BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY OF OKLAHOMA ("PSO") FOR APPROVAL OF THE COST RECOVERY OF THE WIND CATCHER ENERGY CONNECTION PROJECT; A DETERMINATION THERE IS A NEED FOR THE PROJECT; APPROVAL FOR FUTURE INCLUSION IN BASE RATES COST RECOVERY OF PRUDENT COSTS INCURRED BY PSO FOR THE PROJECT; APPROVAL OF A TEMPORARY COST RECOVERY RIDER; APPROVAL OF CERTAIN ACCOUNTING PROCEDURES REGARDING FEDERAL PRODUCTION TAX CREDITS; WAIVER OF OAC 165:35-38-5(e); AND SUCH OTHER RELIEF THE COMMISSION DEEMS PSO IS ENTITLED	)	CAUSE NO. PUD 201700267

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CORPORATION COMMISSION
OF OKLAHOMA

REPORT AND RECOMMENDATION OF THE ADMINISTRATIVE LAW JUDGE

HEARING: January 8, 2018, in Courtroom 301
2101 North Lincoln Boulevard, Oklahoma City, Oklahoma 73105
Before Mary Candler, Administrative Law Judge

APPEARANCES:
Jack P. Fite, Joann S. Worthington, Kendall W. Parrish, Tom Ferguson and George G. Hoyt, Attorneys *representing* Public Service Company of Oklahoma
Natasha M. Scott, Deputy General Counsel Michael L. Velez and Lauren Hensley, Assistant General Counsels, *representing* Public Utility Division, Oklahoma Corporation Commission
Dara M. Derryberry, Deputy Attorney General, Katy Evans Boren, Jared B. Haines, and A. Chase Snodgrass, Assistant Attorneys General *representing* Office of the Attorney General, State of Oklahoma
Thomas P. Schroedter and Michael S. Booze *representing* Oklahoma Industrial Energy Consumers
James A. Roth, Marc Edwards and C. Eric Davis, Attorneys *representing* Plains and Eastern Clean Line Oklahoma LLC
Cheryl A. Vaught, Scot A. Conner, and Jon W. Laasch, Attorneys *representing* Oneta Power, LLC
Rick D. Chamberlain, Attorney *representing* Wal-Mart Stores East, LP, and Sam's East, Inc.
Deborah R. Thompson, Attorney *representing* South Central MCN LLC
Randall Elliott, Attorney *representing* Oklahoma Municipal Power Authority
Kenneth Blakely and Robert D. Edinger, Attorneys *representing* Kiowa Power Partners, LLC
J. Eric Turner, Attorney *representing* Golden Spread Electric Cooperative, Inc.
Patrice Douglas, Jordan Jackson, Michael D. Hockley and Ryan Pulkrabek, Attorneys *representing* Novus Windpower, LLC
David E. Keglovits and Adam C. Doverspike, Attorneys *representing* Windfall Coalition, LLC
James R. Fletcher and Marvin T. Griff, Attorneys *representing* Tri-County Electric Cooperative, Inc.

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This Cause comes before the Corporation Commission ("Commission") of the State of Oklahoma on the Application of Public Service Company of Oklahoma ("PSO" or "Company") seeking for approval of the cost recovery of the wind catcher energy connection project; a determination there is a need for the project; approval for future inclusion in base rates cost recovery of prudent costs incurred by PSO for the project; approval of a temporary cost recovery rider; approval of certain accounting procedures regarding federal production tax credits; waiver of OAC 165:35-38-5(e); and such other relief the Commission deems PSO is entitled.

I. SUMMARY OF RECOMMENDATION

PSO filed the Application in this Cause requesting preapproval for future inclusion in base rates cost recovery of costs incurred by PSO for two proposed projects. The first proposed project is the purchase of the largest wind farm in the United States which consists of 2,000 MW (Name Plate) of wind generation located in the panhandle of Oklahoma. The second proposed project is a 765 kV electric line that spans 350-380 miles to transmit energy from the Wind Facility to the PSO grid near Tulsa. Preapproval of these projects are sought pursuant to Title 17 O.S. §286. Additionally, PSO is requesting a waiver of specific language in OAC 165:35-38-5(e). The Administrative Law Judge ("ALJ") respectfully summarizes the key recommendations contained in this report as follows:

The ALJ recommends the request for waiver of specific language in OAC 165:35-38-5(e) be denied because "before construction starts" refers to instances when a utility is seeking preapproval of a self build generating facility. This Cause is PSO's request of preapproval of the purchase of (1) a wind facility and (2) a 765 kV line running from the wind facility to a PSO substation. The requested waiver is not necessary as this subsection is not applicable to the relief requested in this Cause.

If Title 17 O.S.§286 requires that "need" be a need for capacity or meet a need as it relates to renewable energy requirements or other regulatory requirements then PSO has not proven that such a need exists. However, if "need" in Title 17 O.S. §286 can also be interpreted to include economic need or a need for low-cost energy then it must be determined if PSO has proven such in PSO's economic need analysis.

PSO failed to prove that this Project meets an economic need sufficient for preapproval of this Project. PSO's economic analysis used unreasonable data and utilized a flawed planning process. PSO's economic analysis contained assumptions regarding future gas prices, carbon costs, and wind additions that overstate the benefits of the Project. The Project presents risky elements, including the risk of cost overruns on, or complete failure of, the Gen-Tie line; failure of the Project to qualify for full Production Tax Credits, and risk of non-performance by other AEP companies.

PSO's failure to utilize competitive bidding for two extremely large purchases is of utmost importance in any consideration of preapproval of the Wind Facility and the Gen-Tie line. This failure becomes even more of a concern without adequate explanation or justification. An excuse of "not enough time" for competitive bidding is not sufficient in light of the significant cost to be borne by PSO customers. A project at this price point must be done right. Given the facts of this Cause, the ALJ cannot recommend preapproval of the Project in light of PSO's failure to competitively bid both the Wind Facility and the Gen-Tie line and PSO's failure to adequately explain the lack of competitive bidding for such significant purchases.

It is the conclusion and recommendation of the ALJ that PSO has not met its burden of proof sufficient to prove this Project in whole, or the Wind Project and Gen-Tie Projects in part, meet a need as required by Title 17 O.S. §286.

It is the conclusion and recommendation of the ALJ that PSO has not met its burden of proof sufficient to prove there was consideration of reasonable alternatives as required by Title 17 O.S. §286(C).

II. JURISDICTION AND NOTICE

PSO is an Oklahoma corporation authorized to do business in the State of Oklahoma. PSO is a public utility with plant, property, and other assets dedicated to the generation, production, transmission, distribution, and sale of electricity at wholesale and retail levels within the State of Oklahoma. The Commission has jurisdiction over this Cause by virtue of the provisions of Article IX, Section 18 of the Constitution of the State of Oklahoma, 17 O.S. §§ 151 *et seq.*, and the Rules and Regulations of this Commission. Notice is proper in this Cause and complies with Order No.670744 and the requirements of OAC 165:5-7-51.

III. PROCEDURAL HISTORY

1. On July 31, 2017, PSO filed its Application seeking approval of the cost recovery of the wind catcher energy connection project; a determination there is a need for the project; approval for future inclusion in base rates cost recovery of prudent costs incurred by PSO for the project; approval of a temporary cost recovery rider; approval of certain accounting procedures regarding federal production tax credits; waiver of OAC 165:35-38-5(e); and such other relief the Commission deems PSO is entitled.

2. Also on July 31, 2017, PSO filed a Motion for Procedural Order and a Notice of Hearing and a Motion for Protective Order and Notice of Hearing setting both the Motion for Procedural Order and the Motion for Protective Order for hearing on August 10, 2017.

3. Also on July 31, 2017, PSO filed the direct testimonies of: Brian D. Weber, Jay F. Godfrey, Johannes P. Pfeifenberger, John O. Aaron, Karl R. Bletzacker, Kelly D. Pearce, Michael L. Bright, Paul Chodak, Renee V. Hawkins, Robert W. Bradish and Steven L. Fate.

4. On August 1, 2017, the Office of the Attorney General ("Attorney General") filed an Entry of Appearance for Dara M. Derryberry, Katy Evans Boren and Jared B. Haines.

5. Also on August 1, 2017, Thomas P. Schroedter filed an Entry of Appearance on behalf of Oklahoma Industrial Energy Consumers ("OIEC").

6. On August 2, 2017, the Commission's Public Utility Division ("PUD") filed a Motion for Assessment of Costs with a Notice of Hearing setting the Motion for Assessment of Costs for hearing on August 10, 2017.

7. On August 9, 2017, Cheryl A. Vaught, Scot A. Conner and Jon W. Laasch filed an Entry of Appearance on behalf of Oneta Power, LLC ("Oneta").

8. On August 10, 2017, the Motion for Protective Order and the Motion for Assessment of Costs were recommended. The Motion for Procedural Order was continued by agreement of the parties to August 24, 2017.

9. On August 11, 2017, the Attorney General filed a Motion to Dismiss, or in the Alternative, Motion to Assess Costs along with a Notice of Hearing setting the Motion to Dismiss, or in the Alternative, Motion to Assess Costs for hearing on August 18, 2017.

10. On August 17, 2017, PSO filed its Response to the Attorney General's Motion to Dismiss, or in the Alternative, Motion to Assess Costs.

11. On August 18, 2017, the Attorney General's Motion to Dismiss, or in the Alternative, Motion to Assess Costs was heard and continued by agreement of the parties to August 24, 2017.

12. Also on August 18, 2017, James A. Roth, Marc Edwards and C. Eric Davis filed an Entry of Appearance on behalf of Plains and Eastern Clean Line, LLC ("Plains").

13. On August 21, 2017, Randall Elliott filed an Entry of Appearance on behalf of Oklahoma Municipal Power Authority ("OMPA").

14. On August 24, 2017, the Motion for Procedural Order was continued by agreement of the parties to August 29, 2017. Also on this date, the ALJ issued her report denying the Attorney General's Motion to Dismiss and recommending the Motion to Assess Costs.

15. On August 28, 2017, Rick D. Chamberlain filed an Entry of Appearance on behalf of Wal-Mart Stores East, LP, and Sam's East, Inc. ("Wal-Mart").

16. On August 29, 2017, the Motion for Procedural Order was continued by agreement of the parties to August 31, 2017, at which time the Motion for Procedural Order was heard and recommended.

17. On August 31, 2017, Deborah R. Thompson filed a Motion to Intervene of South Central MCN LLC ("South Central") along with a Notice of Hearing setting the Motion to Intervene of South Central MCN LLC for hearing on September 7, 2017.

18. On September 6, 2017, the Commission issued Order No. 667831, Order Granting Motion for Protective Order and Order No. 667832, Order Granting PUD's Motion for Assessment of Costs.

19. On September 7, 2017, South Central's Motion to Intervene was heard and recommended.

20. On September 12, 2017, the Commission issued Order No. 668057, Order Denying Attorney General's Motion to Dismiss and Granting Motion to Assess Costs.

21. On September 21, 2017, PSO filed Summaries of Direct Testimony of: John O. Aaron, Johannes P. Pfeifenberger, Karl R. Bletzacker, Renee V. Hawkins, Paul Chodak, Kelly D. Pearce, Brian D. Weber, Jay F. Godfrey, Michael L. Bright, Steven L. Fate and Robert W. Bradish.

22. On September 22, 2017, David E. Keglovits and Adam C. Doverspike filed an Entry of Appearance on behalf of Windfall Coalition, LLC ("Windfall").

23. On September 27, 2017, Patrice Douglas and Jordan Jackson filed an Entry of Appearance on behalf of Novus Windpower LLC ("Novus"). Also on this date, A. Chase Snodgrass filed an entry of appearance on behalf of the Attorney General.

24. On September 28, 2017, the Commission issued Order No. 668609, Order Granting Motion for Procedural Schedule. Also on this date, PSO filed Responses to OIEC's Third Set of Data Requests.

25. On September 29, 2017, James R. Fletcher and Marvin T. Griff filed an Entry of Appearance on behalf of Tri-County Electric Cooperative, Inc. ("TCEC") and Kenneth H. Blakely and Robert D. Edinger filed an Entry of Appearance on behalf of Kiowa Power Partners, LLC ("Kiowa").

26. On October 5, 2017, the Commission issued Order No. 668824, Order Granting South Central MCN LLC's Motion to Intervene.

27. On October 10, 2017, Novus filed a Motion to Associate Attorney Michael Dillon Hockley and a Motion to Associate Attorney Ryan Pulkrabek.

28. On October 11, 2017, PSO filed its Objection to Attorney General's Ninth Set of Data Requests, along with a Notice of Hearing setting the Objection to Attorney General's Ninth Set of Data Requests for hearing on October 19, 2017.

29. On October 12, 2017, J. Eric Turner filed an Entry of Appearance on behalf of Golden Spread Electric Cooperative, Inc. ("Golden Spread"). Also on this date, Golden Spread filed its Motion

to Intervene along with a Notice of Hearing setting the Motion to Intervene for hearing on October 19, 2017.

30. Also on October 12, 2017, Novus filed a Notice of Hearing for the Motions to Associate Attorneys (Michael Dillon Hockley and Ryan Pulkrabek) setting the Motions to Associate Attorneys for hearing on October 19, 2017.

31. On October 18, 2017, PSO filed its Response to Golden Spread's Motion to Intervene.

32. On October 19, 2017, the Motion to Intervene by Golden Spread was heard and recommended as were the Motions to Associate Attorneys Michael Dillon Hockley and Ryan Pulkrabek. PSO's Objections to the Attorney General's Ninth Set of Data Requests were resolved and the matter was stricken.

33. On October 20, 2017, TCEC filed a Motion to Associate Counsel (Marvin T. Griff).

34. On November 3, 2017, TCEC filed a Notice of Hearing setting the Motion to Associate Counsel for hearing on November 16, 2017.

35. On November 9, 2017, PSO filed its Motion to Determine Notice along with the Notice of Hearing setting the Motion to Determine Notice for hearing on November 16, 2017.

36. On November 16, 2017, the Motion to Associate Counsel Marvin T. Griff and the Motion to Determine Notice were heard and recommended.

37. Also on November 16, 2017, PSO filed its Supplemental Response to Plains and Eastern Clean Line LLC's 1st Data Requests Second Supplemental Response Number 4 and CL 1-4 Second Supplemental Attachment 4.

38. On November 21, 2017, the Commission issued Order No. 670276, Order Granting Motion to Associate Attorney Ryan Pulkrabek as well as Order No. 670277, Order Granting Motion to Associate Attorney Michael Dillon Hockley.

39. On December 4, 2017, Oneta filed Responsive Testimony for M. Ray Perryman, Ph.D.; Redacted and Unredacted Responsive Testimony of PUD witness Frank Mossburg, Responsive Testimony of Geoffrey M. Rush, Kathy Champion, David Melvin, Jason C. Chaplin; Responsive Testimony of Scott Norwood and Mark E. Garrett on behalf of OIEC; Redacted and Unredacted Responsive Testimony of Andrew Rawlins and Responsive Testimony of Mario Hurtado on behalf of Plains; Responsive Testimony of Steven W. Chriss on behalf of Wal-Mart; Responsive Testimony of Todd F. Bohrmann, Zhen Zhu, Ph.D., Bernard A. Cevera, Daniel V. Bauerkemper, P.E., Frank J. Beling and Carl N. Stover, Jr. on behalf of the Attorney General; Responsive Testimony of Thomas A. Petrie on behalf of Windfall.

40. On December 5, 2017, the Commission issued Order No. 670743, Order Granting Motion to Associate Counsel of Marvin D. Griff, Order No. 670744, Order Granting Motion to Determine Notice and Order No. 670745, Order Granting Motion to Intervene of Golden Spread.

41. Also on December 5, 2017, the Statement of Position of OMPA was filed.

42. On December 6, 2017, Kendall W. Parrish filed an entry of appearance on behalf of PSO. Also on this date, the Summaries of Responsive Testimony were filed: Mark E. Garrett and Scott Norwood on behalf of OIEC; Daniel V. Bauerkemper, P.E., Bernard A. Cevera, Zhen Zhu, Ph.D., Carl N. Stover, Jr., Frank J. Beling and Todd F. Bohrmann on behalf of the Attorney General.

43. On December 7, 2017, Summaries of Responsive Testimony of Geoffrey M. Rush, Jason C. Chaplin, David Melvin, Kathy Champion, and Frank Mossburg on behalf of PUD; Responsive Testimony Summary of Steve W. Chriss on behalf of Wal-Mart.

44. On December 8, 2017, South Central, Kiowa, Golden Spread, Novus (redacted and unredacted) and TCEC filed their respective Statements of Position.

45. On December 11, 2017, Larry Mitchell filed Public Comment.

46. Also on December 11, 2017, Summaries of the Responsive Testimonies of Andrew Rawlins and Mario Hurtado on behalf of Plains and Eastern Clean Line Oklahoma LLC were filed.

47. On December 12, 2017, M. Ray Perryman filed his Summary of Responsive Testimony on behalf of Oneta.

48. On December 13, 2017, Thomas A. Petrie filed his Summary of Responsive Testimony and Exhibits on behalf of Windfall.

49. On December 14, 2017, the Attorney General filed his Renewed Motion to Dismiss along with a Notice of Hearing setting the Renewed Motion to Dismiss before the Commission *en banc* on December 21, 2017.

50. On December 19, 2017, Novus filed its Response in Support of the Attorney General's Renewed Motion to Dismiss.

51. On December 20, 2017, PSO filed a Motion to Associate Counsel (George G. Hoyt) along with a Notice of Hearing setting the Motion to Associate Counsel for hearing on December 21, 2017.

52. Also on December 20, 2017, PSO filed Proof of Publication as well as its Response to the Attorney General's Renewed Motion to Dismiss.

53. On December 21, 2017, the Motion to Associate Counsel was heard and recommended.

54. On December 22, 2017, the following documents were filed:

a. Rebuttal Testimony on behalf of PSO: Paul Chodak, Steven L. Fate, Jay F. Godfrey, Michael L. Bright, Robert W. Bradish, Brian D. Weber, C. Richard Ross, Timothy B. Gaul, Karl R. Bletzacker, Richard G. Smead, Johannes P. Pfeifenberger, Kelly Pearce, Renee V. Hawkins, Thomas A. Finn, David M. Roush;

b. Rebuttal Testimony of Mark E. Garrett on behalf of OIEC.

c. PSO's Response to OIEC's Sixth Data Requests; and

d. PSO's Response to the Attorney General's Data Request 5-9.

55. On December 28, 2017, the Commission issued Order No. 671470, Order Denying Attorney General's Renewed Motion to Dismiss.

56. On January 2, 2018, PSO filed an Errata to Rebuttal Testimony of Johannes P. Pfeifenberger and Errata to Rebuttal Testimony of Brian D. Weber.

