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SOAH DOCKET NO. 473-19-6862

PUC DOCKET NO. 49737

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PUBLIC UTILITY COMMISSION
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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 §

BEFORE THE STATE OFFICE
OF
ADMINISTRATIVE HEARINGS

WORKPAPERS TO THE
DIRECT TESTIMONY AND ATTACHMENTS OF SCOTT NORWOOD
ON BEHALF OF
CITIES ADVOCATING REASONABLE DEREGULATION

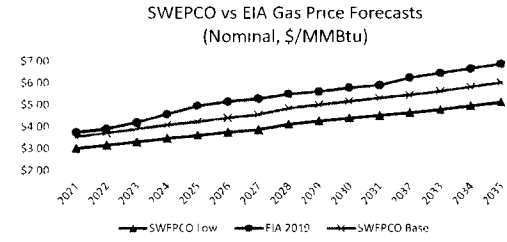
January 15, 2020

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Attachment SN-4

SWEPCO Natural Gas Price Forecasts
 SWFS Analysis vs Wind Catcher Analysis and EIA 2019 Reference
 (\$/MMBtu)

	SWP Low SWFs	EIA AEO19	SWP Base SWFs	SWP Base SWFs vs EAI	SWP Base Wind Catcher	SWP SWFs Base vs WC Base	
2021	\$3.01	\$3.75	\$3.54	-5%	\$5.39	-34%	-19.6%
2022	\$3.16	\$3.90	\$3.71	-5%	\$5.53	-33%	-19.2%
2023	\$3.31	\$4.20	\$3.89	-7%	\$5.67	-31%	-21.1%
2024	\$3.47	\$4.57	\$4.08	-11%	\$5.90	-31%	-24.0%
2025	\$3.60	\$4.95	\$4.24	-14%	\$6.14	-31%	-27.2%
2026	\$3.74	\$5.15	\$4.40	-14%	\$6.40	-31%	-27.3%
2027	\$3.86	\$5.27	\$4.55	-14%	\$6.66	-32%	-26.7%
2028	\$4.12	\$5.49	\$4.84	-12%	\$6.93	-30%	-25.1%
2029	\$4.26	\$5.61	\$5.01	-11%	\$7.21	-31%	-24.1%
2030	\$4.40	\$5.78	\$5.17	-11%	\$7.51	-31%	-24.0%
2031	\$4.51	\$5.89	\$5.30	-10%	\$7.82	-32%	-23.5%
2032	\$4.64	\$6.24	\$5.45	-13%	\$8.14	-33%	-25.7%
2033	\$4.78	\$6.45	\$5.62	-13%	\$8.41	-33%	-26.0%
2034	\$4.95	\$6.66	\$5.82	-13%	\$8.68	-33%	-25.7%
2035	\$5.12	\$6.86	\$6.02	-12%	\$8.93	-33%	-25.4%
2036	\$5.22	\$7.13	\$6.14	-14%	\$9.12	-33%	-26.8%
2037	\$5.43	\$7.31	\$6.39	-12%	\$9.32	-31%	-25.7%
2038	\$5.64	\$7.47	\$6.64	-11%	\$9.53	-30%	-24.5%
2039	\$5.82	\$7.67	\$6.84	-11%	\$9.74	-30%	-24.2%
2040	\$5.97	\$7.96	\$7.02	-12%	\$9.95	-29%	-25.1%
2041	\$6.22	\$8.11	\$7.32	-10%	\$10.17	-28%	-23.3%
2021-41 Avg	\$4.53	\$6.02	\$5.33	-11%	\$7.77	-31%	-24%



SWEPCO SPP Market Price Forecasts
 SWFS Analysis vs Wind Catcher Analysis
 (\$/MWh)

