.

The sensitivity of the AEO2019 projections to changes in assumptions about domestic crude oil and natural gas resources and technological progress is examined in two cases. These cases do not represent a confidence interval for future domestic oil and natural gas supply, but rather they provide a framework to examine the effects of higher and lower domestic supply on energy demand, imports, and prices. Assumptions associated with these cases are described below.

In the Low Oil and Gas Resource and Technology case, the estimated ultimate recovery per well for tight oil, tight gas, or shale gas in the United States and undiscovered resources in Alaska and the offshore Lower 48 states is assumed to be 50% lower than in the Reference case. Rates of technological improvement that reduce costs and increase productivity in the United States are also 50% lower than in the Reference case. These assumptions increase the per-unit cost of crude oil and natural gas development in the United States. The total unproved technically recoverable resource of crude oil is reduced to 167 billion barrels, and the natural gas resource is reduced to 1,204 trillion cubic feet (Tcf), as compared with unproved resource estimates of 267 billion barrels of crude oil and 2,137 Tcf of natural gas as of January 1, 2017, in the Reference case.

In the High Oil and Gas Resource and Technology case, the estimated ultimate recovery per well for tight oil, tight gas, or shale gas in the United States and undiscovered resources in Alaska and the offshore Lower 48 states is assumed to be 50% higher than in the Reference case. Rates of technological improvement that reduce costs and increase productivity in the United States are also 50% higher than in the Reference case. In addition, tight oil and shale gas resources are added to reflect new plays or the expansion of known plays. The total unproved technically recoverable resource of crude oil increases to 419 billion barrels, and the natural gas resource increases to 3,075 Tcf compared with unproved resource estimates of 267 billion barrels of crude oil and 2,137 Tcf of natural gas in the Reference case at the start of 2017.

### PUC DOCKET NO. 47461 SOAH DOCKET NO. 473-17-5481

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APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE WIND CATCHER ENERGY CONNECTION PROJECT IN OKLAHOMA

### PUBLIC UTILITY COMMISSION

**OF TEXAS** 

### ORDER

This Order addresses the application of Southwestern Electric Power Company (SWEPCO) for a certificate of convenience and necessity (CCN) to authorize it to acquire, develop, and own a wind generation facility with a nameplate capacity of 2,000 megawatts (MW) and a 765-kilovolt (kV) generation tie-line to transmit electric energy from the Oklahoma Panhandle to eastern Oklahoma (together, the project). SWEPCO proposed to own 70% of the project, with the remaining 30% to be owned by its affiliate, Public Service Company of Oklahoma (PSO). SWEPCO also requested a good-cause exception to 16 Texas Administrative Code (TAC) § 25.236 to allow it to treat the costs associated with the project as a fuel expense and the federal production tax credit as a credit against the fuel expense. In addition, SWEPCO requested Commission approval to defer for ratemaking purposes a portion of the federal production tax credits into a regulatory liability to be credited back to consumers starting 11 years after the project begins operation. Finally, SWEPCO also filed an application under PURA § 14.101 but argued that section does not apply to this proceeding. In the alternative, SWEPCO requested a public interest finding under that section if the Commission were to find that PURA § 14.101 applies.

The Commission referred the application to the State Office of Administrative Hearings (SOAH) and a hearing on the merits was held on February 13 through February 22, 2018. On May 18, 2018, the SOAH administrative law judges (ALJs) issued a proposal for decision (PFD) in which they recommended approval of the application with certain guarantees to protect consumers if the project does not realize the benefits anticipated in the PFD assessment. After exceptions and replies to exceptions were filed by many of the parties, the ALJs issued a letter on July 6, 2018 making changes to some assumptions used in their analysis that reduced the amount

Order

- 83. The gas prices of the SPS and ETI forecasts used in recent Commission proceedings were significantly lower than SWEPCO's fundamentals forecast. The SPS low case forecast projected a levelized price of natural gas at \$3.55 per MMBtu. The ETI low case forecast projected a levelized price of natural gas at \$3.68 per MMBtu.
- 84. The NYMEX futures prices represent actual transactions between buyers and sellers who put real money at risk in their day-to-day operations. The NYMEX futures prices, when trended to 2045, are \$3.58 per MMBtu.
- 85. DELETED.
- 86. DELETED.
- 87. DELETED.
- 88. DELETED.
- 89. The lowest Energy Information Administration (EIA) case has been the most accurate in recent years.
- 90. The levelized natural-gas-price forecast from EIA's 2018 reference case for the years 2021 through 2045 is approximately \$5.32 per MMBtu.
- 91. A decrease of \$1 per MMBtu in gas prices would reduce the estimated base-case savings for the project by approximately \$392 million net present value.
- 92. DELETED.
- 92A. The record in this proceeding fails to show that the assumptions made by SWEPCO regarding gas prices will result in a probable lowering of cost to consumers.

### Cost of Carbon

- 93. SWEPCO's three cases employ a carbon dioxide dispatch burden (allowance price) on all existing fossil-fuel-fired generating units.
- 94. SWEPCO designed the carbon burden to achieve emission targets similar to those proposed in the federal Clean Power Plan.
- 95. In the base case, the carbon burden is zero in 2021 to 2023, then escalates from \$2.92 per ton in 2024 to \$26.31 in 2032.

### 2 The Economic Role of Financial Futures

William L. Silber

### Background

Before 1972, futures trading was dominated by agricultural commodities. The introduction of foreign currency futures in 1972, interest rate contracts in 1975, and stock index futures in 1982 has shifted the industry from the almost exclusive province of agricultural interests to an integral component of the financial sector. The spectacular growth in trading of financial futures during the first decade of their existence—they now account for approximately 50 percent of all futures trading—has focused attention on the purposes and functions of this segment of the futures industry.