57. On January 3, 2018, the following documents were filed:

a. All Parties Issue List;
b. South Central's Statement of Position Summary as well as an Exhibit and Witness List;
c. PSO's Exhibit and Witness List;
d. PSO's Summaries of Rebuttal Testimony of: Paul Chodak, Jay F. Godfrey, Michael L. Bright, Kelly Pearce, Johannes P. Pfeifenberger, C. Richard Ross, Renee V. Hawkins, David M. Roush, Timothy B. Gaul, Robert W. Bradish, Brian D. Weber, Richard G. Smead, Karl R. Bletzacker, Steven L. Fate, and Thomas A. Finn;
e. OIEC's Surrebuttal Issues List as well as an Exhibit and Witness List;
f. Oneta's Exhibit List as well as Surrebuttal Issues Outline;
g. Wal-Mart's Exhibit List;
h. Plains and Eastern Clean Line of Oklahoma LLC's Surrebuttal Issues as well as an Exhibit List;
i. PUD's Surrebuttal Issues List and Exhibit List;
j. Attorney General's Surrebuttal Issues List and Exhibit List; and
k. Novus' Exhibit List.

58. On January 4, 2018, Public Comments were filed.

59. Also, on January 4, 2018, Windfall's Witness and Exhibit List was filed.

60. Also on January 4, 2018, the Prehearing Conference was held and continued by agreement of the parties to January 5, 2018. On January 5, 2018, the Prehearing Conference was heard and recommended.

61. On January 8, 2018, the following documents were filed:
a. Attorney General filed an Amended Surrebuttal Issues List;
b. PSO's Response to OIEC's Eighth Data Requests;
c. Public Comments;
d. PSO's Response to OIEC's Eighth Data Requests Exhibit;
e. Public Comment Sign-in Sheet;
f. OIEC's 8-13 (Amended) Attachment 1;
g. Hearing Exhibits 1 through 6;

62. Also on January 8, 2018, the Hearing on the Merits was heard and continued each day through January 18, 2018, at which time the Administrative Law Judge ("ALJ") took the matter under advisement.

63. On January 9, 2018, the Commission issued Order No. 671908, Order Granting Motion to Associate Counsel; the Summary of Rebuttal Testimony of Mark E. Garrett; and Exhibits 8 through 11 were filed.

64. On January 10, 2018, the Corrected Entry of Appearance was filed by Clean Line.

65. On January 12, 2018, Public Comment on behalf of Infinity Power Partners and Exhibit 15 were filed.

66. On January 16, 2018, Exhibits 16 and 17 were filed.

67. On January 17, 2018, Public Comment and Exhibits 18 and 19 were filed.

68. On January 18, 2018, Public Comment, PSO's Supplemental Response to OIEC's Eighth Data Requests (Question No. 14) and PSO's Supplemental Response to OIEC's Eighth Data Requests (Question No. 4) were filed.

69. On January 19, 2018, the Amended Summary of the Rebuttal Testimony of Paul Chodak and the Amended Summary of the Rebuttal Testimony of Steven L. Fate were filed.

70. On January 22, 2018, the Affidavit of Mark E. Garrett and the Affidavit of Scott Norwood were filed.

71. On January 23, 2018, Public Comment and the Affidavit of Steve W. Chriss in Support of Prefiled Testimony were filed.

72. On January 29, 2018, Proposed Findings of Fact and Conclusions of Law were filed by Wal-Mart, Windfall Coalition, Novus, Oneta, AG, OIEC, PSO and PUD.

IV. SUMMARY OF THE EVIDENCE

Documents filed in this Cause are contained in the record kept by the Court Clerk of the Commission. Pre-filed testimony was filed of record and live testimony was offered at the Hearing on the Merits. The entirety of the live testimony offered is contained in the transcripts of these proceedings. Summary of the testimony is set forth in Attachment "A" attached hereto and incorporated herein.

Exhibits were admitted into evidence at the Hearings on the Merits and are filed of record in this Cause. The list of those Exhibits is set forth in Attachment "B" attached hereto and incorporated herein.

V. FINDINGS OF FACT AND CONCLUSIONS OF LAW

After consideration of all evidence in this Cause, the ALJ recommends the Commission adopt the following Findings of Fact and Conclusions of Law. Such findings and conclusions are numbered sequentially for clarity. Any subheadings used are also for clarity.

Jurisdiction and Notice

1. The Commission has jurisdiction over this Cause by virtue of the provisions of Article IX, Section 18 of the Constitution of the State of Oklahoma, 17 O.S. §§ 152, 153, 286, and the Rules and Regulations of this Commission. PSO is an Oklahoma corporation authorized to do business in the State of Oklahoma. PSO is a public utility with plant, property, and other assets dedicated to the

generation, production, transmission, distribution, and sale of electricity at wholesale and retail levels within the State of Oklahoma.

2. Notice was published in compliance with the form of notice required by Commission Order No. 670744. Proof of publication was filed of record in this Cause by PSO on December 20, 2017.

PSO's Proposed Projects

3. PSO filed the Application in this Cause on July 31, 2017. PSO is requesting preapproval for future inclusion in base rates cost recovery of costs incurred by PSO for two proposed projects. The first proposed project is the purchase of the largest wind farm in the United States, the Wind Catcher Facility ("Wind Facility"), which consists of 2,000 MW (Name Plate) of wind generation located in the panhandle of Oklahoma. In conjunction with the purchase of the Wind Facility, PSO also proposes a 350-380 mile interconnection generation tie-line ("Gen-Tie"). The Gen-Tie would be constructed to transmit energy from the Wind Facility to the PSO grid near Tulsa. The Gen-Tie is a 765 kV line that will transmit power from the Wind Facility to the PSO grid near Tulsa. This will be the only 765 kV line in the Southwest Power Pool ("SPP"). (Mossburg Responsive, p.5). The Wind Facility and Gen-Tie are collectively referred to by PSO as the Wind Catcher Energy Connection Project ("Project"). If constructed, PSO will own thirty percent of the Project, resulting in 570 MW (based upon the Name Plate production) being delivered into the Tulsa area for PSO customers. The Project is estimated to cost $4.5 billion with PSO's share being $1.36 billion. PSO has estimated net benefits to PSO customers to be $1.006 billion (Tr. 1/8 PM, p.SD 44, ln. 20-22, Application, and Fate Direct, p. 2, ln. 23, p. 3, ln. 6, 9-12). [Southwestern Electric Power Company ("SWEPCO") would own the other 70% of the Project.]

4. The size and scope of the Project brings unique risks. (Mossburg Responsive, p. 5). Although the potential savings are unknown, the revenue requirement for the Wind Catcher Project is fixed and firm. The total Project cost is estimated to be $4.5 billion. PSO's 30% share of the Project capital cost is estimated to be approximately $1.36 billion, which would represent an increase of more than 150% of the total existing net book value of all other PSO's generating assets. If approved, PSO's proposal will increase PSO's rate base by 68.2%. (Mossburg Responsive, p.5). The Wind Facility revenue requirement for the Project is $1.163 billion. The Gen-Tie Line revenue requirement is $538 million. (Hearing Exhibit 16). This revenue requirement is fixed and, if the Project is approved, would be recovered from ratepayers over the life of the Project. (Tr. 1/11/18 PM, p. 12). According to PSO, the revenue requirement in year one of the Project would be approximately $100 million. (Tr. 1/9/18 AM, p. 56).

5. PSO's shareholder return would be approximately $75 million in the first year, although this figure was based on PSO's previous 9.5% ROE. (Tr. 1/11/18 PM, p. 14). Over the life of the Project, the shareholder return would be approximately $900 million. (*Id.* at p. 15-16).

6. PSO testified that it needs timely orders from Oklahoma, Texas, Louisiana and Arkansas in order to go forward with the Project. (Tr. 1/8/18 AM, p. rdh53, lns. 9-14). PSO also testified, however, that PSO would not take any options off the table but that its "strong preference" is that it have approval from all four Commissions before it proceeds with the Project. (Tr. 1/8/18 PM, p. SJ22, ln. 23 – p. SJ23, ln. 4)

PSO's Requested Relief

7. PSO's specific requested relief, as stated in the Application, is as follows:

- approve a temporary rider to provide recovery of the depreciation, operating and maintenance expense, property taxes, and return on the investment, net of federal Production Tax Credits ("PTCs"). The temporary rider would begin when the Project goes into service and will terminate when the Project is included in base rates.

- provide a waiver to the "before construction starts" language in OAC 165:35-38-5(e);

- approve PSO's request to include any PTCs deferred for ratemaking purposes in a regulatory liability that is included in rate base, or earns interest at the Company's pre-tax Weighted Average Cost of Capital ("WACC") from the commercial operation date of the Project and thereafter;

- approve PSO's request to include any unrealized PTCs in a deferred tax asset included in rate base in the event the PTCs cannot be fully utilized in a given year(s);
- approve the requested depreciation rates for the Project;

- approve for future inclusion in base rates cost recovery of prudent costs incurred by PSO for the Project;

- determine there is a need for the Project to deliver low-cost energy into the Tulsa area;

- approve PSO's request to apply a production allocator for both the jurisdictional and class allocation of the cost; and

- issue a final order within 240 days of this Application no later than March 31, 2018, to enable the completion of the Project to meet the deadline for claiming 100 percent of the PTC value for customers. [The ALJ notes that after the filing of the Application, at the hearing on the Motion for Procedural Schedule, PSO stated on the record that an order of the Commission is needed by April 30, 2018. See transcript of hearing 8/29/17 and as memorialized in Commission Order No. 668609.]

Title 17 O.S. §286

8. PSO is seeking preapproval of this Project pursuant to Title 17 O.S. §286.

9. The Commission, in Order No. 647346, entered in Cause PUD 201400229 on December 2, 2015, provided an overview of 17 O.S. § 286 and the alternatives that remain available to a utility if its application for pre-approval is denied. The Commission's analysis is set forth in full as follows:

> Title 17, Section 286 was enacted in 2005 and exists today as amended in 2008. This statutory section provides pre-approval of certain requests of electric utilities in particular circumstances. This section provides utility management with an alternate path to obtain a "used and useful" determination from the Commission for certain types of investments before making those investments. Such "pre-approval" is only available for certain types of utility investments and is subject to specific conditions. Notwithstanding Section 286, a utility remains free to construct or purchase electric generating facilities in the exercise of its management discretion and to seek approval after the fact in a general rate case, as was done prior to the enactment of Section 286. Those procedures remain available as does the Commission's ratemaking authority thereunder. It is important to understand that in enacting Section 286, the Legislature

did not repeal any of the constitutional or statutory provisions under which the Commission has regulated electric utilities for decades. Neither did Section 286 repeal the cost of service, rate of return ratemaking methodology that the Commission has used to regulate electric utilities for decades.

First and foremost, Section 286 must be understood and interpreted in the context of the Commission's historical ratemaking procedures. Utility management still has the discretion to build whatever it wants, whenever it wants, but in doing so assumes the risk and, when seeking a return on and return of the investment, bears the burden to subsequently prove the investment is used and useful in service to the public and that the costs were prudently incurred.

Order No. 647346 at 12-13 (emphasis added).

10. Upon review of Title 17 O.S. §286 and the facts of this Cause, the applicable subsection is subsection C.

11. Title 17 §286(C) states,

> "An electric utility subject to rate regulation by the Corporation Commission may elect to file an application seeking approval by the Commission to construct a new electric generating facility, to purchase an existing electric generation facility or enter into a long-term contract for purchased power and capacity and/or energy, subject to the provisions of this subsection. If and to the extent, that the Commission determines there is a need for construction or purchase of the electric generating facility or long-term purchase power contract, the generating facility or contract shall be considered used and useful and its costs shall be subject to cost recovery rules promulgated by the Commission. The Commission shall enter an order on an application filed pursuant to this subsection within two hundred forty (240) days of the filing of the application, following notice and hearing and after consideration of reasonable alternatives."

12. The Commission, on page 14 of its Order No. 647346, entered in Cause PUD 201400229 on December 2, 2015, also provided an overview of 17 O.S. § 286(C) as follows: "Section 286(C) applies to requests by electric [utilities] for Commission approval to construct a new generation facility, to purchase an existing electric generation facility, or to enter into a long-term contract for purchased power. Additionally, the subsection requires the utility to show there is a need for the generation or contract and requires that reasonable alternatives be considered." The ALJ recommends PSO be required to meet the requirements of §286 if preapproval of the Project is granted. Various parties to this Cause have stated through testimony or statements of position that PSO has failed to meet the requirements for §286 preapproval but then go on to offer alternative recommendations should the Commission grant preapproval by some means other than meeting the requirements of §286. The ALJ makes no such alternative recommendations.

13. PSO requests preapproval of (1) the Wind Facility, an electric generating facility, and (2) the Gen-Tie line, not an electric generating facility. The Gen-Tie line is described by PSO as a 350-380 mile interconnection generation tie-line that would be constructed to transmit energy from the Wind Facility to the PSO grid near Tulsa. (see Finding 3 above). The Gen-Tie is a 765 kV power line that transmits electricity, not a generating facility.

14. PSO's Application, to the extent it seeks preapproval of the Gen-Tie line, does not fall within the express provisions of § 286(C). The fact that transmission facilities and other facilities similar to transmission facilities like the Gen-Tie line are not included in § 286(C) is further demonstrated by other subsections of § 286. Subsection A of § 286 explicitly applies to "transmission" upgrades in certain circumstances (not applicable here), and Subsection B of § 286 applies to plans for capital expenditures for equipment or facilities necessary to comply with environmental laws and regulations. However, subsection C applies specifically to electric generating facilities. The legislative intent must be given effect according to the language used, *Wylie v. Chesser,* 2007 OK 81, ¶ 19, 173 P.3d 64, and the Commission's power to regulate "must be exercised only within the confines of the Constitution and existing statutes." *Public Service Co. of Oklahoma v. State ex rel. Corporation Commission,* 1996 OK 43, ¶ 21, 918 P.2d 733, 738. Title 17 O.S. § 286(C) does not apply to the Gen-Tie Line. Therefore, PSO's application should be denied insofar as it seeks pre-approval relating to the Gen-Tie Line.

PSO's Request for Waiver of Rule

15. PSO has requested a waiver to the "before construction starts" language in OAC 165:35-38-5(e). This subsection states, "A Cause shall be opened by the utility for cost recovery if the competitive bidding RFP process established in [OAC] 165:35-34 is not utilized and the utility wishes to gain approval of cost before construction starts."

16. The phrase "before construction starts" is applicable when a utility seeks preapproval of a self-build generating facility. In this Cause PSO is not building the Wind Facility but is purchasing the Wind Facility from Invenergy.

17. PSO witness Fate testified in response to questions during cross-examination that PSO did not think a waiver of the rule was required, but requested such a waiver in an abundance of caution. (Tr. 1/9/18 PM, p. 27, lns. 3-6).

18. According to PSO witness Fate, the dollars that are being spent in development are shareholder dollars at risk and if the Commission denies PSO's Application, PSO is not going to request recovery of those expenditures. (Tr. 1/9/18 PM, p. 27, lns. 12-23).

19. PSO has offered testimony that construction had to begin prior to January 1, 2017, in order to preserve the possibility of PTCs. Furthermore, PSO offered testimony that even though agreements were signed with Invenergy prior to January 1, 2017, PSO was uncertain of this Project well into 2017. Therefore, PSO alleges it was not possible to open a cause prior to construction.

20. The ALJ recommends this request for waiver of specific language in OAC 165:35-38-5(e) be denied because "before construction starts" refers to instances when a utility is seeking preapproval of a self build generating facility. This Cause is PSO's request of preapproval of the purchase of (1) a wind facility and (2) a 765 kV line running from the wind facility to a PSO substation.

Determination of Need

21. PSO's evidence in this case was that the Project was not proposed or needed to meet energy needs or for system reliability. (Fate Direct, p. 4). It is not needed to supply capacity for meeting future demands, renewable energy goals, or any future regulations of carbon emissions. (Fate Direct, p. 4). Other parties such as PUD, OIEC and the Attorney General also offered testimony that

this Project was not needed for these reasons. (Norwood Responsive, p. 16; Bohrmann Responsive, p. 4; Mossburg Responsive, p. 6).

22. If §286 requires that need be a need for capacity or meet a need as it relates to renewable energy requirements or other regulatory requirements then PSO has not proven that such a need exists. However, if §286 can also be interpreted to include economic need or a need for low-cost energy then it must be determined if PSO has proven such in economic need analysis.

23. The goal of PSO's Project is almost entirely to lower costs to ratepayers, not to keep the lights on. The Project is therefore driven by an 'economic' need, not a 'reliability' need. (Mossburg Responsive, p.6).

24. The Commission is asked to determine that there "is a need for low-cost energy delivered into the Tulsa area that can be satisfied by the Project." (Chodak Direct, p. 10).

Examination of Economic Need Analysis

25. The costs of the Project are largely fixed and certain. (Tr. 1/8/18 AM, p. 112, 127; Tr. 1/9/18 AM, p. 55-56). However, the estimated energy savings for the Project are uncertain and are not guaranteed by PSO. (Tr. 1/8/18 AM, p. 94-95, 114; Tr. 1/9/18 PM, p. 4-7; Norwood Responsive, p. 16).

26. PSO has attempted to justify the Project by first creating a Baseline Case where no new wind generation is added to its portfolio. It then compares this case against a Project Case that includes the Wind Catcher Project. PSO projects changes in generation and purchased power costs over a twenty-five year period from 2021 to 2045 via a two-step process, first creating an SPP-wide dispatch of resources for the years 2020 and 2025 in PROMOD. Based on these results, PSO extrapolates market prices for the other years in the study period. PSO then used these prices as inputs in its PLEXOS dispatch model to determine annual generation, as well as transmission congestion and loss costs for the entire study period. In direct testimony, PSO calculated that the Project will create total benefits of $996 million dollars on a NPV basis. (Mossburg Responsive, p.11).

27. PSO's benefits estimate is significantly overstated due to unreasonable assumptions and flaws underlying PSO's analysis. (Norwood Responsive, p. 16). With relatively modest adjustments to PSO's analysis, the estimated savings for the Wind Catcher Project would be greatly reduced or even eliminated. (Norwood Responsive, pp. 8, 16-17).

28. PSO's analysis contained assumptions regarding future gas prices and wind additions that overstate the benefits of the Project. (Mossburg Responsive, p. 20). The Project presents risky elements, including the risk of cost overruns on, or complete failure of, the Gen-Tie line; failure of the Project to qualify for the full Production Tax Credit, and risk of non-performance by other AEP companies. (Mossburg Responsive, p. 6).

29. PSO's claimed economic benefit exists for the Project only when assuming future gas cost projections well in excess of current market forecasts and carbon cost projections that have no basis. (Stover Responsive, p. 4). When PSO's analysis is revised to properly reflect current market gas cost projections, carbon cost projections based on current carbon regulations, and adjustments to reflect errors in the capital cost estimate of the Gen-Tie component of the project and the treatment of firm capacity, the Project's economic analysis results in costs to ratepayers of $320 million net present value (NPV) and not a benefit. (Stover Responsive, p. 6).

30. PUD witness Mossburg testified that the Project relies on at least "four big bets" on the future:

> (i) That the wind farm can fully qualify for the expiring PTCs,
> (ii) That congestion and curtailment costs associated with third party wind projects will continue to grow and persist, making the hedge provided by the Gen-Tie line valuable,
> (iii) That market prices will be driven by increasing costs for natural gas and significant decreases in new renewable energy construction, resulting in savings to ratepayers from this Project, and
> (iv) That American Electric Power ("AEP") and their counterparties can deliver the entire Project with the price and performance promised. (Mossburg Responsive, p.6).

