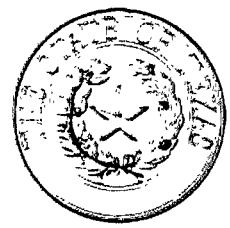

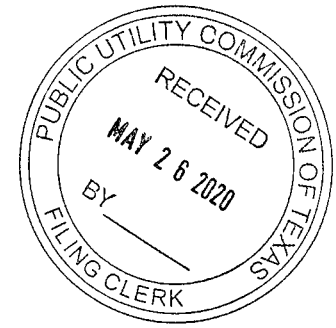

State Office of Administrative Hearings

Kristofer Monson
Chief Administrative Law Judge

May 26, 2020

TO: **Stephen Journeay, Commission Counsel**
Commission Advising and Docket Management
William B. Travis State Office Building
1701 N. Congress, 7th Floor
Austin, Texas 78701

VIA EFILE TEXAS

RE: **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 ACQUISITION OF WIND GENERATION FACILITIES

Enclosed is the Proposal for Decision (PFD) in the above-referenced case. By copy of this letter, the parties to this proceeding are being served with the PFD.

Please place this case on an open meeting agenda for the Commissioners' consideration. The deadline for this case is July 15, 2020. Please notify us and the parties of the open meeting date, as well as the deadlines for filing exceptions to the PFD, replies to the exceptions, and requests for oral argument.

Sincerely,

Steven H. Neinast
Administrative Law Judge

Christiaan Siano
Administrative Law Judge

Meaghan Bailey
Administrative Law Judge

Enclosure
xc: All Parties of Record

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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 ACQUISITION OF WIND GENERATION FACILITIES	§	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

TABLE OF CONTENTS

GLOSSARY OF ACRONYMS

AEO	Annual Energy Outlook
AEP	American Electric Power Company
ALJ	Administrative Law Judge
APSC	Arkansas Public Service Commission
ATC	Around-the-clock
CARD	Cities Advocating Reasonable Deregulation
CCN	Certificate of Convenience and Necessity
CoL	Conclusion of Law
DISIS	Definitive Interconnection System Impact Study
DTA	Deferred Tax Asset
EIA	Energy Information Administration
ETI	Entergy Texas, Inc.
ETEC-NTEC	East Texas Electric Cooperative and Northeast Texas Electric Cooperative
FERC	Federal Energy Regulatory Commission
FoF	Finding of Fact
GE	General Electric
GIA	Generation Interconnection Agreement
G&T	Generation and Transmission
GW	Gigawatt
GWh	Gigawatt-hour
HSPM	Highly Sensitive Protected Material
IBEW	International Brotherhood of Electrical Workers Local Union 738
ICE	InterContinental Exchange
IRP	Integrated Resource Plan
ITC	Investment Tax Credit
ITP	Integrated Transmission Planning
LACOE	Levelized Adjusted Cost of Energy

LCOE	Levelized Cost of Energy
LBNL	Lawrence Berkeley National Laboratory
LMP	Locational Marginal Price
LPSC	Louisiana Public Service Commission
MFN	Most-Favored Nation Clause
MMBtu	Million British Thermal Units
MW	Megawatt
MWh	Megawatt-hour
NCF	Net Capacity Factor
NPV	Net Present Value
NRIS	Network Resource Interconnection Service
NYMEX	New York Mercantile Exchange
OATT	Open Access Transportation Tariff
OPUC	Office of Public Utility Counsel
OSS	Off-system sales
O&M	Operations and Maintenance
OCC	Oklahoma Corporation Commission
PO	Preliminary Order
PFD	Proposal for Decision
PPA	Purchased Power Agreement
PSA	Purchase and Sale Agreement
PSO	Public Service Company of Oklahoma
PTC	Production Tax Credit
PURA	Public Utility Regulatory Act
PV	Photovoltaic
REC	Renewable Energy Credit
RFI	Request for Information
RFP	Request for Proposals

RPS	Renewable Portfolio Standard
SOAH	State Office of Administrative Hearings
SOM	State of the Market
SPP	Southwest Power Pool
SPS	Southwestern Public Service Company
SWEPCO	Southwestern Electric Power Company
SWF	Selected Wind Facility
TAC	Texas Administrative Code
TIEC	Texas Industrial Energy Consumers
WACC	Weighted Average Cost of Capital
WERA	Wind Energy Resource Assessment

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 ACQUISITION OF WIND GENERATION FACILITIES	§	**BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS**

PROPOSAL FOR DECISION

I. INTRODUCTION

On July 15, 2019, Southwestern Electric Power Company (SWEPCO or the Company) filed an application with the Public Utility Commission of Texas (Commission) to amend its certificate of convenience and necessity (CCN) to acquire an interest in three wind generation facilities in Oklahoma (Application). The three facilities, referred to as the Selected Wind Facilities (SWFs or the Project), have a total capacity of 1,485 megawatts (MW). SWEPCO proposes to acquire a 54.5% share of the SWFs, with SWEPCO's sister company, Public Service Company of Oklahoma (PSO), acquiring the remaining 45.5%.[1] The capacity of each facility and SWEPCO's share are:

Wind Facility Name	Total MW	SWEPCO Share
Traverse	999	544.5
Maverick	287	156
Sundance	199	108.5
Total	**1,485**	**810**

The price for the Project including all interconnection and upgrade costs is $1.86 billion. Total Project costs including Purchase and Sale Agreement (PSA) price adjustments are expected

[1] SWEPCO Ex. 2 (Brice Dir.) at 3.

to be $1.996 billion, with SWEPCO's share being approximately $1.09 billion. The SWFs are expected to qualify for production tax credits (PTCs) at the 80% level, except for Sundance, which is expected to qualify for 100% PTCs. SWEPCO requests that PTCs not fully used be included in a deferred tax asset (DTA) for later ratemaking proceedings.[2]

Closing on the acquisitions is subject to regulatory approvals and other conditions. SWEPCO has filed applications to certify the Project with the Arkansas Public Service Commission (APSC), the Louisiana Public Service Commission (LPSC), and the Federal Energy Regulatory Commission (FERC). On February 20, 2020, the Oklahoma Corporation Commission (OCC) approved a Joint Stipulation and Settlement Agreement agreeing to PSO's acquisition of 675 MW in the Project.[3] SWEPCO filed unanimous or unopposed settlement agreements with the APSC and the LPSC on January 24, 2020, and April 9, 2020, respectively. The APSC approved the Arkansas settlement, and the LPSC is expected to act on the Louisiana settlement in May 2020.[4] The FERC approved the acquisition on February 21, 2020.

For reasons discussed in this Proposal for Decision (PFD), the Administrative Law Judges (ALJs) recommend denying the Application.

II. JURISDICTION, NOTICE, AND PROCEDURAL HISTORY

The Commission has jurisdiction and authority over this matter pursuant to Public Utility Regulatory Act (PURA) §§ 14.001, 36.203, 36.204, 37.051, 37.053, 37.056, and 37.057, and has enacted rules regarding CCNs and recovery of fuel costs at 16 Texas Administrative Code (TAC) §§ 25.101 and 25.236. The State Office of Administrative Hearings (SOAH) has jurisdiction, pursuant to Texas Government Code § 2003.049 and PURA § 14.053, over all matters relating to the conduct of a hearing in this matter.

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[2] SWEPCO Ex. 1 (Smoak Dir.) at 6-7.

[3] SWEPCO Ex. 1 (Smoak Dir.) at 5.

[4] On May 11, 2020, after the record had closed, SWEPCO filed notice that the APSC had approved the Arkansas settlement agreement on May 5, 2020.

In the Application, SWEPCO provided a proposed form of notice, to which no party objected. The form was approved, and SWEPCO provided notice. The details of the provision of notice were not disputed and are addressed in Section IX and the findings of fact (FoFs) and conclusions of law (CoLs).

The Commission referred this docket to SOAH on August 22, 2019. On September 12, 2019, the Commission issued a Preliminary Order (PO) listing issues to be addressed in this case.

The Office of Public Utility Counsel (OPUC), Texas Industrial Energy Consumers (TIEC), East Texas Electric Cooperative and Northeast Texas Electric Cooperative (ETEC-NTEC), International Brotherhood of Electrical Workers Local Union 738 (IBEW), Golden Spread Electric Cooperative (Golden Spread), Walmart Inc. (Walmart), and Cities Advocating Reasonable Deregulation (CARD) filed motions to intervene, all of which were granted.[5]

SOAH Order No. 2, issued on September 18, 2019, scheduled the time and place of the hearing. The hearing convened on February 24, 2020, and concluded on February 26, 2020.[6] Parties filed initial briefs on March 9, and reply briefs on March 17. SWEPCO filed its proposed FoFs and CoLs on March 11; the intervenors and Staff filed redlined comments to SWEPCO's proposed FoFs and CoLs on March 19, 2020. On March 25, 2020, Staff and TIEC filed a joint motion to file joint FoFs and CoLs (Joint Motion), which were included with their Joint Motion. The ALJs hereby **GRANT** the Joint Motion. The record therefore closed on March 25, 2020.

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[5] IBEW did not participate at the hearing or file post-hearing briefs. Walmart participated at the hearing and did not file a reply brief. Walmart filed its initial brief three days late and did not request leave to file late or explain why it did not meet the filing deadline. For these reasons, the ALJs did not consider Walmart's initial brief. However, Walmart's position in this case is similar to positions expressed by other parties and did not add additional considerations.

[6] SOAH ALJs Steven Neinast and Christiaan Siano presided at the hearing. After the hearing concluded, SOAH ALJ Meaghan Bailey participated in drafting the PFD. Regarding the issues she addressed in the PFD, ALJ Bailey has read the record in compliance with Texas Government Code § 2001.062(c) and 1 TAC § 155.151(b)-(c).

III. EXECUTIVE SUMMARY

SWEPCO is not seeking the CCN because of the need for additional generation. Rather, SWEPCO states that the SWFs will reduce its customers' energy costs, help meet capacity needs, provide renewable energy credits (RECs) that customers may desire to acquire, and further diversify SWEPCO's portfolio of supply-side resources.[7] According to SWEPCO's Base Fundamental Forecast, the SWFs are expected to create savings of approximately $2.03 billion on a total Company basis in nominal dollars and $567 million net present value (NPV) over the 30-year life of the facilities.[8] SWEPCO's estimates are based on a number of assumptions, including forecasted natural gas prices, an assumed net capacity factor, the value of PTCs, and several other variables. The intervening parties dispute SWEPCO's estimates and presented evidence that SWEPCO significantly overstated the projected cost savings.

In its Application, SWEPCO proposed three cost-type guarantees: a capital cost cap, a PTC eligibility guarantee, and a minimum production guarantee. Commission staff (Staff) and the other parties who would support the Project with additional guarantees contend that SWEPCO's three proposed guarantees are insufficient to protect its customers, particularly because they do not guarantee the cost savings touted by the Company. These parties contend that additional cost-saving guarantees must be ordered if the Application is approved or, if additional guarantees are not ordered, the Application should be denied. TIEC and ETEC-NTEC recommend outright denial of the Application.

There are a number of similarities between this case and SWEPCO's recent CCN application for approval of the Wind Catcher wind generation facilities, also located in Oklahoma (*Wind Catcher*).[9] In *Wind Catcher*, SWEPCO projected significant customer savings over the life

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[7] SWEPCO Ex. 2 (Brice Dir.) at 4.

[8] SWEPCO Ex. 1 (Smoak Dir.) at 7.

[9] *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*, Docket No. 47461, Order (Aug. 13, 2018) (*Wind Catcher*).

of the proposed wind project based on forecasts and analyses strikingly similar to those presented in this case. In *Wind Catcher*, the SOAH ALJs recommended approval of the application with certain additional guarantees to protect consumers if the project did not realize the benefits anticipated in the ALJs' assessment. The Commission, however, rejected the ALJs' recommendation and denied the *Wind Catcher* application, concluding that SWEPCO had not met its burden of proof:

> Based on the evidence admitted in this proceeding, the Commission finds that SWEPCO failed to show that the project will lead to the *probable* lowering of cost to SWEPCO's consumers and, consequently, that it failed to show that the project is necessary for the service, accommodation, convenience, or safety of the public under PURA § 37.056.[10]

Based in part on the *Wind Catcher* precedent and the close similarities between *Wind Catcher* and this case, the ALJs do not recommend adoption of additional cost-saving guarantees recommended by Staff and some parties. The flaws identified by the Commission in *Wind Catcher* are generally mirrored in this case, and in some instances are more pronounced. These include overly optimistic costs savings, compared to more reliable projections, and concerns over how SWEPCO accounted for the cost of a generation tie line (gen-tie) that might be needed to reduce potential congestion costs. SWEPCO declined to adopt adequate cost-saving guarantees, and has not shown why its cost projections and analyses in this case are more reliable or accurate than those found lacking in *Wind Catcher.*

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[10] *Wind Catcher* Order at 2 (emphasis added), *citing* PURA §§ 11.001-58.302, 59.001-66.016). The *Wind Catcher* order also stated:

> The Commission notes the many assumptions, the range in values of the parties' assumptions, and the significant range of benefits or costs to consumers presented by the parties . . . . The bulk of the evidence in this proceeding casts doubt on the assumptions SWEPCO, who bears the burden of proof, used to determine that benefits to consumers are probable. The Commission need not choose a single number within this range given the uncertainty of assumptions and the magnitude of the risk that could be imposed upon consumers. In addition, sufficient consumer safeguards have not been offered by SWEPCO that would allow the Commission to conclude there is a probability of benefits to consumers from the project.

Id. at 8-9.

SWEPCO has not met its burden of proof to show that the Project will result in lower costs to SWEPCO's Texas customers. Credible evidence shows that the Project could result in cost increases to the Company's customers over the life of the Project. The ALJs therefore recommend that the Commission reject SWEPCO's Application.

IV. SUMMARY OF PARTIES' POSITIONS

The SWFs will significantly increase SWEPCO's rate base, with some of the financial risk placed on the customers rather than the shareholders if SWEPCO's Application is granted. Except for SWEPCO, no party recommends approval without at least some additional guarantees or protections.

CARD is a group of cities served by SWEPCO. According to CARD, SWEPCO proposes to acquire wind generation it does not need to serve system peak demand based entirely on the supposition that the Project will produce energy savings sufficient to justify the estimated revenue requirement associated with the Project. CARD recommends denial of the Application absent implementation of customer protections from the down-side risk of the economics of the Project.

ETEC-NTEC are transmission customers in the Southwest Power Pool (SPP) and wholesale power customers of SWEPCO; they are generation and transmission (G&T) cooperatives headquartered in northeast Texas. ETEC-NTEC recommend rejection of the Application without adding more customer protections. They note that SWEPCO's proposed costs do not include a gen-tie, which would increase the capital cost by an estimated $480 million. They recommend considering the gen-tie when evaluating this proposed acquisition. ETEC-NTEC also contend that SWEPCO makes several optimistic assumptions and offers incomplete analysis of the customer benefits, and fails to offer meaningful protections or guarantees to its Texas customers. ETEC-NTEC conclude that SWEPCO has not met its burden of proof and, even accepting SWEPCO's customer benefits analysis for the sake of argument, a reasonable rate impact analysis shows the SWFs will not provide any immediate rate benefits to most Texas retail customers.

Golden Spread, an electric cooperative, argues that SWEPCO has ignored the transmission costs that the Project will impose on other SPP transmission ratepayers in Texas, including Golden Spread, and that the Application does not include evidence related to the potential effects on other utilities. Golden Spread asserts that SWEPCO has failed to meet its burden to prove that this Application is in the public interest because SWEPCO failed to fully analyze the Project's impacts on other SPP transmission ratepayers in Texas. Golden Spread asks that SWEPCO be required to expeditiously acquire firm transmission and to accept the direct assignment of upgrade costs associated with the SWFs before its Application is found to be in the public interest. Further, if SWEPCO ultimately determines that it needs to build a gen-tie, it should be required to obtain prior approval from the Commission and its application for the gen-tie should consider all transmission alternatives that could come from the SPP, including but not limited to the SPP Integrated Transmission Planning (ITP) process, Network Resource Interconnection Service (NRIS), and firm transmission, as well as potential effects each alternative would have on other Texas transmission ratepayers in SPP.

Staff and OPUC argue that SWEPCO's customers will bear the risk of whether the Project will actually produce customer benefits. They argue that the assumptions on which SWEPCO's benefit projections depend are uncertain, and if wrong, would result in little or no benefits. They recommend that the CCN be approved only with additional customer protection guarantees.

TIEC is an association of industrial consumers of electricity whose members are served by SWEPCO and other electric utilities in Texas. TIEC argues that (1) SWEPCO has failed to meet its burden of proof that these projects are necessary for service to its customers, and (2) approval of the Application would "in all likelihood" be harmful for SWEPCO's customers. TIEC asserts that SWEPCO has made a number of unsupported assumptions that increase its projected net benefits from the SWFs by hundreds of millions of dollars. Even with all those unsupported assumptions, the SWFs are still "money losers" based on more credible forecasting models. TIEC states that the SWFs will not reduce rates for SWEPCO's customers, and the Application should be denied.

The Company responds that PURA does not require it to demonstrate that acquisition of the SWFs will lower costs to customers under every possible, conceivable, or implausible scenario. SWEPCO contends that such a standard would be unworkable and ensure that beneficial facilities would not be approved. Rather, SWEPCO states that it has presented evidence of customer benefits under a range of plausible future circumstances, while the other parties have instead elected to evaluate the acquisition under a small set of what the Company characterizes as "highly-improbable worst case scenarios." The Company states that it has met its burden to demonstrate that the Project will result in the probable lowering of costs to customers. SWEPCO adds that the costs of the Project are known with reasonable certainty; it has offered a capital cost cap guarantee; and the SWFs will not incur fuel costs. This means that the SWFs will provide mostly fixed-priced, low cost energy to customers for the life of the facilities. SWEPCO states that the expected energy production of the SWFs is backed by independent wind reports that were not challenged in this proceeding. And, with each megawatt-hour (MWh) produced by the SWFs, SWEPCO will earn federal PTCs for the benefit of customers. The Company has guaranteed that the SWFs will qualify for these PTCs under current law. The value of the PTCs is set by law. According to SWEPCO, the largest unknown, and a focus of intervenor criticism, is the price of energy for the next 30 years. But, according to SWEPCO, a scenario assuming energy prices lower than the energy produced by the SWFs is based on layered improbabilities, rather than circumstances reasonably likely to prevail. SWEPCO argues that some intervenors ignore reputable forecasts of natural gas and energy prices to craft a set of future energy and natural gas prices designed to show it is conceivable the market could produce energy prices slightly lower than the net cost of energy produced by the SWFs. SWEPCO contends that the illustrative scenario some intervenors have created envisioning consistently low energy prices *sustained* for the next 30 years is not probable and is not a valid forecasting methodology.

The Company states that its investment in the Project will mitigate, not increase, customers' risk associated with the future uncertainty of overall customer costs, and its acquisition of the SWFs will serve to reduce the overall risk faced by customers, not increase it. SWEPCO claims that the guarantees it has offered only reinforce the benefits it projects by providing additional protection against unexpected circumstances.

V. CERTIFICATE OF CONVENIENCE AND NECESSITY STANDARD OF REVIEW (P.O. ISSUE NO. 2)

The grant or denial of a CCN is governed by PURA § 37.056. The Commission may approve an application and grant a certificate only if the Commission finds that the certificate is necessary for the "service, accommodation, convenience, or safety of the public."[11] In evaluating whether to grant a CCN, the Commission must consider:

(1) the adequacy of existing service;

(2) the need for additional service;

(3) the effect of granting the certificate on the recipient of the certificate and any electric utility serving the proximate area;

(4) other factors, such as:

(A) community values;

(B) recreational and park areas;

(C) historical and aesthetic values;

(D) environmental integrity;

(E) the probable improvement of service or lowering of cost to consumers in the area if the certificate is granted; and

(F) to the extent applicable, the effect of granting the certificate on the ability of this state to meet the goal established by Section 39.904(a) of [PURA].[12]

The SWFs are not needed to meet increased capacity requirements but rather to provide customer savings. Because the SWFs are located entirely outside of Texas, the Commission need not evaluate the site-specific criteria such as community values, recreational and park areas,

[11] PURA § 37.056(a).

[12] PURA § 37.056(c).

historical and aesthetic values, environmental integrity, and other site-specific factors.[13] SWEPCO admits that the controlling statutory factor is the probability of lowering costs to consumers.[14]

Golden Spread argues that even though the SWFs are not located in Texas, PURA § 37.056(c)(3) nevertheless requires the Commission to "consider the effect of granting the certificate on the recipient of the certificate *and any electric utility serving the proximate area.*"[15] Golden Spread also argues the public interest standard requires that the Commission consider the impact on all Texans. In this case, the Commission must consider the SPP transmission ratepayers in Texas who are not served by SWEPCO, as opposed to simply looking at SWEPCO's customers, as it did in *Hammack* and consistent with the call for an overall public interest assessment in *Texland.*[16] According to Golden Spread, doing so would be consistent with Commission policy expressed in its recent decisions regarding CCNs for generation outside the Electric Reliability Council of Texas:[17]

> By failing to account for the costs associated with transmission built via the regional planning process in this Docket, SWEPCO has failed to prove this Application is in the broader Texas public interest. In analyzing the public interest in this Application, the Commission should consider whether a concerted effort to shift costs on to other SPP transmission ratepayers in Texas, the lack of consideration for [NRIS], and delayed and non-committal consideration of firm transmission creates the risk of significant cross-subsidies at the expense of Golden Spread and other Texas transmission ratepayers.[18]

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[13] *See Application of Southwestern Electric Power Company for Certificate of Convenience and Necessity Authorization for a Coal-Fired Power Plant in Arkansas*, Docket No. 33891, Order at Findings of Fact (FoF) Nos. 43, 46, 48, 50, and 51 (Aug. 12, 2008).

[14] SWEPCO Initial Brief at 1 ("[T]he primary statutory factor by which the Commission will evaluate this application is whether acquisition of the [SWFs] will result in the probable lowering of costs to consumers.").

[15] Emphasis added.

[16] Citing *Hammack v. Public Util. Comm'n*, 131 S.W.3d 713, 723-24 (Tex. App. - Austin 2004, pet. denied); *Public Util. Comm'n v. Texland Elec. Co.*, 701 S.W.2d 261, 266 (Tex. App. - Austin 1985, writ ref'd n.r.e.).

[17] Golden Spread Initial Brief at 8.

[18] Golden Spread Initial Brief at 12.

Golden Spread asks that, if the Commission decides that the Project should move forward, the Commission should condition the Project on SWEPCO's acquisition of firm transmission as soon as possible with direct assignment of upgrade costs to help mitigate the shift of costs onto other SPP transmission ratepayers in Texas. Golden Spread also asks that the Commission require SWEPCO to seek Commission approval of any gen-tie proposal, and include in its Application supporting evidence that analyzes all transmission alternatives, as well as evidence addressing potential effects on other Texas transmission ratepayers in SPP.[19]

The ALJs conclude that PURA § 37.056 is the controlling statutory provision in this case and that the determinative issue is whether it is probable that the Project, if approved, would result in lowering costs to SWEPCO's customers. There is no dispute that a number of the considerations in § 37.056 do not apply, including, but not limited to, the adequacy of existing service, the need for additional service, community values, recreational and park areas, and historical and aesthetic values. Golden Spread's insistence that the Commission must consider the effect of granting the certificate on any electric utility serving the proximate area is facially valid. However, Golden Spread appears to focus on concerns regarding congestion and cost allocation, which are subject to FERC jurisdiction within SPP. Cost allocation issues are discussed in Section VII of this PFD, and congestion issues are discussed in Section VI.

