



Control Number: 49737



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Addendum StartPage: 0

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

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APPLICATION OF SOUTHWESTERN § BEFORE THE STATE OFFICE
ELECTRIC POWER COMPANY FOR §
CERTIFICATE OF CONVENIENCE § PUBLIC UTILITY COMMISSION
AND NECESSITY AUTHORIZATION § FILING CLERK
AND RELATED RELIEF FOR THE § OF
ACQUISITION OF WIND §
GENERATION FACILITIES § ADMINISTRATIVE HEARINGS

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

FEBRUARY 21, 2020

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TIEC_16-16_TIEC_Griffey_Work_paper-Payback_and_discount_rate_breakeven_analysis_Low_gas_No_CO2.xlsx

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Question No. TIEC 16-1:

Has SWEPCO made any effort to explicitly value whether customers would be better off if the wind projects were delayed for any period of time given that natural gas prices are now much lower than SWEPCO's forecast at the time of its IRP? If not, why not?

Response No. TIEC 16-1:

Yes. The decision to proceed with the wind RFP was based on the 2018 SWEPCO Arkansas and PSO IRPs, which used a 2018 vintage pricing forecast. All of the optimized portfolios under all pricing scenarios that were analyzed in preparing SWEPCO's final 2019 Louisiana IRP, using the lower 2019 pricing forecast, had the option to delay wind resource additions delaying the addition of wind was not selected as the optimal solution. For the current filing, delaying the addition of the wind resources would result in a permanent loss to customers of up to \$963 million of PTC value, offset by a reduction of up to \$212 million of carrying charges on the PTC Deferred Tax Asset, depending on the length of the delay. In addition, as discussed in the rebuttal testimony of Company witness Bletzacker, the current weather driven reduction in gas prices in the near term is unsustainable. Gas prices are volatile and thus weather normalized long-term forecasts are more appropriate for use in evaluations of long-term utility resource planning. In addition, when spot gas prices are as low as they are as of the date of preparation of this response (February 2020), market heat rates tend to rise. Less efficient gas units or coal units become the marginal units in the energy market, resulting in power prices not dropping as much as gas prices.

Regardless of the current gas price, Company witness Torpey's breakeven power price analysis as provided in his Errata testimony remains a valid view of how low power prices can go until these facilities would produce breakeven economics.

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Title: Regulatory Consultant Sr

Prepared By: Jon R. Maclean

Title: Resource Planning Mgr

Prepared By: James F. Martin

Title: Regulatory Case Mgr

Prepared By: Jonathan M. Griffin

Title: Regulatory Consultant Staff

Prepared By: Lynn M. Ferry-Nelson

Title: Dir Regulatory Svcs

Sponsored By: Thomas P. Brice

Title: VP Regulatory & Finance

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

Sponsored By: John F. Torpey

Title: Mng Dir Res Plnning&Op Anlysis

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Question No. TIEC 16-2:

Are Mr. Pfeifenberger, Mr. Hollis, or Mr. Torpey individually familiar with the certainty equivalents approach to valuing a project? If the answer is yes, please explain why SWEPCO has not used a certainty equivalents approach to valuing the wind projects.

Response No. TIEC 16-2:

Yes.

SWEPCO's deterministic modeling approach is widely used and has been accepted in multiple jurisdictions for asset acquisition analysis and integrated resource planning purposes. SPS has utilized a deterministic approach as well in proceedings before this Commission, in which the Commission accepted the approach.

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Title: Resource Planning Mgr

Prepared By: James F. Martin

Title: Regulatory Case Mgr

Sponsored By: Noah K. Hollis

Title: Corp Finance Mgr

Sponsored By: John F. Torpey

Title: Mng Dir Res Plnning&Op Anlysis

Sponsored By: Johannes P. Pfeifenberger

Title: Principal, The Brattle Group

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Question No. TIEC 16-3:

Does SWEPCO agree that, from the ratepayers' perspective, the cash flows paid by ratepayers for the cost of the Wind Facilities are more certain than the cash flows received by ratepayers in the form of energy savings (excluding the production tax credits) from those facilities? If SWEPCO does not agree, please (a) identify all of the sources of uncertainty relating to the cash flows paid by ratepayers for the cost of the Wind Facilities, (b) identify all of the sources of uncertainty relating to the cash flows received by ratepayers in the form of energy savings (excluding the production tax credits), and (c) provide a detailed explanation of how the first set of uncertainties imposes greater risks onto ratepayers than the second set of uncertainties.

Response No. TIEC 16-3:

Due to the fixed-price, turnkey nature of the Purchase and Sales Agreements, as well as the capital cost cap guarantee, the costs of the Selected Wind Facilities are known with a reasonable amount of certainty. Because the costs of the Wind Facilities are known with a reasonable amount of certainty, and because the Wind Facilities will incur no fuel costs, the cost of the energy produced by the Wind Facilities is also known with a reasonable amount of certainty. This relatively fixed price, low cost energy and the Production Tax Credits that will be earned make up a substantial portion of the benefits customers will receive from the Wind Facilities. What is less certain is the market price of energy for the next 30 years. However, all resource options come with some level of risk and uncertainty.

When evaluating uncertainties that customers are taking on with a given resource option, one should also evaluate what risks are being mitigated with that resource. Gas plants would face the risks associated with gas supply that a wind investment does not face, for instance. PTC's provide a benefit regardless of what gas or power prices are. Carbon burden risk is mitigated with the clean energy which will be produced by these facilities. Risks of exposure to the energy market due to early retirement of the Company's fossil resources are mitigated. Energy savings of any resource, including this option, may be somewhat more uncertain than costs, but any type of resource the Company could employ that would provide energy and capacity for the benefit of its customers, including PPA's, owned wind, solar, gas or demand side resources, would be in the same position. The option of not acquiring the proposed facilities also presents substantial uncertainty and risk to customers, particularly in light of the pending phase out of PTCs.

Prepared By: James F. Martin

Title: Regulatory Case Mgr

Sponsored By: John F. Torpey

Title: Mng Dir Res Plnning&Op Anlysis

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Question No. TIEC 16-4:

Referring to pages 3-4 of the Rebuttal Testimony of Mr. DeRuntz:

- a. Is it the Company's position that it is unwilling to bear the risk that the ongoing capital and operations & maintenance (O&M) expense may be higher than projected?:
- b. Is it the Company's position that ratepayers should bear the risk that the ongoing capital and O&M expense may be higher than projected?:
- c. Is the risk that ongoing capital and O&M expense may be higher than projected accounted for in the Company's economic analyses? If so, please provide a detailed explanation of how the Company's economic analyses account for the described risks that the ongoing capital and O&M expense may be higher than projected.

Response No. TIEC 16-4:

- a. As stated in the Rebuttal Testimony of Company witnesses Brice and DeRuntz, the Company put forth a reasonable ongoing capital and O&M forecast that was prepared under the assumption that the costs would be subject to periodic reviews for prudence like other SWEPCO generating assets in future Commission proceedings.
- b. See a. above. Customers are also in a position where they benefit from actual expenses being lower than forecasted.
- c. The ongoing capital and O&M forecast utilized in the economic analysis was reasonable. The major components of the forecast (See CARD 2-9 Highly Sensitive Attachment 1) include (1) O&M Services; (2) Major Maintenance; (3) Land Lease; and (4) Property Tax costs. The values used for the "O&M Services" are sourced from the O&M Agreement (Exhibit L to each of the Purchase and Sale Agreements included in Highly Sensitive Confidential Exhibit JFG-3) and are not subject to change for the base scope and term of the agreement (10 years). The values used for period of Year 11-30 were escalated at a fixed percentage and assumes the Company continuing to use a 3rd party (e.g. Invenergy) for these services. The Company may elect to self-perform these services. [REDACTED]

[REDACTED] 1. Inherently, a full service warranty from the turbine manufacturer is at a higher cost than if such services are self-performed or managed by a qualified third party such as Invenergy. The Major Maintenance values for Years 11-30 were escalated at a fixed percentage. Although and Lease and Property Tax are uncontrollable costs, the Company's estimates of those amounts are reasonable.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

Sponsored By: Joseph G. DeRuntz

Title: Director - Projects

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Question No. TIEC 16-5:

Referring to page 4 of the Rebuttal Testimony of Mr. DeRuntz, please provide SWEPCO's 30-year ongoing capital and O&M forecast for each of the Wind Facilities that was used in calculating the projected economic benefits.