There is little doubt that futures markets for agricultural commodities provide important economic benefits. Trading standardized agricultural commodities for future delivery on organized exchanges permits an efficient mechanism for hedging and provides a forum for establishing and disseminating price information. These so-called risk-transfer and price-discovery functions of futures markets are now well documented in the academic and public policy literature.<sup>1</sup>

The main reason for special treatment of financial futures is that, in most cases, highly visible and well-functioning markets already existed for the underlying financial instruments, such as stocks, bonds, and foreign currencies, before the introduction of futures trading. Questions naturally arise under such circumstances: Are financial futures markets merely redundant or, worse, have they supplanted or will they supplant the "real" markets to the public's detriment? Although the spectacular growth of financial futures trading within a freely competitive market system should normally have been sufficient evidence of their economic contributions, the history of legis-

#### WILLIAM L. SILBER

line No. 1" of the Commodity Futures Trading Commission (CFTC) as required for newly proposed contracts,<sup>3</sup> and both appear in the academic literature on futures.<sup>4</sup> In fact, "Guideline No. 1" of the CFTC offers simple definitions of each of these concepts; it states that the price-discovery function of a futures market will be satisfied if "prices involved in transactions for future delivery in the contract ... are ... generally quoted and disseminated as a basis for determining prices to producers, merchants, or consumers of such commodity." The hedging use of a futures market is indicated when "transactions are utilized by producers, merchants, or consumers engaged in handling such commodity ... as a means of hedging themselves against possible loss through fluctuations in price."

Price discovery is an information-based contribution of futures markets, whereas hedging implies a transactions role for futures contracts. In both cases the main contribution appears to lie in establishing prices for the future delivery of a commodity and for providing a forum for transacting at such prices. This is an obvious contribution to those dealing in the cash commodity who need prices to plan production and consumption decisions. Moreover, merchants and consumers who want to avoid the risk of future price fluctuations can eliminate that risk by buying or selling a futures contract today. Although these benefits of futures markets appear obvious, more careful consideration of the issues is required for all storable commodities and for financial futures in particular.

**The Case of Perfectly Storable Commodities.** For perfectly storable commodities such as precious metals and most financial instruments, a well-defined relationship exists between cash market prices and futures prices. More specificially, as long as the underlying commodity is in ample supply, so that spot market holdings can be carried forward into the future, the futures price equals the spot price plus carrying cost, where carrying costs are primarily the net interest cost of holding the cash commodity from the current date until the settlement date on the futures contract.<sup>5</sup>

This so-called arbitrage carry model holds because arbitragers will act to reap riskless profits when the model is violated and, in the process, will drive cash and futures prices back into line. If the futures price is above the spot price plus carrying cost, for example, arbitragers find it profitable to buy the cash commodity, sell the futures contract, and deliver the cash commodity on the settlement date of the contract. The arbitrager earns the difference between the (higher) futures price and the spot price plus carrying cost. Sales of the futures contract by arbitragers and their purchases of the cash

Order

- 83. The gas prices of the SPS and ETI forecasts used in recent Commission proceedings were significantly lower than SWEPCO's fundamentals forecast. The SPS low case forecast projected a levelized price of natural gas at \$3.55 per MMBtu. The ETI low case forecast projected a levelized price of natural gas at \$3.68 per MMBtu.
- 84. The NYMEX futures prices represent actual transactions between buyers and sellers who put real money at risk in their day-to-day operations. The NYMEX futures prices, when trended to 2045, are \$3.58 per MMBtu.
- 85. DELETED.
- 86. DELETED.
- 87. DELETED.
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- 91. A decrease of \$1 per MMBtu in gas prices would reduce the estimated base-case savings for the project by approximately \$392 million net present value.
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- 92A. The record in this proceeding fails to show that the assumptions made by SWEPCO regarding gas prices will result in a probable lowering of cost to consumers.

### Cost of Carbon

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- 94. SWEPCO designed the carbon burden to achieve emission targets similar to those proposed in the federal Clean Power Plan.
- 95. In the base case, the carbon burden is zero in 2021 to 2023, then escalates from \$2.92 per ton in 2024 to \$26.31 in 2032.

### SOAH DOCKET NO. 473-19-6862 PUC DOCKET NO. 49737

### SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS INDUSTRIAL ENERGY CONSUMERS' THIRD REQUEST FOR INFORMATION

### **Question No. TIEC 3-3:**

Please provide the following PROMOD model assumptions/outputs under the Base and Project cases (i.e., with and without the Wind Projects) for 2024 and 2029 for each scenario studied:

- a. SPP system peak.
- b. SPP net energy for load.
- c. Each generation capacity addition/retirement.
- d. Each transmission addition/upgrade/retirement.
- e. Commodity prices and transportation prices (i.e, natural gas, coal).
- f. Energy generated by resource.

### **Response No. TIEC 3-3:**

A portion of the information responsive to this request is HIGHLY SENSITIVE under the terms of the Protective Order. The Highly Sensitive information is available for review at the Austin offices of American Electric Power Company (AEP), 400 West 15<sup>th</sup> Street, Suite 1520, Austin, Texas, 78701, (512) 481-4562, during normal business hours.

- a. a. 2024 SPP Peak (Coincident) = 53.4 GW 2029 SPP Peak (Coincident) = 55.3 GW
- b. b. 2024 SPP Energy = 280.5 TWh 2029 SPP Energy = 288.9 TWh
- c. The Company relied on SPP's 2019 ITP PROMOD Reference Case (Future 1) developed through SPP's ongoing stakeholder-based 2019 ITP process. For generation-related assumptions made by SPP and its stakeholders in the developing the 2019 ITP PROMOD models, please refer to Sections 2.1.1 and 2.2.1.4 of SPP's 2019 ITP Draft Report, provided as TIEC\_3\_003\_Attachment\_1. Section 2.2.2.1 describes SPP's renewable additions for each future, while Section 2.2.1.2 describes the assumed conventional generation additions by technology type in 2024 and 2029. As described in this draft report, for Future 1, which is the future employed in the Company's customer benefits analysis, SPP projects total nameplate generation additions of 4.7 GW in 2024 and 9.4 GW in 2029. Further, as discussed in the Direct Testimony of SWEPCO witness Pfeifenberger, the Company only made minor modifications to SPP's 2019 ITP PROMOD Future 1 model to account for the Selected Wind Facilities that were not already included in SPP's model.