VI. ANALYSIS OF ECONOMICS OF SELECTED WIND FACILITIES (P.O. ISSUE NOS. 2, 3, 5, 6, 19, 23)

A. Request for Proposals Selection Process

SWEPCO's 2018 and 2019 integrated resource plans (IRPs) prepared for the APSC and LPSC identified wind resources as economical and recommended that they be added beginning in 2022 to take advantage of the federal PTCs.[20] As a result, SWEPCO and sister company PSO

[19] Golden Spread also argues that PURA § 14.101 applies to this case. That issue is addressed in Section XI of the PFD.

[20] SWEPCO Ex. 8 (Torpey Dir.) at 11; SWEPCO Ex. 3 (Godfrey Dir.) at 5, 8.

issued requests for proposals (RFPs) in January 2019 to acquire additional wind generation.[21] The combined RFPs sought up to 2,200 MW of additional wind generation capacity.[22]

SWEPCO and PSO sought projects (1) physically located in, and interconnected to, the SPP in Arkansas, Louisiana, Texas, or Oklahoma; (2) not currently experiencing, or anticipated to experience, significant congestion or deliverability constraints; and (3) that balance project performance and deliverability to the American Electric Power Company (AEP) West load zone in the Tulsa area.[23] Additionally, SWEPCO and PSO sought projects that would qualify for at least 80% of the value of the federal PTCs.[24]

SWEPCO and PSO conducted a scoring analysis considering price and non-price factors.[25] Out of an initial 35 bids, the Traverse, Maverick, and Sundance facilities were ranked the top three.[26] Each developer submitted an independent assessment of the wind resource and expected energy output. The independent analyses were required to include one-year, five-year, 10-year, 20-year and 30-year production forecast estimates for the various probability-of-exceedance values (P50, P75, P90, P95, and P99).[27] SWEPCO and PSO hired Simon Wind Inc. to (1) independently review wind resource assessments and the expected energy output included in each of the RFPs, and (2) develop a wind energy resource assessment (WERA) for each of the SWFs.[28]

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[21] SWEPCO Ex. 1 (Smoak Dir.) at 5; SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-1.

[22] SWEPCO Ex. 3 (Godfrey Dir.) at 20.

[23] SWEPCO Ex. 3 (Godfrey Dir.) at 8.

[24] SWEPCO Ex. 3 (Godfrey Dir.) at 8.

[25] SWEPCO Ex. 3 (Godfrey Dir.) at 18, Exh. JFP-1 RFP § 9.2.2.

[26] SWEPCO Ex. 3 (Godfrey Dir.) at 12.

[27] SWEPCO Ex. 3 (Godfrey Dir.) at 23, n.2 (explaining that probability exceedance value (*e.g.*, P90) is the probability (*i.e.*, confidence) that a forecasted value is exceeded. For a P99 forecast, the probability of the forecast being exceeded is 99%.).

[28] SWEPCO Ex. 3 (Godfrey Dir.) at 23-25.

B. Project Description and Cost

The SWFs would be located in north central Oklahoma. SWEPCO and PSO intend to purchase the facilities from Invenergy LLC (Invenergy) on a turnkey basis.

1. Installed Capital Costs

SWEPCO's share of the total installed capital cost for the SWFs is approximately $1.09 billion.[29] This includes all costs associated with interconnecting the facilities to the SPP transmission system and any assigned network upgrade costs, and excludes associated owner's costs, Allowance for Funds Used During Construction applied to the owner's costs, PSA price adjustments, and contingency.[30]

2. Ongoing O&M and Capital Costs

In addition to the capital costs, the SWFs will incur ongoing operation and maintenance (O&M) and capital costs.[31] For the first 10 years, these costs were estimated using (1) actual O&M contract costs extracted from the Invenergy Services agreement; (2) estimates of parts and major maintenance repair costs; and (3) other O&M costs specific to each of the wind facilities.[32] For years 11 through 30, these costs were estimated using a 2.0% annual escalation factor.[33] SWEPCO states that the interim capital expenditures are necessary to achieve the 30-year useful life assumed in the economic analysis.[34]

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[29] SWEPCO Ex. 2 (Brice Dir.) at 6-7.

[30] SWEPCO Ex. 3 (Godfrey Dir.) at 26.

[31] SWEPCO Ex. 16 (DeRuntz Reb.) at 3-4.

[32] SWEPCO Ex. 4 (DeRuntz Dir.), Exh. JGD-5.

[33] SWEPCO Ex. 4 (DeRuntz Dir.) at 17-18.

[34] TIEC Ex. 1 (Pollock Dir.) at 15; SWEPCO Ex. 4 (DeRuntz Dir.) at 18-19.

C. Economic Modeling

SWEPCO modeled the benefits of the SWFs under a range of assumptions, including high, medium, and low power and gas prices, with and without a tax on carbon dioxide (CO_2) emissions (carbon burden); expected levels of energy production at P50 and P95 probability levels; and congestion costs that would result in construction of a gen-tie if SPP did not promote transmission solutions to reduce those costs.[35] Based on these assumptions, SWEPCO's estimates the following customer savings:

Projected Customer Savings[36]

Case	31-Year NPV	Full 31-Year Nominal Total
P50 Capacity Factor Cases ($ millions)		
High Gas With CO_2	$718	$2,501
Base Gas With CO_2	**$567**	**$2,030**
Base Gas Without CO_2	$396	$1,453
Low Gas With CO_2	$396	$1,532
Low Gas Without CO_2	$236	$971
P95 Capacity Factor Cases ($ millions)		
High Gas With CO_2	$461	$1,792
Base Gas With CO_2	$330	$1,386
Base Gas Without CO_2	$181	$883
Low Gas With CO_2	$183	$960
High Congestion With Tie Line ($ millions)		
Base Gas With CO_2 (P50)	$541	$2,025
Base Gas Without CO_2 (P50)	$330	$1,285
Base Gas Without CO_2 (P95)	$94	$640

[35] *See* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-4; SWEPCO Ex. 9 (Pfeifenberger Dir.) at 37-39.

[36] *See* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-4.

SWEPCO's Base Case assumes a carbon tax, no future gen-tie, higher natural gas prices, and a P50 production level.[37]

TIEC argues that all three models SWEPCO used to project the expected benefits have limitations.[38] Because SWEPCO's modeling assumes that the SWFs would not change the dispatch of its existing units, and the projected benefits of the SWFs come from either allowing SWEPCO to forgo market purchases or freeing up SWEPCO's existing thermal units to make market sales, the projected market prices are critical to the projected net benefits.[39] PLEXOS, which SWEPCO used to model its own operating resources and production costs, does not simulate the broader SPP region, and therefore requires as an input the locational marginal prices (LMPs) at which SWEPCO will purchase and sell power from the SPP.[40] AURORA, used to develop the long-term market price forecast, models power prices for only 30 regions across the United States, so SWEPCO had to adjust for locational differences through the PROMOD model.[41] The market price percentage differential for the "SPP Central" area shown in PROMOD and for AEP's load and generation zones were put into the PLEXOS model for each year.[42] The production cost savings were calculated as the difference in production costs between running PLEXOS with and without the SWFs.[43] SWEPCO's projected capacity savings were calculated as the difference in future generation additions and retirements.[44]

TIEC also argues that SWEPCO's economic modeling is highly dependent upon the input assumptions, including natural gas forecasting and the forecasted additions of renewable capacity to the SPP market, as discussed later in the PFD. TIEC argues that because of the complex and

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[37] SWEPCO Ex. 8 (Torpey Dir.) at 16.

[38] TIEC Initial Brief at 11-13.

[39] TIEC Ex. 2 (Griffey Dir.) at 15.

[40] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 39.

[41] SWEPCO Ex. 6 (Sheilendranath Dir.) at 11-12.

[42] SWEPCO Ex. 6 (Sheilendranath Dir.) at 11-12.

[43] SWEPCO Ex. 8 (Torpey Dir.) at 17-19, Exh. JFT-3 (top line).

[44] SWEPCO Ex. 8 (Torpey Dir.) at 17-18.

convoluted nature of SWEPCO's modeling process, the deficiencies and inconsistencies in each model are compounded, which results in a low level of confidence in the final results, which should be interpreted in a way that accounts for a wide margin of error.[45]

SWEPCO argues that it evaluated the costs and benefits of the SWFs under a reasonable range of future assumptions and a variety of future conditions. SWEPCO asserts that there is a high level of confidence in its modeling results because it assessed customer benefits under such a wide range of future conditions using industry standard models. SWEPCO notes that CARD witness Mr. Norwood found SWEPCO's gas price projections, production capacity forecasts, and the mechanics of its modeling of the SWFs' benefits to be in the range of reasonableness.[46]

The ALJs find that SWEPCO's modeling results should be interpreted to account for a wide margin of error. SWEPCO's modeling is far from straightforward and necessarily requires a lower confidence level. While the ALJs do not find that it was inappropriate to use any given model, the results depend heavily on the models' assumptions.

1. Modeling Methodology

SWEPCO developed a case with the SWFs (Project Case) and a case without the SWFs (Baseline Case), then compared the difference for the years 2021 to 2051.[47] Resources such as natural-gas combined-cycle and peaking units, solar generation, and short-term power market purchases, were optimally added to SWEPCO's resources in both the Baseline Case and Project Case throughout the period to maintain the 12% reserve margin as required by the SPP.[48]

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[45] ETEC-NTEC Ex. 2 (Chiles Dir.) at 18.

[46] CARD Initial Brief at 5; CARD Ex. 1 (Norwood Dir.) at 20.

[47] SWEPCO Ex. 2 (Brice Dir.) at 9.

[48] SWEPCO Ex. 8 (Torpey Dir.) at 18.

Long-term natural gas or energy prices were forecasted using the AURORA model. Congestion and losses were modeled using PROMOD, and net benefits were determined using the PLEXOS model.[49] Inputs to the economic modeling included forecast energy and fuel costs, congestion and losses, capacity value of the facilities, PTCs, DTA carrying charges, and facility revenue requirements.[50]

PROMOD simulations developed in the SPP ITP process were combined with AURORA fundamentals price forecasts to produce a projection of AEP West Load Zone and SWEPCO generation LMPs, as well as congestion and loss effects for 2024 and 2029.[51] The results of this simulation were interpolated and extrapolated over 31 years and then incorporated into PLEXOS. The PLEXOS simulation of the Company's resources was based on a 31-year forecast and included the impact the SWFs have on production cost versus the Baseline Case.[52] The model compared the total hourly energy output of SWEPCO's generation resources against the hourly internal load and energy requirement of SWEPCO. To the extent that the energy output exceeded the load, the model determined the surplus generation sold at the hourly generation price. To the extent that the load exceeded the energy output, the model determined the deficit purchase at the market load price. Consequently, the production cost savings included the cost of production less the cost of purchases, plus the revenues from additional off-system sales (OSS) less the 10% OSS margins retained by SWEPCO.[53]

To determine a break-even price for the SWFs, the Company determined the reduction in production costs savings required to result in a zero NPV of customer savings (*i.e.*, what reduction in production cost savings results in net customer benefits equaling $0). This reduction approximates the reduction in around-the-clock (ATC) energy prices that result in a break-even

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[49] Tr. at 330-31 (Sheilendranath).

[50] SWEPCO Ex. 8 (Torpey Dir.) at 16-17, Table 3, Exh. JFT-3.

[51] SWEPCO Ex. 6 (Sheilendranath Dir.) at 4.

[52] SWEPCO Ex. 8 (Torpey Dir.) at 19; SWEPCO Ex. 9 (Pfeifenberger Dir.) at 39-43; SWEPCO Ex. 6 (Sheilendranath Dir.) at 4, Fig. 1.

[53] SWEPCO Ex. 8 (Torpey Dir.) at 17-18.

result. SWEPCO calculated the reduction in natural gas prices that would achieve that energy price reduction.[54]

In its reply brief, TIEC argues that SWEPCO's purported break-even LMPs do not demonstrate that the SWFs will provide net benefits to customers.[55] First, TIEC argues that ATC energy prices do not reflect the LMPs when the SWFs are actually running, which are primarily during off-peak hours when the LMPs are lower.[56] For the same reason, SWEPCO's calculation of break-even ATC LMPs does not capture the hourly differences in prices, because it assumes that LMPs will drop by exactly the same percentage in every hour of the day.[57] Moreover, SWEPCO's break-even LMPs calculation suffers from all of SWEPCO's other unreasonable assumptions that do not affect power prices, including the projected congestion costs, the P50 capacity factor, and a 30-year useful life, discussed later in the PFD. Finally, TIEC argues SWEPCO's break-even LMPs are below current market projections of future power prices, as seen in the SPP South Hub forward prices.[58] Thus, TIEC argues, SWEPCO's break-even LMPs do not demonstrate that the Project will provide benefits to customers.

Although the ALJs agree with TIEC's argument regarding the break-even ATC LMP, the record is insufficiently developed for the ALJs to determine the significance of this deficiency. The ALJs also discount TIEC's argument because it was raised for the first time in TIEC's reply brief, depriving SWEPCO of an opportunity to respond.[59]

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[54] SWEPCO Ex. 8 (Torpey Dir.) at 21; SWEPCO Ex. 5 (Bletzacker Dir.) at 13-15.

[55] TIEC Reply Brief at 14.

[56] The projected hourly shape of the SWFs for each month can be seen in SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-6 at 55 (Traverse), 102 (Sundance) and 201 (Maverick) (Godfrey Dir.). These hourly shapes show that the highest capacity factors are during the winter months, and during the nighttime hours.

[57] Tr. at 575 (Daniel); SWEPCO Ex. 20A (Pfeifenberger Reb.), WP "2018 annual state of the market report.pdf" at 47; SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-6 at 55 (Traverse), 102 (Sundance) and 201 (Maverick).

[58] TIEC Ex. 2 (Griffey Dir.) at 36, Fig. 9.

[59] *See, e.g.*, Tex. Gov't Code § 2001.051 ("[i]n a contested case, each party is entitled to an opportunity . . . to respond and to present evidence . . . on each issue involved in the case").

2. Projected Production Cost Savings

To calculate net customer cost savings benefits, SWEPCO calculated its Base Case over the assumed 30-year life of the Project from 2021 through 2051. The Company then compared these results to its Project Case, and calculated the difference between these two cases to arrive at its projected net customer cost savings benefits.[60] SWEPCO's Base Case projected $567 million additional NPV savings compared to the Project Case.[61]

a. Natural Gas Prices

Future natural gas prices are an essential element of the Project's benefit calculation–the higher the expected future natural gas prices, the greater the expected benefits.[62] SWEPCO estimated the future price of natural gas using long-term forecasts, including publicly available third-party forecasts, proprietary third-party forecasts, and forecasts developed by its parent (AEP) and affiliated corporate support services company, AEP Service Company.

OPUC, TIEC, and Staff challenge SWEPCO's methodology, arguing that SWEPCO relied too heavily on its long-term fundamental forecasts, and the Company failed to properly weight the New York Mercantile Exchange forecast (NYMEX).

i. SWEPCO's Initial Position

All parties agree that natural gas pricing forecasts are an important factor in determining whether the SWFs will provide customer savings over the life of the facilities. SWEPCO relies on its "AEP Long-Term North American Energy Market Forecast" (Fundamentals Forecast) to forecast natural gas prices. The Fundamentals Forecast is a long-term, weather-normalized

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[60] SWEPCO Ex. 2 (Brice Dir.) at 9.

[61] Tr. at 95 (Brice).

[62] *Wind Catcher*, Order at 17 (FoF No. 75).

commodity market forecast. The Company states that the Fundamentals Forecast is not created to meet a specific regulatory need in a particular jurisdiction but, instead, is made available to SWEPCO and its affiliated operating companies in the AEP system for resource planning, capital improvement analyses, fixed asset impairment accounting, and strategic planning. The Fundamentals Forecast projects the price for several commodities, including hourly, monthly, and annual regional power prices (in both nominal and real dollars) and monthly and annual locational natural gas prices, including the benchmark Henry Hub.[63]

The Fundamentals Forecast includes a range of potential price outcomes. To complement the Base Case Fundamentals Forecast, four associated cases were also created: the Lower Band, Upper Band, Base No Carbon, and Lower Band No Carbon cases. The Lower and Upper Band forecasts consider lower and higher North American demand for electric generation and fuels and, consequently, lower and higher fuels prices, respectively. The No Carbon cases assume there will be no regulations limiting CO_2 emissions throughout the entire forecast period.[64] The Company states that the full picture reveals a strong consensus near the middle of the range of these forecasts. It also shows that the proposed Project's break-even natural gas price curve is close to the bottom of all forecasts.[65]

The primary tool used for the development of the Fundamentals Forecast's long-term energy market pricing is the AURORA model. The AURORA database includes approximately 25,000 electric generating facilities in the contiguous United States, Canada, and Baja, Mexico. SWEPCO states that the AURORA model is back-tested to benchmark its historical accuracy.[66]

SWEPCO argues that OPUC ignores all long-term natural gas forecasts and TIEC focuses on only a single, lowest side case of the 2020 Energy Information Agency (EIA) Annual Energy

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[63] SWEPCO Ex. 5 at 3.

[64] SWEPCO Ex. 5 (Bletzacker Dir.) at 4.

[65] SWEPCO Ex. 17 (Bletzacker Reb.) at 21.

[66] SWEPCO Ex. 17 (Bletzacker Reb.) at 15.

Outlook (AEO) forecast. SWEPCO states that EIA's AEO 2020 Reference Case and seven other side cases are above the natural gas break-even price for the SWFs, but TIEC chooses to focus on the High Oil and Gas Supply side case, which is EIA's lowest side case and the only one that is generally lower than the break-even natural gas price for the SWFs. SWEPCO asserts that focusing on only a single, low long-term natural gas forecast to the exclusion of all others is a disservice to Texas customers.

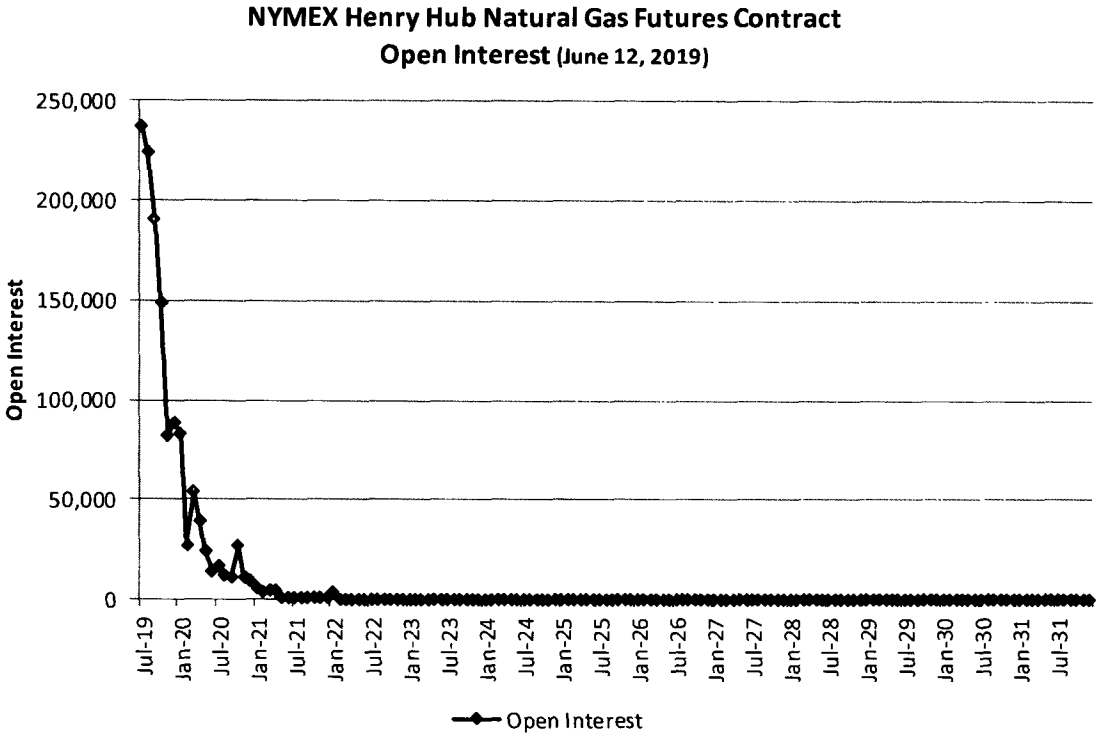
SWEPCO faults TIEC and OPUC for relying exclusively or almost exclusively on the 30-year trended NYMEX natural gas futures prices constructed by their witnesses.[67] The Company explains that the NYMEX futures prices represent actual transactions for only about the first 36 months of the NYMEX futures prices.[68] Neither TIEC nor OPUC could point to transactions between buyers and sellers beyond 36 months.[69] This lack of long-term transactions is demonstrated in the following figure from SWEPO's direct case:[70]

[67] NYMEX natural gas futures contracts are not available beyond the next 12 years. SWEPCO Ex. 17 (Bletzacker Reb.) at 3. According to SWEPCO, the expected useful life of the SWFs is 30 years.

[68] SWEPCO Ex. 34 (TIEC response to SWEPCO Request for Information (RFI) 1-5).

[69] SWEPCO Ex. 26 (OPUC response to SWEPCO RFI 1-3); SWEPCO Ex. 35 (TIEC response to SWEPCO RFI 1-6).

[70] SWEPCO Ex. 5 (Bletzacker Dir.) at 8.



SWEPCO also challenges the use of NYMEX futures claiming they are not weather-normalized but instead represent a snapshot in time.[71] According to SWEPCO, the NYMEX strips presented by TIEC and OPUC were taken during the warmest winter in 125 years.[72] SWEPCO asserts that NYMEX has never marketed its natural gas futures prices as a long-term "forecast" of future natural gas prices. SWEPCO urges that NYMEX's natural gas futures prices are not a substitute for long-term, weather-normalized forecasts of future natural gas prices.

ii. OPUC's, TIEC's, and Staff's Positions on Natural Gas Pricing Forecasts

OPUC supports relying on the NYMEX forecast over SWEPCO's Fundamentals Forecast, contending that the Fundamentals Forecast overstates the economic benefits of non-gas power generation resources, like wind generation. The NYMEX forecast, however, is a market-based

[71] Tr. at 693-94 (Nalepa).

[72] Tr. at 207, 259 (Bletzacker).

forecast that reflects the expectations of market participants.[73] OPUC notes that the Commission recognized in *Wind Catcher* that NYMEX futures are representative of "actual transactions between buyers and sellers who put real money at risk in their day-to-day operations."[74] The Commission also concluded in *Wind Catcher* that "the record of the proceeding fails to show that the assumptions made by SWEPCO regarding gas prices will result in a probable lowering of cost to consumers."[75] OPUC emphasizes that SWEPCO used the same natural gas price predictions in its Fundamentals Forecast in this proceeding that the Commission rejected in *Wind Catcher*. OPUC asserts that SWEPCO completely ignored the NYMEX natural gas prices, or actual market pricing, in its forecasts, outside of immediate spot pricing prior to the model years.[76] OPUC contends the Fundamentals Forecast references market prices only as a current starting position and then immediately becomes untethered from the reality of market prices.[77] OPUC urges the Commission to reject SWEPCO's use of the Fundamentals Forecast in this proceeding for the same reasons expressed in *Wind Catcher*.[78]

OPUC also contends that the Fundamentals Forecast is flawed because it uses a 30-year weather normalization period, while the Commission's established standard for weather normalization is ten years.[79] OPUC argues that using a longer rolling average period for weather normalization will only serve to discount more recent weather trends, such as recent warmer weather, which usually yield lower natural gas prices.[80]

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[73] *E.g.*, OPUC Ex. 1 (Nalepa Dir.) at 21.