Response No. TIEC 16-5:

See CARD 2-9 Highly Sensitive Attachment 1 for the requested information. These amounts were summarized and provided to Company witness Torpey for use of the Company's benefits modeling.

Prepared By: Edward J. Locigno

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Title: Director - Projects

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Question No. TIEC 16-6:

Referring the Rebuttal Testimony of Mr. DeRuntz, Exhibit JGD-1R, pages 15-16::

- a. Please state the projected capital cost of replacing the following components for the Traverse project: [REDACTED]
- b. Please identify in what year of the ongoing and capital O&M forecast provided in response to TIEC 16-4 each of the projected capital costs identified in subpart (a) are made.:
- c. Please indicate where the costs associated with these activities have been included in the net benefits analysis (Updated Torpey Errata Benefits Model Final.xlsx):
- d. Please provide a copy of the standard maintenance manual and the site-specific manual addendum for the Traverse project.

Response No. TIEC 16-6:

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

- a. Please see TIEC 16-6 Highly Sensitive Attachment 1.
- b. The Company will not complete all of these replacements in a single year and this is not how replacement of these items are represented in the ongoing capital and O&M forecast. Instead, the Company will strategically spread these replacements, as needed, over a five year or greater period in advance of the 20-year target date identified in the MLA. This will allow the Company to optimize work activities while maintaining high facility availability. The Company's objective would be to combine this work with other maintenance to eliminate the need for additional outages.
- c. These costs are embedded in each facility's O&M and Capital forecasts on the Inputs worksheet of Company witness Torpey's benefits model.
- d. Please see TIEC 16-6 Highly Sensitive Attachment 2.

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Question No. TIEC 16-7:

Referring the Rebuttal Testimony of Mr. DeRuntz, Exhibit JGD-1R, pages 31-32::

- a. Please state the projected capital cost of replacing the following components for the Maverick project: [REDACTED]
- b. Please identify in what year of the ongoing and capital O&M forecast provided in response to TIEC 16-4 each of the projected capital costs identified in subpart (a) are made.:
- c. Please indicate where the costs associated with these activities have been included in the net benefits analysis (Updated Torpey Errata Benefits Model Final.xlsx):
- d. Please provide a copy of the standard maintenance manual and the site-specific manual addendum for the Maverick project.

Response No. TIEC 16-7:

- a-d. Please see the Company's response TIEC 16-6.

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Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

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Question No. TIEC 16-8:

Referring the Rebuttal Testimony of Mr. DeRuntz, Exhibit JGD-1R, pages 47-48::

- a. Please state the projected capital cost of replacing the following components for the Sundance project: [REDACTED]
- b. Please identify in what year of the ongoing and capital O&M forecast provided in response to TIEC 16-4 each of the projected capital costs identified in subpart (a) are made.:
- c. Please indicate where the costs associated with these activities have been included in the net benefits analysis (Updated Torpey Errata Benefits Model Final.xlsx):
- d. Please provide a copy of the standard maintenance manual and the site-specific manual addendum for the Sundance project.

Response No. TIEC 16-8:

- a-d. Please see the Company's response to TIEC 16-6.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

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Title: Director - Projects

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Question No. TIEC 16-9:

Referring to the Rebuttal Testimony of Mr. DeRuntz, Exhibit JGD-2R at 1, n.2, please provide AEP's survey response to the Benchmarking Anticipated Wind Project Lifetimes survey. Please also provide any draft responses and communications regarding AEP's response to the aforementioned survey.

Response No. TIEC 16-9:

Please see TIEC 16-9 Attachment 1.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

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Edward J Locigno

From: Joseph A Karrasch
Sent: Tuesday, February 18, 2020 8:35 AM
To: Edward J Locigno
Subject: FW: [EXTERNAL] Wind Project Life Assumptions: Seeking your insight!

From: Jay F Godfrey <jfgodfrey@aep.com>
Sent: Wednesday, August 7, 2019 2:04 PM
To: Ryan Wiser <rhwiser@lbl.gov>
Cc: Joseph A Karrasch <jakarrasch@aep.com>
Subject: RE: [EXTERNAL] Wind Project Life Assumptions: Seeking your insight!

Ryan

Earlier this year, we issued an two RFPs which total up to 2,200 MW of wind in SPP on behalf of two of our utilities (Public Service Company of Oklahoma and Southwestern Electric Power Company).

These RFPs may be found at www.psoklahoma.com/rfp and www.swepco.com/rfp

In each, we specified that we were looking to buy (at completion) 30 year design life projects with 30 year design life turbines.

We also required that the developers provide a Mechanical Load Analysis (or equivalent) from the wind turbine manufacturer support the design life assumption

Before issuing the RFPs we reached out to the major manufacturers (we only allowed GE, Vestas and Siemens) to confirm that they could meet this requirement

What they said was that depending on the wind regime that this was achievable but the of course we could expect that O&M might be higher in the later years which seemed appropriate

We ended up selecting three projects totaling 1,485 MW in Oklahoma being developed by Invenergy.

We executed the agreements on 7/11/19 and filed with the appropriate state regulatory authorities on 7/15 seeking approval of the purchase

A link to the press release is found at: <https://aep.com/news/releases/read/1600>

A Powerpoint was also released explaining the proposed transaction:

https://www.aep.com/Assets/docs/investors/eventspresentationsandwebcasts/IR_SWEP_COPSORegulatedWindInvestmentOpportunity_Final.pdf

Let us know if you have any further questions

Regards,



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From: Ryan Wiser <rhwiser@lbl.gov>
Sent: Wednesday, August 7, 2019 12:51 PM
To: Jay F Godfrey <jfgodfrey@aep.com>; Joseph A Karrasch <jakarrasch@aep.com>
Cc: Ryan Wiser <RHWiser@lbl.gov>
Subject: [EXTERNAL] Wind Project Life Assumptions: Seeking your insight!

This is an **EXTERNAL** email. **STOP. THINK** before you **CLICK** links or **OPEN** attachments. If suspicious please click the '**Report to Incidents**' button in Outlook or forward to incidents@aep.com from a mobile device.

Jay, Joseph

I am writing to seek your insight into common project-life assumptions for U.S. wind power projects--yes, pestering you again! Please feel free to forward this request to others, if you think they are in a better position to respond.

The Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory are tasked by the U.S. Department of Energy to track the historical and current levelized cost of energy of U.S. land-based wind projects. One small component of that is assumed project life—historically assumed at 20-years in many cases.

I am seeking your assessment of current assumptions that developers and project sponsors most-commonly use for project life, when considering the lifetime profitability of a project, pitching financiers, and establishing PPAs during the development and financing process. Obviously, each participant in a wind project—whether tax equity, lender, sponsor, or early-stage developer—might view project life expectations differently. We are looking at the perspective of the developer and sponsor.

Any feedback you offer will be kept in confidence—your name or company will not be linked to any responses.

Specifically, I am looking for your assessment of:

- Current most-typical assumptions for project life, from the project developer and sponsor perspectives for projects built today. Is this 20 years, 25 years, 30 years, 35 years, or otherwise?
- Have you seen a change to project life assumptions over the last decade? If project life is now generally assumed to be more than 20 years, when did the transition from 20 years to something greater begin?