31. A key variable in PSO's Project in terms of the benefits PSO delivers to its customers is natural gas prices. (Tr. 1/9/18 AM, p. KA57, lns. 16-24). PSO witness Smead testified that long-term predictions about fuel prices are very difficult. (Tr. 1/11/18 AM, p. KA35, lns. 19-21).

32. Forecasted natural gas prices are a primary driver of the projected energy savings benefits of the Project because natural gas prices directly impact SPP market-energy prices and the avoided cost of energy that would be displaced by the Project. (Norwood Responsive, p. 25, lns. 6-12) (Tr. 1/10/18 PM, p. SJ47, lns. 10-13).

33. The Company's gas forecasts are not reasonable. Mr. Mossburg testified that natural gas prices are an important determinate of the value of new wind. PSO's own analysis shows that the value of the Project moves from $784 million to $1.215 billion depending solely on the path of gas prices used. (Mossburg Responsive, p.20). PSO uses gas price projections from AEP's market fundamentals group. The group creates a long-term, weather-normalized commodity market forecast which is available to all AEP operating companies. (Bletzacker Direct, p.3). The price projections used are generally higher than current market prices and current estimates from authoritative sources. (Mossburg Responsive, p. 21).

34. PSO claims that NYMEX prices are not a reliable forecast of future, weather-normalized, long-term energy market fundamentals. (Bletzacker Direct, p.7). Mr. Mossburg pointed out that while they are not forecasts, per se, NYMEX futures prices represent what people are actually paying for future natural gas price deliveries right now. (Mossburg Responsive, p. 23).

35. Mr. Mossburg testified that beyond NYMEX Futures prices, there are other forecasts of gas prices with which to compare to PSO's. Comparing prices from the World Bank and the IMF to NYMEX and PSO prices at Henry Hub, the World Bank and IMF forecasts are closer to the NYMEX prices and lower than PSO's low case. PSO provides no clear explanation as to why prices are expected to increase to its forecast levels. (Mossburg Responsive, p. 25).

36. Under a forecast consistent with current NYMEX gas futures prices, PSO's base case savings estimate would be reduced by approximately five (5) times the reduction forecasted in PSO's low gas price scenario, or by approximately $1.06 billion (106%) if a gas price forecast consistent with current NYMEX gas futures prices had been used. (Norwood Responsive, p. 27, lns. 7-11).

37. Forecasted natural gas prices are a primary driver of the projected energy savings benefits of the Wind Catcher Project. (Tr. 1/9/18 AM, p. 57; Tr. 1/11/18 Early PM, p. 47). Those

prices directly impact SPP market-energy prices and the avoided cost of energy that would be displaced by the Project. (Norwood Responsive, p. 25). Higher natural gas prices produce higher forecasted benefits for the Wind Catcher Project and lower prices produce less benefits. The base and low case natural gas price forecasts used by PSO for evaluating benefits of the Project are significantly higher than current NYMEX futures prices for natural gas and a recent gas price forecast presented by Southwestern Public Service Company ("SPS") in a pending rate proceeding in Texas involving approval of a similar wind project. (Norwood Responsive, p. 25-26, and Exhibit SN-2; Tr. 1/16/18 AM, p. 128-129).

38. All of the Company's estimates of benefits of the Project assumed a tax on carbon emissions beginning in 2024. (Beling Responsive, p, 7; Tr. 1/11/18 PM, p. 21). However, there is no legislation or regulation that exists imposing such a tax. (Id.) PSO's forecast includes a cost of carbon which assumes that there will be regulations limiting CO2 emissions. The effect of including a cost of carbon in the fundamentals forecast will result in an increase to the operating cost of natural gas fired combined cycle plants which makes a renewable energy project like the Project look better. (Tr. 1/10/18 PM, p. SJ42, ln. 19 – p. SJ43, ln. 9). PSO did not include the impact of a no carbon scenario on the cost and benefits of the Project for ratepayers. (Tr. 1/11/18 PM, p. 21, ln. 23 – p. 22, ln. 1).

39. A reduction in the federal corporate income tax to 20 percent would reduce the value of the Project to customers. (Tr. 1/9/18 AM, p. KA22, ln. 24 – p. KA23, ln. 5).

40. SPP's current interconnection queue shows considerably more wind is predicted to come online in the coming years. Focusing only on Interconnection Agreements for Pending projects, there is 5,794 MW of wind generation on schedule with full Interconnection Agreements and 1,333 MW of wind projects with Interconnection Agreements pending. At earlier levels of development, SPP's queue shows more than 10,000 MW at the facility study stage and more than 23,000 MW at the system impact study stage. In Oklahoma alone more than 2,200 MW is on-schedule with another nearly 12,000 MW at the facility or system impact study stage. (Mossburg Responsive, p. 27-29).

41. Even if just a portion of these projects in Oklahoma and other SPP states come online, the likely result is far more than 3,170 MW of new wind in 2025, as assumed by PSO. This is particularly true if other utilities are using analysis similar to PSO's and coming to the same conclusion that they must increase their purchases of wind-based power prior to PTC expiration. The resulting rush to lock-in low-priced wind deals would bring about a wave of new entry and, presumably, have the effect of depressing market prices and lowering the benefits of additional wind development. (Mossburg Responsive, p. 29).

No Competitive Bidding RFP Process

42. PSO did not conduct a competitive procurement for the Project. PSO witness Fate testified that due to the uniqueness of the Project, and the time constraints imposed by the need to proceed to maintain the Project's eligibility for full PTCs, an RFP would not result in any more favorable alternatives. (Fate Direct, p. 12, ln. 5-8 cited by F. Mossburg Responsive, p. 31).

43. Title 17 O.S. §286(C) provides that costs under this subsection "shall be subject to cost recovery rules promulgated by the Commission." The Commission's intent in adopting the competitive bidding rules is for "the protection of customers of a utility from imprudent financial obligations or costs." OAC 165:35-38-2(c)(2). The Commission's intent is further "to create an open, transparent, fair and nondiscriminatory competitive bidding process for the utility to meet its needs." OAC 165:35-34-1(b).

44. Mr. Mossburg testified that PSO attempted to provide evidence to support this claim by comparing the Project to what a competitive procurement would provide by creating a Generic Wind Case. In the Generic Wind Case, the Company purchases 1,900 MW of wind from a total of twenty-four projects scattered throughout the SPP, including locations in other states. PSO states that it used this method because SPP and its stakeholders had identified these points as being feasible and likely interconnection locations for such future wind. (Pfeifenberger p. 13, ln. 11-12 cited by Mossburg Responsive, p. 31).

45. In direct testimony, PSO calculates that the Generic Wind Case would cost $452 million more than the Project on a net present value ("NPV") basis. (Pearce Direct, Exhibit KDP-3, Mossburg Responsive, p. 32). The primary factor in this difference is the additional $463 million of congestion and loss costs incurred by the Generic Wind projects. The Generic Wind Case does not reflect what would be expected from a competitive procurement. (Mossburg Responsive, p. 32).

46. Mr. Mossburg testified that the primary result of the assumption is that it overstates congestion, which is the primary driver of the Project Case's advantage over the Generic Wind Case. PSO compounds this by assuming that SPP will take no action regarding congestion cost beyond projects that have already been approved. (Mossburg Responsive, p.32-33).

47. Mr. Mossburg testified that these assumptions are a poor comparison to the competitive market because they do not reflect the results and methods of PSO's actual, recent, competitive bidding process conducted in its 2016 wind RFP, which sought 100 to 300 MW of new wind resources. All projects were required to be located in Oklahoma, and all had to offer a twenty year PPA starting in 2019. (Mossburg Responsive, p.33).

48. PSO conducted PROMOD modeling to assess the cost of congestion for each offer in 2019, when the bids were to begin operation. However, instead of assuming a constant or growing level of congestion over the life of the contract, PSO assumed that SPP would take action to alleviate the cost of congestion over time. Therefore, in the analysis of offers, PSO decreased congestion cost to zero over the twenty year PPA term. This differs considerably from the PSO Wind Catcher Application, which assumes in the Generic Wind Case that congestion in SPP will persist throughout the life of the wind projects. (Mossburg Responsive, p. 34).

49. PSO asserted that it did not have sufficient time to conduct competitive bidding or competitive procurement and still qualify for the PTCs. However, PUD witness Mossburg testified that this was time available to conduct competitive bidding and still qualify for PTCs. (Mossburg Responsive, p. 38).

50. Mr. Mossburg explained that it is still possible to conduct a competitive procurement process and still receive offers that qualify for the full PTC. Current IRS guidance requires a project to be in service no later than the end of 2020 in order to qualify for the entire PTC. With the 2016 wind RFP, the Company has a document that is nearly ready to issue and can proceed relatively quickly. That RFP was issued September 28, 2016, and targeted award group identification by December 16, 2016. While having SPP evaluate the network integration costs of the offers will likely extend the timeline, the fact is that the process could still be completed in time for PTC qualification. For example, the RFP could be issued in March and resolved in the fall, leaving the winner about two years to finish the project. A typical wind project can comfortably make that timeline. Even the Wind Catcher Project will not start pouring foundations for its turbines until December of 2018. (Mossburg Responsive, p. 38).

51. At the hearing on the merits, Mr. Mossburg testified that he reviewed the 2013 wind RFP for which he was the independent evaluator. Mr. Mossburg testified that in the 2013 wind RFP, the RFP was issued in June or July of 2013, and he submitted testimony in December of 2013. The hearing was at the beginning of 2014 so the process was concluded in about six months. (Tr.1/17/18 AM, p.19, ln. 1-17).

52. Neither the Wind Facility nor the Gen-Tie line proposed purchases utilized a competitive bidding process. Quanta, a company that works for AEP on a number of projects, is the only company from which PSO requested pricing and design work. (Tr. 1/12/18 AM, p. SJ45, lns. 5-7).

Gen-Tie Issues

53. The need for the Gen-Tie is being driven by the overall size of the Project. PSO does not claim to need a generating facility with an overall capacity of 2000 MW. PSO ratepayers should not have to pay $538 million for a Gen-Tie line that is only necessary due to the overall size of this Project. (Hearing Exhibit 16). The Gen-Tie is necessary not because PSO is adding 600 MW but because SWEPCO is adding 1400 MW of wind. PSO, in its 2013 RFP, chose to add 600 MW of wind and did not incur this type of transmission investment. Further, in PSO's recently cancelled wind RFP, the Company also did not reflect transmission costs of the magnitude contemplated in this Cause. (Chaplin Responsive, p.16-17).

54. Congestion charges are another factor considered by PSO in the decision to build the Gen-Tie line. However, PSO did not incur congestion charges in 2015 and its total congestion charges in 2016 were under $30 million. (Tr. 1/11/18 AM, p. KA57, lns. 12-20).

55. PSO does not have an estimate as to how much of the Gen-Tie line route would need to be acquired by eminent domain. (Tr. 1/12/18 AM, p. SJ48, lns. 11-15). None of the right-of-way for the Gen Tie line has been acquired. Right-of-way efforts have just begun. (Tr. 1/16/18 AM, p. rdh85, lns. 18-22).

56. If the Gen-Tie line is not placed in service by December 31, 2020, as required for PSO to claim 100 percent of the PTCs, power can flow through an alternate point of connection so the Project can be considered placed in service by December 31, 2020. (Tr. 1/9/18 AM, p. KA20, ln. 16 – p. KA21, ln. 4) PSO's proposed alternate interconnection is about 50 MW of capacity. (Tr. 1/8/18 PM, p. SJ42, lns. 15-21).

57. The proposed alternate connection cannot accommodate the 2,000 MW contemplated by the Project. (Tr. 1/9/18 AM, p. KA21, lns. 5-12).

58. If the 765kV Gen-Tie line did not get built the alternate interconnection is capable of carrying 50 MW but the windfarm would need to be restricted to only 50 MW. PSO could not match up a 2,000 MW wind farm with a 50 MW tie for any length of time. (Tr. 1/16/18 AM, p. rdh48, lns. 7-18). If PSO uses the alternate connection, PSO and AEP can only apply for PTCs based on the 50 MW. (Tr. 1/9/18 AM, p. KA32, lns. 22-24).

59. The route for the Gen-Tie line through Osage County, Oklahoma has not been finalized. (Tr. 1/16/18 AM, p. rdh87, lns. 15-24). While it is possible to go around Osage County entirely, doing so would pose additional challenges. (Tr. 1/16/18 AM, p. rdh88, lns. 3-9).

60. Permits necessary for the Gen-Tie line construction have not been obtained from or filed with the U.S. Army Corp of Engineers. (Tr. 1/16/18 AM, p. rdh89, ln.18 – p. rdh90, ln. 3).

61. Necessary applications regarding the Gen-Tie line construction have not been filed with the Oklahoma Department of Environmental Quality. (Tr. 1/16/18 AM, p. rdh90, lns. 4-7).

62. No applications have been filed with the Bureau of Indian Affairs. (Tr. 1/16/18 AM, p. rdh90, ln. 23 – p. rdh91, ln. 2).

63. No applications have been filed with the Oklahoma State Historic Preservation Office. (Tr. 1/16/18 AM, p. rdh91, lns. 3-10).

64. The survey to determine whether or not the Gen Tie line route goes through an American burying beetle habitat has not yet been done. (Tr. 1/16/18 AM, p. rdh91, ln. 14 – p. rdh92, ln. 3).

65. A survey contractor has not been selected for the lesser prairie chicken. (Tr. 1/16/18 AM, p. rdh95, lns. 6-8). No survey for the lesser prairie chicken has been scheduled. (Tr. 1/16/18 AM, p. rdh96, lns. 7-9).

66. A survey contractor has not been selected for the northern long-eared bat. (Tr. 1/16/18 AM, p. rdh97, lns. 1-5).

67. The proposed route for the Gen Tie line encompasses tribal historic preservation sites. (Tr. 1/16/18 AM, p. rdh99, lns. 15-20). The presence of the tribal historic preservation sites requires consultations with and approval from each tribe's historical preservation officer. (Tr. 1/16/18 AM, p. rdh99, lns. 21-25).

68. If it becomes necessary to obtain a federal lease with respect to the Osage Nation, that would trigger a National Environmental Policy Act review. (Tr. 1/16/18 AM, p. rdh100, ln. 14 – p. rdh101, ln. 6).

Southwest Power Pool Concerns

69. PSO did not engage or involve SPP in the planning and/or analysis of the Project. (Chaplin Responsive, p. 13).

70. PUD witness Chaplin testified that PUD has concerns with PSO's decision to leave SPP out of the planning and analysis of the Project for three reasons: it ignores SPP's role as the Regional Transmission Organization ("RTO"), raises concerns about reliability and increased costs related to operating reserves, and unknown SPP upgrade costs in the future. (Chaplin Responsive, p. 13).

71. PUD Witness Rush also testified concerning PSO's failure to involve SPP in its planning and analysis of the Project, in particular with regard to the price of natural gas and congestion costs. Mr. Rush testified that without an analysis through SPP's Integrated Transmission Planning process, PUD could not determine whether PSO's projected congestion costs or natural gas forecasts are reasonable. (Rush Responsive, p. 11).

72. SPP can be expected to add transmission as it becomes economical to do so based upon average congestion. (Tr. 1/11/18 AM, p. KA62, lns. 2-6).

73. When there are areas of congestion, either parties or SPP will address those areas with new transmission to alleviate the congestion. (Tr. 1/16/18 PM, p. sd12, ln. 25 – p. sd13, ln. 14).

PSO's Suite of Guarantees

74. There is no guarantee that PSO's customers are going to realize a benefit from the Project. (Tr. 1/11/18 PM, p. 30, lns. 17-21).

75. PSO's baseline case analyses do not address many of the risks of the Project including the potential for higher capital investment, lower than forecasted wind energy production levels, and lower than forecasted congestion costs. (Tr. 1/11/18 PM, p. 34, ln. 22 – p. 35, ln. 2).

76. PSO proposed a suite of guarantees "to mitigate customer risk and secure the significant benefits for our customers." (Chodak Rebuttal, p. 1, lns. 22-23). This suite of guarantees are:

1. An investment cap equal to 110% of PSO's original filed capital estimates, excluding AFUDC;
2. A guarantee that the Project will qualify for 100% of the federal PTC;
3. A guarantee that the Project will produce a minimum annual production at the bus-bar of 2,220 GWh on a 5-year average;
4. A guarantee that 100% of off-system sales benefits associated with the Project will be allocated to customers;
5. PSO agreed to notify the PUD if terms more favorable to customers are agreed to by SWEPCO in any of the state utility commissions under which it is seeking approval of the Project and agreed to incorporate such terms into the guarantees for the benefit of PSO customers;
6. PSO agreed to file a base rate case no later than 180 days after the Project reaches Commercial Operation. ((guarantees #1-6)Chodak Rebuttal, p. 2, ln. 13 – p. 3, ln. 2).
7. During the hearing on the merits PSO added a seventh proposed guarantee. "As additional assurances to the customer," PSO proposed to credit customers in the event that gas prices are extremely low and at the same time the Project does not produce a specified amount of energy as expected during the Project's first ten (10) years. (Tr. 1/8/18 AM, p. rdh10, lns. 1-9).

77. PSO's guaranteed benefit to ratepayers of $163 million is based on a gas price scenario that is higher than current NYMEX prices. (Tr. 1/11/18 PM, p. 29, ln. 14-25).

78. PSO admits that the guarantees do not result in a completely risk-free proposal. (Tr. 1/8/18 PM, p. SJ44, lns. 16-22; Tr. 1/11/18 PM, p. 30, lns. 17-21).

79. In his oral surrebuttal, PUD witness Mossburg testified that he had reviewed the suite of guarantees. Mr. Mossburg testified that in reviewing the guarantees to determine if they are really going to deliver value for ratepayers, he compared them to what he might see in a competitive bid for wind power. Mr. Mossburg testified that the guarantees do not provide meaningful protections for ratepayers. Mr. Mossburg testified that although there is some value in some of these guarantees, as an

overall package, the risk protections are not as strong as what one would see in a competitive bid. (Tr. 1/17/18 AM, p. 7, ln. 21-p. 8, ln. 20).

80. Mr. Mossburg testified that PSO's first guarantee, "an investment cap", does not provide rate payer protection because it is a soft cap. This "investment cap" is not a hard cap of costs or a guarantee that costs will not be more than this amount. This would simply provide PSO with a presumption of prudence of up to 110% of PSO's proposed costs for the Project. Mr. Mossburg testified that under a traditional recovery scenario, the Company would have to prove prudence for all costs incurred. With this guarantee, PSO would only have to prove prudence for costs above 110% of the current proposed costs. This is of some value to the Company, but little to ratepayers. Further, Mr. Mossburg stated that he doesn't think there is any real justification for the additional ten percent over PSO's current proposed costs. He testified that this is an expensive Project that would charge a premium over what would likely come from the competitive market and now PSO is asking for an allowance of an even greater premium above that.

81. Additionally, Mr. Mossburg testified that the 10% soft cap is concerning because PSO does not use the estimates used in the Company's analysis, calling into question the numbers that PSO is using. (Tr. 1/17/18 AM, p. 9-10).

82. Mr. Mossburg testified that a way to change this guarantee to deliver value to the ratepayers is to make it a hard cap at 100% of PSO's cost estimates with no exceptions, no change in the law, and no force majeure. This change would put it on line with a competitive bid. A bidder offers a price and has to stick by its price. Mr. Mossburg testified that the guarantee should cover both capital and O&M costs. (Tr. 1/17/18 AM, p. 10).