[74] *Wind Catcher*, Order at 18 (FoF No. 84).

[75] *Wind Catcher*, Order at 18 (FoF No. 92A). The Commission also found: "The gas prices of the SPS and ETI forecasts used in recent Commission proceedings were significantly lower than SWEPCO's fundamentals forecast." *Id.* (FoF No. 83).

[76] Tr. at 271-72 (Bletzacker). In its Reply Brief, OPUC adds to this point, stating: "The AEP Fundamentals Forecast, by contrast [to NYMEX], does not in any way factor in actual market pricing beyond the knowledge of today's natural gas prices as a starting point prior to the analysis."

[77] Tr. at 271-72 (Bletzacker).

[78] Citing *Wind Catcher*, Order at 4-5 and 17-18.

[79] Tr. at 258-60 (Bletzacker); Tr. at 710 (Nalepa). *See Application of Southwestern Electric Power Company for Authority to Change Rates and Reconcile Fuel Costs*, Docket No. 40443, Order on Rehearing at 43-44 (FoF Nos. 256-58) (Mar. 6, 2014).

[80] OPUC Ex. 1 (Nalepa Dir.) at 21-22.

OPUC states that, even using SWEPCO's Low Gas Forecast, which represents SWEPCO's view of the low end of probable natural gas pricing, the Company's projected natural gas prices range from 24% to 40% higher than NYMEX futures.[81] To put this into perspective, for 2020, SWEPCO's Base Case natural gas price projection was $3.44, while the actual Henry Hub spot price for the third week of February was between $1.90 and $2.00.[82] Projected NYMEX futures are below that break-even point throughout the Project's life.[83] Even when the Company uses a projection that blends NYMEX natural gas prices with other natural gas price forecasts, the Project results in a net loss to customers for the first few years of operation.[84]

OPUC contends that the Company has admitted that adverse shifts in natural gas prices are a risk to its customers.[85] From its evidence, OPUC concludes SWEPCO's customers will disproportionately bear the majority of the risk associated with this Project due to the Company's faulty natural gas price assumptions.

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[81] Tr. at 208-09 (Bletzacker).

[82] Tr. at 224 (Bletzacker).

[83] OPUC Ex. 1 (Nalepa Dir.) at 28.

[84] SWEPCO Ex. 17 (Bletzacker Reb.) at 19.

[85] Tr. at 157 (Brice).

TIEC argues that SWEPCO provided inflated gas projections that skew the net-benefits analysis in favor of the Project. According to TIEC, the use of more realistic natural gas prices, including the EIA's highest supply case and NYMEX futures prices—both of which the Commission relied upon in rejecting the proposed project in *Wind Catcher*—indicates that the SWFs are likely to be uneconomical. TIEC's basic position is that SWEPCO's forecast, which features increasing prices that exceed $9/million British thermal units (MMBtu) by 2047 in the Base Case, is unreasonably inflated over the long-term. SWEPCO's forecast predicts significantly higher gas prices than: (1) the EIA AEO, (2) NYMEX futures prices, and (3) other third-party forecasts. TIEC emphasizes that, as the Commission found in *Wind Catcher*, SWEPCO has been overstating projected gas prices for over a decade.[86]

TIEC contends that the theoretical future natural gas prices SWEPCO witness Mr. Bletzacker derived in his forecast depart immediately and significantly from actual market prices. Although Mr. Bletzacker created his forecast in the second quarter of 2019, his Base Case ($3.21/MMBtu) and low/no carbon case ($2.73/MMBtu) were significantly higher than actual Henry Hub prices during that same year, which averaged $2.56/MMBtu.[87] For 2020, Mr. Bletzacker's base and low/no carbon cases were $3.44/MMBtu and $2.92/MMBtu, respectively, but NYMEX futures prices as of January 2020 were only $2.25/MMBtu.[88] As an additional point of reference on 2020 prices, the actual Henry Hub price for the week before the hearing was in the range of $1.90/MMBtu to $2.00/MMBtu.[89] Similarly, for 2021, Mr. Bletzacker's base and low/no carbon cases projected prices of $3.54/MMBtu and $3.01/MMBtu, respectively, while NYMEX futures prices are well below that level at $2.43/MMBtu.[90]

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[86] *Wind Catcher*, Order at 17 (FoF No. 80).

[87] TIEC Ex. 1 (Pollock Dir.) at 17.

[88] TIEC Ex. 24 (Excerpt from Bletzacker Workpapers – Highly Sensitive Protected Material (HSPM)).

[89] Tr. at 224 (Bletzacker).

[90] TIEC Ex. 24 (Excerpt from Bletzacker Workpapers - HSPM).

TIEC argues that SWEPCO's forecast prices are significantly higher than the 2020 EIA Reference Case and the EIA Low Case, which the Commission cited as the most accurate EIA case in *Wind Catcher*.[91] TIEC claims that SWEPCO, in its direct case, asserted similarities to the 2019 EIA Reference Case in an effort to bolster the credibility of its forecast. SWEPCO noted that the 2019 EIA Reference Case projected similar prices to its Base Case.[92] However, in January 2020, the EIA released its 2020 AEO, which dropped significantly across all cases from the 2019 version.[93] The 2020 EIA Reference Case dropped in every year compared to the 2019 Reference Case, and by $1.27/MMBtu on an average basis.[94]

According to TIEC, the 2020 EIA AEO demonstrates that AEP's gas forecasts continue to be outliers, and are stale. The 2020 EIA Reference Case is now $1.16/MMBtu below AEP's base case on a levelized basis.[95] The current Reference Case is even $0.25/MMBtu below SWEPCO's low/no carbon case.[96] TIEC argues that the fact that the EIA Reference Case is now lower than SWEPCO's lowest natural gas case is particularly noteworthy given that EIA itself has consistently projected higher natural gas prices than have actually occurred:

> EIA forecasts of gas prices have always been lagging indicators and have historically overstated future gas prices, particularly since the advent of the shale revolution. This is due in part to the nature of the EIA forecasting process. It is both time consuming and suffers some of the same flaws as SWEPCO's fundamentals forecasts. Indeed, academics and energy modelers have noted that EIA, despite knowing of the potential for shale gas for decades, failed to forecast low prices by not addressing the issues of known unknowns and unknown unknowns in its process.[97]

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[91] *Wind Catcher*, Order at 18 (FoF No. 89).

[92] SWEPCO Ex. 5 (Bletzacker Dir.) at 11-12.

[93] TIEC Ex. 3 (Excerpt from Bletzacker Reb. Workpapers).

[94] *Id.* Mr. Bletzacker's rebuttal exhibits included forecasted gas prices only up until 2050.

[95] TIEC Ex. 1 (Pollock Dir.) at 21.

[96] *Id.*

[97] TIEC Ex. 2 (Griffey Dir.) at 30-31 (footnotes omitted).

TIEC witness Mr. Pollock testified that EIA's Reference Case forecasts have overstated future natural gas prices. Each of EIA's Reference Cases since 2013 projected much higher natural gas prices than actually occurred. Additionally, Mr. Pollock testified that the EIA is consistently lowering its Reference Case year after year as it attempts to better reflect the reality of abundantly available cheap natural gas.[98]

Given that EIA's Reference Case has consistently overstated natural gas prices, TIEC concludes that it is unsurprising that EIA's Low Case has provided the most accurate forecast in recent years. The EIA Low Case projects the largest available supply of natural gas—and the most robust shale development—among the EIA cases.[99] In *Wind Catcher*, the Commission specifically found that this case has been the most accurate in recent years. That trend has continued in 2019 and 2020. TIEC notes that EIA's recent Low Cases overshot prices in 2019, and are on pace to do so for 2020 as well. This means that the Commission's finding in *Wind Catcher* that EIA's Low Case was the most accurate has remained valid since that time. Even EIA's lowest price forecast has not reflected the persistence of cheap natural gas under current conditions. TIEC explained that even if one accepted SWEPCO's method of deriving a low case (that is, reduce the base case by 15%), that method would be better applied to the 2020 EIA Reference Case than to SWEPCO's 2019 forecast. TIEC contends that reducing the EIA 2020 Reference Case by 15% would yield a price that is not only significantly below SWEPCO's low case, but is also below SWEPCO's break-even price. "Specifically, on a levelized basis, EIA's 2020 Reference Case price is $4.24/MMBtu, which when reduced by 15% yields a levelized price of $3.60/MMBtu."[100]

TIEC states that it is particularly significant that EIA's 2020 Low Case is below even SWEPCO's calculation of the break-even natural gas price for the SWFs at a P50 net capacity factor (NCF). On a levelized basis, SWEPCO's claimed break-even gas price is $3.67/MMBtu

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[98] TIEC Ex. 1 (Pollock Dir.) at 22, Exh. JP-2.

[99] TIEC Ex. 1 (Pollock Dir.) at 18-19.

[100] TIEC Reply Brief at 24, citing TIEC Ex. 1 (Pollock Dir.) at 21 (for 2020 EIA Reference levelized). $4.24 * 0.85 = $3.60.

while the 2020 EIA Low Case is only $3.46.[101] Therefore, TIEC asserts the 2020 EIA forecasts confirm that SWEPCO's projected gas prices are inflated and that the Project poses an unreasonable risk to customers.

TIEC also relies on the NYMEX to demonstrate that SWEPCO's projected gas prices are unreasonably high. Mr. Pollock calculated that the levelized price of NYMEX futures from 2021 to 2051 is $3.10/MMBtu compared to $5.40/MMBtu for SWEPCO's Base Case, and $4.50/MMBtu for SWEPCO's low/no carbon case.[102] Notably, as with the 2020 EIA Low Case, the levelized futures price is below SWEPCO's claimed break-even price of $3.67/MMBtu.

TIEC argues that SWEPCO's opposition to using NYMEX futures prices to evaluate the Project lacks merit. First, SWEPCO's observation that futures markets contain hedging and similar activities is of no consequence.[103] The presence of hedging activities in the futures market does not change the fact that NYMEX is an actual market in which willing buyers and willing sellers transact.[104] TIEC posits that SWEPCO attempts to diminish the importance of the NYMEX futures market by arguing that there is very little "open interest" in the market beyond the near term.[105] TIEC responds that, while open interest generally declines with time, actual transactions between buyers and sellers occur on the NYMEX market well beyond the two-year period Mr. Bletzacker references.[106] TIEC also notes that NYMEX settlement prices are widely relied on

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[101] TIEC Ex. 1 (Pollock Dir.) at 21.

[102] TIEC Ex. 1 (Pollock Dir.) at 21. To derive his futures price, Mr. Pollock used NYMEX future prices based on the 30-day average closing price for 2021-2031 futures contracts traded at Henry Hub through January 7, 2020. He then trended the 2032-2051 prices based on the average escalation rate from 2027 to 2031. *Id.* at 20-21.

[103] SWEPCO Ex. 17 (Bletzacker Reb.) at 6-7.

[104] TIEC Ex. 1 (Pollock Dir.) at 20.

[105] By "open interest," SWEPCO is referring to the total number of futures contracts that are held by market participants. SWEPCO Ex. 5 (Bletzacker Dir.) at 7.

[106] As an example, TIEC notes that even Mr. Bletzacker's NYMEX Henry Hub Natural Gas Open Interest Forecast graph reproduced above shows that there are transactions beyond the first two or three years, with the graph showing an increase in January 2022, despite the compressed vertical axis.

in the industry,[107] and SWEPCO has not shown that NYMEX's published futures prices—even in the out years in which volume is low—are less reliable than SWEPCO's forecast prices.

TIEC concludes that NYMEX futures prices provide a meaningful market-based data point to compare to theoretically derived forecasts and to evaluate future resource decisions. For that reason, the Commission noted that NYMEX futures—trended to 2045—were well below SWEPCO's natural gas forecasts in explaining its rejection of SWEPCO's prior application in *Wind Catcher*.[108]

TIEC next argues that SWEPCO's Fundamentals Forecasts have overstated prices in each of the last five years.[109] For example, the 2010 forecast predicted natural gas prices of $6.98/MMBtu for 2019, which turned out to be more than 2.5 times the actual price of $2.56/MMBtu. As recently as 2018, SWEPCO's forecast predicted prices of $3.88/MMBtu for 2019, which was still more than $1.30/MMBtu over the actual price a year later. On this point, TIEC concludes that SWEPCO has not undertaken any study comparing its natural gas forecasts to actual gas prices on a weather-normalized basis or otherwise.[110] Further, SWEPCO uses a 30-year weather normalization period,[111] which the Commission has rejected because it fails to account for more recent trends.[112]

TIEC also challenges SWEPCO's natural gas projections (and break-even price) because they rely on a forecast Mr. Bletzacker created using Southwestern Public Service Company's (SPS's) method, and various third-party forecasts. As to the SPS method comparison, TIEC notes that the Commission cited SPS's *low* forecast (not base forecast) in explaining its denial of

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[107] TIEC Ex. 61 (TIEC response to SWEPCO RFI 1-7).

[108] Citing *Wind Catcher* at 5, 18 (FoF No. 84).

[109] TIEC Ex. 1 (Pollock Dir.) at 17.

[110] TIEC Exs. 38 (SWEPCO response to TIEC RFI 1-8), 39 (SWEPCO response to OPUC RFI 2-1), 40 (SWEPCO response to TIEC RFI 7-13; Tr. at 258 (Bletzacker).

[111] SWEPCO Ex. 5 (Bletzacker Dir.) at 6.

[112] *Application of Southwestern Electric Power Company for Authority to Change Rates,* Docket No. 46449, Order on Rehearing at 44-45 (FoF Nos. 271-75) (May 19, 2018).

SWEPCO's application in *Wind Catcher*.[113] In this case, the SPS-method *base* forecast is more than $1.50/MMBtu lower than SWEPCO's Base Case, and more than $0.50/MMBtu lower than SWEPCO's low/no carbon case, and is only marginally higher than SWEPCO's claimed break-even price. An SPS *low* forecast based on SWEPCO's creation of an SPS-method base case would be nearly $1/MMBtu below SWEPCO's purported break-even price on an average basis. As to the third-party forecasts, TIEC contends that SWEPCO's forecasts are outdated and include all of EIA's side cases from 2019 and 2020 that project higher prices than even the EIA Reference Case, which has itself been on the high side of actual gas prices under current market conditions. According to TIEC, SWEPCO's case shows only that there is a great deal of risk that SWFs will be uneconomical.

In sum, TIEC urges that SWEPCO's projected natural gas prices are outliers, and the SWFs should instead be evaluated based on NYMEX futures prices and the EIA Low Case consistent with *Wind Catcher*. As TIEC witness Mr. Griffey calculated, each $1/MMBtu drop in gas prices from SWEPCO's low/no carbon case results in a $246 million NPV drop in net benefits. Assuming recent NYMEX futures prices results in a $396 million NPV reduction in net benefits.[114]

Staff generally takes the same positions as TIEC and OPUC, contending that SWEPCO's estimate of natural gas prices, including its low-gas case, is overstated. This overstatement directly affects the calculation of the Company's estimate of benefits to be realized by customers, which depends on the market price of energy, or the LMP of energy. The higher the LMPs, the greater the production cost savings. Staff cites SWEPCO's concession that the Fundamentals Forecast has been overstating natural gas prices over the last ten years.[115] Despite that concession, Staff notes that SWEPCO admits that it did not make any changes to its forecasting methodology in

[113] *Wind Catcher*, Order at 4-5, 18 (FoF No. 83).

[114] TIEC Ex. 2 (Griffey Dir.) at 33.

[115] Citing TIEC Ex. 1 (Pollock Dir.) at 17; Tr. at 225 (Bletzacker).

calculating natural gas prices since the 2016 Fundamentals Forecast used to evaluate the application the Commission rejected in *Wind Catcher.*[116]

As with TIEC, Staff contends NYMEX futures prices are a much better indicator of future natural gas prices than SWEPCO's Fundamentals Forecast.[117] Staff states that SWEPCO's base and low gas cases are higher than NYMEX gas futures prices, which are similar to the EIA AEO 2020 High Oil and Gas Supply Case natural gas price predictions. Staff also challenges the use of a 30-year period to weather-normalize SWEPCO's Fundamentals Forecast, noting that the Commission has rejected that lengthy a weather-normalization period.[118] Staff concludes that SWEPCO's projected natural gas prices in its Base Case and its low case are overstated, which leads to inflated LMPs.[119]

iii. SWEPCO's Response

SWEPCO presents several responses to the challenges raised by OPUC, TIEC, and Staff: these parties rely on too few forecasts; the Company's witness has actual experience and expertise with natural gas transactions forecasts, while TIEC's witness does not; OPUC, TIEC and Staff focused on too-narrow and too-low sets of natural gas pricing forecasts, and the NYMEX is a short-term forecast that cannot reliably be used to forecast natural gas prices 30 years into the future.

SWEPCO faults TIEC in particular for relying on only three forecasts—two EIA forecasts and TIEC's "trended" NYMEX futures—and placing no reliance on third-party forecasts. SWEPCO asserts that TIEC has ignored more than 40 other natural gas forecasts contained in the

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[116] Citing TIEC Ex. 31 (SWEPCO response to TIEC RFI 1-4) at 5.

[117] Citing TIEC Ex. 1 (Pollock Dir.) at 4.

[118] Citing *Application of Southwestern Electric Power Company for Authority to Change Rates and Reconcile Fuel Costs,* Docket No. 40443 (FoF No. 260) (Mar. 6, 2014).

[119] TIEC Ex. 1 (Pollock Dir.) at 32.

record.[120] SWEPCO also faults TIEC for failing to account for the weather's effect on spot natural gas prices, arguing that "a simple extrapolation of current prices and NYMEX futures" should not be considered a reliable predictor of futures prices because otherwise there "would be little value to EIA or to any of the third-party forecasts bought by companies in the industry at considerable expense."[121]

In addition to highlighting Mr. Bletzacker's expertise, SWEPCO notes that TIEC's witness did not consult with any of the TIEC member companies to solicit their views regarding long-term natural gas prices. According to SWEPCO, this failure to consult its own members, which include one of the largest oil and natural gas exploration and production companies in the country, implies a "willful disregard of credible forecasts of future natural gas prices."[122] SWEPCO argues that the actual daily Henry Hub spot price average for the period 1997-2020 is $0.18 higher than the Company's High Gas forecast average, contrary to the data presented in TIEC's analyses.[123] The TIEC witness's portrayal of the Company's High Gas forecast as "not remotely plausible" is "detached from past evidence, lacks consideration of inherent volatility due to weather or force majeure events, and does not give credence to the possibility of any sea-change regulatory, geopolitical or other influences."[124]

SWEPCO indicates that both TIEC and OPUC rely on "trended" NYMEX futures prices that are not valid long-term forecasts. Neither TIEC nor OPUC cite to meaningful transactions between buyers and sellers beyond 36 months.[125] Further, because the "vast majority" of NYMEX futures prices (that is, those beyond 36 months) are not based on actual transactions, NYMEX creates prices by using "bid/ask spreads, and also looks to information outside the NYMEX

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[120] Citing Tr. at 611, 613-14 (Pollock).

[121] SWEPCO Reply Brief at 21.

[122] SWEPCO Reply Brief at 22.

[123] SWEPCO Ex. 17 (Bletzacker Reb.) at 17-18.

[124] SWEPCO Ex. 17 (Bletzacker Reb.) at 17.

[125] SWEPCO Ex. 26 (OPUC response to SWEPCO RFI 1-3); SWEPCO Ex. 35 (TIEC response to SWEPCO RFI 1-6).

exchange."[126] But, according to SWEPCO, TIEC could not explain what information outside the NYMEX exchange is used to create NYMEX prices, other than a "vague reference" to "other over-the-counter markets." But TIEC's witness conceded that the bids and asks referred to are bids no one accepted and offers no one was willing to buy.[127]

SWEPCO concludes that acquisition of the SWFs will reduce the risk that customers will suffer from high natural gas and energy costs, which is not disputed if the market faces high natural gas costs.

iv. ALJs' Analysis

The ALJs rely primarily on the EIA AEO forecastsand Commission precedent regarding the historical inaccuracy of the SWEPCO's Fundamental Forecasts to recommend that the Commission reject SWEPCO's Fundamental Forecasts as presented in this case. Although the Commission also relied on the NYMEX futures pricing analysis in *Wind Catcher* to conclude that the CCN application in that case should be denied, the ALJs do not place significant reliance on NYMEX long-term natural gas pricing forecasts because almost all of the actual transactions reflected are in the first three years of the future trend. In this regard, NYMEX is a reliable source for predicting near-term natural gas prices (recent events regarding the pandemic perhaps causing an exception). But to reach out to 30 years in a NYMEX forecast, the first roughly three years must be adjusted and extrapolated, and the parties supporting the NYMEX forecast were unable to show why the post-three-year adjustments are any more reliable than other third-party forecasts. For this reason, the ALJs do not include findings supporting use of a NYMEX forecast other than to note that NYMEX futures prices represent actual transactions between buyers and sellers, particularly for the first three years into the future. Instead, the ALJs place more reliance on the EIA modeling and the historical flaws, or inaccuracies, that are evident in the Fundamentals Forecast.

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[126] SWEPCO Reply Brief at 24, quoting TIEC Initial Brief (De-Designated) at 24.

[127] Tr. at 643-45 (Pollock).

While CARD's witness accepted SWEPCO's Fundamentals Forecast, he noted that the net benefits, even under the base-case scenario, would show only about 1% savings in revenue requirements. This minimal benefit led him to conclude that: "This situation places undue risk on ratepayers unless SWEPCO's proposed cost and performance guarantees are significantly enhanced."[128]

The evidence shows that, as in *Wind Catcher*, SWEPCO's modeling continues to predict higher future natural gas prices than shown by the historically more accurate (although still high) EIA modeling. As noted, the 2020 EIA Reference Case is now $1.16/MMBtu below SWEPCO's Fundamentals Forecast base case on a levelized basis.[129] The current EIA Reference Case is even $0.25/MMBtu below SWEPCO's low/no carbon case.[130] Moreover, convincing evidence shows that the EIA Reference Case is still too high when viewed in retrospect. The ALJs thus conclude, as the Commission found in *Wind Catcher*, that EIA's Low Case provides the most accurate forecast, at least in recent years.[131] With the exception of years 2026 through 2029, the EIA Low Case gas price is below SWEPCO's own break-even gas price for the 30-year Project period.[132] The 2020 EIA forecasts confirm that SWEPCO's projected gas prices are inflated and that the SWFs pose a significant risk to customers in terms of cost-benefits. For these reasons, the ALJs recommend that the Commission place little if any weight on the Fundamentals Forecast and instead rely on the EIA forecasts, and in particular the 2020 EIA Reference Case and EIA's Low Case, to conclude that it is not probable that the SWFs will produce net benefits for SWEPCO's customers.

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[128] CARD Ex. 1 (Norwood Dir.) at 24-25.

[129] TIEC Ex. 1 (Pollock Dir.) at 21.

[130] *Id.*

[131] *Wind Catcher,* Order at 18 (FoF No. 89).