I am not looking for any commercially sensitive or project-level data: really just looking for a brief email response (or phone conversation, if preferred), if you can spare the time to share your thoughts.

Thanks in advance for any insight you can provide, and please let me know if you are not able to assist in this instance.

Best regards,

Ryan Wiser

--

Ryan Wiser, Senior Scientist
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Question No. TIEC 16-10:

Please explain why the projected O&M expenses and capital additions included in the net benefits analysis model (Updated Torpey Errata Benefits Model Final.xlsx) are relatively constant throughout the projected lives and do not reflect any substantial increases to account for these extended life maintenance activities in the 20-year time frame.

Response No. TIEC 16-10:

Please see the Company's response to TIEC 16-6 (b).

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Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

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Sponsored By: Joseph G. DeRuntz

Title: Director - Projects

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Question No. TIEC 16-11:

Identify all differences in the equipment and projected interim capital additions/retirements as reflected in the net benefits analysis for the Wind Catcher Project and the corresponding analysis for the Traverse, Sundance, and Maverick projects.

Response No. TIEC 16-11:

There are no notable differences in equipment and interim capital additions/retirements apart from the following:

- Turbine size (2.8 MW for the Selected Wind Facilities (SWFs) vs. 2.5 MW for Wind Catcher);
- Overall project size (1485 MW for the SWFs vs. 2000 MW for Wind Catcher); and
- Project location (three different locations vs a single location for Wind Catcher);

Additionally, it is important to note that the turbines slated for the proposed Wind Catcher were in a higher wind resource regime than for the Selected Wind Farms and thus saw higher expected loads (more stress). All things being equal, turbines with more stress should expect a shorter life. Conversely, turbines with less stress should expect a longer life.

	<u>Net Capacity Factor</u>	<u>Design Life</u>
Wind Catcher	51.1% NCF	25 years
Selected Wind Farms		
Traverse:	43.37% NCF	30 years
Maverick:	44.89% NCF	30 years
Sundance	45.95% NCF	30 years

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Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

Sponsored By: Joseph G. DeRuntz

Title: Director - Projects

Sponsored By: Jay F. Godfrey

Title: VP Energy Mktng & Renewables

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Question No. TIEC 16-12:

Has SWEPCO or AEP prepared or reviewed any analyses or studies of the life spans of the initial capital investments in wind farms placed in service over the past five years? If so, please provide all such analyses or studies.

Response No. TIEC 16-12:

Please see Exhibit JGD-2R to Mr. DeRuntz's rebuttal testimony.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

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Question No. TIEC 16-13:

Has SWEPCO or AEP prepared or reviewed any analyses or studies of the projected life spans of wind farms either currently under construction or to be placed in service over the next three years? If so, please provide all such analyses or studies.

Response No. TIEC 16-13:

Please see Exhibit JGD-2R to Mr. DeRuntz's rebuttal testimony.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-14:

Has SWEPCO or AEP prepared or reviewed any analyses or studies of the performance degradation of wind turbines? If so, please provide all such analyses.

Response No. TIEC 16-14:

The Simon Wind reports included in Exhibit JFG-6 to Mr. Godfrey's direct testimony included performance degradation, which would be reflected in the economic analysis as an adjustment to output. Note that capacity factors provided by Simon and used by the Company at both the P50 and P95 levels used in the benefits modeling reflected a certain amount of degradation/outage time over the 30-year lives of the assets (e.g. 30 -year availability at levelized 96% with an added levelized 1% per year discount due to blade degradation). Absent this degradation, energy output and resulting energy revenues and PTC's would have been higher in the benefits modeling. This is how degradation was accounted for in the benefits analysis.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

Sponsored By: Jay F. Godfrey

Title: VP Energy Mktng & Renewables

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-15:

Is Mr. DeRuntz aware of any wind turbines that have lasted for thirty years? If so, please identify any such wind turbines, including location, commercial operation date, and retirement date.

Response No. TIEC 16-15:

No. However, wind turbine technology has advanced in recent years as noted in Mr. DeRuntz's Rebuttal Testimony.

Prepared By: Joseph A. Karrasch

Title: Dir Renewable Energy Devlpmnt

Prepared By: Edward J. Locigno

Title: Regulatory Analysis & Case Mgr

Sponsored By: Joseph G. DeRuntz

Title: Director - Projects

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

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

Question No. TIEC 16-16:

Referring to the Rebuttal Testimony of Noah K. Hollis at page 9, please provide the calculations, in Excel format with all links intact, supporting the claim that the payback period would only be 9 years.

Response No. TIEC 16-16:

Please see attached work paper TIEC_16-16_TIEC_Griffey Work paper-Payback_and_discount_rate_breakeven_analysis_Low_gas_No_CO2 (provided electronically on the PUC Interchange) .

Prepared By: Carrie M. Luedtke

Title: Corp Finance Analyst Prin

Sponsored By: Noah K. Hollis

Title: Corp Finance Mgr

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-17:

Referring to the Rebuttal Testimony of Mr. Bletzacker at page 10, lines 12-20::

- a. Has SWEPCO prepared a calculation of the value of NextEra's option to deliver at three different points on the Enable pipeline? If so please provide it:
- b. Please provide the basis differential between those 3 delivery points over the last three years.

Response No. TIEC 16-17:

- a. No. On June 24, 2015, the Louisiana Public Service Commission (Commission) approved a long-term Natural Gas Procurement Pilot Program (Pilot Program or Order), for new long-term natural gas resources. A calculation of NextEra's option to deliver to various receipt points was not required by the Commission, however, some portion of the value of this optionality was likely embedded in NextEra's responsive bid.
- b. AEPSC does not have information responsive to this request.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-18:

Referring to the highly sensitive attachment to SWEPCO's Response to TIEC 8-1::

- a. Does Mr. Bletzacker agree that the attachment includes line items entitled [REDACTED] and [REDACTED]
- b. Does Mr. Bletzacker believe that the prices associated with these line items includes any value for NextEra's ability to deliver at the three different points?:
- c. Please explain the source of the line items and the line item entitled [REDACTED]
- d. Please provide the emails referenced under the heading [REDACTED]
- e. Does Mr. Bletzacker agree that these are curves purporting to be market prices as of a certain point in time?:
- f. Does Mr. Bletzacker agree that the NYMEX closing price on the day before this contract was entered into is closer to the actual contract price than any of AEP's Base Case or Low Case that are closest in time to when the contract was signed? If not, why not?

Response No. TIEC 16-18:

- a. Yes. However, Mr. Bletzacker notes that TIEC_8-1_highly_Sensitive_Attachment_1.pdf is an AEPSC internally-generated "Deal Approval Summary" document that contains the Company's expectation of "Enable Gas Basis" and a resulting "Enable Gas Curve" which were prepared as a reference marker for consideration by the Approvers of this fixed price pilot program.
- b. Mr. Bletzacker believes that the value associated with NextEra Energy Marketing's ability to deliver to multiple Enable Gas receipt points, along with the structure of NextEra Energy Marketing's upstream supply deals, is partially reflected in the fixed price offered by NextEra Energy Marketing. The rest of the value was likely retained by NextEra Energy Marketing.
- c. Henry Hub Curve: was a deal marker prepared internally from the NYMEX natural gas futures contract overnight settle prices for July 27, 2017. Enable Gas Basis: was a deal marker prepared from gas price information largely from Morningstar Commodities. Enable Gas Curve was a deal marker representing the Enable Gas Curve marker less the Henry Hub Curve marker.
- d. Please see TIEC_16_18_Attachment_1.
- e. Not necessarily. These curves are created as markers to support the fixed price physical gas supply deal. The prices paid by NextEra's marketing company to the upstream natural gas suppliers that underwrite this fixed price pilot program may not have any connection to these curves.
- f. Mr. Bletzacker believes this is an invalid comparison because heating degree-days during the prior period were the 4th warmest (of 125) on record. As such, this period resulted in less storage refill demand at the time this contract was entered into with correspondingly discounted natural gas prices.