83. Regarding the second guarantee that the project will qualify for the full value of the PTCs, Mr. Mossburg testified that based on the filed testimony, it is unclear what this guarantee actually is. In Mr. Fate's testimony, he lists the reasons he is confident that the Company will qualify for one hundred percent of the PTC. However, he does not explain what happens if he is wrong about those things, so it is unclear if this is truly a guarantee. Mr. Mossburg testified that there is an exception for the guarantee for force majeure or change in law. Mr. Mossburg testified that even with the exceptions there is some value in the guarantee but not as strong as you would find in a competitive bid. Mr. Mossburg testified that going back to the Pro Forma PPA included in the 2016 RFP, it stated that the bidder cannot change the price if the bidder fails to qualify for the renewable incentives, things like PTCs. So the second guarantee is not as strong as if it were a full and unconditional guarantee. (Tr. 1/17/18 AM, p. 11-12).

84. Regarding the third guarantee, Mr. Mossburg testified that it has some value; however, he does have concerns. Mr. Mossburg testified that PSO was using one number, the P50 estimate, in its analysis and now for purposes of guaranteeing what the output will be, PSO is using the P99 estimate. Therefore, if the plant is built and there are no major disasters, there is a very small chance of this guarantee ever coming into play. (Tr. 1/17/18 AM, p. 12).

85. Mr. Mossburg testified that a competitive bid would have a pay for performance element meaning that you only get money if you actually generate and deliver energy, so a bidder absorbs that entire risk of underproduction. To deliver value to the ratepayers, the guarantee could be changed. First, the Company's revenue requirement estimate and output for each year could be a dollar per megawatt hour number to operate essentially as a virtual power purchase agreement. Therefore, PSO would recover that rate times the megawatt hours it generated. This would also address issues of overruns and PTC qualification. Second, the Company could commit to an availability guarantee. The

Company would pledge to have a certain percentage of the facility available to generate when the wind blows. If the Company fails to meet that mark, the Company would owe liquidated damages, which is similar to what a commercial contract would have. (Tr. 1/17/18 AM, p. 12-13).

86. Regarding the fourth guarantee to flow through incremental off system sales margins, based on the Company's own analysis, Mr. Mossburg testified that it has fairly limited value and is standard operating practice in other jurisdictions. (Tr. 1/17/18 AM, p. 13-14).

87. Regarding the fifth guarantee, Mr. Mossburg testified that this guarantee does not address the issues discussed in his testimony. Mr. Mossburg's concern was not so much that another jurisdiction would get a better deal than Oklahoma, but rather that actions in other jurisdictions would increase costs for Oklahoma ratepayers. Mr. Mossburg testified that he was concerned that Louisiana or Arkansas would pull out of the Project and that additional cost would be passed on to Oklahoma ratepayers. Mr. Mossburg testified that PSO should guarantee to hold Oklahoma ratepayers harmless for any cost increases as a result of actions in other jurisdictions. (Tr. 1/17/18 AM, p. 14-15).

88. Regarding the seventh guarantee, Mr. Mossburg testified that it is not really a savings guarantee. Mr. Mossburg testified that the formula that is put together only holds customers harmless in limited circumstances. Those limited circumstances are defined by PSO. This guarantee would come into play only if gas prices are at the PSO defined ultra-low level and output is at the PSO defined very low level, to P95 or P99. Mr. Mossburg testified that to deliver value to customers, the parameters of the guarantee, specifically, the heat rate used to calculate the energy savings, could be improved. (Tr. 1/17/18 AM, p. 15-16).

89. Mr. Mossburg testified that his opinions of the seven guarantees are not meant to supersede the other recommendations in his testimony. His opinions on the guarantees are offered in case the Commission agrees that 600 MW of new wind is appropriate and waives the competitive bidding requirement. Finally, Mr. Mossburg testified that if the Wind Catcher proposal is approved, it is important that hard guarantees be put in place to protect ratepayers from the risks presented by the Project. (Tr. 1/17/18 AM, p. 16-17).

90. It is the conclusion and recommendation of the ALJ that PSO has not met its burden of proof sufficient to prove this Project in whole or the Wind Project and Gen-Tie Projects in part meet a need as required by Title 17 O.S. §286. PSO has failed to prove that this Project meets an economic need sufficient for preapproval of this Project. PSO's economic analysis used unreasonable data and utilized a flawed planning process. PSO's economic analysis contained assumptions regarding future gas prices and wind additions that overstate the benefits of the Project. The Project presents risky elements, including the risk of cost overruns on, or complete failure of, the Gen-Tie line; failure of the Project to qualify for full Production Tax Credit, and risk of non-performance by other AEP companies.

91. PSO's failure to utilize competitive bidding for two extremely large purchases is of utmost importance in any consideration of preapproval of the Wind Facility and the Gen-Tie line. This failure becomes even more of a concern without adequate explanation or justification. An excuse of "not enough time" for competitive bidding is not sufficient in light of the significant cost to be borne by PSO customers. A project at this price point needs to be done right. The ALJ cannot recommend preapproval of the Project in light of PSO's failure to competitively bid both the Wind Facility and the Gen-Tie line and PSO's failure to adequately explain the lack of competitive bidding for such significant purchases.

Consideration of Reasonable Alternatives

92. An additional requirement of Title 17 O.S. §286 is consideration of reasonable alternatives.

93. PSO's analysis did not consider the larger planning environment. The analysis does not look very far beyond wind power and does not address other risks beyond a change in natural gas prices. This might be acceptable if PSO had conducted a strategic, collaborative IRP process prior to pursuing the Project, but in this context, it calls into question whether PSO considered any larger strategic issues regarding the Project. (Mossburg Responsive, p. 13). PSO should have considered potential alternatives to wind generation, changes in load, changes in law, tax reform legislation, scenarios or potential combinations of events, and alternative transmission investments. PSO did not consider these issues in detail in its 2017 IRP update.

94. PSO's 2017 IRP update was filed after the decision was made to proceed with the Project. PSO finished the Project analysis and chose to move forward with the Project then updated its IRP to match the timing of the Project's 600 MW wind addition in 2021. (Chaplin Responsive, p. 11).

95. While the 2017 IRP does consider the costs and use of a few generation resources (solar and reciprocating engines, for example) and test portfolio selection under a few commodity price scenarios, it does not consider alternative transmission investments or even attempt to measure congestion costs, the very costs that are apparently driving PSO to seek the Gen-Tie solution, nor does it carefully examine any more complicated scenarios regarding the future. (Mossburg Responsive, p. 18-19).

96. PSO issued a long-term energy and capacity RFP on December 13, 2016 ("2016 RFP") that was cancelled on the same day PSO announced the Project. (Tr. 1/8/18 PM, p. SJ30, lns. 13-25). PSO could have taken 600 MW of supply at better prices than the Project. PSO's own analysis of the final shortlist of bids shows that there were several offers superior to the Project available in the 2016 RFP. (Mossburg Responsive, p.34). Additionally, PSO's own analysis of bids in its 2016 RFP demonstrates that the Project would charge a considerable premium to avoid unknown congestion and curtailment costs. (Mossburg Responsive, p. 7; Norwood Responsive, p. 9).

97. The wind bids received in the 2016 RFP were pay for performance third-party PPAs, which are far less risky for PSO ratepayers than the Project since PSO would only pay a set rate and only when power is generated. Such PPAs would allow ratepayers to avoid a larger array of risks, including the risks of cost overruns and delays, failure to claim the PTC, risk in increases in operations and maintenance ("O&M") costs, risk associated with asset underperformance, and the potential risk to PSO's balance sheet. (Mossburg Responsive, p.36-37).

98. PSO's decision to proceed with the Project without seeking competitive bids means there is little or no evidence that the PSO's $1.36 billion share of the proposed Project is the lowest reasonable cost alternative available at the time it was selected by PSO. (Norwood Responsive, pp. 17-19). PSO did not provide any analysis that directly compared the actual wind energy bids it received in its 2016 RFP to the Wind Catcher Project. (Norwood Responsive, p. 18). The base pricing of the 19 bids received by PSO in response to its 2016 RFP were all significantly lower than the $26/MWh estimated levelized price of wind energy from the Wind Catcher Project. (Norwood Responsive, p. 19; Chodak Direct, p. 8). Almost all of the bids were from wind generation projects that were located in Oklahoma and not in the congested panhandle region and were assumed in PSO's bid analysis to have relatively low congestion costs. (Norwood Responsive, p. 19).

99. PSO's failure to evaluate competitive alternatives to the Wind Facility and the Gen-Tie line, through a formal RFP process was extraordinary, according to PSO's own testimony. (Fate Direct, p. 12). PSO's decision to reject all bids received in response to the 2016 RFP without directly comparing those offers to the Wind Catcher Project is highly questionable.

100. PSO provided a "generic wind" scenario; however, that analysis was based on faulty assumptions and overstated the estimated economic advantage of the Wind Catcher Project over generic wind alternatives. (Tr. 1/16/18 AM, p. 120-122, 125-126).

101. It is the conclusion and recommendation of the ALJ that PSO has not met its burden of proof sufficient to prove there was consideration of reasonable alternatives as required by Title 17 O.S. §286(C).

Any and all outstanding motions filed in this Cause can and should be deemed resolved by the Final Order issued in this Cause.

Respectfully submitted,

Mary Candler

MARY CANDLER
Administrative Law Judge

2/12/18

Date

C:
Commissioner Murphy
Commissioner Hiett
Commissioner Anthony
Teryl Williams
Nicole King
Joseph Briley
Maribeth D. Snapp
James Myles
Elizabeth A.P. Cates
Matt Mullins

ATTACHMENT "A"

TESTIMONY SUMMARIES

DIRECT TESTIMONY SUMMARIES

Public Service Company

JOHN O. AARON

Mr. John O. Aaron, Manager, Regulated Pricing and Analysis in the Regulatory Services Department of American Electric Power Service Corporation ("AEPSC"), testified on behalf of Public Service Company of Oklahoma ("PSO" or "Company").

Mr. Aaron quantified the estimated impact on PSO's costs and rates of PSO's proposal to purchase a wind generating facility ("Wind Catcher Facility") and associated generation interconnection ("Gen-Tie") in Oklahoma (together, Wind Catcher Energy Connection Project or Project). This impact compared PSO's current base rates and fuel factors to the Project's estimated revenue requirement and fuel cost savings. According to Mr. Aaron, the Project is expected to result in energy savings that will more than offset its fixed cost revenue requirement from the outset of commercial operation, resulting in a net decrease in customer costs. Mr. Aaron further testified that PSO was proposing temporary cost recovery through a rider once the Project is completed and in-service. The proposed rider will terminate once the Project is included in base rates through a general rate case proceeding.

According to Mr. Aaron, the impact of the Project on PSO's costs and rates reflects the annual revenue requirement associated with the Project, the estimated generation cost savings due to the addition of the Project to PSO's existing generation costs, and the offset resulting from federal Production Tax Credits ("PTCs").

These cost elements (revenue requirement, generation costs, and PTCs), when combined with PSO's current revenues, provide sufficient information for estimating the cost and rate impact to the Oklahoma jurisdiction. This is similar to the standard cost-of-service formula that would be applied during a base rate case proceeding.

Mr. Aaron testified that in the first year, there will be an estimated $105.4 million reduction (Oklahoma retail) in net energy costs (fuel costs reduced by off-system sales) associated with the kWh production from this project.

Mr. Aaron further testified that PSO had reflected the federal PTCs received by virtue of the Project as an additional benefit to offset the Project's revenue requirement.

The revenue requirement in year 11 increases when the PTC expires under the traditional process of reflecting the full value of the PTCs received each year as an offset to the revenue requirement. To moderate this increase, PSO was requesting Commission approval to defer PTCs for ratemaking purposes in a regulatory liability that will be used to offset the revenue requirement in years 11 through 18 (2031-2038). In the first three years (2021-2023), the full amount of the PTCs earned will be used to offset the Project's revenue requirement. In years four through ten (2024-2030), a portion of the PTCs earned will be deferred as a regulatory liability. This regulatory liability,

representing the deferred PTCs, will offset the revenue requirement in years 11 through 18 (2031-2038).

According to Mr. Aaron, in the event the PTCs cannot be fully utilized in a given year(s), PSO was requesting Commission approval to include any unrealized PTCs in a deferred tax asset that is included in rate base in subsequent base rate proceedings.

Mr. Aaron testified that the revenue requirement and associated PTCs are allocated to the Oklahoma jurisdiction and retail classes using 2021 estimated kW demand. A demand allocation is consistent with the allocation of production investments filed by PSO in past base rate proceedings in Oklahoma and in Cause No. PUD 200900031 where the Commission found that the costs of assets used to produce wind power should be allocated by the use of a production demand cost allocator.

According to Mr. Aaron, the Oklahoma jurisdictional share of the revenue requirement (once offset by the PTCs) is approximately $78.0 million, and the Oklahoma jurisdictional share of the fuel savings is approximately $105.4 million, resulting in net savings for PSO's retail customers of approximately $27.4 million in the first year.

Mr. Aaron testified that the Wind Catcher Energy Connection Asset ("WCECA") Rider is designed to provide recovery of the revenue requirement associated with the Project after it commences commercial operation. This Rider will continue until the Project is included in retail base rates through the general rate case.

Mr. Aaron further testified that the WCECA Rider provides temporary recovery of Oklahoma jurisdictional costs associated with the operation of the Project including O&M expenses, depreciation expense, and a return on the assets until they are included in base rates through a general rate case. The WCECA Rider also includes the base rate revenue requirement offset for the PTCs associated with the output of the wind project. The WCECA Rider has an annual determination provision that includes a true-up of WCECA Rider revenues to actual costs. According to Mr. Aaron, PSO will follow the traditional over/under accounting in which the actual costs incurred for the Project will be compared to the revenues received pursuant to the Rider. Any net under-recovery recorded as a regulatory asset or any net over-recovery recorded as a regulatory liability will be included for future recovery or refund through the proposed true-up to actual costs in subsequent rider filings or when the project is included in base rates, whichever comes first. WCECA costs will be allocated to PSO's customers using the most current jurisdictional and class demand allocation factors approved at the time the WCECA begins. The WCECA factors recover the revenue requirement on a kWh usage basis for all classes. This recovery methodology is consistent with other generation-related rider recovery previously approved by the Commission.

The expected energy savings from this Project will reduce PSO's eligible fuel expense and flow through the Commission approved Fuel Adjustment Clause Rider.

Pursuant to the WCECA Rider, PSO will submit the actual WCECA Factors 90 days prior to the first billing cycle for the January 2021 revenue month. The factors will be adjusted on an annual basis, if necessary, and will remain in effect until the Project is included in base rates.

JOHANNES P. PFEIFENBERGER

Mr. Johannes P. Pfeifenberger, Principal at the Brattle Group, testified on behalf of PSO and SWEPCO. Both PSO and SWEPCO are operating companies of AEP, jointly the three are the "Companies."

Mr. Pfeifenberger testified that he worked with the Companies to develop a methodology, consistent with SPP and industry practices, to support PSO and SWEPCO in analyzing the costs and benefits of developing the Project. He explained the analytical framework and description of the benefits metrics that the Companies used for modeling and analyzing the proposed Project, which includes the Wind Facility and the Tie Line. He described in detail the cases modeled, why each case was selected, and the key assumptions used in the PROMOD simulations. He described the PROMOD tool, how PROMOD simulation results were transferred for use in the Companies' PLEXOS® simulation, and why both modeling tools were used in supporting the Companies' analysis, including the differences between the two models and how the two models work together.

Mr. Pfeifenberger's testimony then described the methodology used for the Companies' benefit calculations based on the PROMOD and PLEXOS® simulation results. This methodology, which PSO and SWEPCO utilize for analyzing the proposed Project, allowed for assessment of estimated customer cost savings resulting from the Project. To support the Companies' benefits and cost evaluation of the Project, he worked with AEP to develop three main "Cases" of alternative resource procurement paths. The first case, which represents the baseline case, assumes no new development or purchase of wind resources between 2021 and 2045. This "Base Case" reflects an approach to meeting future energy needs of the Companies without additional wind generation. His second case, the "Project Case" reflects the development of the 1,900 MW Project. In addition to the "Project Case" and the "Base Case," the Company evaluated a third alternative—the generic wind procurement alternative, entitled "Generic Wind Case." The Generic Wind Case reflects the procurement of 1,900 MW of wind generation from multiple projects across the entire SPP footprint over SPP's existing and planned regional transmission system. Mr. Pfeifenberger explained that the difference of costs between the Project Case and the Base Case quantifies the benefits of physically delivering to Tulsa 1,900 MW of the Project's high-quality wind generation from the panhandle region of Oklahoma. The difference between the Project Case and the Generic Wind case identifies the savings the Companies can realize through the Project relative to purchasing 1,900 MW of wind generation delivered to the SPP system at the wind plants' various locations.

To support the Generic Wind Case, Mr. Pfeifenberger also developed estimates of the likely cost of power purchase agreements ("PPA") for generic new wind resources in the SPP footprint, which the Companies utilized for comparing the costs and benefits of the proposed Project with the Generic Wind Case procurement alternative. According to Mr. Pfeifenberger, his estimates for the cost of generic wind procurements in SPP were reasonable and within the range of cost estimates obtainable from public sources tracking such wind generation development costs. The quantification of the costs and benefits of the proposed Project and the generic wind alternative from a PSO and SWEPCO customer perspective is presented by Company witness Kelly Pearce. (Mr. Pfeifenberger's testimony addresses only the methodology of this quantification.)

Mr. Pfeifenberger further testified that both PROMOD and PLEXOS® are simulation tools that can be employed to perform the type of forward-looking market simulations necessary to assess the benefits of the Project. However, in this case, both simulation tools had to be utilized for a number of reasons. First, the Companies have historically relied on PLEXOS® for analyzing the market performance of their resources and for evaluating their expected market revenues and dispatch outcomes for resource planning purposes. Relying on PLEXOS® consequently has several advantages. The model is already set up to simulate several years of future market performance quickly and to assess the customer rate impact for the Companies. Most importantly, unlike PROMOD, the Companies' PLEXOS® model is set up to simulate PSO and SWEPCO individually, and therefore is able to assess changes in production costs, market purchase costs, off-system sales revenues, and other customer cost items at the individual operating-company level. Unlike PROMOD, however, the

Companies' PLEXOS® model is not set up to simulate the entire SPP footprint and does not simulate transmission constraints or marginal losses, which means it is unable to assess the extent to which wholesale power prices, congestion costs, and marginal-loss-related costs are affected by the proposed 1,900 MW wind generation development and its alternatives.