[132] TIEC Ex. 3 (Excerpt from Bletzacker Reb. Workpapers); TIEC Ex. 1B (Pollock Dir. Workpapers).

b. Other Assumptions Affecting Locational Marginal Prices

i. Carbon Tax

SWEPCO's 2019 Fundamentals Forecast employed the presumption of a carbon emissions burden beginning in 2028 at $15 per ton and escalating by 3.5% a year.[133] Its assumed implementation in 2028 was "the earliest reasonable projection as to when such legislation could be implemented."[134] TIEC, OPUC, and Staff oppose SWEPCO's use of a carbon tax assumption in its Base Case. These parties emphasize that the Commission explicitly rejected the use of a carbon burden for modeling purposes in *Wind Catcher*.[135]

TIEC argues that circumstances have not changed.[136] Congress has never enacted a tax on carbon; it is unlikely that a carbon tax will be imposed in the foreseeable future; and SWEPCO presented no expert witness on the likelihood that it would.[137] SWEPCO assumes its earliest imposition would be 2028.[138] TIEC argues it is more likely Congress will address carbon by incentivizing carbon-free generating sources, rather than penalizing carbon-emitting sources, as it has done with PTCs and investment tax credits for wind and solar resources.[139]

OPUC, TIEC, and Staff argue that the primary impact of the carbon-tax assumption is to increase the projected LMPs in the modeling, which in turn makes the SWFs appear to be more

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[133] SWEPCO Ex. 5 (Bletzacker Dir.) at 13.

[134] TIEC Ex. 2 (Griffey Dir.) at 112 (citing SWEPCO response to TIEC RFI 9-3).

[135] *Wind Catcher,* Order at 19 (FoF No. 96).

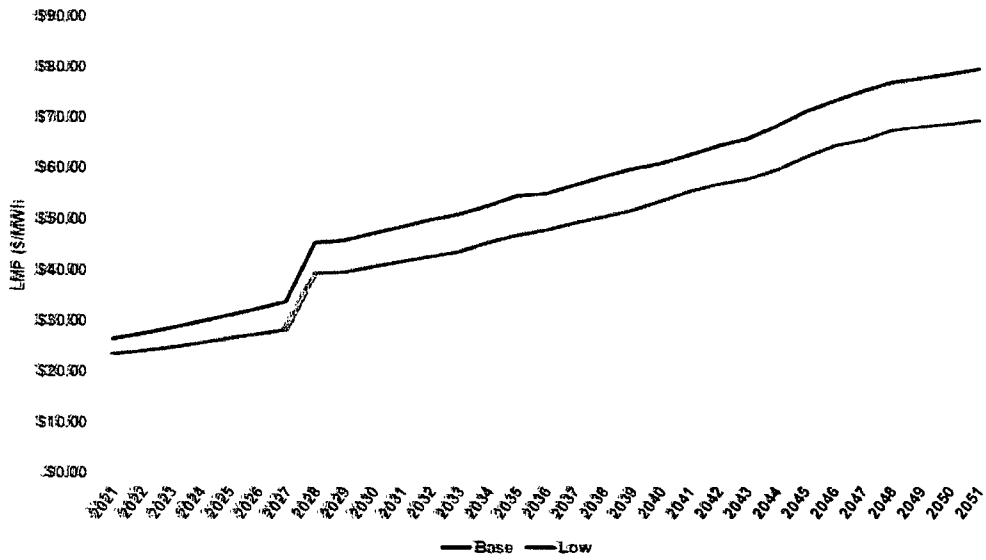
[136] TIEC Initial Brief (De-Designated) at 34.

[137] TIEC Ex. 2 (Griffey Dir.) at 39; Tr. at 622 (Pollock).

[138] OPUC Ex. 1 (Nalepa Dir.) at 15.

[139] TIEC Ex. 1 (Pollock Dir.) at 27; Tr. at 623, 638-39 (Pollock); TIEC Ex. 2 (Griffey Dir.) at 39-40. TIEC also notes that incentives for renewable generation have the opposite effect on LMPs as a carbon-tax because the incentives lower market prices, while a carbon-tax increases prices, and therefore had SWEPCO instead assumed that renewable subsidies will continue or increase would have diminished the economics of the SWFs. TIEC Ex. 1 (Pollock Dir.) at 27; TIEC Ex. 2 (Griffey Dir.) at 39.

economical.[140] The carbon burden in SWEPCO's Base Case assumption accounts for $171 million in NPV net benefits.[141] TIEC witness Pollock showed the 2028 increase in modeled LMPs in the following chart:[142]



Staff illustrated the effect of the carbon tax assumption on the NPV at different production and natural gas price levels in the following table:[143]

	With CO_2 Tax	W/o CO_2 Tax	Reduction in Benefits (NPV)
P50 Base Gas	$567	$396	$171
P50 Low Gas	$396	$236	$160
P95 Base Gas	$330	$181	$149
P95 Low Gas	$183	$43	$140

[140] OPUC Ex. 1 (Nalepa Dir.) at 15-16; Tr. at 682 (Nalepa); TIEC Initial Brief (De-Designated) at 35; Staff Initial Brief at 10.

[141] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1-2.

[142] TIEC Ex. 1 (Pollock Dir.), Exh. JP-3.

[143] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3.

Removing the carbon tax assumption therefore reduces the net cost savings benefits by approximately 30%.[144]

SWEPCO counters that even without a carbon tax, the SWFs have a NPV of $1.453 billion (nominal)/$396 million (NPV) and $971 million (nominal)/$236 million (NPV) in the Base Gas No Carbon and Low Gas No Carbon cases, respectively.[145] SWEPCO further argues that the likelihood of such a carbon burden being imposed at some point over the 30-year life of the SWFs is greater than zero, and that SWEPCO has prudently considered such a possibility when assessing the expected customer savings of the SWFs.[146]

SWEPCO takes issue with TIEC's assertion that incentivizing renewables makes the SWFs less economical. SWEPCO argues that PTCs would decrease the cost of wind generation, but would decrease the cost of energy only if wind is the marginal unit being dispatched. As long as fossil units are retained in the dispatch stack and are on the margin, PTCs for wind generation would have little impact on LMPs.[147]

SWEPCO argues that its assumed 3.5% per annum from $15 per ton dispatch burden[148] is at a level that TIEC witness Pollock testified in 2008 "is on the very low end of the range of possibilities."[149] SWEPCO contends that the carbon burden scenario reflects the risk of regulation of CO_2 emissions from fossil fuel-fired power plants, which is real, regardless of the political climate, given the United States Supreme Court's determination that CO_2 is a pollutant under the Clean Air Act.[150] SWEPCO also cites a recent proposal by House Democrats for an economy-

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[144] OPUC Ex. 1 (Nalepa Dir.) at 16.

[145] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 2 and 5.

[146] SWEPCO Initial Brief at 28.

[147] SWEPCO Reply Brief at 28.

[148] SWEPCO Ex. 5 (Bletzacker Dir.) at 13.

[149] SWEPCO Ex. 36 at 20-21 (Docket No. 33891 Supplemental Direct Testimony of Jeffry Pollock).

[150] *See Massachusetts v. E.P.A.*, 549 U.S. 497, 528-29 (2007).

wide plan for achieving net-zero carbon emissions, labeled the CLEAN Future Act.[151] SWEPCO argues that assigning a zero percent probability to carbon risk is not credible because a carbon burden came very close to implementation several years ago in the Environmental Protection Agency's Clean Power Plan and could be proposed again as the result of any presidential election during the 30-year life of the SWFs.[152]

TIEC responds that neither the recognition of carbon dioxide as a pollutant under the Clean Air Act, nor the more recent legislation proposed by Congressional Democrats makes it likely that a carbon tax will be imposed, given that the carbon tax was not implemented even when there was strong bipartisan support for it in 2008, when Mr. Pollock testified in favor of it.[153] Further, the Clean Power Plan rule adopted under President Obama has also fallen by the wayside.[154]

SWEPCO points out that several intervenor witnesses, including CARD witness Norwood and OPUC witness Mr. Nalepa, admitted that the risk of a carbon emissions burden should be considered.[155] Mr. Norwood even analyzed customer benefits under low gas scenarios, two of which are with carbon.[156] Mr. Norwood also agreed that such a carbon burden was almost implemented several years ago with the EPA's Clean Power Plan,[157] and the likelihood of a carbon burden could change based on election results during the life of the SWFs.[158] SWEPCO also points out that many of the TIEC members participating in this proceeding, including Air Liquide, Eastman Chemical, Komatsu, and Occidental Petroleum, have indicated that they also assign a price on carbon for internal business planning purposes.[159]

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[151] SWEPCO Ex. 17 (Bletzacker Reb.) at 25-26; SWEPCO Initial Brief at 29.

[152] Tr. at 681-86 (Nalepa).

[153] Tr. at 637-38 (Pollock).

[154] Tr. at 620 (Pollock).

[155] Tr. at 682-84 (Nalepa), 662-63 (Norwood).

[156] Tr. at 667-69 (Norwood); CARD Ex. 1 (Norwood Dir.) at 20, 82 (Attachment SN-7).

[157] Tr. at 684 (Nalepa).

[158] Tr. at 684-86 (Nalepa).

[159] SWEPCO Ex. 17 (Bletzacker Reb.) at 26-27.

The ALJs agree that the likelihood that a carbon burden will be implemented over the next 30 years is not zero. However, the evidence shows that forecasting that likelihood is far too speculative to form the basis for evaluating the probable benefits of a billion dollar generating facility. Accordingly, for purposes of assessing the probable lowering of costs, and consistent with Commission precedent, the ALJs find that it is unreasonable to assume a carbon tax, and recommend that the Project be evaluated without one.

ii. Future Renewable Generation

As a part of its economic evaluation, SWEPCO witness Mr. Pfeifenberger testified, "the Company relied on SPP's PROMOD 'Reference Case (Future 1),' which was developed by SPP staff and stakeholders for the 2019 ITP process."[160] The PROMOD models include 24,200 MW of installed wind generation for 2024 and 24,600 MW by 2029, compared to approximately 21,400 MW installed today, and 3,000 MW of installed solar generation in 2024 and 5,000 MW in 2029, compared to 250 MW installed today.[161] To this, the Company added 1,000 MW to reflect the Traverse wind facility, which was not in the SPP ITP model.[162] SWEPCO states that these models contain renewable generation resources at levels and locations that SPP and its stakeholders have deemed feasible and realistic for development by 2024 and 2029.[163] SWEPCO also notes that SPP's recently approved 2019 ITP Assessment Report (November 2019) indicates that SPP conducted a more in-depth analysis in which the 2024 and 2029 renewable generation assumptions were vetted extensively and found to be appropriate.[164]

TIEC asserts that SWEPCO's modeling failed to properly account for renewable generating resources—particularly wind generation. TIEC argues that renewable resources such as wind and solar have little or no marginal cost and that wind projects can bid into the market at

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[160] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 3.

[161] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 8, 18-19.

[162] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 3-4, 10: Fig. 2 Notes.

[163] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 3.

[164] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 4.

negative prices,[165] driving down the LMPs that the model projects.[166] TIEC argues that in the AURORA model used to derive its LMPs,[167] SWEPCO assumed that renewables in SPP would grow by 6.1 GW in 2024 and by 7.2 GW in 2029,[168] to 27.8 GW and 28.9 GW respectively, for years 2024 and 2029,[169] when by July 2019, there was approximately 21.7 GW of wind and solar generation in the SPP footprint.[170] Of this new renewable capacity, all of the additions after 2020 were assumed to be solar additions.

(a) No New Wind Generation After 2020

TIEC argues that SWEPCO understates the addition of renewables to the SPP market by assuming no wind will be added after 2020,[171] including the Traverse and Maverick plants proposed in this case, which have a total nameplate capacity of 1,286 MW.[172]

SWEPCO responds that instead of adding new generators, the AURORA model retires existing wind generators and repowers them in place.[173] SWEPCO also argues that the amount of

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[165] Tr. at 338-39 (Sheilendranath).

[166] TIEC Ex. 1 (Pollock Dir.) at 22; TIEC Ex. 2 (Griffey Dir.) at 35.

[167] TIEC Ex. 2 (Griffey Dir.) at 35, 48-49.

[168] SWEPCO may have assumed even less solar and wind growth than this to the extent that Mr. Pfeifenberger's reference to "Renewables in the Model" in his rebuttal testimony accounts for hydroelectric power. SWEPCO Ex. 20 (Pfeifenberger Reb.) at 7. As of the end of 2018, SPP reported 3.4 GW of existing hydroelectric power. TIEC Ex. 1B (Pollock Dir., Workpapers) at 48.

[169] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 7.

[170] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 8 (July 15, 2019) (showing 250 MW of solar generation); *id.* at 19 (showing 21.4 GW of wind generation).

[171] TIEC Ex. 2 (Griffey Dir.) at 35; TIEC Exs. 44 (SWEPCO response to TIEC RFI 6-3) and 45 (SWEPCO response to TIEC RFI 11-6).

[172] SWEPCO Ex. 2 (Brice Dir.) at 6.

[173] Tr. at 269-70 (Bletzacker); SWEPCO Ex. 17 (Bletzacker Reb.) at 28. SWEPCO also argues that TIEC witness Mr. Griffey's testimony regarding no new wind after 2020 is unsupported. SWEPCO Reply Brief at 31. However, TIEC Exhibits 44 and 45, both SWEPCO RFI responses, clearly show no new wind after 2020.

wind assumed by the AURORA model in 2020[174] is already the approximate level of wind capacity (24,600 MW) forecast by SPP and its stakeholders for 2029 in SPP's ITP PROMOD model.[175]

TIEC counters that the repower-in-place assumption was an input into the model by SWEPCO witness Bletzacker,[176] knowing that it would likely cause the model to select the facilities for repowering.[177] TIEC argues that Mr. Bletzacker's repowered-in-place assumption is not an adequate proxy for accounting for new renewable projects, given that wind capacity in the SPP has more than doubled between 2014 (8.4 GW) and 2018 (20.6 GW)[178]—and that wind plants generally have an expected life of 20 years or more.

The ALJs conclude that SWEPCO's repower-in-place assumption is not persuasive. It begins in the very near future—a mere nine years hence—when wind capacity within SPP "has more than doubled from 8.6 GW in 2014 to 20.6 GW in 2018."[179] It is not reasonable to assume that the rapid increase of renewables, and wind in particular, will stop abruptly in 2020.

The ALJs find that it is unreasonable to hold wind generation constant after 2020 in SWEPCO's AURORA model. As for SWEPCO's contention that the amount of wind assumed by the AURORA model in 2020 is already the approximate level of wind capacity (24,600 MW) forecast by SPP and its stakeholders for 2029 in SPP's ITP PROMOD model, the record is unclear. For the amount of wind assumed in the AURORA model, SWEPCO cites to TIEC Exhibit 45, SWEPCO's response to TIEC RFI 11-6, which shows renewable capacity additions for wind and solar separately, under SWEPCO's base, high and low gas cases. The chart shows a total amount

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[174] TIEC Ex. 45 (SWEPCO response to TIEC RFI 11-6).

[175] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 8.

[176] TIEC Ex. 75 (SWEPCO response to TIEC RFI 11-5) (stating that, except the anticipated re-powering of wind facilities, all capacity changes are an output of the model); Tr. at 270-71 (Bletzacker) (stating that the repower-in-place assumption was "the model's econometric output"); Tr. at 736 (Bletzacker) ("the model does make those choices when you give the model the cost to repower unit and it chooses it as a least cost option.").

[177] Tr. at 736-37 (Bletzacker).

[178] TIEC Ex. 51 (SWEPCO response to ETEC-NTEC RFI 2-34).

[179] *Id*

of renewable generation for 2020 of 24,796 MW, which is the sum of the assumed existing wind (21,349 MW), the assumed new wind (3,044 MW, which is held constant until 2049), and assumed existing solar (393 MW). Remarkably, these assumptions are held constant under all of the scenarios. The record therefore does not support SWEPCO's contention that the amount of wind assumed for 2020 (21,349 MW)[180] is the approximate amount in the SPP ITP PROMOD model (24,600 MW) for 2029.

(b) The SPP Generation Interconnection Queue

TIEC argues that the current requests in the SPP generation interconnection queue show nearly 10 GW of renewable resources in the Generation Interconnection Agreement (GIA) Stage on schedule to enter commercial operation during the period 2019 to 2021, an additional 11 GW of renewable capacity in the Facility Study Stage, and over 70 GW of renewable projects currently in the Definitive Interconnection System Impact Study (DISIS) Stage. If only half of the capacity in the Facility Study Stage is constructed, together with the 10 GW with GIAs, that would be more than 15 GW of renewable resource, more than doubling the 7.2 GW renewable-resource growth assumed in SWEPCO's AURORA model by 2029.

SWEPCO responds that the SPP PROMOD models include projections not reflected in the SPP queue, such as projects that are later suspended or delayed, or SPP stakeholders's decision to shift from wind to solar generation.[181]

TIEC notes that SWEPCO itself has cited to the queue as evidence that there will likely be continued wind deployment in the SPP.[182] TIEC argues that since the *Wind Catcher* case, where the Commission specifically referenced the 40 GW in the SPP interconnection queue in finding

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[180] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 8.

[181] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 5-6.

[182] TIEC Ex. 51 (SWEPCO response to ETEC-NTEC RFI 2-34) ("Furthermore, the Company reported approximately 80 GW of wind energy resources in the SPP interconnection queue at the time of the study and the Company believes that there is a high potential for additional wind resources deployment in the SPP footprint going forward.").

SWEPCO's modeling understated the amount of new wind generation in SPP,[183] the wind generation in SPP's interconnection queue has grown to 80 GW.[184]

TIEC further argues that SWEPCO used SPP's Future 1 case in its PROMOD model, even though AEP has stated that SPP's Future 2 case—which assumes a higher level of renewable resources—more accurately represents the expected level of future renewable penetration in the SPP.[185]

SWEPCO responds that the Company's models reflect close to 30 GW of renewable development, which includes the approximate amount of on-schedule renewables development in the SPP queue,[186] albeit with more solar than wind. SWEPCO witness Pfeifenberger testified that SWEPCO used ITP PROMOD models approved by SPP stakeholders, which contain all planned and/or needed future generation resources at levels and locations that SPP and its stakeholders deemed feasible for development by 2024 and 2029.[187]

The ALJs find SWEPCO's arguments against aligning its renewables projections with the SPP interconnection queue unpersuasive. The recognition of the increase in renewable resources, and wind in particular, is important because wind generation would primarily affect LMPs during

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[183] *Wind Catcher*, at 19 (FoF Nos. 99, 99A).

[184] *Wind Catcher*, at 19 (FoF No. 99A); TIEC Ex. 1 (Pollock Dir.) at 30; TIEC Ex. 51 (SWEPCO response to ETEC-NTEC RFI 2-34) (noting 80 GW of wind generation in the queue in the spring of 2019); SWEPCO Ex. 7 (Ali Dir.) at 7-8; SWEPCO Ex. 3 (Godfrey Dir.) at 12-14 (noting that bids were received on March 1, 2019).

[185] Tr. at 376 (Ali); TIEC Ex. 52. SPP's 2019 Future 2 case projects 27 GW of wind in 2024 and 30 GW in 2029, and SPP's 2020 Future 2 case projects 30 GW of wind in 2025 and 33 GW of wind in 2030. TIEC Exs. 52, 53.

[186] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 7, Fig. 1.

[187] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 3.

the hours in which wind generation runs, which will also be the same hours during which the SWFs will run.[188] Moreover, wind resources add more congestion than do other types of generation.[189]

The ALJs also find that Mr. Pollock's 15 GW analysis is conservative, given that the amount in the interconnection queue has doubled since *Wind Catcher*. Additionally, the ALJs find SWEPCO's choice of PROMOD models telling. Although SWEPCO used ITP PROMOD models approved by SPP stakeholders, those models include both a Future 1 case and a Future 2 case. The Future 2 case assumes a higher level of future renewable penetration than the Future 1 case.[190] Significantly, AEP's representative, when addressing the SPP Market Operations Policy Committee, stated that "SPP's own wind projections show that Future 2 aligns with the expected reality – this region will likely have over 30 GW of wind power in the not distant future."[191] Nevertheless, SWEPCO assessed the economics of the SWFs using the Future 1 case,[192] assuming in its AURORA model that the SPP will not reach 25 GW of wind generation during the entire study period.[193]

(c) EIA Projections

TIEC argues that SWEPCO's renewable models are inconsistent with EIA's renewable projections.[194] TIEC notes that one of the "key takeaways" from the 2020 AEO is that "the electricity generation mix continues to experience a rapid rate of change, with renewables the

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[188] SWEPCO Ex. 20A (Pfeifenberger Reb. Workpapers) at "LBNL Study_wind_and_solar_impacts_on_wholesale _prices_approved.pdf" at 36-37. ("Specifically, periods with high system-wide wind generation have been correlated with lower LMPs, particularly if the load was also simultaneously low. The impact of wind on average LMPs appears to have become stronger over time, such that average LMPs in 2017 were low when the wind was strongest even when system-wide load was relatively high.").

[189] Tr. at 375 (Ali).

[190] TIEC Ex. 52.

[191] TIEC Ex. 55.

[192] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 3.

[193] TIEC Ex. 45 (showing a maximum of 24,983 MW of wind even in the high gas with carbon case).

[194] TIEC Ex. 46 at 3.

fastest-growing source of electricity generation through 2050 . . . ."[195] According to TIEC, EIA projects that "[d]eclining costs for new wind and solar projects [will] support the growing renewables share of the generation mix across a wide range of assumptions,"[196] including low gas prices, and falling electricity prices.[197] TIEC shows that when compared to EIA's SPP-specific projections, the renewables levels assumed in SWEPCO's AURORA and PROMOD models are understated by significant margins. [198]

SWEPCO argues that the EIA projections for "renewables" in SPP in 2024 and 2029[199] are inconsistent with SPP and its stakeholders' forecasts for future renewables in SPP. SWEPCO argues that SPP and its stakeholders have more intimate knowledge of project development in the SPP, including key transmission limitations and hurdles for project development, and it is therefore more reasonable to rely on SPP's assumptions for renewables in the SPP than EIA's assumptions.[200]

Although the ALJs agree that SPP and its stakeholders have more intimate knowledge of project development in the SPP, the evidence shows that SWEPCO did not accurately capture that knowledge in choosing the Future 1 model. Moreover, the EIA's projections are a reliable indication that, over the life of the SWFs, renewable resources are likely to proliferate beyond the 30 GW in SWEPCO's models.

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[195] *Id*

[196] TIEC Ex. 46 at 67.

[197] TIEC Ex. 46 at 74.

[198] TIEC Exs. 76, 77. For each listed year, the EIA AEO figure is the total of the renewable generation shown on these two exhibits for the three SPP regions. *See* SWEPCO Ex. 20 (Pfeifenberger Reb.) at 7 (showing 2024 and 2029 assumptions); TIEC Ex. 44 (showing 2049 assumptions).

[199] TIEC Initial Brief (De-Designated) at 41-43.

[200] SWEPCO Reply Brief at 3.

(d) LMP Projections and Implied Heat Rates

TIEC notes that SWEPCO modeled LMPs to increase over the life of the SWFs.[201] However, average LMPs in the SPP have generally declined over the last decade, as shown below.[202] TIEC argues that this inconsistency further demonstrates SWEPCO's understatement of the growth of renewable capacity in the SPP. TIEC also argues that implied market heat rates, which are the projected power price (LMP) divided by the projected gas price,[203] should decrease with technological improvements and with greater penetration of zero-marginal-cost renewable resources.[204] However, SWEPCO's modeling of the SPP market shows implied heat rates remaining essentially flat over the next 30 years, even in the no-carbon cases.[205]

SWEPCO contends that Mr. Pollock's assertion that the Company overstated market LMPs is inconsistent with his position that gas prices will be very low. Extremely low gas prices would result in fewer new renewable resources being added and more coal plants being retired, both of which would increase power prices beyond those assumed by Mr. Pollock.[206] Furthermore, SWEPCO contends that the LMPs increase because every long-term forecast shows increasing gas prices.[207] Notwithstanding TIEC's assertion that flat implied heat rates indicate understated renewable penetration, SWEPCO notes that implied heat rates *increased* in the SPP from 2012 to 2018, despite the fact that SPP wind capacity almost tripled during that period.[208]

The ALJs find SWEPCO's modeling of LMPs to increase over the life of the SWFs inconsistent with historical trends and therefore unreasonable. Moreover, it is far from clear that

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[201] TIEC Ex. 1 (Pollock Dir.), Exh. JP-3 at 2.