SOAH Docket No. 473-19-6862 PUC Docket No. 49737 TIEC's 3<sup>rd</sup>, Q. # TIEC 3-3 Page 2 of 2

d. As described in Sections 2.1.4 (for reliability studies) and Section 2.2.1.6 (for economic studies) of SPP's ITP Manual (dated October 17, 2018), and provided as TIEC\_3\_003\_Attachment 2, the transmission topology used in the SPP's PROMOD Future 1 Reference Case reflects SPP's existing transmission system and all transmission facilities or upgrades included in SPP's 2017 Transmission Expansion Plan (STEP) that have already been approved for construction. Additionally, SPP also included 2018 ITP Near-Term (ITP NT) transmission updates, which can be accessed through SPP's 2018 STEP listing. The 2017 and 2018 STEP Project Lists can be accessed on SPP website at:

https://www.spp.org/spp-documentsfilings/?document\_name=SPP+Transmission+Expansion+Plan&docket=&start=&end=& filter filetype=&search type=filtered search.

- e. As explained on pp. 29-31 of the Direct Testimony of SWEPCO witness Pfeifenberger, the Company then only made minor transmission modeling refinements to the SPP's PROMOD Future 1 Reference Case.
- f. e. See TIEC\_3\_003\_Highly Sensitive Attachment 3 (Fuel Prices).
- g. See TIEC\_3\_003\_Highly Sensitive Attachment 4 (Energy Generated by Resource).

Prepared By: Anita A. Sharma	Title: Engineer Staff
Sponsored By:	Title:
Sponsored by: Akarsh Sheilendranath	Title: Senior Associate, The Brattle Group
Sponsored by: Johannes P. Pfeifenberger	Title: Principle, The Brattle Group

SOAH Docket No. 473-19-6862 PUC Docket No. 49737 TIEC 3-3 Attachment 1 Page 9 of 73

Southwest Power Pool, Inc.

### **1 INTRODUCTION**

### 1.2 THE ITP ASSESSMENT

The SPP Integrated Transmission Planning (ITP) Assessment is a regional transmission plan that is designed to provide for the reliable and economic delivery of energy, facilitate achievement of public policy objectives and maximize benefits to end-use customers. The ITP assessment contains an evaluation of the SPP transmission system's reliability, public policy, operational, and economic needs and coordinates solutions with ongoing compliance, local planning, interregional planning, and tariff service<sup>1</sup> processes. The 2019 ITP assessment is guided by the requirements defined in the SPP Open Access Transmission Tariff (tariff) Attachment O, the ITP Manual, the 2019 ITP scope.

The ITP process is open and transparent, allowing for stakeholder input throughout the assessment. Study results are coordinated with other entities, including those embedded within the SPP footprint and neighboring first-tier entities.

The objectives of the ITP are to:

- Resolve reliability criteria violations
- Improve access to markets
- Improve interconnections with SPP neighbors
- Meet expected load-growth demands
- Facilitate or respond to expected facility retirements
- Synergize with the Generator Interconnection (GI), Aggregate Transmission Service Studies (ATSS), and Attachment AQ processes
- Address persistent operational issues as defined in the scope
- Facilitate continuity in the overall transmission expansion plan, and
- Facilitate a cost-effective, responsive, and flexible transmission network

### 1.3 REPORT STRUCTURE

This report describes the assessment of the SPP transmission system for a 10-year horizon, focusing on years 2021, 2024 and 2029. These years were evaluated with a baseline reliability scenario and two future market scenarios (futures). Sections 2 and 3 summarize modeling inputs and address the concepts behind this study's approach, key procedural steps in analysis development, and overarching study assumptions. Sections 4 through 7 address specific results, describe projects that merit consideration, and contain portfolio recommendations, benefits, and costs.

<sup>&</sup>lt;sup>1</sup> Tariff services include the SPP Aggregate Transmission Service Studies (ATSS) for long-term firm transmission service, Attachment AQ studies for delivery point changes (AQ), and Generator Interconnection (GI) studies for new generator interconnections.

PUC DOCKET NO. \_\_\_\_

PUBLIC UTILITY COMMISSION OF TEXAS

### APPLICATION OF

### SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

DIRECT TESTIMONY OF

### KARL R. BLETZACKER

### FOR

### SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 15, 2019





### NYMEX Henry Hub Natural Gas Futures Contract

# Q. WHY ARE NATURAL GAS PRICES IMPORTANT IN A FUNDAMENTALS ANALYSIS?

3 A. Natural gas prices are important because fuel prices are a key component in 4 determining the supply stack, or merit order, for the dispatch of generating units. 5 Generating units with the lowest variable operating cost are the first to dispatch and 6 plants with incrementally higher variable operating cost are called upon sequentially as 7 electricity demand increases. Although the latest vintage of natural gas electric 8 generators is more efficient, volatile gas prices can quickly advantage or disadvantage 9 them relative to other generation options. While natural gas prices are most often 10 presented at the benchmark Henry Hub located in Erath, Louisiana, the Fundamentals

Forecast recognizes and projects natural gas prices at locations all across the contiguous 2 United States.