	SWP Base Gas for SWFs (\$/MMBtu)	SWP Base SPP Mkt Price (\$/MWh)	SPP Implied Mkt HR MMBtu/MWh	SWP Base Mkt Price for WC (\$/MWh)	SWP SWFs Mkt Price vs WC Base % Diff
2021	3.54	26.96	7.61	47.03	-43%
2022	3.71	28.02	7.54	48.83	-43%
2023	3.89	29.20	7.50	50.17	-42%
2024	4.08	30.50	7.47	54.39	-44%
2025	4.24	31.68	7.47	57.33	-45%
2026	4.40	33.02	7.51	61.51	-46%
2027	4.55	34.29	7.54	65.35	-48%
2028	4.84	44.07	9.10	69.58	-37%
2029	5.01	44.45	8.87	75.03	-41%
2030	5.17	45.76	8.85	80.30	-43%
2031	5.30	47.06	8.87	85.52	-45%
2032	5.45	48.74	8.94	88.79	-45%
2033	5.62	50.03	8.91	91.20	-45%
2034	5.82	51.55	8.86	93.33	-45%
2035	6.02	53.68	8.92	96.15	-44%
2036	6.14	53.88	8.77	97.14	-45%
2037	6.39	55.47	8.67	99.21	-44%
2038	6.64	57.35	8.64	101.43	-43%
2039	6.84	59.01	8.63	102.43	-42%
2040	7.02	59.84	8.53	103.07	-42%
2041	7.32	61.17	8.36	105.42	-42%
2021-31 Avg	\$5.33	\$45.03	8.36	\$79.68	-43%

Attachment SN-7

SWEPCO Average Benefit of SWFs for Low Gas Scenarios
(\$Millions)

<u>Scenarios</u>	<u>NPV</u>	<u>Nominal</u>	0.38148148
Low Gas, Base Wind, With CO2	\$396	\$1,532	
Low Gas, Base Wind, No CO2	\$236	\$971	
Low Gas, Low Wind, With CO2	<u>\$183</u>	<u>\$960</u>	
Average:	\$272	\$1,154	
Average/Yr:	\$9.1	\$38	
Tx Retail Alloc at 38.1%:	\$3.5	\$15	
Tx Retail Rev 2021:	\$629.8		
Tx Retail Benefit, %/Rev:	0.5%		

<u>Wind Facility</u>	<u>Total MW</u>	<u>SWEPCO Share</u>	<u>In-Service Date</u>	<u>PSO Share</u>
Traverse	999	544	DEC 2021	455
Maverick	287	157	DEC 2021	130
Sundance	199	109	DEC 2020	90
Total	1485	810		675

Source is PSO witness Simmons' Direct Testimony, page 6.

Total Estimated Capital Cost of SWFs

	<u>Traverse</u>	<u>Maverick</u>	<u>Sundance</u>	<u>Total Project</u>
Nameplate Capacity, MW	999	287	199	1485
Planned COD	2021	2021	2020	
PSA Base Purchase Price	\$1,208,376,087	\$371,577,337	\$280,954,690	\$1,860,908,114
PSA Price Adjustments:				\$0
O&M Mobilization	\$3,005,859	\$673,353	\$320,803	\$4,000,015
Capital- Spare Parts	\$3,406,000	\$822,000	\$2,078,000	\$6,306,000
Power Curve Testing	<u>\$750,000</u>	<u>\$0</u>	<u>\$0</u>	<u>\$750,000</u>
Subtotal PSA Adjustments:	\$7,161,859	\$1,495,353	\$2,398,803	\$11,056,015
Owner's Costs				\$0
Owner's Costs and Overheads	\$25,050,062	\$13,252,544	\$11,475,715	\$49,778,321
Contingency	\$42,293,163	\$13,005,207	\$9,833,414	\$65,131,784
AFUDC	<u>\$4,702,973</u>	<u>\$2,663,906</u>	<u>\$1,977,319</u>	<u>\$9,344,198</u>
Subtotal Owner's Costs:	\$72,046,198	\$28,921,657	\$23,286,448	\$124,254,303
Total Project Cost	\$1,287,584,144	\$401,994,347	\$306,639,941	\$1,996,218,432
Cost per kW (Nameplate)	\$1,289	\$1,401	\$1,541	\$1,344

Source is SWEPCO Witness DeRuntz's Table 1 and Exhibit JGD-3.