[202] SWEPCO Ex. 20A (Pfeifenberger Reb., Workpapers), at "2018 annual state of the market report.pdf" at 106.

[203] TIEC Ex. 1 (Pollock Dir.) at 28-29.

[204] TIEC Ex. 2 (Griffey Dir.) at 35.

[205] TIEC Ex. 2 (Griffey Dir.) at 34.

[206] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 16-17.

[207] SWEPCO Ex. 17A (Bletzacker HSPM Reb.) at Bates No. 000002, Fig. 10.

[208] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 14-16, Fig. 5.

lower gas prices will drive down the addition of renewable resources, given EIA's projections that renewable generation additions will exceed natural gas fired generation additions.

The ALJs also find the implied market heat rate a weak index of renewable penetration. As SWEPCO notes, with the exception of the Base Case Off Peak, all of the cases in TIEC's exhibit show implied heat rates decreasing.

(e) Impact of Undercounting Renewable Additions

TIEC witness Griffey calculated the impact of SWEPCO's average implied heat rate remaining flat by adjusting for a decline by $2 MMBtu/MWh between the present and 2028,[209] as reducing the net benefits of the SWFs by $409 million NPV.[210]

SWEPCO disputes TIEC's assertion that additional wind in the SPP would significantly impact the customer benefits of the SWFs. SWEPCO argues that the SWFs' benefits depend on LMPs at the locations where SWEPCO's load purchases are made (at the AEP West load zone) and at SWEPCO's conventional generation locations, where SWEPCO's off-system sales revenues are generated, neither of which is significantly affected by pricing in SPP's congested, low-deliverability wind locations.[211]

Additionally, SWEPCO witness Pfeifenberger quantified the impact of adding 3,400 MW of wind in Oklahoma on AEP load zone prices as less than 2% in both 2024 and 2029, while the impact on the LMPs at the Company's generating facilities was 0.5% in 2024 and 0.01% in 2029.[212] This result, SWEPCO argues, is consistent with a recent study by the Lawrence Berkeley National Laboratory (LBNL) showing that for SPP, the price impact of wind generation was

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[209] TIEC Ex. 2 (Griffey Dir.) at 36-37.

[210] TIEC Ex. 2 (Griffey Dir.) at 37, 45.

[211] *See* SWEPCO Ex. 20 (Pfeifenberger Reb.) at 10, Fig. 2 (showing the small impact of 3,400 MW of additional wind generation on LMPs at the SWEPCO Gen Zone and AEP Load Zone).

[212] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 10, Fig. 2.

approximately $0.05/MWh for each one percent of penetration, less than Mr. Pfeifenberger's determination.[213]

TIEC argues that Mr. Pfeifenberger's quantification of the impact of assuming more wind substantially understates the likely penetration of renewables for two reasons. First, Mr. Pfeifenberger's analyses focus on average prices, and therefore ignore the true impact that additional wind generation will have on the projected benefits of the SWFs.[214] Second, because wind generation sets the price only in the hours in which wind is on the margin, those prices are generally negative due to PTCs.[215] TIEC argues that SWEPCO's models would have to be rerun using the appropriate assumptions to fully assess those impacts.

SWEPCO again counters that TIEC's quantification of the impact of additional wind in the SPP overlooks the market impacts that would result from TIEC's gas price and renewable assumptions if they were correct. SWEPCO argues that a future with gas prices as low as TIEC suggests would likely have more coal retirements, which would tend to increase power prices relative to TIEC's proposed levels.[216]

The ALJs agree with TIEC that SWEPCO's models understate the reasonable level of renewable resources over the life of the SWFs. However, the ALJs are not persuaded by TIEC's quantification of the impact, as it is based on TIEC's implied heat rate calculation. Neither are the ALJs persuaded that SWEPCO has adequately accounted for the impact of additional renewable penetration. SWEPCO's assertion that additional renewable resources will have only a minimal impact on the economics of the SWFs is not credible. SWEPCO's quantification of the impacts used 3,400 MW of wind capacity, which does not approach the projected level of wind penetration. Moreover, the evidence shows that given the timing of wind generation, assessing its impact

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[213] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 11, 12.

[214] *E.g.*, SWEPCO Ex. 20 (Pfeifenberger Reb.) at 8-12.

[215] Tr. at 335-36 (Sheilendranath).

[216] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 16-17.

requires more nuance than simply comparing a certain number of watts to the LMPs. The evidence shows that additional wind penetration will have the greatest impact in driving down LMPs during the windiest hours, which will tend to be those hours when the SWFs are running.[217] Accordingly, the ALJs find that SWEPCO understated the additional renewable resources in SPP in its economic analysis of the SWFs.

c. Capacity Factor

Under SWEPCO's Base Case economic benefits analysis (with and without carbon), the expected energy output of the SWFs was the expected P50 level of production with an NCF of 44.01%.[218] SWEPCO states that it is equally likely that production from the SWFs will be above or below the P50 level (*i.e.*, 50% each).[219] This assumption (which affects both the projected production cost savings and the expected value of the PTCs) is the expected NCF. The NCF is the ratio of the actual output of a generating unit over a period of time to its potential output if it were able to operate at full nameplate generating capacity.[220] SWEPCO also ran cases assuming the P95 level, with a NCF of 38.13%.[221] SWEPCO admits that the actual output is unknown[222] and the P50 level excludes force majeure and curtailment.[223]

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[217] SWEPCO Ex. 20A (Pfeifenberger Reb., Workpapers), "LBNL Study_wind_and_solar_impacts_on_wholesale _prices_approved.pdf" at 36-37 (noting that the "region with the highest concentration of negative wholesale prices and the lowest average prices in 2017 [wa]s in the SPP footprint covering states in and around Oklahoma" and that "periods with high system-wide wind generation have been correlated with lower LMPs, particularly if the load was also simultaneously low").

[218] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1-2, Exh. JFT-4; SWEPCO Ex. 8B (Torpey Dir., Workpapers), "Updated Torpey Errata Benefits Model Final.xlsx," Tab "Combined P-Values"; Tr. at 56 (Smoak).

[219] SWEPCO Initial Brief at 31, *citing* SWEPCO Ex. 2 (Brice Dir.) at 18, SWEPCO Ex. 8 (Torpey Dir.) at 15-16; SWEPCO Ex. 14 (Brice Reb.) at 4.

[220] Tr. at 35-36 (Smoak); OPUC Ex. 1 (Nalepa Dir.) at 18.

[221] SWEPCO Ex. 8B (Torpey Dir., Workpapers), "Updated Torpey Errata Benefits Model Final.xlsx," Tab "Combined P-Values."

[222] SWEPCO Ex. 14 (Brice Reb.) at 7; Tr. 152 (Brice).

[223] SWEPCO Ex. 3 (Godfrey Dir.), at Ex. JFG-6 at 58 (P-Values set "assuming turbines operate according to the stated power curve, including the 2.0% discount per the 'Losses' tab, turbines are operated and maintained according to the manufacturer specifications with no major mechanical defects, and all curtailment is reimbursed."); Tr. at 188-189 (Godfrey).

Staff, TIEC, and OPUC argue that assuming a P50 (44.01%) NCF overstates the potential benefits for customers. Instead, Staff and OPUC assert that the economic benefits of the SWFs should be evaluated using the P95 level (38.13% capacity factor),[224] reflecting SWEPCO's minimum production guarantee, discussed below.[225] Staff notes that, even at the P95 production level, SWEPCO's minimum production guarantee has an exception for curtailments.[226]

TIEC disputes SWEPCO's contention that the P50 level means that it is equally likely that production from the SWFs will be above or below the P50 level because the P50 level explicitly does not account for force majeure events, mechanical defects, and curtailments[227]—all of which lower the expected output of the SWFs and represent real risks to customers. TIEC observes that curtailment, for reasons such as transmission constraints, means that the wind farms will not be generating energy even though the wind is blowing,[228] which other SWEPCO wind farms located in central Oklahoma have experienced.[229] TIEC argues that low-probability, high-impact events—such as mechanical breakdowns or seasonal shutdowns due to the whooping crane's migration path, which crosses the Traverse project[230]—are completely unaccounted for in SWEPCO's P50 analysis. Thus, TIEC argues, the P50 level does not represent the actual median of possible outcomes. As a result, the P50 level of 44.01% overstates what would be expected under a true median probability scenario.[231]

SWEPCO argues that TIEC witness Pollock and OPUC witness Nalepa improperly focus on the improbable P95 production level in their analyses while ignoring the probable P50

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[224] Tr. at 35 (Smoak).

[225] OPUC Ex. 1 (Nalepa Dir.) at 8, 17-18; SWEPCO Ex. 2 (Brice Dir.) at 19.

[226] SWEPCO Ex. 2 (Brice Dir.) at 54.

[227] SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-6 at 58; Tr. at 56 (Smoak) (confirming that the P50 does not include any reductions for curtailment or force majeure).

[228] Tr. at 398 (Ali), 507-08 (Pfeifenberger).

[229] Tr. at 193-95 (Godfrey); *see also* TIEC Ex. 18 (HSPM) and TIEC (HSPM) Initial Brief at 49 (regarding the extent of the curtailment).

[230] Tr. at 39-40 (Smoak); SWEPCO Ex. 3B (Godfrey HSPM Dir.), Exh. JFG-3 Traverse at 625 (later de-designated).

[231] Tr. at 56-57 (Smoak).

production level.[232] SWEPCO contends that the P95 production level is unrealistic and implausibly low. The P95 production level has a probability of being exceeded 95% of the time, and a probability that production will fall below that level only 5% of the time.[233] The P95 production level has a 5% chance of occurring over any five-year block of time and an even smaller chance of occurring over six consecutive five-year blocks.[234] SWEPCO argues that it is equally likely that the very high P5 production level could occur over that period, resulting in enormous customer savings.[235] Nevertheless, SWEPCO states, even at the P95 production level, the SWFs would produce customer savings.[236]

SWEPCO further argues that neither force majeure nor curtailment will reduce the NCF determined by its analyst Simon Wind, a meteorological consulting firm with international experience siting wind turbines and a long track record working with AEP on wind energy projects.[237] Moreover, SWEPCO states that the P50 level of production does not exclude force majeure, as TIEC alleges. Rather, SWEPCO states that the Simon Wind report identifies a discount for what it describes as "site access, force majeure," described as "non-meteorological events that affect site access."[238] SWEPCO notes that the report identifies further discounts for icing, high and low temperature shutdowns, and other metrological events including lightning and severe weather.[239] SWEPCO emphasizes that its RFP process required each bidder to submit an independent assessment of the wind resource and expected energy output, which was then independently reviewed by Simon Wind.

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[232] SWEPCO Initial Brief at 31-32.

[233] SWEPCO Ex. 2 (Brice Dir.) at 18; SWEPCO Ex. 8 (Torpey Dir.) at 23; SWEPCO Ex. 14 (Brice Reb.) at 4.

[234] SWEPCO Ex. 2 (Brice Dir.) at 6; Tr. at 628 (Pollock).

[235] SWEPCO Initial Brief at 32.

[236] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 6-9, Exh. JFT-4; SWEPCO Ex. 14 (Brice Reb.) at 4.

[237] SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-4.

[238] SWEPCO Ex. 3 (Godfrey Dir.), Exh. JFG-6 at 54, 105, and 200, under "Environmental" category. In this PFD, citations to the Simon Wind report (Exhibit JFG-6) use the pagination that appears in the upper right-hand corner.

[239] SWEPCO Ex. 3 (Godfrey Dir.) at 54, 105, and 200.

Staff, OPUC, and TIEC each quantify the impact of the 5.88 percentage point difference in assuming NCF at P95 instead of P50. All begin with different cases, so their reductions in NPV customer savings are correspondingly different, ranging from $237 million to $193 million. OPUC calculates the reduction to the Base Case with carbon results in a $237 million NPV.[240] Staff calculates the reduction to the Base Case without carbon as $215 million NPV.[241] TIEC calculates that each NCF percentage point decrease results in a $32.8 million NPV benefit decrease.[242] Thus, the reduction from the low/no carbon case, to the P95 low/no carbon case (projected benefits of $43 million NPV) decreases the projected benefits by $193 million NPV.[243]

Staff argues that the risk of such a large variation in savings, a risk SWEPCO is unwilling to assume, warrants evaluating the economics of the SWFs based on the P95 production level.[244] OPUC emphasizes that the significant impact of falling below the P50 level warrants evaluating the customer benefits under the more conservative power output projection.

The ALJs find that it is not reasonable to evaluate the customer benefits of the SWFs at the P50 level, while guaranteeing benefits only at the P95 level. Accordingly, the ALJs recommend that the benefits of the SWFs be evaluated at the guaranteed level – P95. The evidence shows that, although the likelihood is high that SWFs will produce at the P50 level, it is a near certainty that they will produce at the P95 level that SWEPCO guarantees. While the risks of curtailment and force majeure may be low, the evidence shows they are real and asymmetrical. Where each NCF percentage point is worth $32.8 million in the low gas, no carbon cases, that difference represents significant value to the customers. SWEPCO's confidence levels notwithstanding, the ALJs do

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[240] OPUC Ex. 1 (Nalepa Dir.) at 18-19.

[241] SWEPCO Ex. 8 (Torpey Dir.), Attachment JFT-3 at 2, 7.

[242] TIEC Initial Brief (De-Designated) at 50.

[243] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 5; SWEPCO Ex. 14 (Brice Reb.) at 6. Low gas, no carbon case at P95 is not shown on SWEPCO Ex. 8 (Torpey Dir.), JFT-4. The P50 NCF of 44.01% minus the P95 NCF of 38.13% equals 5.88%. Therefore, $193 million/5.88 = $32.8 million.

[244] Staff Reply Brief at 9.

not recommend basing the customer benefit projections at a probability level SWEPCO is not prepared to guarantee when, as here, the sole purpose of the acquisition is customer savings.

d. Useful Life

SWEPCO states that the SWFs will be engineered to have a useful life of 30 years. The SWFs use General Electric (GE) 2.3 MW, 2.5 MW, and 2.82 MW wind turbine generators.[245]

Staff and TIEC argue that the economic modeling should assume a useful life of 25 years, rather than 30 years.[246] TIEC witness Pollock notes that the GE manufacturer warranty falls far short of this number.[247] Moreover, the five additional years of life improve the economic calculation of net benefits because the production cost savings are the highest in the last five years.[248] Even in SWEPCO's low/no carbon case, a third (or $77 million NPV) of the total $236 million NPV benefits come from those last five years alone.[249] TIEC's witnesses calculate the overall impact of assuming a 25-year life rather than a 30-year useful life in the low/no carbon case, taking into account the shorter depreciation schedule (which decreases net benefits) and removing interim capital additions and ongoing O&M after year 25 (which increases net benefits), to be $63 million NPV.[250]

TIEC notes that SWEPCO witness Mr. DeRuntz supported a 30-year useful life assumption by referencing a LBNL study showing that wind project owners have increased their project life assumptions to an average life of 29.6 years.[251] The study, TIEC argues, is based merely on a

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[245] SWEPCO Ex. 3 (Godfrey Dir.) at 22.

[246] SWEPCO Ex. 4 (DeRuntz Dir.) at 18-19.

[247] TIEC Ex. 1A (Pollock HSPM Dir.) at 1.

[248] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3; Tr. at 727 (DeRuntz); TIEC Ex. 1 (Pollock Dir.) at 14-16.

[249] TIEC Ex. 2 (Griffey Dir.) at 45 & n.69; SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 5 (adding the nominal benefits shown for years 2047-2051).

[250] TIEC Ex. 2 (Griffey Dir.) at 45 n.69; *see also* TIEC Ex. 1 (Pollock Dir.) at 15.

[251] SWEPCO Ex. 16 (DeRuntz Reb.) at 2, Exh. JGD-2R.

survey of wind developers, sponsors, and owners who assume, on average, that wind projects have useful lives of 29.6 years, not actual achieved service lives.[252] The survey states that the project life of wind projects has been "historically assumed at 20 years in many cases." SWEPCO's response is based on information provided to it from major wind turbine manufacturers, including GE, which states that a 30-year life is achievable but that they "could expect that O&M might be higher in the later years."[253] In fact, SWEPCO witness DeRuntz admits that he is not aware of any wind farms that have achieved useful lives of 30 years.[254]

SWEPCO responds that there is no reason to suppose that the LBNL survey participants would deliberately inflate their numbers.[255] SWEPCO further argues that Mr. DeRuntz's admission to not being aware of any wind farms with 30 year useful lives is not meaningful, because wind turbines today are far different than they were 30 years ago. Mr. DeRuntz testified that "[a]n increase in the life of the facilities over time is a natural progression and would be commensurate with advances in technology and experience with operation of wind farms."[256] Similarly, the LBNL study noted that expectations for the useful life of wind projects "have consistently increased over time—from a typical value of ~20 years in the early 2000s and prior, to ~25 years by the mid-2010s, and then to ~30 years most recently."[257]

TIEC further argues that the additional five years is not based on any inherent durability of the plant, but on interim capital additions and higher O&M costs.[258] SWEPCO forecasted ongoing capital and O&M expenses as flat in real terms for years 11 through 30, despite SWEPCO's admission that a 30-year design life will increase O&M costs in the later years. Even if the SWFs' life could be extended to 30 years through interim capital expenditures and O&M costs, those costs

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[252] *Id.*; Tr. at 726 (DeRuntz).

[253] TIEC Ex. 74 (SWEPCO response to TIEC RFI 16-9).

[254] Tr. at 726 (DeRuntz).

[255] SWEPCO Reply Brief at 39.

[256] SWEPCO Ex. 16 (DeRuntz Reb.) at 2.

[257] SWEPCO Ex. 16 (DeRuntz Reb.), Exh. JGD-2R at 3.

[258] TIEC Ex. 1 (Pollock Dir.) at 13; TIEC Ex. 74.

are mere projections.[259] The same LBNL study concluded that "[u]ltimately, the actual useful life of wind assets will depend critically on how components wear over time, which will affect O&M expenditures."[260]

SWEPCO responds that Mr. DeRuntz did adequately account for O&M costs in his projections,[261] and TIEC and Staff fail to consider the most significant evidence—the GE site-specific mechanical loads analyses contained in SWEPCO Exhibit 16A.[262] SWEPCO emphasizes that GE, the turbine manufacturer, performed an analysis for each project, and stated that "[t]he project was assessed for a [l]ife of 30 years" and assumes a 30-year life.[263] The three analyses also included a list of 30-year life maintenance activities.[264] SWEPCO argues that the turbine manufacturer is in the best position to know that a 30-year design, accompanied by life maintenance practices, is achievable. SWEPCO also notes that in 2016 the Iowa Utilities Board approved depreciation over a 40-year useful life for up to 2,000 MW of new wind generation by MidAmerican Energy Company,[265] a full 10 years beyond SWEPCO's proposed 30-year life.

Staff and TIEC counter that, just two years ago, SWEPCO based the economic analysis of its Wind Catcher project on a useful life of 25 years,[266] even though both projects share the same turbine manufacturer (GE), build, and generation specifications.[267]

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[259] TIEC Ex. 1 (Pollock Dir.) at 13.

[260] SWEPCO Ex. 16 (DeRuntz Reb.), Exh. JGD-2R at 4.

[261] SWEPCO Ex. 4 (DeRuntz Dir.) at 19.

[262] SWEPCO Ex. 16A (DeRuntz HSPM Reb.), Exh. JGD-1R; *see also* SWEPCO Ex. 16 (DeRuntz Reb.) at 2.

[263] SWEPCO Ex. 16A (DeRuntz HSPM Reb.), Exh. JGD-1R at 1-16 (Traverse), 17-32 (Maverick), and 33-48 (Sundance).

[264] SWEPCO Ex. 16A (DeRuntz HSPM Reb.) at 15-16, 31-32, 47-48.

[265] State of Iowa Department of Commerce Utilities Board, *In Re: MidAmerican Energy Company*, Docket No. RPU-2016-0001 (WRU-2016-0020-0156) (Aug. 26, 2016); *see* p. 1 and Attachment Article III, "Depreciation" ("The depreciation life of [the wind farm] for ratemaking purposes shall be 40 years.")

[266] TIEC Ex. 1 (Pollock Dir.) at 13; *Wind Catcher*, Direct Testimony of Paul Chadok at 55 (July 31, 2017).

[267] TIEC Ex. 1 (Pollock Dir.) at 14.

SWEPCO distinguishes the Wind Catcher facilities from the SWFs. The Wind Catcher facilities would have operated in different and more demanding conditions, located in the counties of Texas and Cimarron in the Oklahoma Panhandle,[268] whereas the SWFs will be much farther to the east, in north central Oklahoma.[269] The annual average wind speed is higher in the Panhandle than in north central Oklahoma.[270] The higher wind speed generates more energy but also more wear and tear on the facilities, hence the shorter useful life of the Wind Catcher facilities. Finally, in *Wind Catcher*, ETEC-NTEC witness Mr. Daniel, with whom Staff witness Mr. Tuvilla agreed,[271] concluded that a 30-year useful life was reasonable.[272]

Although the Wind Catcher facilities and the SWFs are in different locations, the ALJs find it unreasonable that a full third of the projected customer savings depends on such an uncertain final five years of the Project. Although it is reasonable to assume an industrial progression toward longer useful lives with advances in technology and experience with operations,[273] the evidence overwhelmingly shows that achieving a 30-year useful life for the SWFs depends heavily on ongoing capital and O&M expenses.[274] The evidence further shows that the amount and extent of those expenses is uncertain, and could even exceed the projected benefit of those final years. The LBNL study noted that "the actual incremental value of years 25 to 30 is generally quite low in present value terms, especially if there is a need for increased O&M or refurbishment."[275] The study itself states that its "analysis overstates the benefits of extended project lifetimes."[276]

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[268] *Wind Catcher*, PFD at 1 (May 18, 2018).

[269] SWEPCO Ex. 1 (Smoak Dir.) at 4.

[270] SWEPCO Ex. 4 (DeRuntz Dir.), Exh. JGD-2.

[271] SWEPCO Ex. 38 at 7 (*Wind Catcher*, Tuvilla Dir.).

[272] SWEPCO Ex. 33 at 13 (*Wind Catcher*, Daniel Dir.); Tr. at 583-85.

[273] SWEPCO Ex. 16 (DeRuntz Reb.) at 2.

[274] SWEPCO Ex. 16A (DeRuntz HSPM Reb.), Exh. JGD-1R; SWEPCO Ex. 16 (DeRuntz Reb.), Exh. JGD-2R at 6.

[275] SWEPCO Ex. 16 (DeRuntz Reb.), Exh. JGD-2R at 6.

[276] SWEPCO Ex. 16 (DeRuntz Reb.), Exh. JGD-2R at 7.