#### 3 WHY IS IT IMPORTANT TO RECOGNIZE THE LOCATIONAL VALUE OF Q. 4 NATURAL GAS?

5 A. The locational value of natural gas (expressed either as a specific gas price or a price 6 differential to the Henry Hub) can and does vary widely across North America. 7 Generally, natural gas prices are lower near production areas and reduced further in 8 areas with constrained exit pipeline capacity. For example, natural gas values at the 9 west Texas Waha Hub (heavily influenced by prolific, and export-constrained, Permian 10 Basin shale production) are not directly comparable to natural gas values within the 11 areas of SPP in which AEP generation (owned by Public Services Company of 12 Oklahoma and SWEPCO) operates.

#### 13 0. WHAT IS THE IMPACT OF A POTENTIAL CO2 BURDEN ON THE 14 FUNDAMENTALS FORECAST?

15 A. A CO<sub>2</sub> emission burden would adversely affect the cost of electricity generated by 16 fossil fuels - along with emission rates and implementation timing. CO<sub>2</sub> regulations 17 would also affect fuel markets, e.g., an increase in natural gas consumption will result 18 in increased natural gas prices. The direct effect of a \$10 per metric ton allowance 19 price for a coal plant is an approximate \$10 per MWh increase in plant operating costs. 20 And likewise, the impact of a \$10 per metric ton allowance price for a natural gas-fired 21 combined cycle plant is an approximate \$4 per MWh increase in plant operating costs. 22 Relative to fossil fuels, wind-generated power becomes more valuable because it has 23 no CO<sub>2</sub> emission burden.

PUC DOCKET NO.

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# Q. WHAT ARE THE SALIENT FEATURES OF YOUR MOST RECENT FUNDAMENTALS FORECAST?

3 A. Natural Gas. Figure 3 illustrates the most recent natural gas price forecast for the Base, 4 High Band, Low Band, Base No Carbon and Low Band No Carbon cases at the 5 benchmark Henry Hub. The Fundamentals Forecast recognizes the balance between 6 long-term increase in demand (including the expanding role of natural gas for electric 7 generation and the prospect of liquefied natural gas exports) and the likelihood of cost-8 effective advances in shale-directed drilling and completion techniques. Abundant, 9 relatively low-cost natural gas reserves and productive capacity will continue to grow 10 domestically and globally as shale gas extraction technology becomes more 11 widespread. Over the long term, natural gas pipeline capacity is expected to keep pace 12 with the evolving locations of supply and consumption as the extensive domestic 13 natural gas transportation infrastructure is sufficiently robust to overcome constraints 14 through existing capacity expansions, flow reversals, and new construction.

EIA presents six plausible Side Cases represented by the shaded area. This figure shows, beyond 2037, SPP's 2019 Integrated Transmission Planning Forecast rises well above the High Fundamentals Forecast while the IEA 2017 Current Policies and the EIA 2019 Annual Energy Outlook forecasts, through the entire period, are quite similar to the Company's Fundamentals Forecast's Base Case.

### Figure 4



Henry Hub Outlooks

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DIRECT TESTIMONY KARL R. BLETZACKER <u>CO2 Mitigation.</u> The 2019 Fundamentals Forecast employed a CO2 dispatch burden
 on all existing fossil fuel-fired generating units that escalates 3.5% per annum from \$15
 per ton commencing in 2028. This CO2 dispatch burden is less stringent than, and not
 intended to achieve, the national mass-based emission targets similar to those
 previously proposed (and now withdrawn) in the Clean Power Plan.

### 6 Q. DO RECENT LOW NATURAL GAS PRICES INDICATE THAT PRICES WILL BE 7 LOW FOR A LONG TIME?

8 A. No, not necessarily. Natural gas prices can deviate from forecasted values for extended 9 periods due to a variety of reasons, including abnormal weather and force majeure situations such as hurricanes Katrina and Rita. As addressed earlier, actual heating-10 11 and cooling-season weather can deviate dramatically from normal. Warmer than 12 normal winters result in less gas demand and less storage refill demand in the following 13 summer with correspondingly discounted natural gas prices. This is exactly what the 14 U.S. experienced in the winters of 2011-2012, 2015-2016 and 2016-2017 (the second, 15 third and fourth warmest winters since 1895, respectively), which resulted in natural 16 gas spot prices that were significantly lower than weather-normal values.

### IV. SELECTED WIND FACILITIES BREAK-EVEN NATURAL GAS PRICE EVALUATION

20 Q. PLEASE DESCRIBE THE BREAK-EVEN NATURAL GAS PRICE EVALUATION
21 FOR THE SELECTED WIND FACILITIES.

A. The break-even natural gas price evaluation yielded the analogous Henry Hub natural
 gas prices implied by the SPP electric energy prices as provided by Company witness

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Torpey. Figure 5 illustrates that the Selected Wind Facilities break-even Henry Hub natural gas prices are positioned well below all of the Company's Fundamentals Forecasts and other publicly available forecasts.

### Figure 5





### 4 Q. WHAT METHOD DID YOU USE TO PERFORM THE SELECTED WIND 5 FACILITIES BREAK-EVEN NATURAL GAS PRICE EVALUATION?

- A. Please refer to Company witness Torpey's Direct Testimony for the derivation of the
  Company-specific Break-Even SPP electric power prices. Forecasted power price

PUC DOCKET NO.

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DIRECT TESTIMONY KARL R. BLETZACKER

PUC Docket No. 47461 SOAH Docket No. 473-17-5481 Order

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- 96. Although it is possible that a carbon tax will be imposed in the future, such a tax has not been imposed in the past, there is not one in place now, and there was no credible evidence to show that the imposition of such a tax is likely in the future.
- 97. SWEPCO's modeling of the locational marginal prices should not have included the carbon-burden component, and the calculation of the estimated benefits of the project should be reduced accordingly.
- 98. DELETED.