Prepared By: Connie S. Trecazzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

DEAL APPROVAL SUMMARY

TRANSACTION SUMMARY

Customer: Southwestern Electric Power Company
Counterparty: Nextera Energy Marking, LLC
Fuel: Natural Gas
Term: April 1, 2018 – March 31, 2023
Receipt Pts: Enable Gas Pipeline (Flex, EGT Scissortail or Mark West Points)
Delivery Pt: Stall Plant
Product: Fixed Price Physical Gas Supply

VALUATION

INPUTS		OUTPUTS	
Fixed Price (FP):	\$2.63/MMBtu	Market Price COB:	July 27, 2017
		Henry Hub Curve:	\$2.806
		Enable Gas Basis:	-\$0.1986
		Enable Gas Curve:	\$2.6074
MMBtus/day:	10,000	Total FP Contract Value:	\$48,023,800

ACCOUNTING

TREATMENT: Mark to Market/Reg Deferred	BOOK: KMTM
---	-------------------

APPROVALS

TIME/DATE:

FUNCTION	PERSON	INITIAL	FUNCTION	PERSON	INITIAL
Marketing: email 7/28 → 10:02am	Amy Jeffries Jay Godfrey/Holly Turner	10:02am 7/28/17	MID OFFICE:	Tony Bender	email 7/28/17 10:12am
Commercial & Fin Analysis:	Eric James	email 7/28/17 8:30am	MARKET RISK:	David Kulha Michael Stauffer	email 7/28/17 7:44am
STRUCTURING:	Ed Sarkel ✓	email 7/28 8:51am	ACCOUNTING:	Ryan Frenton	email 7/28 10:17am
RISK:	Joe Obergfell ✓	email 7/28/17 7:37am	CREDIT:	David Kulha William Thompson	email 7/28/17 7:44am
COM OPS:	Jeff LaFleur	7/28/17	LEGAL:	Alyssa Bowerman ✓	email 7/28 10:12am
SWEPCO President:	Venita McCellon- Allen	email 7/28/17 12:19 pm	TRADING:	Tom Presthus	email 7/28 8:57am

Amy E Jeffries

From: Venita McCellon-Allen
Sent: Friday, July 28, 2017 12:19 PM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Amy, this has my approval.

Thanks to you and the team for all your hard work on this project.

Venita

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 6:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
Subject: SWEPCO Gas Hedging RFP - DASH
Importance: High

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We are recommending SWEPCO enter into an agreement for 10,000 MMBtus/day at a fixed price of \$2.63 for the term of April 1, 2018 – March 31, 2023. **Please respond with your approval of the attached Deal Approval Summary as soon as possible. We intend to execute the agreement on Friday, July 28, 2017.**

Feel free to call me with any questions.

Thank you,
Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | 📠: 614-716-6235 | 📞: 614-309-5562 | ✉: aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: Alyssa J Bowerman
Sent: Friday, July 28, 2017 10:12 AM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Legal – approved.

Alyssa J. Bowerman
Counsel
American Electric Power
155 W. Nationwide Blvd., 3rd Floor
Columbus, OH 43215
Office: 614.583.6012 (Audinet: 8.220.6012)
Cell: 614.557.5237
Fax: 614.583.1602

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman <ajbowerman@aep.com>; Eric J James <ejjames@aep.com>; Edward A Sarkel <easarkel@aep.com>; Joseph V Obergfell <jvobergfell@aep.com>; Jeffrey LaFleur <jdlafleur@aep.com>; Venita McCellon-Allen <vmccellon-allen@aep.com>; Anthony J Bender II <ajbender@aep.com>; David J Kulha <dkulha@aep.com>; Ryan J Frenton <rjffrenton@aep.com>; Michael S Stauffer <msstauffer@aep.com>
Cc: Marguerite C Mills <mcmills@aep.com>; Tom Brice JR. <tpbrice1@aep.com>; Abbe M Ross <amross@aep.com>; Shilpa Jain <sjain@aep.com>; Forrest J Westfall <fjwestfall@aep.com>; Heather M Whitney <hmwhitney@aep.com>
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Importance: High

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Thank you,
Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | ☎ : 614-716-6235 | 📠 : 614-309-5562 | ✉ : aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: David J Kulha
Sent: Friday, July 28, 2017 7:44 AM
To: Amy E Jeffries; Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney; William H Thompson III; Shilpa Jain
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Approved – Credit and Market Risk

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
Subject: SWEPCO Gas Hedging RFP - DASH
Importance: High

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Feel free to call me with any questions.
Thank you,
Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | 📞: 614-716-6235 ; 📞: 614-309-5562 | ✉: aejeffries@aep.com ; AIM: aejaep



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Amy E Jeffries

From: Edward A Sarkel
Sent: Friday, July 28, 2017 8:51 AM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Approved

Ed Sarkel
200-6231 (audinet)
614-716-6231 (outside)
easarkel@aep.com

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
Subject: SWEPCO Gas Hedging RFP - DASH
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Feel free to call me with any questions.
Thank you,
Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | ☎ : 614-716-6235 | ☎ : 614-309-5562 | ✉ : aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: Joseph V Obergfell
Sent: Friday, July 28, 2017 7:37 AM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

I approve.

Joseph V. Obergfell
Manager, Risk and Energy Scheduling
American Electric Power
614-716-6264

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
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Regulated Commercial Operations

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!

Amy E Jeffries

From: Ryan J Frenton
Sent: Friday, July 28, 2017 10:17 AM
To: Amy E Jeffries; Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Approved.

Regards,

Ryan J. Frenton
American Electric Power
Manager, Derivative Accounting
155 W. Nationwide Boulevard
Internal: 220-6489
External: (614) 583-6489
Mobile: (614) 302-1528
Email: rjfrenton@aep.com



From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
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Thank you,
Amy

**Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations**

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | ☎: 614-716-6235 | ☎: 614-309-5562 | ✉: aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: Eric J James
Sent: Friday, July 28, 2017 8:30 AM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Approved

Eric J. James

Vice President – Commercial & Financial Analysis
Internal: 200-6273
External: (614) 716-6273
Cell: (614) 282-8207

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman; Eric J James; Edward A Sarkel; Joseph V Obergfell; Jeffrey LaFleur; Venita McCellon-Allen; Anthony J Bender II; David J Kulha; Ryan J Frenton; Michael S Stauffer
Cc: Marguerite C Mills; Tom Brice JR.; Abbe M Ross; Shilpa Jain; Forrest J Westfall; Heather M Whitney
Subject: SWEPCO Gas Hedging RFP - DASH
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Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | 📞: 614-716-6235 | 📞: 614-309-5562 | ✉: aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: Thomas D Presthus
Sent: Friday, July 28, 2017 8:57 AM
To: Amy E Jeffries; Jay F Godfrey
Cc: Eric J James
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Congratulations!

Approved – TDP 8:56am, 7/28/17

From: Amy E Jeffries
Sent: Friday, July 28, 2017 8:41 AM
To: Thomas D Presthus <tdpresth@aeep.com>; Jay F Godfrey <jfgodfrey@aeep.com>
Cc: Eric J James <ejjames@aeep.com>
Subject: FW: SWEPCO Gas Hedging RFP - DASH
Importance: High

Tom and Jay,

According to AEP's Market Risk policy, someone from Trading and someone from Marketing also needs to acknowledge that they saw the DASH. Please respond that you acknowledge that you have seen the DASH by stating "not applicable" or "approved".