The ALJs find that, for purposes of determining the probability of lowering costs to customers in this case, a useful life of 30 years is unreasonable. Therefore, the ALJs recommend that customer benefits be evaluated using a 25-year useful life for the SWFs.

e. Congestion and Losses and Gen-tie

SWEPCO estimated congestion and loss-related costs associated with the delivery of power from the SWFs to the AEP West load zone. In doing so, it relied on simulations of the SPP system prepared using SPP's stakeholder-developed 2019 ITP PROMOD models and assumptions for two SPP-developed future years, 2024 and 2029. Based on this information, it estimated the congestion and loss-related costs for years 2025–2028 by linearly interpolating between the 2024 and 2029 congestion and loss-related costs. For years 2021–2023, it estimated the congestion and loss-related costs by applying the implied growth rates in its fundamental price forecast to the 2024 PROMOD congestion and loss results. Congestion and loss-related costs were kept constant for 2030 through 2051 based on the assumption that, in the long run, as congestion costs increase, new transmission upgrades will become cost-effective in the future and that SPP's planning process will identify transmission solutions to address transmission congestion and prevent congestion costs from rising further. Specifically, SWEPCO modeled congestion as the difference in the PROMOD projected congestion and loss components of LMPs at the SWFs' nodes and the same components of LMPs at the AEP West load zone.[277] Congestion costs were then treated as an offset to project benefits.[278]

Staff, ETEC-NTEC, and TIEC take issue with SWEPCO's congestion analysis. TIEC and ETEC-NTEC argue that SWEPCO failed to adequately analyze the transmission impacts of the SWFs and therefore understated the cost of congestion.[279] In particular, they argue that SWEPCO's congestion and loss estimates are understated due to modeling flaws, holding the costs

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[277] SWEPCO Ex. 6 (Sheilendranath Dir.) at 4-5, 9; Tr. at 307 (Sheilendrananth).

[278] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3.

[279] ETEC-NTEC Initial Brief at 5.

constant from 2030 through 2051, and for failure to include the cost of the gen-tie in its benefits modeling.

i. Congestion Costs Are Understated

It is undisputed that PROMOD understates congestion costs.[280] SWEPCO witness Mr. Ali explained that this is because it is "simulating a perfect day-ahead market under normalized perfectly predictable load and system conditions."[281] SWEPCO witness Pfeifenberger admitted that these simplifying assumptions about market conditions "tend to yield conservatively low market price fluctuations and congestion levels."[282] In *Wind Catcher*, SWEPCO added a "realistic level of real time wind curtailments" by assuming a 5% curtailment of wind production.[283] In this case, by contrast, SWEPCO did not make any adjustments in its net benefits analysis to account for PROMOD's understatement of congestion costs.[284] TIEC argues that the same 5% curtailment adjustment should be applied to the SWFs, which would reduce the projected NCF from 44.01% to 41.81%, a reduction in NCF of 2.2 percentage points, or a reduction of the net benefits by $72 million NPV.[285]

SWEPCO argues that even if congestion increases to the level in the high congestion/gen-tie cases, the Company can cost-effectively cap that increase by building a gen-tie, and the SWFs will still provide customer benefits. SWEPCO explains that it did not make a "curtailment adjustment" in this case because the Company reasonably bounded the risk of increased congestion in its high-congestion/gen-tie sensitivity cases, although it does not expect congestion to rise to those levels. SWEPCO also notes that in *Wind Catcher*, the PROMOD congestion levels included

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[280] SWEPCO Ex. 7 (Ali Dir.) at 5.

[281] *Id.*

[282] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 5.

[283] TIEC Ex. 65 at 22, 24, JPP-2 at 4.

[284] TIEC Ex. 2 (Griffey Dir.) at 43.

[285] 95% * 44.01% = 41.81%. TIEC Initial Brief at 58 (valuing each percentage-point reduction in NCF results in $32.8 million NPV reduction in SWEPCO's low/no-carbon case).

wind facilities throughout the SPP footprint, including areas with weak transmission and high curtailment risk far from the AEP West load zone, and no deliverability analysis had been done to ensure transmission headroom.[286]

TIEC argues that SWEPCO does not explain how the RFP deliverability analysis it performed in this case obviated the need to account for PROMOD's tendency to understate congestion. Next, TIEC argues that SWEPCO further undercounted congestion by understating the amount of renewable resources, particularly wind generation, that will be developed in SPP in the future. Greater wind penetration will tend to increase congestion costs associated with delivering energy from the SWFs to the AEP West Load zone.[287] Staff also noted that SWEPCO witness Ali admitted that wind resources add more congestion than other types of generation,[288] and that additional wind and solar generation could increase congestion in SPP.[289] TIEC argues that by underestimating the wind development in SPP in its modeling, SWEPCO has understated this risk.

ii. Holding Congestion Costs Constant

TIEC and ETEC-NTEC argue, and Staff agrees, that SWEPCO's modeling assumption that congestion and loss-related costs would remain constant from 2030 through 2051 further understates congestion costs.[290] The flat congestion cost assumption was based on the premise that, in the long run, new transmission upgrades will become cost-effective as congestion costs

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[286] Tr. at 511-12, 514-15 (Pfeifenberger).

[287] *E.g.*, SWEPCO Ex. 20 (Pfeifenberger Reb.) at 13 ("For example, if more wind generation were to develop in SPP beyond 2030, the percentage price differentials from SPP Central zone to the AEP load zone would likely increase."); SWEPCO Ex. 9 (Pfeifenberger Dir.) at 12 (noting prevailing west-to-east power flows in SPP, which cause congestion); Tr. at 375 (Ali); SWEPCO Ex. 7 (Ali Dir.) at 10.

[288] Tr. at 375 (Ali).

[289] Tr. at 328-29 (Sheilendranath).

[290] TIEC Ex. 2 (Griffey Dir.) at 41.

increase and SPP's planning process will identify transmission solutions to address transmission congestion and prevent congestion costs from rising further.[291]

However, TIEC and ETEC-NTEC point out that SWEPCO keeps the congestion and loss costs flat despite assuming that electricity prices double from 2029 to 2051 (increasing customer savings from the SWFs).[292] They also observe that by holding congestion flat in nominal terms, SWEPCO assumes that congestion costs will not even increase with inflation.[293] TIEC argues that these contradictory assumptions are at odds with the principle that congestion costs correlate directly with power prices, a relationship that happens simply "by definition of [the] calculation of congestion costs."[294] Thus, TIEC argues, SWEPCO's flat congestion-cost assumption means that it is assuming that system congestion levels in the SPP will improve dramatically after 2029. And if this assumption were incorrect, even if congestion costs after 2029 escalate at the rate of the InterContinental Exchange (ICE), SPP South Hub forward prices would decrease net benefits by $49 million NPV.[295]

SWEPCO responds first that Mr. Griffey's use of the SPP ICE South Hub forward prices is not valid because the total number of ICE SPP South futures contracts (*i.e.*, open interest) is extremely low in the near term and *de minimis* or zero thereafter, indicating illiquidity.[296] Therefore, TIEC's assessment of the impact of wind penetration on the benefits of the SWFs is not credible.

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[291] SWEPCO Ex. 6 (Sheilendranath Dir.) at 5; Tr. at 307 (Sheilendranath).

[292] TIEC Ex. 2 (Griffey Dir.) at 41; SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1 of 12 (showing line 1, Production Cost Savings Excluding Congestion/Losses, increasing in nominal terms over the relevant years).

[293] Tr. at 310, 323, 329 (Sheilendranath).

[294] Tr. at 317 (Sheilendranath).

[295] TIEC Ex. 2 (Griffey Dir.) at 43-44.

[296] TIEC Ex. 2 (Griffey Dir.) at 114.

Similarly, ETEC-NTEC argue that holding these costs constant in nominal dollars from 2029 through 2051[297] causes them to fall in present value terms,[298] a reduction accelerated by SWEPCO's use of a 7.09% discount rate.[299] Consequently, congestion and losses decline from a present value of $18 million in 2029 to $4 million in 2050.[300]

ETEC-NTEC argue that SWEPCO's use of a flat congestion cost fails to account for the time value of money. In contrast, ETEC-NTEC argue, SWEPCO recognized a 2.0% annual escalation factor of O&M and capital costs, and admitted that the gen-tie will cost more in 2026 than in 2021 due to inflation.[301] SWEPCO thus underestimated the cost of congestion and overestimated the benefits of the project.

SWEPCO counters that ETEC-NTEC mistakenly equate the time value of money with inflation, and then attempt to discount future congestion and loss costs at the Company's discount rate, which is different from both the inflation rate and the time value of money.[302] SWEPCO asserts that the record does not show any relationship between congestion costs and inflation, the time value of money, or the Company's discount rate.[303] SWEPCO argues that there is no such relationship because congestion costs are limited primarily by the cost-effectiveness of building transmission to reduce those costs and to address other SPP planning criteria.[304] Finally, transmission costs are not expected to grow due to technological advances and other factors.[305]

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[297] SWEPCO Ex. 6 (Sheilendranath Dir.) at 10; Tr. at 310 (Sheilendranath); Tr. at 407 (Torpey); *see also* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1 of 12, Line 2 (bates 329) (showing congestion and losses held constant at $32 million beginning in 2029).

[298] Tr. at 410 (Torpey) ("A: [I] mean, a present value is -- is just recognizing that dollars in the future have less value today.").

[299] Tr. at 406 (Torpey).

[300] Tr. at 418-19 (Torpey); ETEC-NTEC Initial Brief at 12, n.47.

[301] Tr. at 394 (Ali).

[302] ETEC-NTEC Initial Brief at 11-13.

[303] SWEPCO Reply Brief at 43.

[304] Tr. at 311-15, 324-26 (Sheilendranath).

[305] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 19.

TIEC and Staff also challenge SWEPCO's assumption that the SPP ITP process will advance all transmission solutions necessary.[306] Staff argues that SWEPCO's assumption is not supported by evidence,[307] and notes that SPP has not approved all of these transmission solutions.[308] Staff adds that Mr. Sheilendranath admitted that the ITP process does not actually provide transmission solutions, but instead addresses future needs of the transmission system so that transmission solutions can be developed.[309]

Similarly, TIEC argues that SWEPCO's SPP ITP transmission solution assumption is entirely speculative and is not based on any known plans or statements from SPP.[310] By its own admission, Mr. Pfeifenberger stated that "SPP may further expand the transmission system" but that "there is the risk that future congestion levels could be higher than simulated in the base case."[311] "Whether and when SPP would identify and approve such further [transmission] upgrades is uncertain . . . ."[312]

Moreover, TIEC points out that SWEPCO's assumes that it will be economic for SPP to implement transmission solutions when congestion costs reach a range of $9-10/MWh.[313] However, Mr. Pfeifenberger admitted that, in *Wind Catcher*, the stated threshold cost of transmission solutions was in the range of $10/MWh to $20/MWh,[314] putting the $10/MWh threshold at the bottom end of a wide range of estimates of the level of congestion that would justify transmission solutions.

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[306] Tr. at 312-13 (Sheilendranath).

[307] Tr. at 312-13 (Sheilendranath).

[308] Tr. at 351-52 (Sheilendranath).

[309] Tr. at 349 (Sheilendranath).

[310] Tr. at 325 (Sheilendranath).

[311] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 20.

[312] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 35.

[313] Tr. at 322, 339-40 (Sheilendranath).

[314] Tr. at 485 (Pfeifenberger). In its reply brief, TIEC states that the $10/MWh-$20/MWh range to which Mr. Pfeifenberger testified is based on the same Lawrence Berkeley National Laboratory study cited in this docket; however, the ALJs were not able to find that reference in the record. TIEC Reply Brief at 41

TIEC adds that SWEPCO's argument against escalating the $10/MWh trigger for transmission solutions inflation—that technological improvements will make it more cost-effective for the SPP to address congestion through transmission solutions[315]—is inconsistent with the continuous power-price increases that SWEPCO projects, which it does not assume will be mitigated by new technology.[316]

SWEPCO explains that the ITP stakeholder process both develops PROMOD simulations for analyzing system changes, such as the 2024 and 2029 models used in this case, and separately reviews and approves transmission upgrades that provide solutions to identified system needs.[317] SWEPCO further argues that it is reasonable to assume new transmission technologies, which are already emerging, unlike generation technologies, which are not similarly innovating.[318]

There is significant disagreement among the parties on the effect of increasing congestion costs with inflation. SWEPCO witness Pfeifenberger testified that:

> Even growing congestion costs with inflation, let alone at the rate of projected increases in power prices as suggested by Mr. Griffey, would inflate congestion to the point that it would be economical for the Company to mitigate these cost increases. For instance, under the Base Case with No Carbon, growing congestion costs with inflation from 2030 to 2051 would result in a 2027-2051 NPV of congestion costs that exceeds the equivalent NPV of the revenue requirements of constructing a gen-tie between the Selected Wind Facilities and the Tulsa region of the AEP load zone.[319]

SWEPCO contends that if increasing congestion costs with inflation would make it economical for the Company to mitigate congestion costs through a transmission solution, then it

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[315] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 19; TIEC Ex. 2 (Griffey Dir.) at 41, 96 (SWEPCO response to TIEC RFI 2-9); Tr. at 341 (Sheilendranath).

[316] TIEC Ex. 2 (Griffey Dir.) at 41-42.

[317] Tr. at 351 and 357-58 (Sheilendranath).

[318] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 20.

[319] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 17.

would also be economical for SPP to do so.[320] These transmission solutions will prevent congestion from rising further and therefore SWEPCO held congestion costs constant after 2029.[321] Moreover, Mr. Pfeifenberger testified that "[a]ssuming the gen-tie serves as a proxy for cost-effective transmission, absorbing the cost of inflated congestion would be unreasonable when either AEP or SPP can cost effectively mitigate these costs."[322] SWEPCO further reasons that the expiration of PTCs after ten years would change wind facility bidding practices and contribute to reducing future wind-related congestion costs.[323]

Even if inflation is not consisidered, TIEC argues that if the assumption to hold congestion costs flat in nominal terms is implicitly based on the availability of a gen-tie solution, then the cost of that gen-tie solution needs to be factored into the economic analysis.[324]

Finally, TIEC argues that Mr. Sheilendranath's testimony—that because SWEPCO can build a potential gen-tie at about $9/MWh[325]—is inconsistent with SWEPCO's Base Case without a gen-tie, showing congestion costs at $12.98/MWh from 2029 onward,[326] while simultaneously assuming that the cost of congestion is lower than the cost of building a gen-tie.[327]

In sum, SWEPCO nevertheless contends that it was reasonable to hold congestion and loss costs constant after 2029.[328] Therefore, the cost of congestion is not expected to go up but rather

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[320] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 17-18.

[321] SWEPCO Ex. 6 (Sheilendranath Dir.) at 5.

[322] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 17-18.

[323] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 18.

[324] TIEC Initial Brief (De-Designated) at 56.

[325] Tr. at 321 (Sheilendranath).

[326] SWEPCO Ex. 6 (Sheilendranath Dir.) at 15.

[327] *Compare* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1 (showing Base Case without gen-tie) *with id.* at 10 (showing Base Case with gen-tie).

[328] SWEPCO Ex. 6 (Sheilendranath Dir.) at 5; Tr. at 311-12 (Sheilendranath).

to go down, as happens when new transmission is added.[329] In the event that SPP does not advance transmission solutions necessary to address congestion, SWEPCO's high congestion/gen-tie sensitivity cases show that the Company could build a gen-tie to avoid congestion and the SWFs would still provide benefits to customers.[330]

iii. The Gen-tie

SWEPCO states that it will continue to use the SPP for transmission for the SWFs but nevertheless evaluated construction of a gen-tie should one be needed to relieve congestion.[331] The Company estimated the cost of a gen-tie assumed to be in service in 2026, after a period to monitor congestion and SPP actions.[332] Only once congestion costs exceed the cost of building a dedicated gen-tie would SWEPCO begin such a build-out,[333] assuming that SPP generally did not upgrade the transmission needs it had identified in the ITP process.[334] According to SWEPCO, should congestion costs warrant building a gen-tie by 2026, the SWFs would still result in customer savings.[335] Although SWEPCO estimated the cost of the gen-tie to be $444 million in 2021, SWEPCO assumes the gen-tie will not be in service until 2026, at which time its cost will increase to about $480 million.[336] The estimated Texas retail jurisdiction cost is approximately $415 million.[337]

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[329] Tr. at 341 (Sheilendranath); SWEPCO Ex. 9 (Pfeifenberger Dir.) at 10 (Table 1); *see also* SWEPCO Ex. 20 (Pfeifenberger Reb.) at 31, Fig. 1; Tr. at 326-27 (Sheilendranath).

[330] SWEPCO Ex. 7 (Ali Dir.) at 10, 13-14; SWEPCO Ex. 8 (Torpey Dir.) at 23; Tr. at 380-81 (Ali).

[331] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 31; SWEPCO Ex. 7 (Ali Dir.) at 10, 12-13; Tr. at 20-21 (Smoak).

[332] SWEPCO Ex. 7 (Ali Dir.) at 13; Tr. at 28 (Smoak).

[333] Tr. at 381 (Ali).

[334] SWEPCO Ex. 9 (Pfeifenberger Dir.) at 31; SWEPCO Ex. 7 (Ali Dir.) at 12-13.

[335] SWEPCO Ex. 8 (Torpey Dir.) at 23.

[336] SWEPCO Ex. 7 (Ali Dir.) at 13; SWEPCO Ex. 7A (Ali Dir., Workpapers), (PSO/SWEPCO RFP-Gen Tie Cost Estimate); Tr. at 96, 178.

[337] OPUC Ex. 1 (Nalepa Dir.) at 6.

TIEC, OPUC, and ETEC-NTEC argue that the need for and cost of a gen-tie should be considered in this proceeding.[338] TIEC contends that SWEPCO's assumption that future congestion costs in the SPP will stay flat in nominal terms is inconsistent without assuming a gen-tie.[339]

Moreover, TIEC and OPUC argue that failure to assume a gen-tie is inconsistent with SWEPCO's ranking of the bids during the RFP process. In ranking the bids, SWEPCO used a levelized adjusted cost of energy (LACOE), calculated by adding the levelized cost of energy (LCOE) to the levelized cost of congestion and line losses and the levelized cost of a potential gen-tie, giving equal weight to both.[340] OPUC witness Nalepa explained that Traverse, Maverick, and Sundance rise to the top of the project ranking "[o]nly when additional gen-tie costs were considered in the project rankings."[341]

Staff, TIEC, and ETEC-NTEC also take issue with SWEPCO's assumption that a gen-tie will reduce congestion costs to zero in 2026.[342] TIEC and Staff argue that assumption is inconsistent with SWEPCO's modeling in *Wind Catcher*, where SWEPCO projected congestion costs even with a gen-tie.[343]

Finally, TIEC takes issue with SWEPCO's proposed 60-year life of a dedicated gen-tie.[344] If placed into service in 2027, as proposed, the gen-tie would be used for only 25 of the proposed

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[338] TIEC Initial Brief at 56.

[339] TIEC Ex. 2 (Griffey Dir.) at 41.

[340] SWEPCO Ex. 8 (Torpey Dir.) at 14; Tr. at 455-57 (Torpey).

[341] OPUC Ex. 1 (Nalepa Dir.) at 20.

[342] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 10-12 (showing line 2, Congestion and Losses, being held at $0 beginning in 2026 through 2051).

[343] TIEC Exhibit 57 at 4 (SWEPCO response to CARD RFI 1-26) (showing that SWEPCO forecasted congestion costs associated with Wind Catcher to start at $2.63/MWh and increase to $5.68/MWh by 2045, which accords with the higher power prices that SWEPCO assumed in the *Wind Catcher* proceeding); TIEC Ex. 58 at 10 (SWEPCO response to OPUC RFI 3-8); SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 10-12, line 2 (showing zero congestion costs for years 2027-2051).

[344] TIEC Ex. 60.

30-years of life of the SWFs, and may have no use thereafter.[345] Thus, TIEC argues, it is unreasonable to evaluate the revenue requirement cost of a gen-tie with a 60-year life reflecting only $233 million NPV revenue requirement,[346] which captures only 25 years of costs.

Several parties also question SWEPCO's gen-tie cost estimate. ETEC-NTEC argue that the gen-tie as proposed may be inadequate and that the added cost of constructing a reliable gen-tie could double its cost.[347] ETEC-NTEC also point out that there is further uncertainty regarding the proposed gen-tie, as it may be an integrated transmission facility (*i.e.*, looped facility) eligible for cost recovery from all parties in SPP under the highway-byway methodology.[348] ETEC-NTEC argue that because SWEPCO offers no guarantees concerning the congestion costs the SWFs will incur, any higher-than-estimated costs of congestion or the gen-tie would be borne by the customers and further reduce the economics of the SWFs.[349] ETEC-NTEC and Staff point out that the gen-tie's route is unknown, and a gen-tie's length and cost can change after the initial planning stage, as in *Wind Catcher*, where the length increased by 30 miles.[350] Staff and TIEC contend that the longer construction of the gen-tie is pushed into the future, the more it will cost, thereby reducing customer savings.[351]

SWEPCO argues that it is unreasonable to expect the level of certainty for a facility that SWEPCO does not expect to build. SWEPCO states that it presented the gen-tie sensitivity cases only to demonstrate that if congestion is higher than expected and the SPP does not advance transmission solutions to address it, the Company can build a gen-tie to cap the cost of congestion and the SWFs will still deliver customer benefits.[352] The gen-tie option would only be pursued

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[345] Tr. at 463-64 (Torpey).

[346] Tr. at 417 (Torpey); Tr. at 382 (Ali).

[347] ETEC-NTEC Ex. 2 (Chiles Dir.) at 16.

[348] ETEC-NTEC Ex. 2 (Chiles Dir.) at 14.

[349] Tr. at 96 (Brice).

[350] Tr. at 24 (Smoak); Tr. at 393-95 (Ali).

[351] Tr. at 389 (Ali); OPUC Ex. 1 (Nalepa Dir.) at 20.

[352] SWEPCO Ex. 7 (Ali Dir.) at 10, 13-14; SWEPCO Ex. 8 (Torpey Dir.) at 23; Tr. at 380-81 (Ali).

following a cost/benefit analysis and if other solutions, including less-expensive options such as transmission rebuilds, reactive power devices, dynamic line ratings, and system reconfiguration, were not available to the Company or implemented by SPP.[353]

OPUC and Staff argue that the Company should be required to seek Commission approval of the construction of any future gen-ties if the Commission approves the Company's CCN application in this proceeding,[354] which SWEPCO agrees to do.[355] However, ETEC-NTEC argue that seeking pre-approval does not help because the only relevant question would be whether the expected congestion costs would be greater than the gen-tie costs, and all wind facility-related issues would no longer be relevant because the costs associated with the SWFs would be sunk costs.[356]

iv. ALJs' Analysis

As it is undisputed that PROMOD understates congestion costs and that there is the risk that future congestion levels could be higher than simulated in the Base Case, the ALJs find that it is reasonable to make some adjustment for the understatement of congestion costs. Although SWEPCO claims to have done this in its high-congestion cases, that accounts only for future congestion, not the understatement of congestion inherent in PROMOD.[357] Accordingly, the ALJs find that it is reasonable to use the same 5% curtailment adjustment used in *Wind Catcher* to provide a "realistic level of real time wind curtailments."[358] According to TIEC, this adjustment would reduce the net benefits of the Low Gas/No Carbon case by $72 million NPV, which would

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[353] Tr. at 381, 388-89, and 391-92 (Ali); Tr. at 486-87 (Pfeifenberger).

[354] OPUC Initial Brief at 18-19.

[355] Tr. at 96-97 (Brice).

[356] Tr. at 96-98 (Brice).

[357] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 20.

[358] TIEC Ex. 65 at 22, 24, JPP-2 at 4.

result in customer savings of less than $108 million NPV at P95.[359] This adjustment for PROMOD's understatement of congestion, however, does not account for future congestion, the uncertainty in the cost of the gen-tie, or the likelihood that a gen-tie will not reduce congestion to zero.