### **Other Assumptions**

- 99. SWEPCO's modeling understated the amount of new wind generation in SPP.
- 99A. The SPP interconnection queue includes an additional 6,000 MW of projects with pending or completed interconnection agreements, 10,000 MW of additional wind projects in the SPP Facility Study Stage, and another 24,000 MW in the Definitive Interconnection System Impact Study stage.
- 100. DELETED.
- 101. DELETED.
- 102. DELETED.
- SWEPCO's calculated congestion costs are likely too high due to high estimated natural gas prices.

### Net Capacity Factor

- 104. A crucial measure of generation output is the wind facility's net capacity factor, which is the ratio of the actual output of a generating unit over a period of time to its potential output at full nameplate capacity.
- 105. Based on the results of two studies, SWEPCO estimates a project net capacity factor of 51.1% at a P50 estimate, which means there is a 50% likelihood that the actual output will be greater and a 50% likelihood that the actual output would be less than 51.1%.



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MARKET MONITORING UNIT

# STATE OF THE MARKET

2018

published

May 15, 2019

Southwest Power Pool, Inc. Market Monitoring Unit

percent from 2017.<sup>17</sup> This increase was driven by a 17 percent increase in nameplate wind capacity in 2018.

### Figure 2–11 Generation nameplate capacity by technology type

Fuel type	2016	2017	2018	Percent as of year-end 2018
Coal	26,939	25,717	25,064	28%
Gas, simple-cycle	24,024	23,737	22,846	26%
Wind	16,114	17,596	20,589	23%
Gas, combined-cycle	12,870	12,618	13,248	15%
Hydro	3,428	3,422	3,431	4%
Nuclear	2,107	2,061	2,061	2%
Oil	1,684	1,639	1,639	2%
Solar	215	215	215	0%
Other	74	74	74	0%
Total	87,453	87,079	89,167	

Note: Capacity is nameplate rating at year-end.



Natural gas-fired installed generation capacity still represents the largest share of generation capacity in the SPP market at 42 percent (gas simple-cycle 26 percent, gas combined-cycle 15 percent), with coal being the second largest type at 28 percent. Wind continues to increase due largely to new additions, with a 2018 market share of 23 percent of total capacity in the SPP market. In terms of nameplate capacity, coal resources decreased from

<sup>&</sup>lt;sup>17</sup> The change in total generation capacity from year to year includes additions, retirements, and nameplate rating changes that occur during the year.

Southwest Power Pool, Inc.

	Drivers									
	Rei	Emerging								
Kon Accumptions		Case		Techno	ologies					
Rey Assumptions	2021	2024	2029	2024	2029					
Peak Demand	As submitted in	As submitt	ed in load	As submitted in load						
Growth Rates	load forecast	fored	ast	forecast						
Energy Demand	As submitted in	As submitt	ed in load	Increase du	e to electric					
Growth Rates	load forecast	fored	cast	vehicle growth						
Natural Gas	Current industry	Current i	ndústry	Current industry						
Prices	forecast	fored	ast	forecast						
Coal	Current industry	Current i	ndustry	Current	industry					
Prices	forecast	fored	ast	fore	cast					
Emissions	Current industry	Current i	ndustry	Current industry						
Prices	forecast	fored	ast	🗠 fore	cast					
Fossil Fuel	Age-based 60+,	Age-based 6	0+, subject	Age-bas	ed, 60+					
Retirements	subject to	to stakehol	der input							
	stakeholder input									
Environmental	Current	Current re	gulations	Current regulations						
Regulations	regulations									
Demand	As submitted in	As submitt	ed in load	As submitted in load						
Response <sup>3</sup>	load forecast	forec	ast	fore	cast					
Distributed	As submitted in	As submitted in load		+300MW	+500MW					
Generation (Solar) <sup>8</sup>	load forecast	forec	forecast							
Energy	As submitted in	As submitte	ed in load	As submitted in load						
Efficiency <sup>8</sup>	load forecast	forec	cast	forecast						
Export Lines	No	No.	)	No						
New/Re-Powered	Increased	Increased	capacity	Increased capacity						
Renewables	capacity factor	factor		factor						
Storage	None	Noi	1e	Nc	ne					
Total Renewable Capacity										
Solar (GW)	0.25	3	5	4	7					
Wind (GW)	18.8	24.2	24.6	27	30					
Table 1: Future Drivers										

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<sup>&</sup>lt;sup>3</sup> As defined in the <u>MDWG Model Development Procedure Manual</u>

### SOAH DOCKET NO. 473-19-6862 PUC DOCKET NO. 49737

### SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS INDUSTRIAL ENERGY CONSUMERS' ELEVENTH REQUEST FOR INFORMATION

**Question No. TIEC 11-5:** 

Referring to SWEPCO's Response to TIEC 6-2:

- a. Please provide a list of generation capacity retirements in the SPP region determined by the Aurora model by year and by fuel type, including the net capacity and assumed heat rates of the retired units.
- b. Does the Aurora model inputs allow for planned retirements or planned additions or are all capacity changes an output of the model?
- c. Please provide a version of TIEC\_6\_02\_Attachment\_1 that breaks renewable capacity additions down between wind and solar separately.

### **Response No. TIEC 11-5:**

- a. & c. Please refer to TIEC\_11\_05\_Attachment\_1, provided electronically on the PUC Interchange.
- b. The Aurora model allows for planned retirements (e.g. retirements upon reaching a certain age) and planned additions (e.g. units currently under construction). All other capacity changes are an output of the model (except the anticipated re-powering of wind facilities).