Thank you,
Amy

From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman <ajbowerman@aeep.com>; Eric J James <ejjames@aeep.com>; Edward A Sarkel <easarkel@aeep.com>; Joseph V Obergfell <jvobergfell@aeep.com>; Jeffrey LaFleur <jdlafleur@aeep.com>; Venita McCellon-Allen <vmccellon-allen@aeep.com>; Anthony J Bender II <ajbender@aeep.com>; David J Kulha <djkulha@aeep.com>; Ryan J Frenton <rjfrenton@aeep.com>; Michael S Stauffer <msstauffer@aeep.com>
Cc: Marguerite C Mills <mcmills@aeep.com>; Tom Brice JR. <tpbrice1@aeep.com>; Abbe M Ross <amross@aeep.com>; Shilpa Jain <sjain@aeep.com>; Forrest J Westfall <fjwestfall@aeep.com>; Heather M Whitney <hmwhitney@aeep.com>
Subject: SWEPCO Gas Hedging RFP - DASH
Importance: High

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Feel free to call me with any questions.
Thank you,

Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | ☎: 614-716-6235 | ☎: 614-309 5562 | ✉: aejeffries@aep.com | AIM: aejaep



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Amy E Jeffries

From: Anthony J Bender II
Sent: Friday, July 28, 2017 10:12 AM
To: Amy E Jeffries
Subject: RE: SWEPCO Gas Hedging RFP - DASH

I'm good. Thanks!

Tony Bender | American Electric Power | Manager – Reporting and Analysis

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | 📞: 614-716-3917 | 📠: 614-949-7267 | ✉: ajbender@aep.com



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From: Amy E Jeffries
Sent: Thursday, July 27, 2017 7:42 PM
To: Alyssa J Bowerman <ajbowerman@aep.com>; Eric J James <ejjames@aep.com>; Edward A Sarkel <easarkel@aep.com>; Joseph V Oberbergfell <jvoberbergfell@aep.com>; Jeffrey LaFleur <jdlafleur@aep.com>; Venita McCellon-Allen <vmccellon-allen@aep.com>; Anthony J Bender II <ajbender@aep.com>; David J Kulha <djkulha@aep.com>; Ryan J Frenton <rjfrenton@aep.com>; Michael S Stauffer <msstauffer@aep.com>
Cc: Marguerite C Mills <mcmills@aep.com>; Tom Brice JR. <tpbrice1@aep.com>; Abbe M Ross <amross@aep.com>; Shilpa Jain <sjain@aep.com>; Forrest J Westfall <fjwestfall@aep.com>; Heather M Whitney <hmwhitney@aep.com>
Subject: SWEPCO Gas Hedging RFP - DASH
Importance: High

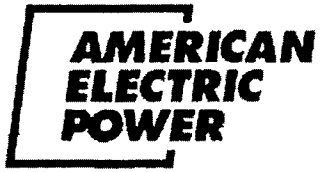
Good evening, all. After many months, we have finally received approval from the Louisiana Commission to enter into a long term supply agreement in accordance with our application and certification of the Long Term Natural Gas Hedging Pilot Program. The two short-listed bidders submitted updated bids this afternoon. As a result, Nextera Energy Marketing's fixed price bid of \$2.63/MMBtu was the lowest and most favorable bid.

We are recommending SWEPCO enter into an agreement for 10,000 MMBtus/day at a fixed price of \$2.63 for the term of April 1, 2018 – March 31, 2023. Please respond with your approval of the attached Deal Approval Summary as soon as possible. We intend to execute the agreement on Friday, July 28, 2017.

Feel free to call me with any questions.
Thank you,
Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | 📞: 614-716-6235 | 📠: 614-309-5562 | ✉: aejeffries@aep.com | AIM: aejaep



BOUNDLESS ENERGY

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Amy E Jeffries

From: Jay F Godfrey
Sent: Friday, July 28, 2017 10:02 AM
To: Amy E Jeffries; Thomas D Presthus
Cc: Eric J James; David J Kulha
Subject: RE: SWEPCO Gas Hedging RFP - DASH

Amy

I have seen the DASH
It is not applicable from my standpoint as Energy Marketing has nothing to do with a gas hedge
Nevertheless, I approve.
JFG 9:59 am 7/28/17

Consgrats

Jay F. Godfrey
American Electric Power
Managing Director – Energy Marketing & Renewables.
1 Riverside Plaza 14th Floor | Columbus OH 43215 ☎: 614-716-6162 | ✉: jfgodfrey@aep.com



BOUNDLESS ENERGY

From: Amy E Jeffries
Sent: Friday, July 28, 2017 8:41 AM
To: Thomas D Presthus <tdpresthus@aep.com>; Jay F Godfrey <jfgodfrey@aep.com>
Cc: Eric J James <ejjames@aep.com>
Subject: FW: SWEPCO Gas Hedging RFP - DASH
Importance: High

Tom and Jay,

According to AEP's Market Risk policy, someone from Trading and someone from Marketing also needs to acknowledge that they saw the DASH. Please respond that you acknowledge that you have seen the DASH by stating "not applicable" or "approved".

Thank you,
Amy

From: Amy E Jeffries

Sent: Thursday, July 27, 2017 7:42 PM

To: Alyssa J Bowerman <ajbowerman@aep.com>; Eric J James <ejjames@aep.com>; Edward A Sarkel <esarkel@aep.com>; Joseph V Obergfell <jvobergfell@aep.com>; Jeffrey LaFleur <jdlaflaur@aep.com>; Venita McCellon-Allen <vmccellon-allen@aep.com>; Anthony J Bender II <ajbender@aep.com>; David J Kulha <djkulha@aep.com>; Ryan J Frenton <rjfrenton@aep.com>; Michael S Stauffer <msstauffer@aep.com>

Cc: Marguerite C Mills <mcmills@aep.com>; Tom Brice JR. <tpbrice1@aep.com>; Abbe M Ross <amross@aep.com>; Shilpa Jain <sjain@aep.com>; Forrest J Westfall <fjwestfall@aep.com>; Heather M Whitney <hmmwhitney@aep.com>

Subject: SWEPCO Gas Hedging RFP - DASH

Importance: High

Good evening, all. After many months, we have finally received approval from the Louisiana Commission to enter into a long term supply agreement in accordance with our application and certification of the Long Term Natural Gas Hedging Pilot Program. The two short-listed bidders submitted updated bids this afternoon. As a result, Nextera Energy Marketing's fixed price bid of \$2.63/MMBtu was the lowest and most favorable bid.

We are recommending SWEPCO enter into an agreement for 10,000 MMBtus/day at a fixed price of \$2.63 for the term of April 1, 2018 – March 31, 2023. Please respond with your approval of the attached Deal Approval Summary as soon as possible. We intend to execute the agreement on Friday, July 28, 2017.

Feel free to call me with any questions.

Thank you,

Amy

Amy Jeffries | AEP | Natural Gas and Oil Manager
Regulated Commercial Operations

1 Riverside Plaza 14th Floor | Columbus, OH 43215 | ☎: 614-716-6235 ☎: 614-309-5562 | ✉: aejeffries@aep.com | AIM: aejaep



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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-19:

Does AEP have a forward price curve for natural gas delivery to Henry Hub, whether generated internally or provided by a third party? If so, please provide the most recent forward price curve for natural gas delivery to Henry Hub, and describe the source of the price curve.

Response No. TIEC 16-19:

No. AEP's Fuel, Emissions and Logistic group only provides a forecasted price for about two years for natural gas delivery to the Henry Hub and it is based upon NYMEX natural gas futures prices.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-20:

Please provide the source of the data used for the inflation adjustment in Figure 2 of Mr. Bletzacker's testimony.:

- a. Does Mr. Bletzacker believe market participants would have collectively used the same source as Mr. Bletzacker?:
- b. If inflation were 1.5% annually instead of the rate assumed by Mr. Bletzacker, would in:
- a. flation adjusted NYMEX prices have a negative slope? c. Why did Mr. Bletzacker use a base year that is other than the current year for his inflation adjustment?