Furthermore, the ALJs find SWEPCO's assumption that the SPP ITP process would advance transmission solutions to be unreasonable. "SPP may further expand the transmission system over time."[360] But it may not. SWEPCO presented no evidence that it would, and much of the evidence contradicts the assumption. Although SWEPCO witness Sheilendranath testified that the projected 2029 congestion cost level was already close to high enough that SPP could cost-effectively advance transmission to address it,[361] his conclusion is based on a threshold per MWh of $9-10. But the evidence shows that the economic threshold could be as high as $20/MWh,[362] which might not be reached during the useful lives of the SWFs. Even at the $9-$10 threshold, SWEPCO's Low Gas/No Carbon cases will reach only $8.68/MWh by 2029.[363] Finally, SWEPCO's Base Case simultaneously assumes that the cost of congestion is lower than the cost of building a gen-tie[364] and that congestion costs from 2029-2050 will be $12.98/MWh.[365] The evidence therefore shows that congestion costs will exceed the amount modeled for 2029. Accordingly, the ALJs find it unreasonable to hold congestion and loss costs flat from 2029 to 2051.

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[359] SWEPCO Ex. 8, JFT-4 (showing $181 million NPV at P95 base case without CO_2 ($181 - $72 million = $108 million)). SWEPCO did not model a P95 low gas/no carbon case.

[360] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 20.

[361] Tr. at 311-12 (Sheilendranath).

[362] Tr. at 485 (Pfeifenberger).

[363] SWEPCO Ex. 6 (Sheilandranath Dir.) at 17. The $10/MWh cap would stay the same between cases because it is based on the cost of building transmission solutions, which has no relationship with power prices. Tr. at 342-43 (Sheilendranath).

[364] *Compare* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1 (showing Base Case without gen-tie) *with id.* at 10 (showing Base Case with gen-tie).

[365] SWEPCO Ex. 6 (Sheilendranath Dir.) at 15.

Additionally, the ALJs find SWEPCO's testimony that it does not expect to build a gen-tie unpersuasive and inconsistent with its economic evaluation and its RFP process. SWEPCO recognized inflation in O&M and in gen-tie costs, but not the costs of congestion and losses. SWEPCO witness Pfeifenberger testified that even increasing the costs of congestion with inflation would make it economic for the Company to build a gen-tie.[366] The ALJs therefore find that failing to account for inflation in the costs of congestion and losses unreasonable. Although the escalation rate of SPP South Hub forward prices may not be the best rate upon which to base a congestion cost escalation, it is nevertheless a reasonable indicator that an increase in power prices after 2029 could reduce net benefits of the SWFs by $49 million NPV.[367]

In contrast to its no-gen-tie assumption, SWEPCO assumed the cost of the gen-tie in its bid evaluation process, by adjusting the LCOE "for the average of levelized congestion and line loss costs and levelized gen-tie costs."[368] As OPUC witness Nalepa testified, Traverse, Maverick, and Sundance would not have been the top-ranked projects if the gen-tie costs were not included.[369]

Therefore, the ALJs find that the cost of the gen-tie should be considered in the economic analysis of the SWFs. However, given the considerable uncertainty associated with the cost of the gen-tie, the ALJs find that the $480 million cost should be considered a low end, subject to significant variation. If the Commission approves the SWFs, the ALJs recommend SWEPCO be required to seek approval prior to constructing any gen-tie.

Finally, the ALJs find that it is unreasonable to evaluate the cost of the gen-tie based on a 60-year useful life when the SWFs are not expected to have a useful life beyond 30 years. The ALJs therefore recommend that the revenue requirement of the gen-tie be evaluated using the same useful life of the SWFs.

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[366] SWEPCO Ex. 20 (Pfeifenberger Reb.) at 17.

[367] TIEC Ex. 2 (Griffey Dir.) at 43-44.

[368] SWEPCO Ex. 8 (Torpey Dir.) at 14.

[369] OPUC Ex. 1 (Nalepa Dir.) at 20.

3. Capacity Value

Based on the expectation that the capacity from the SWFs will allow SWEPCO to defer or reduce future capacity requirements, SWEPCO included the NPV savings associated with the delay in future capacity additions as a benefit of the SWFs.[370] SWEPCO determined the capacity value of the SWFs by comparing the costs of resource additions in a Project Case that included the SWFs capacity contribution to a Base Case that excluded that contribution.[371] SWEPCO estimated that the SWFs will produce cost savings of $70 million NPV in its Base Case, and $29 million NPV in its Low Gas/No Carbon case, in the form of deferred capacity additions.[372] SWEPCO's estimate is based on an assumed firm capacity rating of 15% of the SWFs' nameplate rating, representing a capacity contribution of 123 MW.[373]

Staff, TIEC, OPUC, and CARD oppose the inclusion of any capacity value from the SWFs in the net benefits analysis because SWEPCO has no current capacity need and none is expected until 2037.[374] TIEC witness Pollock testified that the deferred-capacity-addition value of the SWFs is entirely speculative, as the need for future resource additions is based on forecasted load growth, which is subject to change, and because the SPP has not accredited the SWFs for capacity.[375]

SWEPCO argues that the fact that the SWFs will not start to generate capacity savings for several years does not detract from their capacity value. Moreover, contrary to the assertion that capacity benefits will not begin until 2037, SWEPCO argues that in some of its modeling cases, the benefits begin in 2034 or earlier.[376]

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[370] SWEPCO Ex. 8 (Torpey Dir.) at 22.

[371] SWEPCO Ex. 8 (Torpey Dir.) at 19-20.

[372] SWEPCO Ex. 8 (Torpey Dir.) at 16.

[373] SWEPCO Ex. 8 (Torpey Dir.) at 19.

[374] SWEPCO Ex. 23 (Aaron Reb.) at 2; Tr. at 542-43 (Aaron).

[375] TIEC Ex. 1 (Pollock Dir.) at 12; Tr. at 428-29 (Torpey).

[376] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3.

The ALJs find that projecting the capacity benefits up to 18 years into the future is entirely speculative. Accordingly, the ALJs recommend that no capacity value be included in determining the expected net benefits of the SWFs. The evidence shows that the SWFs are not needed to meet any capacity requirement, SWEPCO has excess capacity until 2026, and although the SWFs may provide capacity benefit as early as 2034, SWEPCO's witness testified that the SWFs "do not result in capacity savings for SWEPCO until 2037."[377]

4. Production Tax Credits

In its RFP, the Company solicited bids only for projects that qualified for the PTCs at either the 100% or 80% levels, which will be awarded throughout the first ten years of the life of the SWFs.[378] SWEPCO guarantees customer benefits at these levels, even if PTCs are not received at these levels because a facility is deemed ineligible for the credit.[379] The Company hired Simon Wind to review the wind resource assessments and the expected energy output of the facilities and produce an independent wind energy resource assessment of each of the SWFs.[380] According to SWEPCO, the Commission can be confident in the energy output expected from the SWFs.[381]

Staff and TIEC argue that, because the PTCs' value is subject to the production level of the SWFs, customers are exposed to substantial risk for the same reasons that the NCF is uncertain. The parties' arguments are largely repetitive of those made above relating to the capacity factor issue. They note that SWEPCO guarantees energy production only at the P95 level of 38.13%, and does not guarantee against force majeure events, curtailments, or a change in law.[382] They also note that PTCs account for the second largest amount of the projected net benefits of the

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[377] SWEPCO Ex. 23 (Aaron Reb.) at 2.

[378] SWEPCO Ex. 3 (Godfrey Dir.) at 6; SWEPCO Ex. 10 (Multer Dir.) at 2-3, 5; SWEPCO Ex. 12 (Aaron Dir.) at 10.

[379] SWEPCO Ex. 2 (Brice Dir.) at 16-17.

[380] SWEPCO Ex. 3 (Godfrey Dir.) at 23.

[381] SWEPCO Ex. 3 (Godfrey Dir.) at 24-25.

[382] Tr. at 114 (Brice); Tr. at 152-53 (Brice).

SWFs, estimated at the P50 level to be $507 million NPV, grossed up and net of the DTA.[383] However, the value of the PTCs drops from $630 million NPV to $546 million NPV when the energy production level drops from 44.01% (P50) to 38.13% (P95).[384]

SWEPCO agrees that "the amount of PTCs earned by the SWFs could be lower if the output of the facilities is lower."[385] SWEPCO argues, however, that because the estimate is based on the P50 level of production, it is equally likely that the amount of PTCs earned by the SWFs will be higher because the output is higher.

The ALJs find that the value of the PTCs should be assessed at the guaranteed level of production (P95) for the same reasons the ALJs found the P50 level to be unreasonable. Although the output of the SWFs may be equally likely to be higher than the P50 level, the consequences to the customers are not. Although the ALJs find the risk of change in law to be small, for the same reasons discussed above with regard to the capacity factor issue, the risk of force majeure or curtailment events could further reduce the NCF. Given that the primary driver of the proposed acquisition is the PTCs, the ALJs find that it is unreasonable for the customers to bear the risk of the PTCs falling below the P95 level of production.

5. Deferred Tax Asset

SWEPCO proposes to give its customers the benefits of all of the generated tax credits as they are produced, even though it will not be able to use them for some time.[386] As a result, the Company proposes to reflect any unused credits that it must carry forward to future tax years as DTA included in rate base.[387] SWEPCO's economic analysis included the effects of the carrying

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[383] SWEPCO Ex. 8 (Torpey Dir.) at 16.

[384] *Compare* SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1 *with id.* at Exh. JFT-3 at 6.

[385] Staff Initial Brief at 19.

[386] SWEPCO Ex. 12 (Aaron Dir.) at 6: SWEPCO Ex. 23 (Aaron Reb.) at 3.

[387] SWEPCO Ex. 23 (Aaron Reb.) at 3.

costs that customers would owe on this DTA in exchange for the benefit of receiving all of the PTCs as they are generated.[388]

SWEPCO argues that the inclusion of DTAs is not only normal ratemaking practice, but that it would be unfair for customers to have all the benefits of the PTCs and not include the associated DTA in rate base.[389]

Staff, TIEC, and ETEC-NTEC object to the Company's DTA proposal, because it represents a $123 million NPV cost to customers at the P50 level that SWEPCO could have used as a tax equity investor, and due to other uncertainties relating to fully quantifying the impact of the carrying charges.[390]

The ALJs agree that DTAs are a normal part of ratemaking, and for that reason, as discussed further below, should not be addressed in this case. If the Commission determines that the Application should be approved, the ALJs recommend that the DTA issue be deferred to the rate case (or rate proceeding) in which SWEPCO seeks to add the SWFs to its rate base.

6. Revenue Requirement

SWEPCO estimates the revenue requirement for the SWFs will be approximately $3.233 billion, or about $1.348 billion in NPV.[391] The revenue requirement includes a return of

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[388] SWEPCO Ex. 8 (Torpey Dir.) at 17.

[389] SWEPCO Ex. 14 (Brice Reb.) at 18-20.

[390] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 1.

[391] Tr. at 148, 466 (Brice); SWEPCO Ex. 2 (Brice Dir.) at 74.

and on the investment in the facilities' assets, taxes on those assets, a return (carrying charges) on the DTA, depreciation expense, and the O&M expenses associated with the SWFs.[392]

Staff and CARD contend that the revenue requirement remains constant in all scenarios modeled, but the customer benefits do not.[393] CARD witness Norwood testified that because much of the revenue requirement is fixed, it places an undue risk on customers if the forecasted benefits of the SWFs do not materialize, "unless SWEPCO's proposed cost and performance guarantees are significantly enhanced."[394] Unlike customer benefits, once the Application is approved, the return on and of the investment in the SWFs is all but guaranteed.[395]

TIEC argues that the SWFs impose significant risks to customers that are not captured in the economic analyses and are not capped. Specifically, SWEPCO's economic analyses understate the costs associated with ongoing capital and O&M and the potential construction of a dedicated gen-tie. Although SWEPCO's economic analyses include a forecast of interim capital additions and O&M costs for the first ten years (while the O&M agreement with Invenergy is in effect), the ongoing capital and O&M forecast does not include risk pricing for contingencies, or the higher O&M expenses that the turbine manufacturers specifically stated would be required in later years.[396]

SWEPCO responds that it would be inappropriate to include ongoing capital and O&M costs in a cost cap or guarantee because many factors affecting these costs are beyond SWEPCO's control and because customers will be protected through the reasonableness and prudence reviews the Commission would undertake in a rate case.[397]

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[392] SWEPCO Ex. 12 (Aaron Dir.) at 4.

[393] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3; Tr. at 151-53 (Brice).

[394] CARD Ex. 1 (Norwood Dir.) at 25.

[395] Tr. at 149, 436 (Brice).

[396] SWEPCO Ex. 16 (DeRuntz Reb.) at 4 and Exh. JGD-2R at 6; TIEC Ex. 74.

[397] SWEPCO Ex. 16 (DeRuntz Reb.) at 4.

TIEC argues that SWEPCO's economic analyses further fails to account for the full cost of a potential gen-tie, because it is not reasonable, as SWEPCO has done, to depreciate the gen-tie over 60 years when it will be useful to the SWFs for only 25 years.[398]

The ALJs find that SWEPCO's projected revenue requirement is understated. In particular, SWEPCO's economic analysis does not properly account for the costs associated with ongoing capital and O&M costs and the potential construction of a dedicated gen-tie. In addition, SWEPCO's forecast of interim capital additions and O&M costs does not include risk pricing for unknowns that could be experienced over the life of the Project, and SWEPCO's assumption that O&M costs will remain flat in real terms after the first ten years although its turbine manufacturers state that O&M costs would be higher in later years.[399] Moreover, the ALJs find that it is unreasonable to assign a 60 year depreciable life to a gen-tie that may be useful only during the remaining 20-25 year useful life of the SWFs.[400] As addressed previously, the ALJs recommend that the full cost of the gen-tie be included in the revenue requirement.

D. Economic Evaluation and Summary

SWEPCO estimates that the SWFs will provide approximately $567 million NPV or more than $2.03 billion on a nominal basis over their 30-year useful life, and asserts that SWEPCO's acquisition of the SWFs will result in the probable lowering of costs to customers.[401]

Staff, TIEC, ETEC-NTEC, and OPUC challenge SWEPCO's economic evaluation. The parties argue that given the problems discussed above, there is a substantial likelihood that acquisition of the SWFs will not provide benefits to customers, and that SWEPCO has failed to

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[398] Tr. at 465 (Torpey); TIEC Ex. 60.

[399] SWEPCO Ex. 16 (DeRuntz Reb.) at 4, Exh. JGD-2R at 6; Tr. at 724-25, 727 (DeRuntz); TIEC Ex. 74.

[400] Tr. at 463 (Torpey); SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3 at 10.

[401] SWEPCO Ex. 2 (Brice Dir.) at 38.

demonstrate a probable lowering of costs to consumers.[402] They further argue that the projected customer cost savings are uncertain and the customers will bear most of the risk if the projected customer cost savings do not materialize.[403]

TIEC argues that SWEPCO improperly evaluated the results of its economic model. Specifically, by comparing cases in which it acquires the SWFs to cases where it does not,[404] SWEPCO treats both the projected costs and benefits of the SWFs as equally certain, and then surmises that if the NPV of the net benefits is greater than zero, the projects should be approved.[405] TIEC witness Griffey testified that this approach is appropriate only "when (i) there is no uncertainty in the benefits, or (ii) either an investment is reversible at no cost or, if the investment is irreversible, then the investment decision has to be made now."[406]

TIEC argues that the projected costs of the SWFs are substantially more certain than the benefits. SWEPCO expects to make an initial investment of approximately 90% of the total cost of the SWFs.[407] Once placed into rate base, the costs to customers will be substantially certain (other than for a gen-tie).[408] Far less certain are the production cost savings, which turn on uncertain variables about future market conditions, such as the price of natural gas, congestion levels, and the generation mix in the SPP.[409]

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[402] *See Hammack*, 131 S.W.3d at 726 ("Therefore, the Commission concluded that there was a sufficient showing of probable improvement of service or lowering of costs to consumers. We hold there is a reasonable basis in the record to support the Commission's finding that the proposed line will result in the probable improvement of service or lowering of cost to consumers.").

[403] OPUC Ex. 1 (Nalepa Dir.) at 9.

[404] SWEPCO Ex. 8 (Torpey Dir.) at 17-19.

[405] TIEC Ex. 2 (Griffey Dir.) at 56.

[406] TIEC Ex. 2 (Griffey Dir.) at 54 (citing Investment Under Uncertainty, Dixit and Pindyck, Princeton University Press, 1994, at 6). Mr. Griffey is a former utility manager with extensive experience with utility planning techniques. *Id.* at 2-4.

[407] TIEC Ex. 2 (Griffey Dir.) at 54. Based on SWEPCO's estimates, the O&M costs would be 12% of total costs. *Id.* at 12. There will also be costs associated with the DTA that can fluctuate from projections, though these costs are of a much smaller magnitude than the initial capital cost of the SWFs.

[408] TIEC Ex. 2 (Griffey Dir.) at 54. The cost of the initial investment to ratepayers can fluctuate to some degree based on changes to SWEPCO's rate of return in the future.

[409] TIEC Ex. 2 (Griffey Dir.) at 54.

TIEC also argues that SWEPCO's analysis fails to reflect the fact that—in the absence of a capacity need—SWEPCO does not have to make an irreversible decision to acquire an economic resource now.[410] TIEC argues that because the projected benefits of the SWFs depend on increasing natural gas prices, SWEPCO would have no way to mitigate the costs of the SWFs if natural gas prices remain low,[411] but if gas prices escalate as SWEPCO projects, SWEPCO would still be able to mitigate the impact on customers, including by procuring renewable power in the future.[412]

OPUC argues that removing the Company's CO_2 assumptions reduces the benefits of SWEPCO's Base Case by $171 million, and by another $237 million at the P95 level, for a cumulative reduction of NPV $386 million, or more than two-thirds of the benefits.[413] Adding the costs of the gen-tie would lower the NPV benefits of SWEPCO's Base Case by another $26 million.[414]

Staff and TIEC argue that the only models appropriate to consider are SWEPCO's low gas and no carbon tax models, which estimate a NPV of $236 million (P50) and $43 million (P95).[415] Staff contends that reducing natural gas prices by 10% for SWEPCO's Low Gas/No Carbon case, reduces the projected net benefits to $109 million NPV (P50).[416] TIEC asserts that simply adjusting SWEPCO's economic analyses to reflect reasonable outlooks on the future price of natural gas eliminates all of the purported economic benefits.[417] Staff and TIEC argue that the cumulative impact of adjusting for SWEPCO's implied heat rates, understatement of congestion costs, the 30-year (instead of 25-year) useful life, and the capacity value, results in a $550 million

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[410] *Id.*

[411] *Id.*

[412] TIEC Ex. 2 (Griffey Dir.) at 55.

[413] OPUC Ex. 1 (Nalepa Dir.) at 16, 18-19.

[414] OPUC Ex. 1 (Nalepa Dir.) at 20.

[415] SWEPCO Ex. 8 (Torpey Dir.), Exh. JFT-3; SWEPCO Ex. 14 (Brice Reb.), Exh. TBP-1R.

[416] Staff Ex. 10 (SWEPCO response to TIEC RFI 3-6).

[417] TIEC Initial Brief (De-Designated) at 66.

NPV decrease from SWEPCO's Low Gas/No Carbon case, or a $314 million NPV cost to customers.[418] This assumes a P50 level of production, though SWEPCO has guaranteed production only at the P95 level.[419] If the cost of the gen-tie were added, the NPV drops an additional $50 million NPV to $364 million NPV to rate payers.[420] TIEC regards these calculations as conservative because they do not account for other risks in SWEPCO's economic analysis, identified throughout this case.

ETEC-NTEC argue that even under SWEPCO's benefit calculations, the SWFs will not provide any immediate rate benefits to most Texas retail customers, but will result in increased costs for most of them if the SWFs' costs are allocated using a production demand allocator. [421] ETEC-NTEC also assert that SWEPCO can achieve significant cost savings by retiring Dolet Hills, a lignite generation facility, and that doing so could affect the economics of the SWFs.[422]

SWEPCO asserts that the Project will benefit customers by providing mostly fixed-priced, low cost energy to customers for the life of the facilities. SWEPCO used an energy allocator to evaluate customer bill impacts because it matches the costs of the SWFs with the benefits they generate.[423] Even assuming a demand allocation, ETEC-NTEC witness Daniels' analysis shows customer impacts only for 2021-2024, and less than a 2% cost impact for residential customers.[424] As to the Dolet Hills argument, SWEPCO states that the retirement of that facility would have been captured in both the "with wind" and "without wind" cases, but may have caused the capacity benefit of the SWFs to occur sooner, resulting in increased benefit. [425]

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[418] TIEC Ex. 2 (Griffey Dir.) at 45-46.

[419] TIEC Ex. 2 (Griffey Dir.) at 46.

[420] TIEC Initial Brief (De-Designated) at 67, n.349.

[421] ETEC-NTEC Ex. 1a (Daniel Dir.) at 9-16; *see also id.* at Exhs. JWD-2 and JWD-3 at bates JWD_00033-JWD_00034.

[422] ETEC-NTEC Initial Brief at 17-18.

[423] SWEPCO Ex. 23 (Aaron Reb.) at 2.

[424] ETEC-NTEC Ex. 1a (Daniel Dir.), Exh. JWD-2.

[425] SWEPCO Ex. 19 (Torpey Reb.) at 19; SWEPCO Reply Brief at 59.

The ALJs find that SWEPCO's modeling of the net benefits does not capture a realistic range of future outcomes when considering the substantial risks to consumers and that SWEPCO failed to meet its burden to show that the SWFs will result in a probable lowering of costs to customers. Critically, the ALJs conclude that SWEPCO's natural gas forecasts, carbon burden, useful life, and capacity factor are all overstated, while renewable energy penetration and congestion are understated. Based only on quantifiable risks, there is significant risk that the SWFs will not provide benefits to customers. The risks that are unquantifiable—production level, congestion, gen-tie, and O&M expenses—further jeopardize the probability that the SWFs will lower costs to customers.

VII. PROPOSED CONDITIONS (P.O. ISSUE NOS. 10, 19, 20, 24)

SWEPCO proposes three cost-saving guarantees associated with the acquisition of the SWFs: a capital cost cap, a PTC eligibility guarantee, and a minimum production guarantee. The Company asserts its proposed guarantees help to ensure its customers would still receive benefits even under unexpected circumstances (*e.g.*, if gas and power prices remained low, if the actual capital cost of the SWFs reached the cost cap, and/or if production remained at the low P95 level). SWEPCO witness Brice testified that if the SWFs performed only at the P95 level for the entire 30-year study period and that gas and power prices remained very low over that same period (*i.e.*, SWEPCO's Low Gas/No Carbon scenario), then customers could still expect benefits of $473 million (nominal) and $43 million (NPV).[426]

Staff, OPUC, CARD, and Golden Spread request that the Commission deny SWEPCO's Application unless it orders additional conditions.[427] More specifically, Staff, OPUC, and CARD dispute SWEPCO's purported customer cost-saving benefits and argue the Project contains multiple variables that could either greatly reduce SWEPCO's projected benefits or result in a significant loss to customers. They assert that while SWEPCO's proposed guarantees provide

[426] SWEPCO Ex. 14 (Brice Reb.) at 6.