Prepared By: Connie S. Trecazzi

Title: Economic Forecast Anlyst Staff

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Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

#### Annual SPP Modeled Capacity Additions (MW)

Base		Base High		Low		No_CO2			No_CO2_Low						
Year	Gas	Wind*	Solar	Gas	Wind*	Solar	Gas	Wind*	Solar	Gas	Wind*	Solar	Gas	Wind*	Solar
2019		2,351	800	1.	2,351	800		2,351	800		2,351	800		2,351	800
2020		693	800		693	800		693	800		693	800		693	800
2021			400			400			400			400			400
2022			400			400			400			400			200
2023		2	400		2	400		2	400		2	400		2	200
2024		2	400		2	400		2	400		2	400		2	200
2025			400			400			200			300			200
2026		196	400		196	400		196	200		196	200		196	200
2027		10	400		10	400		10	200		10	200		10	100
2028		226	400		226	400		226	200		226	200		226	
2029			300			300			150			200			8
2030		708	300		708	300		708	150		708	200		708	14.5
2031		254	200		254	200		254	150		254	200		254	
2032		386	200		386	200		386	100		386	50		386	
2033		646	200	1,231	646	300		646			646			646	
2034		1,094	200		1,094	200		1,094		1,231	1,094	100		1,094	
2035		784	100		784	150		784			784			784	
2036	1,231	757	100	1,231	757	250		757			757			757	
2037		2,604	1.1.1.1.1	1,231	2,604	200		2,604	04. T		2,604			2,604	1.7
2038		795	11 T		795	1		795			795			795	
2039		1,123	· · · · ·		1,123			1,123			1,123			1,123	
2040		3,795		1,231	3,795	100		3,795		1,231	3,795	100		3,795	·
2041		3,441			3,441			3,441	2		3,441			3,441	
2042		1,647		1,231	1,647	100		1,647			1,647			1,647	
2043		2,884	3.00	1,231	2,884	100		2,884			2,884		1,231	2,884	100
2044		2,351		1,231	2,351	100		2,351		1,231	2,351	100		2,351	
2045	1,231	693	100	1,231	693	100		693		1,231	693	100		693	
2046	2,462		200	4,924		300				1,231		100			
2047				2,462		200									
2048	1,231		100	2,462		200				1,231		100			
2049		1 E 1	-	3,693	1	200		and the second s		0.		1 A A			

PUC DOCKET NO.

PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF SOUTHWESTERN ELECTRIC POWER COMPANY FOR CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZATION AND RELATED RELIEF FOR THE ACQUISITION OF WIND GENERATION FACILITIES

DIRECT TESTIMONY OF

### JOHN O. AARON

FOR

SOUTHWESTERN ELECTRIC POWER COMPANY

JULY 15, 2019

### 1 Q. HOW DO THE ADDITION OF THE SELECTED WIND FACILITIES PRODUCE

### 2 SAVINGS FOR SWEPCO'S TEXAS CUSTOMERS?

3 First, the addition of the Selected Wind Facilities to SWEPCO's generation mix is A. 4 expected to lower SWEPCO's energy costs. In the first year (Sundance Facility only), 5 there will be an estimated \$3.3 million (Texas retail) reduction in net energy costs (fuel 6 costs reduced by off-system sales) associated with the kWh production from the 7 Sundance Facility. In the second year (all Facilities), there will be an estimated \$25.8 8 million (Texas retail) reduction in net energy costs (fuel costs reduced by off-system 9 sales) associated with the kWh production from all facilities. As discussed by company 10 witness Torpey and summarized in his Exhibit JFT-3, two scenarios were reviewed to 11 identify the energy benefit of the Facilities that is reflected in the rate impact analysis. 12 The first scenario, the "Baseline Case," assumed the Selected Wind Facilities for 13 SWEPCO were not added and the second scenario, the "Project Case," assumed the 14 Selected Wind Facilities are approved and implemented. The total generation costs 15 from the Baseline Case are reflected in the pro-forma revenues in my rate impact 16 analysis and the difference between the Baseline Case and the Project Case generation 17 costs are reflected in the proposed rate impact analysis. Consistent with SWEPCO's 18 current fuel cost recovery, 90% of the off-system sales margins are returned to 19 SWEPCO's customers and reflected in the energy cost savings in the rate impact 20 analysis.

Second, the Selected Wind Facilities are expected to defer future capacity
 requirements for SWEPCO and result in additional savings to SWEPCO's Texas
 customers beginning in 2030. Because the capacity savings for SWEPCO do not begin

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until 2030, my calculation of the impact on major classes for the first four years the
 Facilities are in service does not show this capacity savings value.

Third, the Selected Wind Facilities will be eligible for federal PTCs during the first ten years of commercial operation. The PTCs will flow through to SWEPCO's customers as an additional benefit valued with a tax gross up. Since the PTCs create a direct reduction to income tax expense, the pre-tax revenue level of the PTCs is determined by applying the applicable tax gross up factor.

# 8 Q. WHAT HAPPENS IN THE EVENT THE PRODUCTION TAX CREDITS ARE NOT 9 FULLY UTILIZED IN A GIVEN YEAR?

10 A. Even though customers will receive the benefit of PTCs earned in any given year, in 11 the event the Company cannot fully utilize PTCs in a given year(s), a DTA will be 12 established on SWEPCO's balance sheet. SWEPCO requests Commission approval to 13 include this DTA in its rate base and revenue requirement in a future proceeding. 14 Because SWEPCO's customers are receiving the benefits of the PTCs as earned by 15 SWEPCO, it is reasonable to also include the DTA associated with the PTCs not used 16 by SWEPCO in its base rate revenue requirement. Company witness Multer discusses 17 PTCs and the DTA in his testimony.

18 Q. HOW ARE THE SELECTED WIND FACILITIES' REVENUE REQUIREMENT
19 AND THE SAVINGS DESCRIBED ABOVE ALLOCATED TO TEXAS
20 CUSTOMERS?