Response No. TIEC 16-20:

The inflation adjustment utilized in Figure 2 is provided by Moody's Analytics.

- a. Moody's Analytics states: *"Moody's Analytics provides financial intelligence and analytical tools to help business leaders make better, faster decisions. We are known for our industry-leading and award-winning solutions, made up of research, data, software, and professional services, assembled to deliver a seamless customer experience. We create confidence in thousands of organizations worldwide, with our commitment to excellence, open mindset approach, and focus on meeting customer needs."*
- b. Mr. Bletzacker has only performed the analysis utilizing inflation values provided by Moody's Analytics.
- c. The last full calendar-year of actual inflation information prior to the Company's 1H2019 Fundamentals Forecast was 2018, consequently, inflation adjustments are based in 2018 dollars.

Prepared By: Connie S. Trecazzi

Title: Economic Forecast Anlyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-21:

Does Mr. Bletzacker agree that the monthly prices in his inflation-adjusted prices in his Figure 2 begin increasing relative to the previous year's prices beginning in 2030?

Response No. TIEC 16-21:

No. Inflation-adjusted prices in Figure 2 begin increasing relative to the previous year's prices beginning completely in 2031. This is due entirely to the (non-inflation-adjusted) NYMEX system-generated prices inserted in these years.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-22:

Referring to the Rebuttal Testimony of Mr. Bletzacker at page 16, line 11, please explain in greater detail why Mr. Bletzacker believes Mr. Griffey's comparison of AEP's natural gas forecasts to actual Henry Hub spot prices and the Henry Hub futures price on 12/30/19 is misleading. Please provide a detailed explanation of Mr. Bletzacker's belief that declining inflation adjusted forward prices through 2032 makes the comparison misleading.

Response No. TIEC 16-22:

Mr. Griffey's Direct Testimony, page 21, lines 1-12 is attempting to validate his statement that SWEPCO's weather-normalized natural gas price forecasts have "proven to be wildly and consistently overstated" (Griffey Direct Testimony, page 21, line 4). As proof, Mr. Griffey describes the price escalation over time of the Company's weather-normalized natural gas price forecasts and then displays the price escalation (Figure 4) of a single-date set (12/30/2019) of NYMEX natural gas futures contract prices. Mr. Griffey's implied inference is that the Company's natural gas price forecasts over time have displayed a flawed price escalation because they have been greater than the 12/30/2019 NYMEX (nominal\$) price escalation (which is in decline on an inflation-adjusted basis).

Regardless of the presence of a declining inflation-adjusted slope, Mr. Bletzacker's belief is that NYMEX natural gas futures contract prices are not suitable for comparison to the Company's long-term forecast of natural gas prices for the reasons discussed in his Rebuttal Testimony, Section III.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

**SOAH DOCKET NO. 473-19-6862
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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-23:

Does Mr. Bletzacker agree that there have been previous periods of at least ten years where inflation-adjusted natural gas prices have declined?

Response No. TIEC 16-23:

In Figure 8 (Bletzacker Rebuttal Testimony, page 18), Mr. Bletzacker provided the inflation-adjusted Henry Hub spot prices from 1997 - 2020. Mr. Bletzacker would agree that the volatility of natural gas spot prices have resulted in many short-term periods (less than 10 years) of both increases and decreases of inflation-adjusted Henry Hub natural gas spot prices.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-24:

Please refer to Figure 10 of Mr. Bletzacker's testimony. Does Mr. Bletzacker believe that anything other than the most recent third-party forecasts are relevant to the decision of whether the wind projects are economic? If he believes that older forecasts are relevant, please explain the relevance of the older forecasts.

Response No. TIEC 16-24:

Highly Sensitive Figure 10 depicts all third party forecasts as provided in the Company's possession in response to TIEC 5-2. Mr. Bletzacker believes the relevance of a third-party forecast is determined by the inclusion of "best available" information not available to the Company. Given that there has been no "sea-change" development (i.e., legislative/regulatory developments, impactful force majeure event(s), substantial evidence of enhancements or barriers to natural gas finding and production costs, and others), all of the 2018-2019 third party forecasts depicted in Highly Sensitive Figure 10 are relevant. When viewed collectively, Highly Sensitive Figure 10 presents an independent range of plausible outcomes and Break-Even natural gas values that are relevant to the economic decision of the Project.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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PUC DOCKET NO. 49737**

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-25:

Referring to the Rebuttal Testimony of Mr. Bletzacker, page 27, line 17::

- a. Does Mr. Bletzacker agree that the High and Low cases presented in this proceeding form a +/-15% band around the Base case? If Mr. Bletzacker disagrees, please state the basis of his disagreement.: .
- b. Does Mr. Bletzacker believe that a +/- 15% band around SWEPCO's base natural gas forecast represents the plausible range of natural gas prices in the future? If so, why does Mr. Bletzacker not believe that lower prices are not within the plausible range?:
- c. Can Mr. Bletzacker place a probability around the likelihood that gas prices will be within his plausible range? If so, please provide that probability and all supporting calculations.

Response No. TIEC 16-25:

- a. No. Mr. Bletzacker agrees that, as described in the Company's response to TIEC 15-10, the High and Low cases represent higher and lower demand for U.S. electric generation and fuels and, consequently, higher and lower fuels prices, respectively. The differences in each case's assumptions on a month-to-month basis can be seen in Company witness Bletzacker's workpapers. Given the multitude of differences between these wholly stand-alone cases, the "+/- band around the Base case" is dependent upon which forecast element is being referenced.
- b. Mr. Bletzacker believes the associated cases were designed and generated to define a plausible range of outcomes surrounding the Base Case Fundamentals Forecast which is inclusive of the variance of fuels prices (including natural gas), fuels demand and electric generation demand. Defining "plausibility" as "within the bounds of possibility", Mr. Bletzacker has offered Highly Sensitive Figure 10 to represent that lower prices than the Company's Low case are likewise plausible.
- c. No.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-26:

Does Mr. Bletzacker agree with the statement on page 21 of Mr. Pollock's Direct Testimony (errata) that SWEPCO Low/No-Carbon gas price forecast is higher than the EIA's 2020 reference case forecast?:

- a. If agree, is it Mr. Bletzacker's position that the EIA 2020 EIA Reference Case forecast is outside of a plausible range of outcomes?:
- b. If disagree, please provide a detailed explanation of why Mr. Bletzacker disagrees.

Response No. TIEC 16-26:

No. The statement on page 21 Of Mr. Pollock's Direct Testimony (errata), lines 13-14 is: "In fact, even SWEPCO's Low Gas projection is higher than the 2020 EIA Reference case projection".

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Anlyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-27:

Referring to the Rebuttal Testimony of Mr. Bletzacker at Figure 12, please reconcile this chart with the cumulative renewable capacity figures shown in SWEPCO's Response to TIEC 6-3.

Response No. TIEC 16-27:

TIEC 6-3 includes repowered facilities as existing facilities. TIEC 11-5c is the relevant reference, it breaks out when and how much wind will be repowered rather than retired.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

**SOAH DOCKET NO. 473-19-6862
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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-28:

Referring to the Rebuttal Testimony of Mr. Bletzacker, Highly Sensitive Figure 9, please provide the precise publication date/month of each of the third-party forecasts.

Response No. TIEC 16-28:

IHS: 11/2019; Platts/PIRA: 10/2019; Wood Mackenzie: 1/2020

Prepared By: Connie S. Trecazzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-29:

Referring to the Rebuttal Testimony of Mr. Bletzacker at page 15::

- a. Please confirm that Mr. Bletzacker still uses EIA's forecasted natural gas demand for each sector except electric generation as inputs to the Aurora model in producing the Fundamentals Forecast, as set forth in his response to TIEC 10-1 in Docket No. 47461.:
- b. Please confirm that Mr. Bletzacker still reviews EIA's Annual Energy Outlook to come up with natural gas price elasticities, as set forth in his response to TIEC 11-2 in Docket No. 47461.:
- c. Is Mr. Bletzacker planning on producing a new Fundamentals Forecast in light of the newest EIA AEO that has been released? If not, please provide a detailed explanation why the \$1/MMBtu drop in the EIA's reference case between the 2019 and 2020 AEOs does not justify creating a new Fundamentals Forecast.