SWEPCO's Estimated Cumulative Net Benefits of SWFs
(30-Year Life, Total Company, \$Millions)

<u>Benefit/Cost Category</u>	<u>Net Present Value</u>	<u>Nominal Value</u>
Production Cost Savings Excl Congestion	\$1,660	\$5,095
Congestion and Losses	-\$322	-\$893
Capacity Value	\$70	\$311
Production Tax Credits (grossed up, net of DTA)	\$507	\$750
SWFs Revenue Requirement	<u>-\$1,348</u>	<u>-\$3,233</u>
Total Net Customer Benefits:	\$567	\$2,030

Source is Table 3 on pages 15-16 of the Errata Direct Testimony of PSO witness Torpey.

	<u>ProForma Revenue without SWFs</u>	<u>Estimated Net Benefit</u>	<u>Net Benefit, %</u>
2021	\$629,816,738	\$401,944	0.1%
2022	\$645,245,779	\$3,921,902	0.6%
2023	\$655,632,937	\$5,988,615	0.9%
2024	<u>\$654,894,212</u>	<u>\$6,287,997</u>	<u>1.0%</u>
Total	\$2,585,589,666	\$16,600,458	0.6%
Annual Avg	\$646,397,417	\$4,150,115	0.6%

\$15,433,333
2.5%

SWEPCO's Estimated Cumulative Net Benefits of SWFs and Wind Catcher
(30-year Life Value, Total Company, \$Millions)

	<u>SWFs</u>	<u>Wind Catcher</u>			
Nameplate Capacity Ownership	810	1400	73%		
Estimated Capital Cost	\$1,090	\$3,200	194%	-65.9%	
<u>Benefit/Cost Category</u>					
Production Cost Savings Excl Congestion	\$1,660	\$4,307	159%		
Congestion and Losses	(\$322)	(\$395)	23%		
Capacity Value	\$70	\$287	310%		
Production Tax Credits (grossed up, net of DTA)	\$507	\$1,268	150%		
Wind Facility Revenue Requirement	(\$1,348)	(\$2,730)	103%		
Tie-Line Revenue Requirement	<u>\$0</u>	<u>(\$1,181)</u>			
Total Net Customer Benefits:	\$567	\$1,556	174%	(\$989)	-63.6%
Net Benefit difference:	(\$989)				-63.6%

Source is Table 3 on pages 15-16 of the Errata Direct Testimony of PSO witness Torpey.

<u>Scenarios</u>	<u>NPV</u>	<u>Nominal</u>	
1. Base Gas, Base Wind, With CO2	\$567	\$2,030	0.99%
2. Base Gas, Base Wind, No CO2	\$396	\$1,453	
3. Low Gas, Base Wind, With CO2	\$396	\$1,532	
4. Low Gas, Base Wind, No CO2	\$236	\$971	
5. High Gas, Base Wind, With CO2	\$718	\$2,501	
6. Base Gas, Low Wind, With CO2	\$330	\$1,386	
7. Base Gas, Low Wind, No CO2	\$181	\$883	
8. Low Gas, Low Wind, With CO2	\$183	\$960	
9. High Gas, Low Wind, With CO2	\$461	\$1,792	
10. Base Gas, Base Wind, High Congestion, With CO2	\$541	\$2,025	
11. Base Gas, Base Wind, High Congestion, No CO2	\$330	\$1,285	
12. Base Gas, Low Wind, High Congestion, No CO2	<u>\$94</u>	<u>\$640</u>	
Average:	\$369	\$1,455	
Average of Low Gas Scenarios:	\$272	\$1,154	

		Jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	
2020	\$2.30			220	217	216	220	225	231	233	232	235	243	261
2021	\$2.43		272	267	256	231	227	231	234	234	233	235	241	258
2022	\$2.43		270	266	253	228	226	230	235	236	235	237	244	261
2023	\$2.48		273	269	257	231	230	234	238	240	239	242	250	268
2024	\$2.51		280	276	264	237	235	238	241	242	241	244	250	268
2025	\$2.55		280	277	267	241	240	243	246	247	246	249	255	271

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**Workpapers to the
Direct Testimony & Attachments of
Scott Norwood**

Native Files

January 15, 2020