As Mr. Pfeifenberger explained, SPP's PROMOD models simulate the entire SPP system (and surrounding market areas), including the full SPP transmission network and associated transmission constraints and marginal losses. Mr. Pfeifenberger identified that Transmission constraints have a significant effect on SPP-wide market outcomes and the associated locational marginal prices. Given the large proposed additions of wind generation, it is important to capture these effects of the transmission network on locational prices when evaluating the costs and benefits of the Project and its potential alternatives. However, the region-wide and locational simulations undertaking in the SPP PROMOD cases made it computationally challenging and time consuming to analyze more than a few years—the main reason why SPP had produced PROMOD cases for only two future years: 2020 and 2025. As Mr. Pfeifenberger explained, SPP's PROMOD model was further limited by the fact that it had been set up to analyze cost impacts only for individual SPP transmission zones—such as the AEP zone, which aggregates both AEP companies (PSO and SWEPCO) along other public power entities—and without the level of detail that is required to separately assess impacts on customer rates of the two companies. Therefore, to assess the present value of future cost and benefits of the Project and its two alternatives over the entire 25-year horizon from 2021 through 2045 and for each of the two Companies, PLEXOS® was employed in conjunction with SPP's PROMOD models. The combination of the models allows the analysis to capture the impact on the individual operating companies individually while also capturing the impacts of the additional wind generation on the transmission system and the associated congestion, losses, and locational marginal prices.

KARL R. BLETZACKER

Mr. Karl R. Bletzacker, Director, Fundamentals Analysis, AEPSC testified on PSO.

Mr. Bletzacker sponsored the Long-Term North American Energy Market Forecast ("Fundamentals Forecast") utilized by Company witnesses Kelly D. Pearce and Johannes P. Pfeifenberger as a basis for certain elements of their respective analyses.

According to Mr. Bletzacker, the Fundamentals Forecast is a long-term, weather-normalized commodity market forecast. It is not created to meet a specific regulatory need in a particular jurisdiction; rather, it is made available to all AEP operating companies after completion. It is often referenced for purposes such as fixed asset impairment accounting, capital improvement analyses, resource planning, and strategic planning. These projections cover the electricity market within the Eastern Interconnect (which includes the Southwest Power Pool ("SPP")), the Electric Reliability Council of Texas and the Western Electricity Coordinating Council. The Fundamentals Forecast includes: 1) monthly and annual regional power prices (in both nominal and real dollars), 2) prices for various qualities of Central Appalachian ("CAPP"), Northern Appalachian ("NAPP"), Illinois Basin ("ILB"), Powder River Basin ("PRB") and Colorado coals, 3) monthly and annual locational natural gas prices, including the benchmark Henry Hub, 4) uranium fuel prices, 5) SO2, NOx and CO2 values, 6) locational implied heat rates, 7) electric generation capacity values, 8) renewable energy subsidies, and 9) inflation factors, among others.

Mr. Bletzacker further testified that to complement the Base Case Fundamentals Forecast, three associated cases are also created: the Lower Band, Upper Band and No Carbon cases. The associated cases were designed and generated to define a plausible range of outcomes surrounding the Base Case.

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. Nominally, fossil fuel prices vary one standard deviation above and below Base Case values. The No Carbon case assumes there will be no regulations limiting CO2 emissions throughout the entire forecast period.

Mr. Bletzacker testified that the primary tool used for the development of the North American long-term energy market pricing forecasts is the AURORAxmp® Energy Market model. It iteratively generates zonal, but not company-specific, long-term capacity expansion plans, annual energy dispatch, fuel burns and emission totals from inputs including fuel, load, emissions and capital costs, among others. Ultimately, AURORAxmp® creates a weather-normalized, long-term forecast of the market in which a utility would be operating.

According to Mr. Bletzacker, AEPSC also has ample energy market research information available for its reference, which includes many well-accepted energy consultancies such as Cambridge Energy Research Associates, PIRA Energy Group and WoodMackenzie. Although no exact forecast inputs from these sources of energy market research information is utilized, an in-depth assessment of this research information can yield, among other things, an indication of the supply, demand and price relationship (price elasticity) over a period of time. This price elasticity, when applied to the AURORAxmp® natural gas burn, yields a corresponding change in natural gas prices – which is recycled through the AURORAxmp® model iteratively until the change in natural gas burn is de minimis.

Mr. Bletzacker testified that it is important to recognize that the Fundamentals Forecast is a long-term, weather normalized energy market forecast.

According to Mr. Bletzacker, the AURORAxmp® Energy Market Model is widely used by utilities for integrated resource and transmission planning, power cost analysis and detailed generator evaluation. The database includes approximately 25,000 electric generating facilities in the contiguous United States, Canada and Baja Mexico. These generating facilities include wind, solar, biomass, nuclear, coal, natural gas and oil. A licensed online data provider, ABB Velocity Suite, provides up-to-date information on markets, entities and transactions along with the operating characteristics of each generating facility, which are subsequently exported to the AURORAxmp® model.

Mr. Bletzacker testified that natural gas prices are important because fuel prices are a key component in determining the supply stack, or merit order, for the dispatch of generating units.

Mr. Bletzacker further testified on the importance of CO2 allowance prices in a fundamental forecast. According to Mr. Bletzacker, CO2 emission costs would adversely affect the prices of electricity generated by fossil fuels relative to lower and zero carbon-intensive generating resources such as renewables. CO2 regulations would also affect fuel markets, e.g., an increase in natural gas consumption will result in increased natural gas prices. The direct effect of a $10 per tonne allowance price for a coal plant is an approximate $10 per MWh increase in plant variable operating costs. And likewise, a $10 per tonne allowance price for a natural gas-fired combined cycle plant is an approximate $4 per MWh increase in plant variable operating costs.

Mr. Bletzacker described the salient features of his most recent (Late-2016) Fundamentals Forecast as follows:

Natural Gas. The Fundamentals Forecast recognizes the balance between long-term increase in demand (the expanding role of natural gas for electric generation, the prospect of liquefied natural gas

exports, natural gas for use as a transportation fuel, and others) and the likelihood of cost-effective advances in shale-directed drilling and completion techniques (longer laterals, increased fracturing stages, proppant delivery, and others). Abundant, relatively low-cost natural gas reserves and productive capacity will continue to grow domestically and globally as shale gas extraction technology becomes more widespread. Despite negative reaction in some regions of the country, the long-term environmental impacts of shale gas development will ultimately be manageable according to Mr. Bletzacker. Natural gas pipeline capacity is expected to keep pace with the evolving locations of supply and consumption as the extensive domestic natural gas transportation infrastructure is sufficiently robust to overcome constraints through existing capacity expansions, flow reversals and new construction.

CO2 Mitigation. The 2016 Fundamentals Forecast employed a CO2 dispatch burden (allowance price) on all existing fossil fuel-fired generating units that escalates from $2.92 per ton in 2024 to $26.31 per ton in 2032 in order to achieve national mass based emission targets similar to those proposed in the Clean Power Plan.

RENEE V. HAWKINS

Ms. Renee V. Hawkins, Assistant Treasurer and Managing Director, Corporate Finance for AEPSC, a wholly-owned subsidiary of AEP, testified on behalf of PSO. Ms. Hawkins is also the Assistant Treasurer of PSO.

According to Ms. Hawkins, her testimony addressed how the Company intends to finance the purchase of the Wind Facility and the construction of the associated Gen-Tie Line, together referred to as the Project, as well as discuss the impact on credit ratings and support the return on equity ("ROE").

Ms. Hawkins testified that the ownership percentages for the Project are targeted at 30% and 70%, for PSO and SWEPCO, respectively. PSO intends to utilize a combination of short- and long-term debt and equity contributions from its parent, AEP, to fund the Project with an approximate capital structure of 52% - 54% debt and 46% – 48%% equity. This is consistent with PSO's current capital structure according to Ms. Hawkins. The Company may enter into a revolving credit agreement to initially fund the construction expenditures prior to issuing long-term debt.

Ms. Hawkins further testified that PSO participates in the Utility Money Pool through which it can lend and borrow short-term funds from other AEP utility subsidiaries. PSO has authorization from the FERC to access up to $300 million of short-term financing from that source. The long-term debt issuances associated with this Project will be approximately $700 million.

Ms. Hawkins testified that as needed, PSO will also receive equity contributions from AEP to finance the Project. This is consistent with how AEP currently contributes equity for major projects. The intent of the capital contributions will be to maintain a capital structure consistent with the current levels of debt and equity and is approximately $550 million for the Project. A portion of this requirement may be met by deferring dividends to PSO's parent company, AEP.

Ms. Hawkins testified that based on PSO's current credit ratings, the Company is able to finance a project of this size at a reasonable cost.

According to Ms. Hawkins, there is short-term pressure on PSO's credit metrics during construction but upon completion of construction and initiation of a temporary recovery rider, the Project is supportive of PSO's current credit ratings.

According to Ms. Hawkins, the Company will be making a significant investment in these assets and will need recovery of the costs as soon as the assets go into service. PSO's current net plant is approximately $3.8 billion and upon completion, this Project will grow assets by an additional $1.36 billion or a 36% increase in net plant assets. For an investment of this magnitude, the Company requires a temporary rider to recover both a return on and a return of the assets in order to protect the financial condition of the Company. The absence of timely recovery of the costs of these assets would negatively impact earnings, cash flows and the resulting financial metrics relied upon by fixed-income investors and the credit rating agencies. In the Company's credit opinion, Moody's cites significant increase in capital expenditures without timely recovery as a factor that could lead to a downgrade.

Ms. Hawkins further testified that PSO was proposing that the ROE be based on the Commission-approved ROE in effect during the recovery period. With the establishment of a rider, the ROE can be updated when a new ROE is established through a traditional rate proceeding.

For the analysis presented in this case, an ROE of 10.5% was used. That ROE presents a reasonable view of the Project over its entire life and recognizes that interest rates are anticipated to be higher over the life of the Project.

Ms. Hawkins further testified that in the savings analysis completed by witness Pearce, he is using a discount rate of 7.22%, which is the weighted average cost of capital that was filed in the PSO 2017 Cause No. PUD 201700151.

PAUL CHODAK

Mr. Paul Chodak, Executive Vice President – Utilities for American Electric Power Company Inc. ("AEP"), testified on behalf of PSO .

Mr. Chodak testified that in late 2016, AEP had discussions with Invenergy related to a potential large scale wind project in the Oklahoma Panhandle. These discussions ultimately led to the execution of a Joint Development Agreement related to the Project on November 30, 2016. Initial siting feasibility analysis was completed in December of 2016 and in January of 2017 AEP engaged The Brattle Group to study the potential benefits of this Project. We recognized that delivering a large quantity of energy from the Oklahoma Panhandle over the existing transmission system was not possible, so we investigated the benefits of a dedicated generation tie-line that could deliver this low-cost power from the Oklahoma Panhandle directly to the AEP load zone. After evaluating the potential benefits of this Project, AEP undertook a significant modeling analysis to more precisely quantify the value of the Project to our customers over the life of the Project. Additionally, contracts were negotiated for the development of the Wind Facility and the construction of the Gen-Tie to include refined estimates of the Project cost in the overall analysis of the Project net benefits. Given the late contact with Invenergy, AEP rapidly evaluated and developed this Project so that customers could benefit from the full value of the "PTC". The manageable but tight construction schedule for the Project requires timely consideration of this filing no later than the end of March 2018 in order to preserve the maximum PTC savings for our customers.

By harnessing this high-quality wind resource and leveraging the extension of the federal PTCs, the Companies have an opportunity to lock-in over eight million low-cost megawatt-hours ("MWh") per year of energy for their customers over the 25-year Project life. The delivery of this low-cost energy into the Companies SPP zone also creates additional significant savings for PSO customers and other SPP customers by lowering the zonal energy price.

Mr. Chodak further testified that the Project is uniquely situated to unlock the full value of Oklahoma's wind by delivering this great resource directly to our load. With an increasing penetration of wind in the SPP regional transmission organization footprint, and the expectation for additional congestion in the region, the Companies undertook a process to evaluate the possibility of directly connecting this wind resource to our load, thereby bypassing congestion on the grid. AEP's team of engineers and construction professionals, in coordination with the Quanta Electric Power Construction, LLC ("Quanta") Services team, developed the Gen-Tie as a feasible and cost-effective delivery solution.

The Companies have entered into a MIPA with Invenergy to construct and purchase the Wind Facility in the Oklahoma Panhandle, subject to regulatory approvals and other conditions. In connection with the Wind Facility, the Companies will develop an approximately 350- to 380-mile Gen-Tie line to avoid congestion and enable the delivery of the Wind Facility energy to our customer load zone in Tulsa. The Wind Facility and Gen-Tie are proposed to be owned 30 percent by PSO and 70 percent by Southwestern Electric Power Company ("SWEPCO").

According to Mr. Chodak, the Wind Facility will provide over eight million MWh to the AEP load zone annually and consists of approximately 300,000 acres in Texas and Cimarron Counties in the Oklahoma Panhandle under lease to Invenergy for wind energy development. Invenergy started construction in 2016 and has targeted completion in the third quarter of 2020, which will enable customers to benefit from 100% of the PTC value. The Wind Facility includes 800 General Electric 2.5 MW WTG. The facility will be built in Oklahoma and significant portions of the equipment will be manufactured in Arkansas, Texas and Louisiana.

Mr. Chodak testified that the Project is expected to provide savings of approximately $2.9 billion, net of cost and in net present value dollars, as compared to relying on market energy. The combination of the Panhandle wind plus the Gen-Tie provides customers with an additional approximately $1.1 billion in savings relative to other similar wind generation options.

In 2021, the project will deliver energy to our customers at an average cost of $30/MWh as compared to a market price of $39/MWh. This will result in lower costs to customers from day 1. Furthermore, this will lower the AEP load zone Locational Marginal Price ("LMP") which will benefit non-AEP customers as well. The Project is able to produce power with an average price of approximately $26/MWh in constant 2021 dollars over a 25-year period. This represents the total cost of the Project ("Wind Facility and Gen-Tie").

According to Mr. Chodak, the Project is expected to result in a net bill reduction in the initial year that the facility provides service to our customers and the Project is expected to result in net savings of over $7 billion (in nominal dollars) to both PSO and SWEPCO customers over the life of the Project.

Mr. Chodak testified that the Company is seeking approval of a temporary rider to provide recovery of the Project as an interim recovery mechanism until the Company is able to add the Project to base rates. Absent strong regulatory support, the large size and unique nature of this Project would represent significant financial risk to PSO. The support of the Commission is necessary to allow the Company to move forward with the Project and bring to its customers the significant benefits of the Project.

Mr. Chodak further testified that in December 2015, the federal PTC extension included a phase-out over a four-year period starting at the end of year 2016. The customer benefits of this Project

are significantly impacted by the value that the PTCs provide. In order to claim 100% of the PTC value, an eligible project must have "commenced construction" prior to January 1, 2017, and show "continuous progress" toward completion and to enable commercial operation prior to January 1, 2021. Invenergy has taken and is taking the necessary steps to secure the commencement and continuing progress of construction at the Wind Facility to receive the 100% PTC. In order to enable commercial operation of the Project prior to January 1, 2021, significant investments in the Project will need to be incurred beginning in mid-2018. The Companies are committed to preserve the eligibility of the Project for full PTC's through mid-2018. According to Mr. Chodak, the Companies could not commit to the significant investments beyond that time unless the requested Commission approvals, including assurance of cost recovery, are received consistent with the timeline proposed by the Companies in the various filings described. Without timely approval, the Companies will not be able to move forward with this Project. The Companies recognize that the requested timeline for approvals is tight but wanted to partner with state commissions to take advantage of this time-sensitive opportunity to bring these substantial savings to our customers.

KELLY D. PEARCE

Dr. Kelly D. Pearce, Director - Contracts and Analysis for AEPSC, testified on behalf of PSO

Dr. Pearce's testimony quantifies the benefits of PSO's proposal to acquire a thirty-percent[1] (30%) share of the Wind Facility and to construct the Gen-Tie Line, which together forms the Project that is forecasted to provide PSO's customers a savings over the 25-year project life of approximately $996 million in discounted or net present value ("NPV") dollars. Consistent with the in-service date of the Project, all NPV values referenced by Dr. Pearce are expressed in 2020 dollars.

Dr. Pearce testified that his EXHIBIT KDP-1 contains the forecasted benefits, projected costs, and resulting net customer savings of the Project. These results were summarized in Table I.

TABLE I – Total PSO Net Benefits of the Project Relative to the Baseline Case

Company Costs and Benefits	PSO Savings and Cost Total 2021 - 2045 (NPV $Millions)
1. Avoided Costs Benefits (Exhibit KDP-1 Ln1+Ln2+Ln3)	$1,860
2. Revenue Requirement of Wind Facility and Gen-Tie Line (Cost) (Exhibit KDP-1 Ln4 + Ln6)	($1,701)
3. PTCs including tax gross-up (Exhibit KDP-1 Ln5)	$837
4. Net Customer Benefits	**$996**

According to Dr. Pearce, Line 1 is the forecasted avoided costs, which is the savings in fuel, purchased power, and other variable costs, plus the Wind Facility capacity value, less the incremental costs of congestion and Off-System Sales ("OSS") revenue net of retained margins. Line 2 shows the projected revenue requirement of the Project. Line 3 shows the forecasted value of the PTCs, including the tax gross-up. Line 4, the net of Lines 1, 2 and 3, shows a substantial savings for PSO's customers over the life of the Project.

[1] SWEPCO, a PSO affiliate, will own the remaining 70% of the Project.

Dr. Pearce testified that PSO's most recent Integrated Resource Plan (IRP) was developed in 2015 and reflected the modeling of an additional 100 MW of near-term wind generation and additional natural gas combined cycle ("NGCC") units beginning in 2022. It is important to note that the 2015 IRP assumed PTCs would expire at the end of 2016, which is no longer the case. Consequently, with the extension of the PTC, the Project effectively adds additional wind resources to capture the PTCs value and delays by a year, from 2024 to 2025, the timing and cost of adding one NGCC. The benefits of the large energy savings coupled with the PTCs and delay in adding an NGCC unit creates a unique opportunity for PSO's customers to save up to approximately a billion dollars, as shown in EXHIBIT KDP-1.

According to Dr. Pearce, to determine the net benefits of the Project, the Company developed both a baseline scenario ("Base Case"), which assumed no new wind resource additions for PSO, and a change-case scenario that included the Project ("Project Case"), and then compared the difference or "delta" between these two cases for the period modeled, 2021 to 2045. Consistent with the 2015 IRP, NGCC units were assumed as additions to PSO's resources in both the Base Case and Project Case as needed throughout the period to maintain a 12% capacity reserve margin as required by SPP.

The forecasted total variable costs used to determine the APC savings are based on a MWh generation forecast for each PSO generation unit determined utilizing the simulation model PLEXOS®, a widely-accepted model that AEP uses to forecast its operating companies' production costs. The PLEXOS® model utilizes a forecast for each unit's cost of energy (e.g., fuel, fuel handling, variable operations and maintenance, consumable costs and emission allowance costs), scheduled maintenance outages, and forced outages, along with forecasted market prices of energy to determine forecasted generation output, costs, and revenues.

The model forecasts and compares the total hourly energy output of PSO's generation resources against the hourly internal load energy requirement of PSO. To the extent that the resources exceed the load, the model determines the surplus generation sold at the hourly generation price. To the extent that the load exceeds the resources, the model determines the deficit purchase at the market load price. Consequently, the APC includes the cost of production less the cost of purchases, plus the revenues from additional OSS less the OSS margins retained by PSO. The benefits also include the Project's capacity value, which is determined outside of PLEXOS®.