Response No. TIEC 16-29:

- a. Confirm. Mr. Bletzacker also reviews the same information, where available, from the other reputable forecast(s) providers as identified in Highly Sensitive Figure 10.
- b. Confirm. Mr. Bletzacker also reviews the same information, where available, from the other reputable forecast(s) providers as identified in Highly Sensitive Figure 10.
- c. Not at this time. To this point, AEPSC's Fundamentals Analysis group has not conducted a complete review of EIA's AEO 2020. Initial indications are that the EIA AEO 2020 is not advancing any "sea-change" developments (i.e., legislative/regulatory developments, impactful force majeure event(s), substantial evidence of enhancements or barriers to natural gas finding and production costs, and others). In context with others, EIA's AEO 2020 natural gas price is further depicted in Highly Sensitive Figure 10.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-30:

Is Mr. Bletzacker aware of any utilities that use implied volatilities in natural gas forecasting and resource planning? If not, please describe all efforts that AEP or Mr. Bletzacker have made to determine whether other utilities use implied volatilities in their planning.

Response No. TIEC 16-30:

No. As stated in Bletzacker Rebuttal Testimony, page 27, lines 22-24 and page 28, lines 1-4, Mr. Bletzacker has not seen forecasts from reputable entities such as IHS/CERA, Platt's Analytics/PIRA, Wood Mackenzie, EIA, SPP and the International Energy Agency which rely upon calculations of the implied volatility of NYMEX natural gas futures contracts as Mr. Griffey proposes. Nor, has such an analysis been requested by any regulatory agency in the jurisdictions served by AEP.

Prepared By: Connie S. Trecuzzi

Title: Economic Forecast Analyst Staff

Sponsored By: Karl R. Bletzacker

Title: Dir Fundamental Analysis

**SOAH DOCKET NO. 473-19-6862
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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-31:

Referring to the Rebuttal Testimony of Mr. Torpey at page 13 lines 8-9: Please provide the heat rates and variable O&M associated with the "new efficient natural gas plants that have very low fuel costs" that Mr. Torpey cites as the cause of the jump in energy benefits in 2047.

Response No. TIEC 16-31:

The information responsive to this request is CONFIDENTIAL under the terms of the Protective Order. The Confidential information is available for review at the Austin offices of American Electric Power Company (AEP), 400 West 15th Street, Suite 1520, Austin, Texas, 78701, (512) 481-4562, during normal business hours.

See TIEC 16-31 Confidential Attachment 1.

Prepared By: Jon R. Maclean
Prepared By: James F. Martin

Title: Resource Planning Mgr
Title: Regulatory Case Mgr

Sponsored By: John F. Torpey

Title: Mng Dir Res Plnning&Op Anlysis

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-32:

Referring to the Rebuttal Testimony of Mr. Pfeifenberger at page 5, is it Mr. Pfeifenberger's position that none of the projects in the "Facility Study" stage and in the "DISIS" stage will be put in commercial operation? If the answer is no, please provide the percentages that Mr. Pfeifenberger believes are reasonable to assume for the percentage of projects in the "Facility Study" and in the "DISIS" stage that will be put in commercial operation.

Response No. TIEC 16-32:

No. Speculating about any percentages from "on schedule" facilities with Generation Interconnection Agreements, Facility Study, or DISIS projects for future renewable generation development would be unsupported and less robust in terms of a consistent set of PROMOD modeling inputs than the assumptions vetted by SPP and its stakeholders for future renewable generation in SPP. How much renewable generation is developed from each of these groups of proposals in SPP's interconnection queue will depend on market conditions. In a low gas price environment, for example, a smaller portion of these projects would likely be developed.

As stated in Mr. Pfeifenberger's rebuttal testimony, commercial development of projects still in the Facility Study or DISIS stage is speculative, and therefore should not be considered for long-term planning purposes unless consistent with other modeling inputs or more information regarding specific projects is available. SPP staff and its stakeholders will have relied on any such specific information regarding Facility Study or DISIS projects, and would have reflected that information in their projections for renewable generation capacity in the context of other input assumptions associated with SPP's 2019 ITP PROMOD models. For example, SPP staff and its stakeholders included up to 5,000 MW of new solar generation by 2029 in SPP's 2019 ITP Reference Case Future 1 (i.e., starting point for SWEPCO's analysis), despite the fact that only 260 MW of solar generation in SPP's interconnection queue currently has a Generation Interconnection Agreement.

The importance of combining wind generation development assumptions consistent with other modeling inputs is also illustrated by contrasting SPP's Future 1 and Future 2 assumptions and results. The simulated market prices for AEP load zone in SPP's 2019 Emerging Technologies Case (Future 2)—which included 7.4 GW of additional renewable generation capacity in 2029 compared to that assumed by SPP in its Future 1 Reference Case—was slightly higher despite the 7.4 GW additional renewable generation assumed by SPP. This further supports Mr. Pfeifenberger's conclusion in his rebuttal testimony that modeling additional renewable generation resources in SPP would not have resulted in lower market prices as claimed by the TIEC witness.

Prepared By: Johannes P. Pfeifenberger

Title: Principal, The Brattle Group

Sponsored By: Johannes P. Pfeifenberger

Title: Principal, The Brattle Group

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-33:

Referring to the Rebuttal Testimony of Mr. Pfeifenberger at page 5, lines 15-18, please provide the documents supporting Mr. Pfeifenberger's calculation along with an explanation of how he made this calculation.

Response No. TIEC 16-33:

Please see Pfeifenberger workpaper, "Pfeifenberger WP-R-1 - Figure 1.xlsx". Sheet "Comparison to Feb 2019 Queue" includes the calculations for the figures cited in Mr. Pfeifenberger's rebuttal testimony. The underlying SPP Generation Interconnection Queues relied upon for this calculation are provided in sheets "GI_ActiveRequest 022219" (2/22/19 Queue) and "GI_ActiveRequest 011620" (1/16/20 Queue).

To determine the amount of renewable resources "on schedule" to go into commercial operation in 2019, Mr. Pfeifenberger summed the capacities of all generation interconnection requests in the 2/22/19 Queue with a Generation Type of "Wind", "Solar", or "Battery", a Commercial Operation Date in 2019, and a Status of "IA FULLY EXECUTED/ON SCHEDULE".

To determine the amount of renewable resources that actually went into commercial operation in 2019, Mr. Pfeifenberger summed the capacities of all generation interconnection requests in the 1/16/20 Queue with a Generation type of "Wind", "Solar", or "Battery", a Commercial Operation Date in 2019 or later, and a Status of "IA FULLY EXECUTED/COMMERCIAL OPERATION".

Prepared By: Johannes P. Pfeifenberger

Title: Principal, The Brattle Group

Sponsored By: Johannes P. Pfeifenberger

Title: Principal, The Brattle Group

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-34:

Referring to the Rebuttal Testimony of Mr. Pfeifenberger at page 7, lines 3-9::

- a. Please provide the current projections of coal generation retirements to which Mr. Pfeifenberger refers;
- b. Please provide any analysis or data upon which Mr. Pfeifenberger relies on for his statement that “a lot more SPP coal generation would be retired than currently projected.”;
- c. Please provide the data or source document upon which Mr. Pfeifenberger relies for his statement that “there is a significant surplus of generation in the SPP footprint.”;
- d. Please provide the data or source document upon which Mr. Pfeifenberger relies for his statement that the surplus referenced in subpart (c) of this RFI will be “reduced and eliminated over time,” including any projections that Mr. Pfeifenberger has created or reviewed as to when and to what extent surplus generation in the SPP footprint will be reduced or eliminated.