[427] The parties' proposed additional conditions are discussed below in Section VII.C.

some value, they are ultimately insufficient to protect SWEPCO's customers from the Project's potential financial risks arising from underestimated Project costs and overestimated customer benefits.[428]

Golden Spread argues that SWEPCO failed to properly consider alternative transmission solutions for congestion associated with the Project, which may result in other SPP transmission ratepayers in Texas (including Golden Spread) subsidizing the Project without receiving benefits. Additionally, Golden Spread argues that SWEPCO's failure to consider alternative solutions could also have adverse effects on its retail customers.[429]

TIEC and ETEC-NTEC argue SWEPCO's proposed guarantees are insufficient for similar reasons, but recommend the Commission deny SWEPCO's Application outright rather than condition its approval on the adoption of additional guarantees. TIEC asserts the limitations SWEPCO imposed on the proposed guarantees render them ineffectual, and that the guarantees fail to address the significant economic risk that natural gas and power prices will not continuously escalate at the level SWEPCO projects.[430] ETEC-NTEC assert SWEPCO's proposed guarantees fail to address the significant economic risks posed by congestion costs, including potential gen-tie construction costs.[431]

For reasons discussed in greater detail below, the ALJs find that SWEPCO failed to show that its proposed cost-saving guarantees provide sufficient economic safeguards that would result in a probable lowering of customer costs.

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[428] *See* CARD Ex. 1 (Norwood Dir.); OPUC Ex. 1 (Nalepa Dir.); Staff Initial Brief at 20-24.

[429] Golden Spread Initial Brief at 14-22.

[430] TIEC Initial Brief at 68.

[431] ETEC-NTEC Initial Brief at 18.

A. SWEPCO's Proposed Conditions

1. Capital Cost Cap

SWEPCO proposes a cost cap guarantee equal to 100% of its share of the aggregate filed capital costs for the Project, which total approximately $1.09 billion.[432] This guarantee is not subject to exceptions.[433]

All parties, except TIEC and Staff, either support or do not oppose this guarantee. TIEC argues that SWEPCO's capital cost cap fails to protect customers because the total assumed capital cost of the SWFs is uneconomical, mainly due to SWEPCO's unreasonable expectations of future natural gas prices.[434] Both TIEC and Staff indicate that the benefit of the cap is limited because it applies only to SWEPCO's initial capital investment of $1.09 billion[435] and does not include interim capital additions, accurate ongoing O&M expenses (which SWEPCO states will be necessary to maintain the SWFs during their 30-year expected life),[436] or the potential $480 million gen-tie.[437]

A comprehensive summary of SWEPCO's economic evaluation of the Project's assumed capital cost as well as the opposing arguments are discussed above in Section VI of this PFD.

The ALJs agree that, in principle, such a cap would provide an economic safeguard for SWEPCO's customers; however, SWEPCO's proposed guarantee is inadequate. Any benefit that could have resulted from this guarantee is diminished because the cap includes uncertain and possibly underestimated O&M expenses and does not account for $480 million in gen-tie

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[432] SWEPCO Ex. 4 (DeRuntz Dir.) at 14, Exh. JGD-3.

[433] SWEPCO Ex. 2 (Brice Dir.) at 16-17.

[434] TIEC Ex. 1 (Pollock Dir.) at 21; SWEPCO Ex. 5 (Bletzacker Dir.) at 13-15.

[435] SWEPCO Ex. 2 (Brice Dir.) at 16.

[436] Staff Ex. 3 at 17; Tr. at 725, 727 (DeRuntz); TIEC Ex. 1 (Pollock Dir.) at 13.

[437] Tr. at 25 (Smoak).

construction costs (which the ALJs previously recommended should be included in the Project's economic evaluation).[438]

2. Production Tax Credit Eligibility Guarantee

SWEPCO proposes to guarantee that, if PTCs are not received at the 100% level for Sundance and at the 80% level for Traverse and Maverick, because one or more of the SWFs is determined to be ineligible under current law, its customers will be made whole for the value of the lost PTCs based upon actual production.[439] This guarantee is subject to an exception for any future legislative changes that would make one or more of the SWFs ineligible for PTCs.

OPUC argues that this is an important guarantee and should be required if the Commission approves the Application.[440] CARD, Staff, and TIEC dispute SWEPCO's future-legislative-change exception, alleging it increases the customers' potential financial risk (*i.e.*, the Project's projected benefits would be reduced if a future legislative change made one or more of the SWFs ineligible to generate qualified PTCs).[441] Staff indicates that such a change in law would result in a reduction in the customers' economic benefits by approximately $507 million NPV for the life of the Project.[442]

TIEC asserts that the value of the PTCs is affected by the SWFs' production level, which SWEPCO will not guarantee at the anticipated P50 capacity (44.01%), and that the lower guaranteed P95 capacity (38.1%) is subject to significant force majeure and curtailment exceptions, as discussed in more detail below.[443]

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[438] *See* Section III of this PFD.

[439] SWEPCO Ex. 2 (Brice Dir.) at 16-17; Tr. at 32-33 (Smoak); Tr. at 152-53 (Brice).

[440] OPUC Ex. 1 (Nalepa Dir.) at 30.

[441] Tr. at 31-33 (Smoak).

[442] SWEPCO Ex. 8 (Torpey Dir.) at 17, Exh. JFT-3.

[443] TIEC Initial Brief at 69.

CARD recommends the Commission require SWEPCO to provide its customers with full PTC eligibility level benefits based on the actual output of the SWFs to the extent not covered by a net benefits guarantee.[444] CARD witness Norwood argued this modified PTC eligibility guarantee would mitigate any reduction to ratepayer benefits resulting from such a legislative change.[445]

SWEPCO witness Mr. Smoak confirmed that the Project's benefits would be reduced and the customers would absorb any resulting losses if such a future legislative change occurred.[446] However, SWEPCO indicates that changes to tax laws concerning a benefit that has been provided to and relied upon by taxpayers have historically been prospective in nature rather than retroactively enforced. SWEPCO witness Brice emphasized a similar argument presented by TIEC to the Commission in Docket No. 46936:

> Congress has never retroactively reduced the level of PTCs, and even in the recent House legislation that would have reduced the value of PTCs by eliminating the inflation adjustment, projects for which construction began prior to the enactment of the legislation – such as SPS's Wind Plants – were exempt.[447]

Additionally, SWEPCO asserts that it cannot guarantee what Congress may or may not do in the future concerning the PTC eligibility criteria, and that under its proposed guarantee SWEPCO alone bears the risk that the SWFs will not qualify for the PTCs under current law.

The ALJs conclude it is a reasonable assumption that any such future legislative change would be prospective in nature, and that it would be unreasonable to require SWEPCO to commit to a potentially risky guarantee considering it cannot foresee any future congressional actions that

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[444] CARD's recommended net benefits guarantee is discussed below in Section VI.C.

[445] CARD Ex. 1 (Norwood Dir.) at 23. Mr. Norwood explained that his recommended PTC eligibility guarantee is identical to the guarantee included in the *Wind Catcher* settlement filed in Oklahoma, which is attached to his direct testimony as Exhibit SN-8.

[446] Tr. at 31-33 (Smoak). Mr. Smoak did not estimate the amount of losses that would result if the future-legislative-change exception were triggered.

[447] SWEPCO Ex. 14 (Brice Reb.) at 15 (*citing* TIEC response to Commission's Questions at 3-4 (Apr. 19, 2018)).

may affect the current PTC eligibility criteria. While the parties' arguments opposing the exception are understandable, the ALJs are not convinced it raises a significant potential financial risk to customers. CARD's proposed net benefits guarantee is addressed below.

3. Minimum Production Guarantee

SWEPCO proposes that, beginning in 2022, the Company will guarantee a minimum production level, in aggregate from the SWFs, of an average of 87% of the expected output for ten years, as averaged over five-year periods (*i.e.*, two five-year blocks). This guarantee represents the P95 level at a 38.1% capacity factor and 4,959 gigawatt-hour (GWh) per year, in the aggregate for the SWFs. If the minimum production level is not achieved, SWEPCO's customers will be made whole on an energy and PTC (if applicable) basis. This guarantee is subject to exceptions for force majeure as well as economic and/or environmentally based SPP curtailments.[448]

a. Staff's and Intervenors' Arguments

TIEC, CARD, OPUC, and Staff contend SWEPCO's guarantee is inadequate to protect customers. Unlike the other parties, TIEC does not propose an alternative minimum production guarantee. TIEC, CARD, and OPUC dispute SWEPCO's force majeure exception alleging it does not protect the ratepayers from the potentially significant financial risk of the SWFs being shut down for certain unforeseen events that would result in reduced customer benefits.[449] TIEC and CARD also dispute the SPP curtailment exception.[450]

The parties argue SWEPCO's proposed guarantee does not protect customers beyond the year 2031 because it is available only for the first ten years of the Project (*i.e.*, the first two sets of

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[448] SWEPCO witness Brice testified that the force majeure exception to this guarantee is limited to events the Company cannot control and that a lack of wind velocity would not trigger the exception. He further testified that any payments made under this guarantee would be net of any make-whole payments made under the PTC eligibility guarantee. SWEPCO Ex. 2 (Brice Dir.) at 17, n. 1.

[449] OPUC Ex. 1 (Nalepa Dir.) at 30; CARD Ex. 1 (Norwood Dir.) at 23-24; TIEC Initial Brief at 69.

[450] CARD Ex. 1 (Norwood Dir.) at 23-24; TIEC Initial Brief at 69.

five-year blocks), and because customers would have to wait until the end of each applicable five-year block (*i.e.*, 2026 and 2032) to receive any make-whole payments.[451] The parties argue that even if the guarantee were triggered, SWEPCO's imposed exceptions could apply, which would reduce, if not nullify, any potential make-whole payments to customers.[452] Moreover, Staff emphasizes that, because the SWFs are expected to produce at the P50 level, SWEPCO does not anticipate this guarantee to be invoked during Project's expected 30-year life.[453]

CARD, OPUC, and Staff recommend SWEPCO's guarantee should be applied to the Project's entire expected 30-year operating life, which OPUC witness Nalepa argued would match the base rate cost burden on the customers.[454]

CARD recommends that, because the customer benefits are highly sensitive to the actual energy output of SWFs, the Commission should modify SWEPCO's proposed guarantee to mirror the capacity factor guarantee included within the *Wind Catcher* settlement filed in Oklahoma. Mr. Norwood explained that CARD's proposal would be based on a higher guaranteed minimum average capacity factor of 39.6% (which is 90% of the expected P50 level) measured over six five-year periods, with no exceptions for force majeure or SPP curtailments.[455]

OPUC recommends that customers should receive the benefits of this guarantee in reduced fuel expenses and PTCs based on a minimum P50 production capacity (44.01%) regardless of whether the SWFs' actual production is lower. Mr. Nalepa argued this enhanced proposal would mitigate any financial risks to SWEPCO's customers if the SWFs' production is lower than expected and would mirror the production level SWEPCO uses to calculate the Project's customer benefits. He indicated that, assuming no carbon tax and a P95 output level, the cumulative impact

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[451] Tr. at 43-44 (Smoak).

[452] *See* CARD Ex. 1 (Norwood Dir.); OPUC Ex. 1 (Nalepa Dir.); TIEC Initial Brief at 69-70; Staff Initial Brief at 23-24.

[453] Tr. at 45 (Smoak).

[454] OPUC Ex. 1 (Nalepa Dir.) at 30.

[455] CARD Ex. 1 at 23-24.

to SWEPCO's purported customer cost savings benefits under its Base Case ($567 million) would be a reduction of $386 million (more than two-thirds).[456] OPUC also recommends no exception for force majeure events which is consistent with or similar to the guarantees SWEPCO and PSO agreed to in the Oklahoma and Arkansas settlement agreements for the acquisition of the SWFs, as discussed below.[457]

Unlike CARD and OPUC, Staff does not detail a specific alternative proposal, but recommends that if the Application is approved, it should include an "improved minimum production guarantee."[458]

b. SWEPCO's Response

SWEPCO asserts that OPUC's request for a guaranteed P50 production level is unreasonable and contradicts the purpose of the proposed guarantee because it would penalize the Company for any deviation below the average expected production level. SWEPCO further asserts that its proposed guarantees are just a backstop and do not assure customers a specific level of benefits.[459] According to SWEPCO, OPUC's proposal is unbalanced providing customers with all the benefits of above-average production while the Company bears all the risk of any below-average production.[460] SWEPCO did not specifically respond to CARD's recommendation, but its argument against OPUC's proposal is relevant and applies.

The ALJs find SWEPCO's proposed minimum production guarantee lacking in many respects, especially in light of the fact that the Project is not needed to increase SWEPCO's generation but was presented as providing a projected financial benefit to its customers. The guarantee is only applicable to one-third of the Project's expected life, and if the guarantee is

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[456] OPUC Ex. 1 (Nalepa Dir.) at 18-19.

[457] OPUC Ex. 1 (Nalepa Dir.) at 14, 29.

[458] Staff Initial Brief at 26.

[459] SWEPCO Ex. 2 (Brice Dir.) at 16-17; SWEPCO Ex. 14 (Brice Reb.) at 1, 6, Exh. TPB-1R.

[460] SWEPCO Ex 14 (Brice Reb.) at 14-15.

triggered during that time frame, the customers must wait until the end of each five-year period in order to be made whole. Additionally, SWEPCO's guarantee is subject to exceptions for force majeure events and SPP curtailments which means that customers may not be eligible for potential make-whole payments even if the guarantee is triggered.

Additionally, the ALJs find that it is an unequal comparison to project potential customer benefits based on the SWFs' expected P50 production level but to limit the availability of cost-saving guarantees at the lower P95 level. The evidence shows that SWEPCO does not anticipate that production will deviate from its expected P50 level for an amount of time that would trigger this guarantee; thus, the ALJs agree with OPUC that it is a *de minimis* guarantee that would amount to little if any benefit to the customers.

B. Conditions Contained in Settlements Filed in Other Jurisdictions

With regard to the acquisition of the SWFs, SWEPCO and PSO entered into comprehensive settlements filed with the APSC[461] and OCC[462] that, as compared to the proposals in this proceeding, contain enhanced cost saving guarantees.[463] Messrs. Smoak and Brice agreed that these settlements, and the guarantees included within them, are reasonable when viewed in the context of a comprehensive settlement agreement.[464]

TIEC asserts that the guarantees included in these settlements are irrelevant to the Commission's decision in this case, and argues that the Commission should base its decision in this proceeding exclusively on the guarantees SWEPCO proposed in the Application (which TIEC indicates SWEPCO has not modified or expanded).[465] TIEC also argues that no plausible

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[461] SWEPCO Ex. 14A (Brice Reb., Workpapers) at 19-035-U_80_2 Settlement Agreement (Arkansas Settlement).

[462] SWEPCO Ex. 14A (Brice Reb., Workpapers) at Attachment A (Oklahoma Settlement Documents).

[463] Compared to SWEPCO's proposed guarantees in this proceeding, the settlements do not contain substantive changes to the Capital Cost Cap or Production Tax Credit Eligibility Guarantee.

[464] Tr. at 87 (Smoak); Tr. at 169 (Brice).

[465] TIEC Initial Brief at 70; Tr. at 13, 45-47 (Smoak).

modifications could be made to SWEPCO's guarantees that would overcome the fact that the SWFs are woefully uneconomical based on actual and expected natural gas prices as well as other errors that affect the Project's economic evaluation and projections.[466]

With regard to the contested issues in this proceeding, the settlements' most relevant guarantees are detailed below.

1. Minimum Production Guarantee

In both settlements, SWEPCO and PSO agreed to extend their P95 Minimum Production Guarantee to cover the expected 30-year life of the Project (measured in six five-year blocks) with no exception for force majeure events. SWEPCO went a step further in the Arkansas settlement and provided this guarantee with no exception for economic-based SPP curtailments (an exception for environmentally-based curtailments remained).[467]

2. Deferred Tax Asset

In the Oklahoma settlement, PSO agreed that the Company will earn a return on the DTA balance resulting from unused production tax credits over the first twenty years of operation of the SWFs using its then-applicable cost of long-term debt.[468] SWEPCO indicates the Arkansas settlement does not include a similar provision due to jurisdictional ratemaking differences. Rather, the Arkansas settlement provides that the DTA balance will be used to reduce the

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[466] TIEC Reply Brief at 52. A comprehensive overview of TIEC's arguments regarding SWEPCO's economic evaluation of the Project is provided in Section III of this PFD.

[467] SWEPCO Ex. 14A (Brice Reb., Workpapers) at 19-035-U_80_2 Settlement Agreement (found in Section 2.C. on page 3 of the agreement).

[468] SWEPCO Ex. 14A (Brice Reb., Workpapers) at Attachment A (Oklahoma Settlement Documents) (found in Section 3.A. on page 3 of the agreement).

accumulated deferred income tax component of the Company's cost of capital in any subsequent rate case filing or "FRR" filing.[469]

3. Off-System Sales

In the Oklahoma settlement, PSO agreed to credit its customers with 100% of the benefit of OSS margins effective January 1, 2021.[470]

4. Most Favored Nation Clause

In both settlements, SWEPCO and PSO agreed to a Most Favored Nations (MFN) clause applicable to the Cost Cap Guarantee, PTC Eligibility Guarantee, Net Capacity Factor Guarantee, and any other term or condition adopted for the two companies in any of the state jurisdictions. The MFN clause would apply to such terms implemented through settlement or an order issued by the jurisdiction, to the extent such terms or conditions are more favorable to SWEPCO's or PSO's customers.[471]

Additionally, both settlements contain guarantees related to various other issues, including jurisdictional and class allocation, which were not substantively discussed by the parties and are not addressed in this PFD.

The ALJs agree with TIEC that the guarantees agreed to in the above-referenced settlements are, on their face, irrelevant to the Commission's decision in this case. Mr. Brice testified that

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[469] SWEPCO Ex. 14A (Brice Reb., Workpapers) at 19-035-U_80_2 Settlement Agreement (found in Section 3.C. on page 3 of the agreement. The agreement does not define "FRR filing.").

[470] SWEPCO Ex. 14A (Brice Reb., Workpapers) at Attachment A (Oklahoma Settlement Documents) (found in Section 3.B. on page 3 of the agreement.). Staff noted that SWEPCO is authorized to retain 10% of its off-system sales under 16 TAC § 25.236(a)(9). *See* SWEPCO Ex. 14 (Brice Reb.) at 21.

[471] SWEPCO Ex. 14A (Brice Reb., Workpapers) at Attachment A (Oklahoma Settlement Documents) (found in Section 2.d. on page 3 of the agreement); SWEPCO Ex. 14A (Brice Reb. Workpapers) at 19-035-U_80_2 Settlement Agreement (found in Section 2.d. on page 3 of the agreement).

SWEPCO would entertain an expansion of the guarantees being offered in this proceeding consistent with those included within the settlements as part of a reasonable suite of conditions contained in a final order approving the acquisition of the SWFs.[472] In its reply brief, SWEPCO confirms that its position on that issue has not changed. Although SWEPCO states it would "entertain an expansion" of its proposed guarantees, the record shows that SWEPCO declined to so on its own initiative. Accordingly, the ALJs did not consider the guarantees contained in the settlements when deciding whether SWEPCO had proposed adequate cost-saving guarantees for its customers.[473]

C. Staff's and Intervenors' Proposed Conditions

The additional cost saving conditions proposed by OPUC, CARD, Staff, and Golden Spread are summarized below. Some recommendations propose guarantees that are similar or identical to the enhanced settlement guarantees discussed above.

1. OPUC

OPUC recommends that the Commission require SWEPCO to guarantee minimum energy savings to its customers based on its proposed Base Case natural price forecast, regardless of actual market prices.[474] OPUC states that natural gas prices set the marginal price in the wholesale electricity market and caps the price for wind generation resources, and, therefore, have a significant impact on the Project's anticipated customer benefits. As such, OPUC argues that its recommended guarantee would help to secure those anticipated benefits for the customers and prevent them from being diminished if actual natural gas prices are lower than expected.[475] As

[472] SWEPCO Ex. 14 (Brice Reb.) at 13.

[473] Tr. at 45-47 (Smoak).

[474] OPUC Initial Brief at 28-29; OPUC Ex. 1 (Nalepa Dir.) at 30.

[475] OPUC Ex. 1 (Nalepa Dir.) at 21, 30.

precedent for its recommended guarantee, OPUC points to the minimum energy savings guarantee the Commission approved in Docket No. 46936.[476]

Alternatively, OPUC recommends that, at a minimum, the Commission should require SWEPCO to hold its customers harmless and guarantee a minimum energy savings based on its Break Even natural gas forecast. OPUC stresses that SWEPCO's Application should be denied if SWEPCO will not at least guarantee that the Project will break even.[477]

SWEPCO disputes OPUC's recommended minimum energy savings guarantee, arguing that it would penalize the Company if circumstances deviated from expectations. The Company states that fuel costs, particularly natural gas costs, are historically volatile over extended periods like the SWFs' expected 30-year life, and asserts that such a guarantee would require the Company to assume extraordinary and unprecedented risk.[478] Additionally, SWEPCO suggests that OPUC's recommendation could be inconsistent with PURA § 36.051, which requires the Commission to provide utilities with an opportunity to recover the expenses and a reasonable return on their investments. SWEPCO estimates that it would need to guarantee savings in the range of $1.5 billion, and asserts that its approved return on equity does not compensate it for taking such a risk.[479]

The ALJs conclude that, although OPUC's recommended guarantee would provide additional protection for the customers, it is unreasonable to require SWEPCO to commit to provide customer benefits based on natural gas price forecasts that the evidence shows are inflated.

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[476] *See Application of Southwestern Public Service Company for Approval of Transactions with ESI Energy LLC, and Invenergy Wind Development North America LLC, to Amend a Certificate of Convenience and Necessity for Wind Generation Projects and Associated Facilities in Hale County, Texas and Roosevelt County, New Mexico, and for Related Approvals*, Docket No. 46936, Order at FoF Nos. 79-88 (May 25, 2018).

[477] OPUC Initial Brief at 28.

[478] SWEPCO Ex. 14 at 16; SWEPCO Initial Brief at 49.

[479] Tr. at 705-09 (Nalepa); SWEPCO Ex. 14 (Brice Reb.). at 17.

Furthermore, the ALJs place no precedential value on the minimum energy savings guarantee approved in Docket No. 46936, because it was an unopposed settlement provision.[480]

2. CARD

CARD witness Norwood recommended that approval of SWEPCO's Application should be contingent upon its commitment to provide cost, performance, and ratemaking guarantees for the Project that are consistent with the stronger guarantees agreed to by AEP in the Oklahoma *Wind Catcher* settlement agreement.[481] Therefore, CARD recommends that SWEPCO be required to provide a net benefits guarantee that the SWFs will provide net benefits to customers during the initial ten years of the Project's commercial operations.[482] As SWEPCO indicates in its reply brief, the basic formula of CARD's proposal, as found in the Oklahoma *Wind Catcher* settlement agreement, is as follows:

Net Benefit for Customers = Fuel Savings + Capacity Value +
PTCs + Minimum Net Capacity Factor Guarantee Payments + RECs Value +
Carbon Savings – Project Revenue Requirement[483]

With regard to the importance and relevance the Oklahoma *Wind Catcher* settlement has to this case, Mr. Norwood testified:

> While the Company's proposed guarantees enhance the value of the SWFs to customers by lowering somewhat primary risks that otherwise could reduce net benefits of the Project, the guarantees offered by SWEPCO in this case would provide less protection to customers than the guarantees agreed to by AEP in the Oklahoma Wind Catcher case, despite the fact that estimated benefits of the SWFs are approximately 64% lower than forecasted benefits of the Wind Catcher project.

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[480] Docket No. 46936, Order at 1 (May 15, 2018).

[481] CARD Ex. 1 (Norwood Dir.) at 22-25, Exh. SN-8 (Oklahoma Wind Catcher Settlement Agreement Guarantee Terms).

[482] CARD Ex. 1 (Norwood Dir.) at 22-23.

[483] SWEPCO Reply Brief at 62; *see* CARD Ex. 1 (Norwood Dir,) at Exh. SN-8.