Dr. Pearce further testified that under normal IRP or incremental resource addition modeling, the Company has not historically modeled the impact that a new resource itself has on market prices of energy. The reasons for this are twofold. First, new generation is typically being sized to meet only the load growth and generation retirement changes of the Company, and additional OSS and purchases are incidental to the overall economics. Secondly, the generation resource additions are typically small relative to the size of the regional transmission organization ("RTO"), in this case, SPP. As such, the change in SPP market prices can reasonably be assumed to be negligible.

However, due to the amount of energy, particularly when at full output, which will be produced by the Project in comparison to the SPP market, the Company included a forecast of the impact that the Project itself will have on SPP market energy prices.

Dr. Pearce described the PTCs. The PTCs are an inflation-adjusted per kWh federal tax credit for electricity generated by qualified energy resources. The PTCs are available for 10 years from the date the resource is placed in service. Resource eligibility is being stepped down and will no longer be available at the 100% level under the safe harbor provision for facilities that do not achieve commercial operation by the end of 2020.

The Project Wind Facility is forecasted to produce power at a levelized cost of $10.90/MWh including the cost of the Wind Facility net of the PTCs.

Dr. Pearce testified that in addition to the AEP Fundamentals group base forecast of future natural gas prices, the Company also modeled the impacts on the Project of both low and high natural gas price forecasts. These natural gas prices were utilized in PROMOD to determine the SPP energy market prices that were then input into the PLEXOS® model. The lower natural gas price forecast reduces the net benefit of the Project by approximately 21%. At this level, the Project provides net benefits to PSO's customers of $784 million on and NPV basis in 2020 dollars over the 25-year Project life. Alternatively, in the high gas price scenario, benefits are increased 22%, and are approximately $1.2 billion on an NPV basis over the Project life.

Dr. Pearce testified further that the Company considered the feasibility and economics of attempting to capture the benefits of the PTCs on the same scale as the Project, without the costs of the Gen-Tie Line. To compare this generic wind case ("Generic Wind Case") with the Project, the Company modeled 1,900 MW of wind resources with PSO receiving the same 30% allocation of the output. However, the congestion created by adding 1,900 MW of wind in the same area of the Oklahoma Panhandle as the Project, but without the Gen-Tie Line, is not realistic given the expected magnitude of congestion that would be created. Therefore, the Company modeled the Generic Wind Case as being distributed and sourced from several delivery points in western Oklahoma, Kansas, Texas, Nebraska and Missouri. For the PROMOD cases used to determine market price impacts, 7,509 GWhs of annual output were modeled based on data from the National Renewable Energy Laboratory. For the PLEXOS® modeling, which determines the value of the wind resources, the output was increased to 7,991 GWhs of annual output, as described by Company witness Pfeifenberger. The Project's forecasted average annual output is 8,722 GWhs delivered to PSO's existing Tulsa North 345 kV substation after reducing for Gen-Tie losses.

The Company utilized an initial purchase price of $18.62/MWh for the Generic Wind Case with an annual escalation of 2.25%. This price assumes that the PTCs can be captured before their expiration. This price is based on reported estimates from the U.S. Energy Information Agency's 2017 Annual Energy Outlook. The Company also assumed and included approximately $40 million of contingency cost.

The Project is expected to produce approximately $452 million more in customer savings than the Generic Wind Case would relative to the Baseline Case. As indicated, the Generic Wind scenario provides some of the same benefits as the Project and avoids the cost of the Gen-Tie Line. However, the Generic Wind Case APC also includes the purchase costs of the Generic Wind and therefore has a higher APC than the Project APC. In addition, without the Gen-Tie Line, the Generic Wind Case creates significant congestion in SPP compared to the Project, even when attempting to mitigate this congestion by dispersing the resources. Furthermore, the Generic Wind Case will be subject to economic curtailments by SPP.

According to Dr. Pearce, even with the Project, PSO remains a significant net buyer in the SPP market to serve its load. If the 1900 MW Project is added and the output carried directly to the Tulsa load center through the Gen-Tie Line, the economics of supply and demand will result in a net lowering of SPP hourly power prices. This means that the net energy that PSO does purchase from SPP will tend to be less expensive than what it would otherwise have been without the Project.

Dr. Pearce testified that the value of the PTCs grows over time, as do the customer benefits, until their expiration after 2030. While benefits continue beyond 2030, there is a significant drop in

benefits in 2031 as a result of the PTCs' expiration that would lead to a significant one-time increase in the Project's year-over-year revenue requirement, which up to that point would be declining each year.

The Company is proposing to defer, for ratemaking purposes, some of the value of the PTCs beginning in 2024 through 2030. This would be accomplished, with Commission approval, by establishing a regulatory liability, and then returning this value to customers beginning in 2031 until the entire liability has all been returned in the form of credits to customers. The result of this "shaping" is that the revenue requirement does not result in a large decrease from 2021 to 2030 followed by a large increase in 2031.

Dr. Pearce further testified that beginning in 2031, when the PTCs expire, PSO will flow the value of the deferred PTCs back to its customers. The amounts flowed through to customers will be based on a percentage of the aggregated amount at the end of the prior year, as shown in Table III.

TABLE III – Proposed Schedule for the Return of the Deferred PTCs Value and End of Year ("EOY") Balances

Year	Proposed PTCs Value Returned - Percent of Prior Year End Balance	Forecasted PTCs Value Returned (Nominal Millions)	Forecasted Deferred PTCs EOY Balance Including Interest (Nominal Millions)
2031	27.7%	$45.7	$133.9
2032	30.7%	$41.0	$104.6
2033	34.5%	$36.1	$77.4
2034	39.7%	$30.7	$53.1
2035	47.0%	$25.0	$32.4
2036	58.2%	$18.8	$15.9
2037	76.6%	$12.2	$4.7
2038	Remaining Balance	$5.0	($0.0)

BRIAN D. WEBER

Mr. Brian D. Weber, Managing Director, Transmission Business Development for AEPSC, testified on behalf of PSO.

Mr. Weber testified that at a high-level, the Gen-Tie scope of work consists of two proposed 765/345 kV substations, two fiber-optic repeater sites, and approximately 350 to 380 miles of single-circuit 765 kV generation tie-line. The selected contractor is Quanta Electric Power Construction, LLC, a whole owned subsidiary of Quanta Services (Quanta or Contractor).

The westernmost substation, referred herein as the Western 765 kV Generation Substation, will be located in the Oklahoma Panhandle at the Wind Facility site. The Western 765 kV Generation Substation will be designed to accommodate six 345 kV line positions and a single 765 kV line position. The Western 765 kV Generation Substation will require a phased construction approach to allow for the 345 kV portion of the substation to operate independently of the 765 kV portion of the substation by October 31, 2019. The planned phased construction will allow commissioning for the Wind Facility to begin in advance of the Gen-Tie's completion. The Contractor's responsibility for physical construction will cease at the 345 kV take-off structures facing the Wind Facility. The wind farm constructor, Invenergy, will be responsible for the design, procurement and installation of the Wind Facility's 345 kV collector system.

The easternmost substation, referred herein as the Tulsa North 765 kV Generation Substation, is anticipated to be near or adjacent to the existing PSO Tulsa North facilities in Tulsa County, Oklahoma. The Tulsa North 765 kV Generation Substation will be designed to step down the voltage of the incoming 765 kV generation tie-line to 345 kV for interconnection with the existing PSO Tulsa North facilities. The Contractor's responsibility for physical construction will cease at the Tulsa North 765 kV Generation Substation's 345 kV take-off structure facing the existing PSO Tulsa North 345 kV Substation.

The total estimated capital cost for the Gen-Tie is $1.624 billion inclusive of $148 million for Allowance for Funds Used during Construction ("AFUDC").

According to Mr. Weber, Quanta is a leading transmission construction contractor specializing in designing, building and maintaining transmission systems of all lengths and configurations across the voltage spectrum. With over 28,000 workers, Quanta is the largest specialty contractor in North America. Quanta has a family of 120 construction subsidiaries that it calls upon to deliver end-to-end infrastructure solutions on a self-perform basis, more than half of them serving the electric industry. With over $7.65 billion in revenues (2016), a senior secured revolving credit facility of $1.81 billion and aggregate bonding capacity greater than $5.0 billion, Quanta is a substantial, publicly-traded (NYSE: PWR, S&P 500 Index) entity with the financial wherewithal to take on a project of the scale of Gen-Tie.

As it relates to the Gen-Tie scope of work, Quanta has decades of experience to draw upon in completing the Gen-Tie, as well as experience specifically tailored to the Gen-Tie. Quanta has completed more than 10,000 miles of extra high voltage transmission over the last 50 years, and designed and built over 600 substations in the last two decades. Specifically for AEP, Quanta has built over 300 transmission and substation projects since the 1960s. During that time, Quanta has completed a variety of landmark projects for AEP, including the Wyoming-Jacksons Ferry 765 kV project and the Lower Rio Grande Valley energized 345 kV reconductor project. Lastly, Quanta is fully informed of AEP's EPC design standards for transmission and substations, and has long-standing relationships with AEP's preferred suppliers.

Mr. Weber testified that the Engineer Procure and Construct (EPC) Contract is a fixed-price contract where all engineering, procurement and construction is covered under the scope with one counter-party, which for the scope of work necessary to construct the Gen-Tie, is Quanta. The Contractor, with minimal exception, is responsible for line routing, siting, permitting, easement acquisition, surveying, engineering design, procurement, construction, testing, and commissioning to established AEP standards and project-specific design criteria for the entire Gen-Tie scope described previously. Contract completion is ensured utilizing backstop letters of credit with accredited financial institutions, a parental guaranty from Quanta Services, and liquidated damages for delays in reaching the guaranteed completion date.

Mr. Weber further testified that the EPC approach provides significant value to customers because it allows the Contractor to efficiently manage design, construction and procurement activities together. This approach reduces inefficiencies and the potential for disputes arising from delays or impacts from inter-related work streams, which may result in future cost increases. Examples of these inter-related work streams include items such as material deliveries and access to rights-of-way. This approach also reduces the potential that future warranty claims would be clouded by questions regarding installation practices or treatment of the materials during the construction phase because all warranties are provided by the same entity providing construction

Finally, Mr. Weber described key contractual terms in the EPC agreement, as well as the approach to permitting and land acquisition for the Gen-Tie.

JAY F. GODFREY

Mr. Jay F. Godfrey is employed by AEPSC, a wholly owned-subsidiary of AEP, as Managing Director - Energy Marketing and Renewables, and testified on behalf of PSO and SWEPCO.

Mr. Godfrey testified that the main benefit of pursuing the purchase of the 2,000 MW Wind Facility now is that the Wind Facility will benefit from the 100% value of the federal PTC, assuming timely regulatory approvals. Under the Company's proposal this federal credit helps to significantly increase the net savings associated with the Wind Facility.

According to Mr. Godfrey, the PTC is a tax credit against Federal Income Taxes based on every kWh of energy that is produced by a wind generator over the first 10 years of operation and is based on an annual inflation-adjusted value that is currently set at $0.024 (2017) per kWh.

According to Mr. Godfrey, on July 26, 2017, the Companies and Invenergy entered into the MIPA, which governs the construction of the Wind Facility by Invenergy and the Companies' purchase of 100% of the equity interests of States Edge Wind I LLC ("Project Company"), a single-purpose entity that will own the rights and assets associated with the Wind Facility. PSO and SWEPCO will share both the benefit and the cost of the Wind Facility consistent with their ownership shares of 30% and 70%, respectively.

Mr. Godfrey testified that the MIPA includes the covenants (e.g., development, construction timing, pre-closing activities), representations and warranties, indemnifications, termination rights and conditions precedent to closing that are typical for such a transaction. The MIPA also includes details regarding the purchase of the equity interests, the purchase price, and the associated conditions precedent for closing and payment. Finally, the MIPA contains requirements for the provision of project supplier warranties and credit support for same.

Mr. Godfrey further testified that the total purchase price for the 2,000 MW Wind Facility is $2.694 billion or approximately $1,347/kW. This purchase price does not include associated owner's costs, MIPA price adjustments, or any contingency for risk mitigation for the Wind Facility as further described by Company witness Michael L. Bright. The MIPA purchase price also does not include the costs associated with the Gen-Tie line.

Mr. Godfrey testified that the Companies' purchase obligations are conditioned on regulatory approval by the Commissions in Oklahoma, Arkansas, Louisiana, and Texas. In addition to the required state commission approvals, there are certain ancillary Federal Energy Regulatory Commission (FERC) filings and approvals that will be necessary as the project progresses.

Mr. Godfrey further testified that the NTP is the full Notice to Proceed to be issued by the Companies to Invenergy. The NTP, which is issued after certain NTP condition precedents or requirements have been satisfied, gives Invenergy approval to advance construction activities into the major construction phase of the Wind Facility.

According to Mr. Godfrey, the condition precedents required prior to the NTP issuance, consist of a variety of obligations for the Companies and the Seller, Invenergy. The major requirements include the following:

- The issuance of state regulatory and FERC approvals acceptable to PSO and SWEPCO;
- Timely completion by Invenergy of the Key Milestones for construction defined in the MIPA;
- Seller shall have delivered required credit support as set forth in the MIPA;
- Seller shall have secured its construction loan;
- Seller shall have met the other conditions to NTP set forth in the MIPA;
- The Tulsa North Interconnection Agreement, Turbine Supply Agreement, and all major project documents greater than $25 million shall have been executed or contemporaneously delivered and executed with the NTP; and
- Acceptable Property Agreement Amendments have been obtained.

Mr. Godfrey testified that after the NTP, generally speaking, the closing of the MIPA will occur when certain closing conditions have been met by Invenergy. The closing conditions in the MIPA include, but are not limited to, Invenergy having:

- Achieved Project Substantial Completion or Interim Project Substantial Completion with the related Milestone Completion Certificate completed;
- Obtained or have caused States Edge I Holdings, LLC to obtain all permits;
- Confirmed the representations and warranties are true and correct in all material respects; and
- Met the other closing conditions as set forth in the MIPA.

The Companies have the right to terminate the MIPA if timely regulatory approvals are not obtained according to Mr. Godfrey. The Companies can also terminate the MIPA for convenience before closing, but would then be responsible for certain Project Development costs incurred by Invenergy and States Edge I Holdings, LLC.

Mr. Godfrey testified that the Companies completed a thorough due diligence of the Wind Facility opportunity including, but not limited to, the following areas of review: technology, overall project design, land leases, transmission and interconnection, steps taken to qualify the Wind Facility for 100% of the PTC, environmental/wildlife, and the Wind Facility's forecasted annual production (MWh).

According to Mr. Godfrey due diligence actions will continue for the Wind Facility and there are a series of requirements that are included in the MIPA. For example, Invenergy will be responsible for completing all of the environmental assessments and is further required to use good faith efforts to site the WTGs consistent with industry best practices as set forth by U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines (2012). In accordance with the MIPA, Invenergy is also required to coordinate with AEPSC's Projects and Engineering team as detailed project engineering continues, post commission approvals.

According to Mr. Godfrey, of the many areas reviewed during the Company's due diligence process, the forecasted annual production is the most impactful to the economic analysis completed by the Company. The wind modeling and analysis projected that the average wind speed at the WTG hub height was 9.0 meters/second. When taking into account potential losses from availability, turbine power curve, turbine availability, wake effects (in Scenario B), etc., the wind resource analysis projects that the forecasted annual net generation for the Wind Facility will be 8,963.9 Gigawatt Hours ("GWh") for Scenario A and 8,951.1 GWh for Scenario B at the Western Terminus, that being the

Western 345kV to 765kV generation substation that serves as the aggregation point for the collector substations at the Wind Facility.

- Scenario A considers the production from an 800 WTG layout.
- Scenario B uses Scenario A as a foundation but takes into account an additional wake impact deduction from a hypothetical 160 turbine build-out on adjacent land by a third party.

Mr. Godfrey testified that the economic analysis included in the testimony of Company witness Pearce utilized the lower Scenario B result (8,951.1 GWh/year) from the Western Terminus, which when delivered to the Tulsa North substation equates to 8,722 GWh/year.

MICHAEL L. BRIGHT

Mr. Michael L. Bright, employed by AEPSC, as Managing Director Projects, testified on behalf of PSO.

Mr. Bright's testimony: (1) provided an overview of the Wind Facility; (2) presented milestones for additional construction activities and the estimated commercial operation date ("COD") of the Wind Facility; (3) described the Companies' role in project management, or the oversight of engineering, procurement, and construction; (4) described the Companies' O&M plan for the Wind Facility; and (5) provided O&M and ongoing capital estimates for the Wind Facility.

According to Mr. Bright, the 2000 MW nameplate (1900 MW delivered) Wind Facility is currently under construction in Texas and Cimarron counties, Oklahoma. The Wind Facility will consist of 800 General Electric ("GE") 2.5 MW wind turbine generators ("WTG") with a hub height of 88.6 meters and a rotor diameter of 127 meters. The Wind Facility will be engineered to have a design life of 25 years.

The energy from the turbines will flow into a 34.5kV underground Collection System to five substations where the energy will be transformed from 34.5kV to 345kV. These five 345kV substations will then be connected via overhead transmission lines into the Western 765kV Substation where the voltage is stepped up from 345kV to 765kv for transmission. The Wind Facility will be connected to the electric grid via the Wind Catcher Generation Tie Line ("Gen-Tie Line" or "Gen-Tie"), a dedicated extra high voltage ("EHV") line approximately 350 to 380 miles long that ends at the existing PSO Tulsa North 345kV substation. The Western 765kV Generation Substation also serves as the point at which the energy output from the Wind Facility is metered for tax and land lease royalty purposes.

Mr. Bright testified that continuous construction activities are ongoing and included excavating turbine foundations and the installation of concrete seal slabs for approximately 150 WTG locations. The continuous construction activities for the Wind Facility will continue until regulatory approval is granted and the Companies issue a Notice to Proceed ("NTP") to allow construction activities to commence unconstrained. Concurrent with continuous construction activities, engineering and design are proceeding on the collection and transmission systems' equipment specifications and substation configuration.

According to Mr. Bright, the estimated COD for the Wind Facility is in the fourth quarter of 2020.

The Companies have entered into a Membership Interests Purchase Agreement ("MIPA") with States Edge Wind I Holdings LLC ("Invenergy") for the purchase of the 100% equity interest in States Edge Wind I LLC. Invenergy is the project company that owns the rights and assets to the Wind Facility.

Invenergy will be responsible for the development, permitting, engineering, procurement of all necessary equipment and materials, construction and commissioning.

Mr. Bright further testified that the Companies have review rights of engineering, design and procurement of the Wind Facility and oversight of all construction activities via provisions stipulated in the MIPA. AEPSC, on behalf of the Companies, has been involved in determining the scope of the Wind Facility and reviewing its engineering and design elements through its due diligence efforts in the development of the MIPA.

Mr. Bright also testified that AEPSC has a long history of safe project management and construction of large-scale complex utility projects, ranging from construction of power plants to environmental retrofits and upgrades.

Mr. Bright described the general components in construction of the wind facility. Mr. Bright testified regarding the status of any required permitting or siting approvals that need to be obtained for the Wind Facility as well as status environmental impact and wildlife studies.