Response No. TIEC 16-34:

The request appears to refer to page 17 (not 7) of Mr. Pfeifenberger's Rebuttal testimony.

Please see Figure 2.7: Conventional Generation Retirements from SPP's 2019 ITP Assessment Report, published November 6, 2019 and available at https://www.spp.org/Documents/60937/2019%20ITP%20Report_v1.0.pdf. This figure identifies approximately 2.5 GW of coal retirements by 2024 and 3.3 GW by 2029 under SPP's Reference Case (Future 1). Total projected conventional generation retirements under Future 1 amount to around 7.4 GW by 2024 and 10.1 GW by 2029.

In SPP's Emerging Technologies future (Future 2) with more renewable generation development, SPP projects higher conventional generation retirements, totaling around 8.6 GW (2024) and 11.7 GW (2029), which include approximately 2.6 GW of coal retirements by 2024 and 3.6 GW by 2029.

As noted in the 2019 ITP report, SPP's Future 1 and Future 2 PROMOD coal retirement assumptions are based on natural gas prices that increase from \$3.14/MMBtu in 2020 to \$4.62/MMBtu in 2024 and \$5.07/MMBtu in 2029. At the lower assumed natural gas prices of the TIEC witnesses, coal retirements would necessarily be higher as a larger percentage of the existing coal fleet would be uneconomic.

See page 87 of the NERC 2019 Long-Term Reliability Assessment; available at https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_LTRA_2019.pdf

See source cited in (c), showing that the surplus in SPP reserve margins are projected to decline over time. Mr. Pfeifenberger has not created or reviewed any projections as to when the surplus generation in the SPP footprint will be eliminated, but notes that NERC has analyzed retirement scenarios that would eliminate SPP's surplus generation. See: https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_Retirements_Report_2018_Final.pdf.

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

**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-35:

Referring to the Rebuttal Testimony of Mr. Pfeifenberger at pages 19-20. In the non gen-tie cases, are any of the costs associated with the technologies cited that can reduce congestion (e.g., gen-tie, batteries, demand response) included in SWEPCO's economic analysis? If not, please explain why it is reasonable to include the benefits from such options but not the costs in the economic analysis of the wind projects.

Response No. TIEC 16-35:

Yes, with the qualification that these costs would be incurred by SPP with or without the Company's acquisition of the Selected Wind Facilities. As a result, these costs are the same in the "with and "without" cases of the Company's benefit-cost analysis of the acquisition and, thus, did not need to be quantified.

In the Base Congestion Case analyses, the PROMOD simulated congestion costs associated with the Selected Wind Facilities are already high enough by around 2029 that it would be cost-effective for SPP, via its Integrated Transmission Planning process to advance transmission solutions (and other technologies) to avoid further increases in wind-related congestion costs in this part of the SPP system.

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
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Question No. TIEC 16-36:

Please explain why Mr. Pfeifenberger believes that it is appropriate to assume technologies such as batteries will be useful to reduce congestion but not to reduce power prices over the next thirty years.

Response No. TIEC 16-36:

Mr. Pfeifenberger explained that several cost-effective new transmission technologies, in addition to the introduction of competition in the transmission industry, already are able to reduce congestion costs. These technologies are slowly being adopted and should be expected to address growing congestion costs cost-effectively. Substitute transmission technologies are not yet widely used, but are expected to become cost-effective in the future. Such technologies will provide for cost-effective alternatives to address congestion costs, but only at a certain minimum level of congestion costs. Therefore, they would be economically most attractive to address high congestion costs associated with wind generation delivery from certain locations, but not necessarily to be widely utilized throughout the SPP footprint. From a SPP-wide perspective, technologies such as batteries will not reduce average prices. Rather, wide-spread deployment of batteries would increase off-peak prices (when charging) and decrease on-peak prices (when discharging), which would likely increase the value of the Selected Wind Facilities. In addition, foot-print wide deployment of these technologies would be less likely under the very low gas prices projections that TIEC believes will prevail in the long term.

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Question No. TIEC 16-37:

Does Mr. Pfeifenberger believe over the next thirty years that battery technology combined with renewables will result in lower locational marginal prices than fossil fuel alternatives? If not, please explain why not.

Response No. TIEC 16-37:

No, not as a general proposition. Please see response to 16-36. Even if locational energy prices decreased on average, prices for ancillary services, capacity, or other wholesale power market products may increase.

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**SOUTHWESTERN ELECTRIC POWER COMPANY'S RESPONSE TO TEXAS
INDUSTRIAL ENERGY CONSUMERS' SIXTEENTH REQUEST FOR INFORMATION**

Question No. TIEC 16-38:

Refer to the Rebuttal Testimony of Mr. Pfeifenberger at page 28, lines 1-2. Please provide his calculation of the after-tax WACC. Please explain Mr. Pfeifenberger's choice of capital structure that he employed in his calculation.

Response No. TIEC 16-38:

Applying a typical utility regulatory capital structure of 50 percent equity and 50 percent debt to the Oil and Gas company debt and equity costs of 5.12 percent and 12.45 percent (per Table 1 of the cited Texas Comptroller 2019 Property Value Study), and an assumed marginal tax rate of 21 percent, Mr. Pfeifenberger calculated the after-tax WACC as:

$$(1-0.21) \times 0.5 \times 5.12 \text{ percent} + 0.5 \times 12.45 \text{ percent} = 8.24 \text{ percent.}$$

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Question No. TIEC 16-39:

Referring to the Rebuttal Testimony of Mr. Pfeifenberger at page 26, lines 11-12::

- a. Please provide all of Mr. Pfeifenberger's bases for his claim that "the WACC of merchant natural gas generators has been found to be in the 8.0% to 8.5% range," including copies of any quantitative analyses underlying his claim.:
- b. Is his basis for the statement referenced in the prior subpart of this RFI from work that Brattle has done for PJM in calculating the cost of new entry for PJM's capacity market? If so, please provide a copy of those calculations.

Response No. TIEC 16-39:

Yes. Please see the discussion related to Cost of Capital in paragraphs 101-105, 108, and 111, in the FERC Order dated April 15, 2019 on PJM's quadrennial revision of its Variable Resource Requirement (VRR) Curve used in the Reliability Pricing Model (RPM). The FERC Order (Docket Nos. ER19-105-001 ER19-105-002) can be accessed via the following weblink:

<https://www.ferc.gov/CalendarFiles/20190415202536-ER19-105-001.pdf>

Also see Brattle's report "Fourth Review of PJM's Variable Resource Requirement Curve", prepared for PJM (April 19, 2018):

https://brattlefiles.blob.core.windows.net/files/13894_20180420-pjm-2018-variable-resource-requirement-curve-study.pdf

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Question No. TIEC 16-40:

Referring to the Rebuttal Testimony of Mr. Brice, page 22, lines 1-16::

- a. Are all of the costs associated with the "optimization activities" described recovered through SWEPCO's retail rates? If the answer is no, please identify with specificity each cost associated with the "optimization activities" that is not recovered through SWEPCO's retail rates:
- b. Does SWEPCO perform these "optimization activities" regardless of whether it makes an off-system sale? If not, please explain how SWEPCO decides whether to perform these optimization activities.

Response No. TIEC 16-40:

- a. Yes. The costs of making energy sales, including off system sales, have always been included in base rates. Allowing a utility to retain a portion of off-system sales margins is consistent with the Commission's rules and provides an incentive to maximize sales of the utility's generation.
- b. Yes. SWEPCO relies on the expertise and efforts of several groups within the Company to continuously monitor market conditions as a function of the optimization activities.

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