The revenue requirement of the Facilities along with the cost savings and PTCs in this analysis is allocated to the Texas jurisdiction and retail classes using an estimated energy allocator. An energy allocation matches the costs of the Facilities with the

benefits generated by the Facilities and the PTCs earned. Actual Texas jurisdictional
 and class energy allocation factors will be used when the Facilities are recovered in
 SWEPCO's rates.

4 Q. WILL SWEPCO CUSTOMERS SEE A NET DECREASE IN THEIR MONTHLY
5 BILLS IN THE FIRST YEAR OF OPERATION OF THE SELECTED WIND
6 FACILITIES WHILE STILL ALLOWING SWEPCO TO RECOVER THE NEEDED
7 REVENUE REQUIREMENT?

A. Yes. The revenue requirement from the addition of these facilities will be more than
offset by the energy savings and credits associated with the federal PTC from the
operation of the Selected Wind Facilities. There are net customer savings in 2021,
which reflects Sundance only, of approximately \$428,000 but rising to approximately
\$4.1 million in savings for Texas customers in 2022, which is for all three facilities, as
shown in EXHIBIT JOA-1.

14 Q. WHAT ARE THE TEXAS CUSTOMER NET BENEFITS OVER THE FIRST FOUR15 YEARS OF OPERATION?

A. For the first four years of operations, SWEPCO Texas customers would receive a Net
Benefit of approximately \$17.1 million in savings, as further shown in EXHIBIT
JOA-1.

19 Q. WHAT ARE THE TEXAS CUSTOMER NET BENEFITS OVER THE FIRST TEN20 YEARS OF OPERATION?

A. For the first ten years of operations, SWEPCO Texas customers would receive a Net
 Benefit of approximately \$121.2 million in savings, as further shown on EXHIBIT
 JOA-1.

PUC DOCKET NO.

DIRECT TESTIMONY JOHN O. AARON

### BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

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APPLICATION OF PUBLIC SERVICE ) COMPANY OF OKLAHOMA (PSO) FOR ) APPROVAL OF THE COST RECOVERY OF THE SELECTED WIND FACILITIES (SWFs); A DETERMINATION THERE IS A NEED FOR THE SWFs: APPROVAL FOR FUTURE INCLUSION ) IN BASE RATES COST RECOVERY OF PRUDENT COSTS INCURRED BY PSO FOR THE SWFs; APPROVAL OF A TEMPORARY COST RECOVERY RIDER: APPROVAL OF CERTAIN ACCOUNTING PROCEDURES **REGARDING FEDERAL PRODUCTION TAX** CREDITS; AND SUCH OTHER RELIEF THE COMMISSION DEEMS PSO IS ENTITLED

### CAUSE NO. PUD 201900048



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### JOINT STIPULATION AND SETTLEMENT AGREEMENT

COME NOW the undersigned parties to the above entitled cause and present the following Joint Stipulation and Settlement Agreement ("Joint Stipulation") for the Commission's review and approval as their compromise and settlement of all issues in this proceeding between the parties to this Joint Stipulation ("Stipulating Parties"). The Stipulating Parties represent to the Commission that this Joint Stipulation represents a fair, just and reasonable settlement of these issues, that the terms and conditions of the Joint Stipulation are in the public interest, and the Stipulating Parties urge the Commission to issue an Order in this Cause adopting and approving this Joint Stipulation.

It is hereby stipulated and agreed by and between the Stipulating Parties as follows:

### TERMS OF THE JOINT STIPULATION AND SETTLEMENT AGREEMENT

Effective with the final order of the Oklahoma Corporation Commission ("OCC" or "Commission") approving all elements of this Joint Stipulation:

#### 1. Approval of the Application.

Except as described below, the Stipulating Parties request that the Commission approve the relief requested by the Company in its Application. Public Service Company of Oklahoma ("PSO" or the "Company") is authorized to acquire up to 675 MW of installed capacity from the Selected Wind Facilities ("SWFs").

### 2. <u>Guarantees</u>.

- (a) <u>Cost Cap</u>. PSO commits to a total cost cap of 100% of filed capital costs, including AFUDC and contingency, of \$908,279,387. The Cost Cap will be reduced by the amount of any purchase price reduction realized by the Company under the terms and conditions of the PSAs, plus a proportionate share of contingency. Costs above the cap are not recoverable. When the Selected Wind Facilities are reviewed for placement in base rates, the Stipulating Parties agree that the "PSA Purchase Price" of the Selected Wind Facilities (as set forth in Exhibit JGD-3, *Total Installed Capacity Cost*, to the direct testimony of Company witness Joseph G. DeRuntz) will carry a rebuttable presumption of prudence. There shall be no exceptions to the cap for force majeure or changes in applicable law.
- (b) <u>PTC Eligibility</u>. PSO will provide a guarantee, for cost recovery purposes, that the SWFs will be eligible for the applicable value of PTCs (80% for Traverse and Maverick and 100% for Sundance) for the actual output of the SWFs. PSO will be excused from this guarantee to the extent changes in federal law pertaining to PTCs, including changes to the Internal Revenue Code, directly reduce the value of PTCs. Based on the combined effect of the PTC and NCF Guarantees, customers will receive PTCs equal to the greater of actual or guaranteed MWh production upon completion of the SWFs.
- (c) <u>Net Capacity Factor (NCF)</u>. PSO guarantees a minimum net average capacity factor from the SWFs of P95 over the six five-year periods of the first thirty full years of operations (with the first year of full operations starting January 1, 2022). The NCF guarantee will be measured in MWh and at P95 will equal 11,269,460 MWh for each five-year period at 675 MW, adjusted ratably for the Company's share of any reduction in the final amount of MW installed by Invenergy and its subsidiaries pursuant to the purchase and sale agreements for the SWFs (the "PSAs"). The MWh guarantee for the sixth five-year period (years 26-30) will be adjusted ratably downward if the Sundance facility is constructed but is no longer in operation after its 30<sup>th</sup> year of operations.