Mr. Bright testified regarding the construction milestones after NTP is issued are as follows:

Milestone	**Milestone Completion Date**
Purchase Order Issued for GSU Transformers	11/30/2018
Turbine Foundation Pours Begin	12/28/2018
Turbine Deliveries Begin	6/21/2019
First Substation Commissioning Complete	8/30/2019
1st Turbine Mechanically Complete	9/6/2019
WTG Commissioning Begins	9/27/2019
Substation Commissioning Complete	4/17/2020
Turbine Deliveries Complete	6/17/2020
Substantial Completion	9/30/2020

The Wind Facility construction schedule supports qualifying for 100% "PTC" benefits according to Mr. Bright.

Additionally, Mr. Bright testified that the total installed capital cost for the Wind Facility is approximately $2.902 billion and includes the purchase price, owner's costs, other estimated costs and contingency.

Mr. Bright further testified that the Companies will be responsible for the O&M of the Wind Facility. The Companies will utilize their own employees, AEPSC and Invenergy Services, LLC ("Invenergy Services") to support operation of the Wind Facility.

STEVEN L. FATE

Mr. Steven L. Fate, Vice President, Regulatory and Finance for PSO, testified on behalf of PSO. Mr. Fate described the Company's Application related to the Wind Catcher Energy Connection Project

("Project"). The Project is the combination of the Wind Facility and the associated Gen-Tie. On July 26, 2017, PSO and its affiliate SWEPCO (collectively the Companies) entered into a MIPA with States Edge Wind I Holdings, LLC, a single-purpose subsidiary of Invenergy, to acquire the Wind Facility, subject to regulatory approvals and other conditions. The Wind Facility, located in the Oklahoma Panhandle, consists of 2,000 MW of wind generation (nameplate capacity). Mr. Fate further testified that in conjunction with the Wind Facility, the Companies have contracted with Quanta for the construction of the 350- to 380-mile Gen-Tie to deliver the Wind Facility energy to the PSO transmission grid near Tulsa. PSO will own 30% of the Project, resulting in 570 MW delivered into the Tulsa area (600 MW nameplate). At the projected capacity factor of 51%, PSO's share would be approximately 2.6 million MWh annually. The Project is located in a high-quality wind area and is projected to be eligible to receive 100% PTCs under federal law. It will produce a savings for PSO customers in each year of the Project with approximately $996 million net present value of savings as compared to purchasing PSO's energy needs from the market.

Mr. Fate described the Project and how it was uniquely situated to enable PSO to further its goal of diversifying its energy supply with low-cost, clean, Oklahoma-based resources. In addition to the positive attributes of other Oklahoma-based wind generation, the Project is unique in its ability to: (1) significantly reduce the Project's grid congestion or curtailment risk and associated costs, and (2) create significant economic benefits by the delivery of low-cost energy and reducing the price of energy in the AEP SPP zone. The Gen-Tie is necessary to ensure dependable delivery of the Wind Facility's energy to the PSO electrical grid near the Tulsa area, where the existing grid can provide deliverability to PSO's load. Although the Project will provide some capacity benefits, it is not being proposed for that reason, but instead to reduce overall power supply costs for customers.

The Company requests that the Commission approve a temporary rider for the Project to recover the depreciation, operations and maintenance expense, weighted average cost of capital, and property taxes net of PTCs. The production cost savings will flow to customers through the FCA rider.

PSO also requests that the Commission grant authority for the Company to use for ratemaking purposes a deferred accounting regulatory liability for PTCs not credited to customers. Granting PSO the ability to defer some PTCs will allow the shaping and smoothing of the revenue requirement over the Project's life to avoid a sharp decline in year-over-year savings in the eleventh year when the PTCs expire. Additionally, PSO requests the Commission grant authority to include unrealized PTCs in a deferred tax asset included in rate base in the event the PTCs cannot be fully utilized in a given year or years.

Mr. Fate testified that PSO specifically requests that the Commission:

- approve a temporary rider to provide recovery of the depreciation, operating and maintenance expense, property taxes, and return on the investment, net of PTCs;
- provide a good cause exception to the "before construction starts" language in OAC 165:35-38-5(e);
- approve PSO's request to include any PTCs deferred for ratemaking purposes in a regulatory liability that is included in rate base, or earns interest at the Company's pre-tax Weighted Average Cost of Capital ("WACC") from the commercial operation date of the Project and thereafter;
- approve PSO's request to include any unrealized PTCs in a deferred tax asset included in rate base in the event the PTCs cannot be fully utilized in a given year(s);
- approve the requested depreciation rates for the Project;

- reaffirm the Commission's prior guidance to flow the revenue from the net proceeds from the sale of renewable-energy credits ("RECs") through the FCA;
- approve PSO's request to apply a production allocator for both the jurisdictional and class allocation of the cost; and
- issue a final order by March 30, 2018, to enable the completion of the Project to enable the commercial operation of the Project prior to January 1, 2021.

According to Mr. Fate, PSO has a long-standing practice of securing generation resources through open, fair, transparent, and nondiscriminatory competitive solicitations. Since 2005, pre-dating the formalization of the Commission's Competitive Bidding Rules, PSO has exclusively procured additional generation through the Request for Proposal ("RFP") processes. Since 2005, PSO has secured approximately 1,300 MW of natural gas-fired generation and an additional 900 MW of wind generation through competitive bidding processes. Most of these RFPs have been monitored by either a third-party Independent Evaluator selected by PUD or directly by PUD staff. In all cases without exception, regardless of who was monitoring the PSO RFP process, they have concurred with PSO's final resource selection.

PSO's long-standing practice to secure generation through an RFP process notwithstanding, the Project and its attendant benefits are unique in the way they are achieved and would unlikely be replicated through an RFP process. It is PSO's belief that the savings to customers from the Project are sufficiently compelling and that due to the uniqueness of the Project, and the time constraints imposed by the need to proceed to maintain the Project's eligibility for full PTCs, an RFP would not result in any more favorable alternatives and thus, would not be in the best interest of customers. As a result, PSO is seeking a good cause waiver of OAC 165:35-38-5(e).

Mr. Fate testified that PSO is proposing the WCECA Rider that becomes effective when the Project goes in-service and ends when the Commission includes the Project in base rates. PSO plans on filing a base rate case when the Project is commercial. The WCECA Rider would include depreciation, return, O&M expense, and property taxes, net of PTCs.

Mr. Fate further testified that PSO's portion of the Project is a considerable investment of approximately $1.358 billion. Without the use of a rider as a means of cost recovery, PSO will not be able to recover its full costs of the investments at the time they go in-service, which would not allow PSO the reasonable opportunity to earn a fair return on this major investment, and will result in reduced cash flow and credit rating issues.

According to Mr. Fate, PSO proposes to use the PTCs received by virtue of the Wind Facility as an additional benefit to offset the Project's revenue requirement. Because of the base rate revenue requirement increase expected in year eleven when the PTC expires, a portion of the PTCs earned prior to year eleven will be deferred as a regulatory liability to offset the revenue requirement in year eleven until the entire liability is returned in the form of a credit to customers. This deferral mechanism and subsequent revenue requirement reduction reduces the impact to customers in year eleven when compared to the traditional treatment of reflecting the tax credits when earned.

Mr. Fate testified that in order for the Project to receive the full benefit of federal PTCs, it is necessary to move forward to meet the completion deadline discussed earlier in his testimony. As a result, PSO requests that the Commission decide this case no later than the end of March 2018, 240 days after the filing date.

ROBERT W. BRADISH

Mr. Robert W. Bradish, Vice President - Grid Development for AEPSC testified on behalf of PSO.

Mr. Bradish testified that his testimony supported the Company's Application with respect to the Wind Catcher Generation Tie ("Gen-Tie") line, which in conjunction with the Wind Catcher Facility ("Wind Facility"), forms the Wind Catcher Energy Connection Project ("Project"). The Companies propose to construct, own and operate an approximately 350- to 380-mile 765 kV Gen-Tie line to interconnect the Wind Facility to the AEP SPP load zone in Tulsa. Specifically, the Gen-Tie line will interconnect the Wind Facility, via two proposed generation substations, to PSO's existing Tulsa North 345 kV Substation located in Tulsa County, Oklahoma. Mr. Bradish referred to the approximately 350- to 380-mile 765 kV generation-tie line, the proposed Western 765 kV Generation Substation, and the proposed Tulsa North 765 kV Generation Substation, as the "Gen-Tie."

According to Mr. Bradish, the Gen-Tie enables the Companies to procure higher capacity factor renewable wind energy from the Wind Facility at a cost significantly less than wholesale energy prices, providing significant savings for their respective customers over the life of the Project. The Oklahoma Panhandle has some of the best wind resources in the country, but lacks sufficient transmission facilities to deliver that wind energy to major load centers. The Gen-Tie will allow the Companies' respective customers in the AEP load zone to fully realize the benefits of those wind energy resources delivered directly to the Tulsa area without incurring curtailments.

Mr. Bradish further testified that generation resources are dispatched in the market based on their economic merit subject to transmission constraints. When the grid experiences transmission congestion, more expensive generation is dispatched in lieu of the most economical resources, which are curtailed to prevent overloading the transmission grid. Accordingly, congestion results in additional cost to the Companies' customers and also drives the locational marginal prices ("LMPs") of energy in the marketplace.

SPP published a study in December 2016 that identified Frequently Constrained Areas ("FCAs"). These are areas in the SPP marketplace that experience frequent transmission congestion. From June 2016 through May 2017, the Woodward, Oklahoma area and the Texas Panhandle were the most constrained areas.

Mr. Bradish testified that the 765 kV Gen-Tie line was selected for the Project because it was the least expensive and most efficient solution to interconnect and transfer the wind energy from the proposed Western 765 kV Generation Substation to the proposed Tulsa North 765 kV Generation Substation, on a dollar per delivered MW basis. It also has expansion capability for future generation and future connection into the SPP 345 kV system. The 765 kV technology selected for application in this Project represents the highest voltage class in commercial operation in North America and provides the greatest transmission capacity and operating flexibility, with minimal losses in the delivery of energy.

Mr. Bradish further testified that AEP optimized the selected Gen-Tie design to most cost-effectively interconnect the Wind Facility's low-cost wind energy from the proposed Western 765 kV Generation Substation to the existing Tulsa North 345 kV Substation. The 765 kV design is the best option for several reasons. First, the higher operating voltage and resulting increased thermal capacity of 765 kV offer an added advantage of markedly improved efficiency relative to 345 kV. The 765 kV line incurs only about one-quarter of the power losses of the AEP BOLDTM 345 kV double-circuit

alternative, both carrying the same amount of power. For this Project, the overall energy loss for the 765 kV line is approximately 50 MW versus approximately 185 MW of losses for the AEP BOLDTM 345 kV double-circuit line.

To illustrate this point, consider the additional wind turbines that would be needed to deliver the incremental 135 MW of wind energy (185 MW less 50 MW), in order to compensate for the additional energy losses on the BOLDTM 345 kV line alternative. At an installed cost of $1,374 per kW for the Wind Facility, as supported by Company witness Jay F. Godfrey, 135 MW of additional wind turbines would cost an additional $185 million. Given the capital cost differences described above (and also discussed in Company witness Weber's testimony) and the impact of additional energy losses for the equivalent energy delivery, the cost of the 765 kV line was estimated to be approximately 18 percent less expensive than the AEP BOLDTM double-circuit 345 kV line.

Second, a single 765 kV generation tie-line can carry substantially more power than a similarly situated 345 kV line. To assess the load-carrying ability, or loadability, of a high-voltage line, engineers commonly use the concept of Surge Impedance Loading ("SIL"). SIL, a loading level at which the line attains reactive power self-sufficiency, is a convenient "yardstick" for measuring relative loadabilities of long lines operating at different nominal voltages. A single 765 kV, six-conductor bundled line has an approximate SIL = 2210 MW for a line of the Gen-Tie's length. In comparison, it would require six, single-circuit traditional 345 kV lines built with bundled conductors (SIL = 390 MW for each 345 kV line), or three double-circuit traditional 345 kV lines, to achieve the same loadability. Using the AEP BOLDTM 345 kV technology (SIL =678 MW), it will take four single-circuits or two, double-circuits to achieve the same loadability.

765 kV also efficiently uses rights-of-way requiring less land to deliver the equivalent amount of power compared to traditional 345 kV options. When comparing the impacts of 765 kV and 345 kV construction, the former clearly has numerous advantages. The rights-of-way requirements for 345 kV construction (900 feet for six single-circuits or 450 feet for three double-circuits) are much higher than for a single 765 kV circuit (200 feet) to move the equivalent amount of power. With fewer lines and less rights-of-way necessary, the reduced impact of 765 kV line on the landscape is significant. Moreover, a typical double-circuit 345 kV structure is actually taller (about 170 feet) than a 765 kV tower (about 130 feet).

Mr. Bradish testified that the useful design life of the Gen-Tie is approximately 50 years or more and is expected to be an extremely useful asset well beyond the 25-year expected life of the Wind Facility. As such, the Companies propose a depreciable life of 50 years for the Gen-Tie. Based on his experience, Mr. Bradish testified it was his expectation that the Gen-Tie will remain a tremendously useful asset after the original 25-year life of the Wind Facility has initially expired.

According to Mr. Bradish, SPP did not need to approve the Gen-Tie line. The SPP Tariff only governs the studies used to determine the impact of adding a generation facility to the proposed point of interconnection so that the transmission system improvements ("System Upgrades") required for and to accommodate the interconnection can be identified.

Responsive Testimony Summaries

OIEC

MARK E. GARRETT

Mr. Garrett testified that PSO is requesting special rate treatment for the Wind Catcher Project to mitigate any negative impact on the Company's financial standing. By seeking to eliminate its

financial risk, the Company proposes rate treatment that unacceptably shifts risk to ratepayers and removes important regulatory safeguards.

Mr. Garrett further testified that PSO's estimated Project benefits are highly dependent on gas prices over the next 25 years and the performance of the wind turbines, two key variables that are uncertain and not guaranteed. However, the cost of PSO's rate base investment in Wind Catcher Project is largely fixed, and would be paid by ratepayers, even if PSO's non-binding estimates of the price of gas and the performance of the Project miss the mark.

Mr. Garrett testified that if the Commission determines the Project should be allowed to proceed against the recommendations of OIEC witness Mr. Scott Norwood, the Commission could authorize rider cost recovery, as requested by PSO, but in such event, the Commission should require PSO to file a rate case within six months of placing the Project in service. To allow the Project to be recovered through a rider for an extended period of time would amount to objectionable piecemeal ratemaking.

The Wind Catcher Project will cause a 48% increase in the utility's rate base. This is far too great an increase not to resynchronize all of the components of the revenue requirement at the same point in time, including rate base, cost of capital, revenues, operating expense, depreciation, taxes and PTCs. If the rate increase resulting from the Wind Catcher Project is large enough that the Company needs special rate treatment to eliminate the regulatory lag, then it is too large for the ratepayers to assume without the protections of full rate case review. Only with a full rate case review can ratepayers be assured that their rates are not higher than they should otherwise be as a result of this Project being included in rates.

The PTCs are an inflation-adjusted per kWh federal tax credit for electricity generated by qualified energy resources. The PTCs are vital to the economic viability of the Project as forecasted PTC savings represent more than 51% of the total savings in year one. The Project's eligibility for the tax credits is not guaranteed. The economic value of PTCs depends on several variables: (1) how much wind energy is actually produced; (2) whether, and to what extent, the Wind Catcher Project meets eligibility deadlines and requirements; (3) whether current tax policy authorizing the PTCs is revised in future years; and (4) whether and when the Company is able to use the tax credits based on other changes in corporate tax rates.

The PTCs are scheduled to expire in year eleven of the Project. PSO has proposed to accumulate some of the tax credits as a regulatory liability in the early years of the Project to reduce rate shock in the transition to the post-PTC period. PSO also proposes that in the event the Company is not able to use all of its PTCs, the unused credits be recorded as an accumulated deferred income tax asset until the Company is able to use them.

PSO's request to defer some of the credits to smooth the transition to the post-PTC period is not unreasonable. However, Mr. Garrett recommended that the PTC benefits be tracked between rate cases for the difference between credits embedded in rates and the credits produced during the rate-effective period between cases. This accumulated balance, which could be either an excess or a deficiency, could be amortized in rates in PSO's next rate case. Thus, the Commission's approval of requested deferral of PTCs should be contingent upon the PTC tracker mechanism outlined above.

Mr. Garrett outlined the following safeguards for ratepayers:

Periodic Rate Cases. PSO estimates the Project will reduce ratepayers' net fuel costs. It is important to remember that the large revenue requirement decreases calculated by PSO will only be

passed on to ratepayers through periodic rate cases. The Commission should require PSO to file periodic rate cases to capture these benefits for ratepayers. In these rate cases, the Commission will be able to evaluate the desired smoothing effect of the PTC deferrals.

PTC Tracker Mechanism. If ratepayers are asked to pay all of the costs of the Project, they should receive all of the benefits as well. If the PTC tax benefits are not tracked in a deferred liability account, the increase in benefits between rate cases (above the level established in base rates) will be retained by the Company.

Address Federal Tax Law Changes. Federal legislation currently under consideration by the United States Congress could have a major impact on PSO as well as the Wind Catcher Project. If this legislation is enacted and the impact of such legislation is not addressed in PSO's pending rate case, then PSO should be required to file a new rate case to reset its revenue requirement to reflect the new tax rates and to update the treatment of PTCs in accordance with the new legislation.

SCOTT NORWOOD

Scott Norwood's Responsive Testimony presented his findings and recommendations regarding PSO's Application for approval of cost recovery, a determination of need, and inclusion in base rates of the costs associated with the Company's proposed acquisition of a 30% ownership interest in the Project. The proposed Project would consist of a 2,000 MW Wind Energy Facility to be located in the Oklahoma Panhandle region, and a 350 mile, 765 kV dedicated Gen-Tieto deliver energy from the Project to the PSO grid near Tulsa, Oklahoma. PSO's affiliate, SWEPCO, would own the remaining 70% of the Project. The total Project cost including AFUDC is estimated to be $4.5 billion. PSO's 30% share of the Project capital cost is estimated to be approximately $1.36 billion, which would represent an increase of more than 150% to the total existing net book value of all other PSO's generating assets. PSO's testimony indicated that the Project is being proposed to provide energy cost savings to customers and increase diversity of the Company's energy supply, and admits that the Project was not proposed or needed to supply capacity for meeting future demand of its system, or to meet any renewable energy goals or any future regulations of carbon emissions. The Company asserts that the Project will save PSO's customers approximately $996 million on a net present value basis over the life of the facility. Mr. Norwood's analysis reveals that PSO's $996 million energy savings forecast for the Project is overstated for the following reasons:

1) PSO's savings forecast is based on a natural gas price forecast that is nearly double current NYMEX natural gas futures prices.
2) The Company's savings forecast unreasonably assumes that, in absence of the Project, PSO would not acquire any new wind energy for the next 30 years.
3) PSO's savings forecast fails to account for the risk that the actual level of wind energy produced from the Project could be lower than projected by the Company.
4) PSO's savings forecast for the Project is based on congestion costs for alternative wind projects that are highly uncertain.
5) PSO's savings forecast fails to account for the risk that benefits of wind PTCs could be lower than estimated due to lower wind energy production levels or future tax law changes.
6) PSO's savings forecast unrealistically assumes that PTCs and other reductions in base rate revenue requirements of the Project will automatically be flowed through to customers without regulatory lag.