NCF will be measured across all facilities on a combined basis and will be evaluated in a filing to be made no later than May 1 of the year following the 5-year performance period. Any make-whole payments resulting from a NCF production shortfall in any five-year period will flow back to customers through the FCA over the 12-month period following the performance evaluation covering each five-year performance period. (For example, any make-whole payment pertaining to years 1-5 will flow back to customers during the 12 months following the performance evaluation in year 6.) The calculation for determining amounts due to customers under this guarantee shall be as set out in Attachment 1 hereto. Hours impacted by force majeure will <u>not</u> be excluded from the calculation. (d) <u>Most Favored Nations (MFN)</u>. The MFN will apply to the Cost Cap, NCF Guarantee, PTC Eligibility Guarantee and any other term or condition adopted for SWEPCO in any of the state jurisdictions on behalf of which it acquires a share of the Selected Wind Facilities, whether through settlement or order issued by any such jurisdiction, to the extent such terms or conditions are more favorable to PSO's Oklahoma customers. The respective terms of this Joint Stipulation shall be deemed to be modified to incorporate those more favorable terms provided the term or condition is not unique to the SWEPCO jurisdiction (for example, the MFN will not apply to issues related to customer cost allocation, jurisdictional allocation and rate design). The Company will serve the Stipulating Parties with the orders and settlements described above promptly after they are issued and identify any provisions to which this clause applies.

### 3. Other Settlement Terms and Conditions.

- (a) <u>Deferred Tax Asset (DTA)</u>. The Company will earn a return on the DTA balance resulting from unused production tax credits over the first twenty (20) years of operation of the SWFs using its then applicable cost of long term debt (currently 4.72%) on any deferred tax asset balance.
- (b) <u>Off-system sales (OSS)</u>. PSO's fuel adjustment clause (FCA) Rider shall be modified such that PSO customers shall be credited with 100% of PSO's off-system sales margins effective January 1, 2021.
- (c) <u>Wind Facility Asset (WFA) Rider</u>. The Stipulating Parties agree that the Company should be authorized to implement the WFA Rider as set forth in the Company's testimony, except as set forth below.
  - The Company will seek to include each Selected Wind Facility in base rates as (i) soon as practical after each Selected Wind Facility achieves commercial operation. For each Selected Wind Facility that can be included in the general base rate proceeding to be filed by the Company between October 2020 and October 2021, either as a test year item or a post-test year adjustment, the WFA Rider will sunset for that Selected Wind Facility on the date the revenue requirement associated with that Selected Wind Facility is included in base rates. If a Selected Wind Facility is not included in that general base rate proceeding, then the WFA Rider will sunset on the earlier of (A) July 1, 2023 and (B) the date that the revenue requirement associated with that Selected Wind Facility is included in base rates through a general base rate proceeding that will be filed by the Company within one year of the date that the facility achieves commercial operation. In either case, true-up of costs included in the rider, including any unrecovered deferrals, during the period it was in effect are excluded from the sunset. Revenues collected through the WFA Rider are subject to refund based upon the Commission's final determination of prudency.

- (ii) Cost recovery pursuant to the WFA Rider is limited to the Company's filed capital costs and O&M. Additional capital investment and O&M in excess of the levels projected in the Company's testimony during the period the rider is in effect will not be recoverable through the WFA Rider.
- (iii) The WFA Rider will recover the lesser of actual or filed capital costs and the lesser of actual or filed O&M. O&M costs will be limited to service agreement costs, land lease costs, and property taxes (as those categories are described in Exhibit JGD-5, O&M and Capital Forecast, to the direct testimony of Company witness Joseph G. DeRuntz). O&M costs will be deferred and only recovered through the WFA Rider after the costs are incurred.
- (d) <u>Gen-Tie</u>. Nothing in this settlement should be interpreted as providing pre-approval for any future gen-tie lines related to the Selected Wind Facilities.
- (e) Allocation of Revenue Requirement to Customer Classes. The revenue requirement associated with the filed capital cost of the SWFs will be allocated in PSO's WFA Rider to the Company's customer classes based on a blended demand/energy allocator, as each wind facility is placed in the WFA Rider, such that the revenue distribution resulting from such allocation will result in no net cost increase for the Company's residential customer class for the year following the addition of each wind facility in the WFA Rider using PSO's base case projections, including production cost savings, production tax credits, and congestion losses, as further described in Attachment 2 hereto. When each wind facility is initially placed in rate base in a PSO base rate proceeding, the Stipulating Parties agree to support or not object to the use of PSO's production cost allocator currently in effect for allocation of SWF costs to PSO's customer classes as part of any cost of service study in such base rate proceeding. The Stipulating Parties reserve the right in PSO's subsequent base rate proceeding, which the Company shall file by no later than January 1, 2025, to recommend an alternative method of cost allocation for the SWFs.
- (f) <u>Renewable Energy Credits (RECs)</u>. The proceeds, net of transaction costs, from the sale of RECs associated with the Selected Wind Facilities will be provided to customers through the FCA.
- (g) <u>Green Energy Choice Tariff (GECT)</u>. The Green Energy Choice Tariff will be modified to provide customers the option to purchase RECs available to the Company and derived from the Selected Wind Facilities for up to 100% of their monthly load based on total monthly billed energy usage (kWh). The REC price in the annual rate calculation will be the most recent 12-month weighted average REC transactional market price, as more fully set forth in the current GECT. Upon request, PSO will provide an attestation setting forth that the REC's provided under this special term are not double-counted and are retired on behalf of participating customers by the Company.

### NATIVE FILES PROVIDED ON ATTACHED CD