As summarized in Mr. Norwood's Table 1 below, with modest adjustments for these and other risks and flaws in PSO's calculations, the Company's energy savings forecast for the Wind Catcher Project would be significantly reduced, or even totally eliminated.

Table 1
PSO Base Case Savings Estimate
for Wind Catcher Project
(2021-2046 Cum NPV; $Millions)

PSO Base Case Savings (30%)	$996
Savings Risk Adjustments:	
Generic Wind added to Base Case	-$544
Lower Gas Prices (based on SPS forecast)	-$636
10% Capital Cost Increase	-$136
10% Reduction to Wind Energy Level	-$262
20% Reduction to PTC Value	-$167
20% Reduction to Generic Wind Congestion Costs	-$164
4-year Regulatory Lag	-$62
Total Potential Adj:	-$1,971

The above results indicate that PSO's Wind Catcher proposal places far too much risk on customers, while the Company's stockholders would bear little risk. PSO's estimated benefits of the Project are highly dependent on the price of natural gas over the next 25 years and the performance of the wind turbines, two key variables that are uncertain and not guaranteed. But the cost of PSO's share of the Project – estimated by the Company to be $3.4 billion on a nominal basis (net of PTCs) over 25 years – is largely fixed, and would be paid by ratepayers even if PSO's non-binding estimates of the price of gas and the performance of the Project miss the mark.

In addition to the flaws in PSO's energy savings forecast for the Project, the bids received in response to the Company's September 2016 RfFPs for Wind Energy ("2016 Wind RFP") suggest that the Company could have purchased wind energy from other suppliers at rates that were equal to or lower than the forecasted cost of wind energy from the Project.

Given the above facts, Mr. Norwood concluded that PSO's proposals for approval and cost recovery of the Project would place undue risk on ratepayers and therefore are not in the public interest. He therefore recommended denial of PSO's request for approval of the Project as proposed.

Alternatively, if the Commission believes it may be in the public interest for PSO to acquire a portion of the Project, Mr. Norwood recommended that the Commission impose the following conditions to help mitigate the undue economic risks that would be placed on customers arising from PSO's ownership of the Project:

1) The Commission should cap the capital costs of the proposed Wind Facilities and Gen-Tie line for purposes of recovery in rates at no greater than the approved ownership level of the Project costs PSO identifies in its Application;

2) The Commission should require PSO to guarantee the PTCs for the Project at 100% of the level assumed in PSO's benefits analysis (approximately $42/MWh grossed up for taxes in 2021), since the forecasted PTC savings represent nearly 85% of the total savings and therefore are essential to the economic viability of the Project;
3) The Commission should require PSO to guarantee the wind energy production from the Project on a rolling three-year average basis at a level that is no less than the 51% capacity factor that PSO assumed for its Project cost/benefits analysis;
4) The Commission should require PSO to address the reasonableness of the final cost and forecasted savings from its proposed Gen-Tie investment in comparison to actual incurred congestion costs attributable to wind energy resources in direct testimony presented in the Company's next base rate case; and
5) The Commission should require that 100% of any margins earned from REC and off-system energy sales resulting from the approved ownership of the Project shall be credited to PSO's customers.

The details of Mr. Norwood's analysis of PSO's cost/benefit analysis for the Project and additional support for his findings and recommendations are addressed in his Responsive Testimony.

ATTORNEY GENERAL

DANIEL V BAUERKEMPER, P.E.

Mr. Daniel V. Bauerkemper submitted pre-filed testimony on behalf of Mike Hunter, the Attorney General of Oklahoma. Mr. Bauerkemper's testimony involved his concerns with the Gen-Tie proposed by PSO and its parent company AEP. Mr. Bauerkemper first testified to his educational and professional background. He had not previously testified before the Commission.

Mr. Bauerkemper then described his concerns with the Gen-Tie in detail; he did not recommend moving forward with the construction of the proposed Gen-Tie. His concerns included the proposed cost, contingency issues, and reliability issues.

With respect to cost, Mr. Bauerkemper testified that the Gen-Tie is prone to considerable risk. He explained that the contracted amount of $1.6 billion will be subject to many objective forces that could increase the cost of the 765 kV transmission line. First, the route itself is not final even now, according to a recent AEP statement. A transmission line path is fundamental to its design and, therefore, its cost. An uncertain right-of-way could also imply the need to enter into eminent domain proceedings. This also is a costly proposition.

With respect to N-1 contingency, NERC guidelines speak to single circuit transmission lines as those being the most prone to failures when compared to other system key components. What further compounds this risk is the distance involved. As it stands, the design is for up to 380 miles of what is, by NERC guideline, considered to be most likely to fail when making decisions with respect to contingency.

Finally, Mr. Bauerkemper testified regarding reliability that two very pragmatic concerns exist that must be addressed within the context of PSO's ability to see to the long-term reliability of the Gen-Tie within the constraints of a contracted budget. The first concern arises when considering that the 350 to 380 mile line of single circuit would be run across a region with a high rate of tornado activity. The second concern arises from the lack of geotechnical data being used to make decisions in an area

that is showing increases in sinkhole activity. Prudence would demand that geotechnical data be gathered in such a region prior to developing contractual costs around a project of this magnitude.

Given the risks associated with the unknowns around right-of-way and geotechnical data, coupled with the long term contingency risks of the proposed design in an area known for extreme weather conditions, Mr. Bauerkemper recommended not moving forward with the proposed Gen-Tie.

BERNARD A. CEVERA

Mr. Bernard A. Cevera pre-filed testimony on behalf of the Attorney General of the State of Oklahoma. Mr. Cevera's testimony cautions that there are serious concerns with the Gen-Tie as proposed by PSO. First, he testified as to his educational and professional background. He has not testified before the Commission, but he has testified before the FERC, the Kansas Corporation Commission, the Public Utilities Commission of Ohio, and the Wyoming Public Service Commission.

Mr. Cevera then provided his analysis of various aspects of the proposed Gen-Tie. A single radial line is unreliable, and in the event of an outage, PSO will be dependent upon another party -- the SPP-- for power, exposing PSO's customers to reliability risks and replacement power costs over the life of the project. The typical approach to transmission should be applied to have access to multiple networked transmission paths for delivery of power from the Oklahoma Panhandle to the network. The presence of a second line in close proximity would allow for the possibility of a second set of structures surviving what one set of structures could not. Mr. Cevera noted that SPP has not been contacted by PSO about transmission service over the Gen-Tie or including it in the network.

Mr. Cevera's testimony indicated that the Gen-Tie may cost more than estimated and that the additional cost may be passed on the customers. Mr. Cevera's firm C.H. Guernsey & Co., Inc. retained Mr. Bauerkemper from the engineering firm Lutz, Daily & Brain (LDB) to provide comparable construction costs for the Gen-Tie. LDB's estimate is $1.889 billion for the construction of the Gen-Tie, excluding financing fees, property tax, and carrying charges. PSO's total estimate for the Gen-Tie is $1.624 billion, or $1.476 billion after removing financing fees, property tax, and carrying charges. LDB's estimate is thus $414 million higher. Further, there is not a capacity benefit under the currently applicable FERC-approved Open Access Transmission Tariff (SPP Tariff), and Wind Catcher will not be a designated resource under the Tariff.

Mr. Cevera identified examples showing that there is an absence of regional transmission planning for this project involving the SPP and the neighboring transmission owners, raising public policy concerns about coordination with Oklahoma utilities and others. The SPP's role is to provide for coordination of transmission resource for utilities in the SPP region and that transmission is essential for delivery of power and energy from the source to the load. Mr. Cevera testified that this is particularly important for renewable power supply resources that are not located close to load centers. Wind Catcher has not been planned together with the SPP and the SPP has not been asked to study the project. It is possible SPP could have identified transmission alternatives that had lower costs and did not suffer from the same reliability concerns.

Mr. Cevera concluded that a Small Wind alternative would eliminate the need to the Gen-Tie, increasing reliability from multiple network transmission lines and eliminating about $2 billion in capital costs for the customers. Mr. Cevera explained that PSO could pursue a smaller wind project up to 700 MW with no serious technical problems, and it could possibly go as large as 1400 MW so long as it cooperated with the SPP to develop any necessary network upgrades. SPP is facilitating the Woodward-Tatonga second line 345 kV project scheduled to be online in July 2018. This line is being

added to accommodate wind in western Oklahoma. Mr. Cevera performed an evaluation using the 2025 Summer peak case from the SPP 2015 series model and found that adding 1,400 MW of wind generation at Hitchland, with the inclusion of the Woodward-Tatonga second line 345 kV project and Tatonga to Matthewson 345 kV line new double-circuit line would produce a reasonable alternative to the Gen-Tie.

The transmission planning process identified by Mr. Cevera was created to provide assurance that the optimum transmission plan is developed, that the lowest-cost, most reliable plan is built using a competitive bidding process, and that the plan reflects the interest of all stakeholders. The Gen-Tie was not planned with SPP as a transmission line.

ZHEN ZHU, PH.D.

Zhen Zhu, Ph.D., submitted pre-filed testimony on behalf of Mike Hunter, the Attorney General of Oklahoma, regarding the natural gas price forecasts relied on by PSO in this Cause. Dr. Zhu showed that PSO's Henry Hub gas price forecasts are too high, PSO's forecast of forward basis is too small, and as a result the delivered gas cost estimates PSO relied on are too high, compared to the most recent market perception of the natural gas price and basis.

First, Dr. Zhu testified as to his educational and professional background. He has testified before the Commission before. He also testified before several other state public service commissions including Michigan Public Service Commission, Georgia Public Service Commission and South Carolina Public Service Commission.

Then, Dr. Zhu testified regarding PSO's gas price forecast. He explained that PSO had to pick and choose gas prices as the input to the AURORAxmp model that PSO used to generate the fundamental forecasts. PSO's gas price forecast largely reflects PSO's own judgment. Dr. Zhu argued that there is no basis to believe PSO's price judgment is superior to market-based prices. Dr. Zhu showed that PSO's gas price forecast generated the same way as in this case overestimated future gas prices in the past.

Dr. Zhu showed that PSO gas price forecasts are much higher than the United States Energy Information Administration (EIA) gas price forecasts and much higher than the current market perceptions represented by the natural gas futures contract prices reflected in the New York Mercantile Exchange (NYMEX). In addition, the PSO forecast of Oklahoma-Henry Hub gas price basis is too small compared to the market perception of the locational basis. The high Henry Hub gas price forecast and the small basis forecast leads to excessively high gas costs, which leads to over-stated Project benefits.

Dr. Zhu found that PSO has completely ignored the price signal by the market and argued that completely disregarding market price signal is erroneous. He counter-argued against the points that PSO used to defend their position against using the NYMEX prices. Dr. Zhu argued that the futures market not only provides instruments for hedging energy commodity risks, but it also provides collective forecasts of future gas prices. Market participants enter transactions based on beliefs using available information, and the resulting equilibrium prices reflect the market fundamental forces of supply and demand and the market's expectation of future demand and supply. The futures market provides information regarding future gas prices for both the short term and long term. Dr. Zhu cited sources to argue that this view of the roles of the futures market - hedging and price discovery -- has been supported by academia as well as market regulators. Dr. Zhu further testified that PSO does not

possess any superior information than the market and their judgment regarding future gas prices is just one view and cannot be better than the market's collective forecast of the future gas prices.

Dr. Zhu recommended that the Commission carefully evaluate the Project economics under a full range of possible assumptions. A critical data point for that evaluation is an analysis based on market gas prices.

CARL N. STOVER, JR.

Mr. Carl N. Stover, Jr. submitted pre-filed testimony on behalf of Mike Hunter, Oklahoma Attorney General. The purpose of his testimony is to:

1. Assess and evaluate the economic benefits of the $996 million[2] in ratepayers benefits the PSO asserts will result from implementation of the Wind Catcher Project or Project).

2. Assess and evaluate, pursuant to 17 O.S. §286(C), whether reasonable alternatives to the Wind Catcher Project exist that would mitigate risk to ratepayers and provide opportunities to realize economic benefits.

Mr. Stover's testimony established that PSO has not provided to the Commission a complete range of reasonably expected potential economic risks associated with the Project. Mr. Stover's testimony showed that PSO's claimed economic benefit exists only assuming future gas cost projections that are well in excess of current market forecasts and carbon cost projections that have no basis given current carbon regulations. When the analysis was revised to properly reflect current market gas cost projections, carbon cost projections based on current carbon regulations and adjustments to reflect errors in the capital cost estimate of the Gen-Tie component of the project and the treatment of firm capacity, approval of the Project will result in a cost to the ratepayer of $320 million NPV.

Mr. Stover testified that reasonable alternatives exist to the Wind Catcher Project that are more reliable, are better aligned with public policy considerations for the region and that reduce the exposure to increased costs to ratepayers. Mr. Stover identified the reasonable alternatives for both of the gas and carbon cost assumptions.

1. Gas and carbon cost projections based on current market estimates for gas and current carbon regulations: The reasonable alternative is the Base Case which consists of gas-fired generation.

2. High gas and high carbon cost projections proposed by PSO: The reasonable alternative is the Generic Wind. Mr. Stover identified another possible alternative intended to capture the benefits of the high capacity factor and the apparent economic benefits offered by PSO ownership associated with the Wind Facility which, when adjusted in size to meet PSO requirements and integrated with SPP regional transmission, could offer benefits as a reasonable alternative to the Wind Catcher Project.

Mr. Stover testified that because the Wind Catcher project does not satisfy the only stated need of providing benefits to the ratepayer under the full range of fuel and carbon cost projections that can

[2] Benefit of PSO Share of Project Cost and Benefits compared to Base – Gas only case. Net present value for the 2021 – 2045 period. Exhibit KDP-1.

reasonably be expected to occur and because PSO's proposal of assigning all risk of economic uncertainty to the ratepayer, the Proposed Wind Catcher Project should be rejected.

FRANK J. BELING

Mr. Frank J. Beling submitted pre-filed testimony on behalf of Mike Hunter, the Attorney General of Oklahoma. Mr. Beling's testimony examined the economic analysis performed by PSO to estimate the Project Benefits of the Project. Mr. Beling first testified as to his educational and professional background before moving to his substantive analysis of the case.

Mr. Beling testified that several flaws exist in the Company analysis of Project Benefits and Mr. Beling provided estimates of suggested adjustments. Mr. Beling provided adjustments for three primary areas: natural gas price, carbon dioxide emission costs, and congestion costs. The Company provided its estimates of Project Benefits stated as NPV levels for the period from 2021 to 2045 that discount future years using a discount rate of 7.22% and Mr. Beling's adjustments are stated as NPV levels using the same discount rate.

Natural Gas Adjustment

The Company estimates of Project Benefits are provided at four future levels of natural gas pricing:

- Base
- High
- Low
- OIEC-PSO-5-8

Mr. Beling provided the estimated Project Benefits at an additional market-based gas price level discussed by Attorney General expert witness Dr. Zhu. Mr. Beling estimated that the Project Benefits at the market-based gas prices would be about $706 million lower on an NPV basis than the Company had projected for the Low gas scenario.

Carbon Regulation Adjustment

All of the Company's estimates for Project Benefits assumed a tax on carbon emissions beginning in 2024. Currently, no legislation or regulations exist that would create such a tax, although future changes in legislation or regulation are possible. The Company used three different levels of carbon prices in its Low, Base, and High gas scenarios, and it used its Low assumptions for the OIEC-PSO-5-8 scenario. Mr. Beling estimated that the impact of removing Company carbon prices in the Low gas scenario would be a reduction to the Project Benefits of about $187 million on an NPV basis.

Congestion Cost Adjustment

Mr. Beling pointed out that congestion is an important issue in this proceeding, both as a component of the Company economic analysis, and also as the Company's justification for construction of the Gen-Tie. The Company estimated a much higher level of future congestion cost in the Generic Wind Case compared to its Project Case. Mr. Beling indicated that the Company made significantly unfavorable and unrealistic assumptions when estimating the future congestion costs of the Generic Wind Case.

To estimate future congestion cost in the Generic Wind Case, the Company included 24 locations in its analysis. The estimated future congestion cost varied drastically among the locations the Company selected; for example, the 2025 estimated average congestion cost was as low as $1.21/MWh and as high as $47.27/MWh. Mr. Beling asserted that, since it is unlikely the Company would pursue a wind resource at such an unfavorable site, the Company has overstated the estimated congestion costs in the Generic Wind Case by including these highly unfavorable locations in its calculation.

Mr. Beling described a more reasonable methodology of estimating congestion costs for the Generic Wind Case by excluding the most unfavorable sites from the calculation. Mr. Beling estimated that by making this adjustment, the estimated future congestion costs could decrease by at least $206 million on an NPV Basis.

Other Issues

Mr. Beling provided a description of two additional issues with the Company analysis of Project Benefits relating to the Company escalation of congestion costs and relating to the Company projections of market prices in the OIEC-PSO-5-8 scenario.

Company Congestion Cost Escalation

First, Mr. Beling identified an issue with the way the Company estimated future congestion costs for the years from 2026 to 2045 that may result in the Company estimates being too high. This type of overestimate would penalize the Generic Wind Case and would artificially inflate the Project Benefits when compared to the Generic Wind Case.

Company Market Price Assumptions in OIEC-PSO-5-8 Scenario

Mr. Beling also identified issues with the forecasted market prices in the OIEC-PSO-5-8 scenario in which the Company assumed market prices too high relative to the gas prices assumed. Mr. Beling provided examples from actual historical market price data in the SPP and demonstrated that even during periods of low gas prices, the relationship between gas price and market price was significantly different from Company projections in the OIEC-PSO-5-8 Scenario. Mr. Beling concludes that the Company's overstatement of these market prices would artificially inflate the estimated Project Benefits in that scenario.

TODD F. BOHRMANN

Mr. Todd F. Bohrmann submitted pre-filed responsive testimony on behalf of Mike Hunter, the Oklahoma Attorney General. He testified as to his educational and professional background. He has previously testified before the Commission. The purpose of his testimony was to demonstrate that PSO has failed to meet its statutory burdens of proof to receive Commission pre-approval with cost recovery for the (Wind Catcher Project or Project) for the following reasons:

Non-Compliance with Commission Rules

Mr. Bohrmann testified that the Company has failed to present a compelling argument for the Commission to grant a "good cause" exception to its failure to comply with the Commission's rule OAC 165:35-38-5(e) that requires a utility seeking pre-approved cost recovery of a new generation facility to either seek approval of its plans before construction starts, or to employ competitive bidding.

The Company chose not to engage in a competitive bidding process. On September 28, 2016, the Company issued an RFP for 100 to 300 MW of Oklahoma wind resources for a 20-year purchased power agreement commencing in 2019 ("2016 Wind RFP"). However, after nearly one year of analysis of bids received and negotiations with a selected bidder, the Company chose to cancel its 2016 Wind RFP. The Company also chose not to approach the Commission for approval of the Wind Catcher Project before starting construction. Instead, PSO embarked on entering a development agreement with an unregulated third party negotiated by affiliate personnel at AEP nearly a year ago. PSO knew construction on the project would begin in 2016, long before it sought preapproval or any kind of waiver of the Commission's rules requiring preconstruction approval. PSO's involvement in the Wind Catcher Project was not publicly disclosed until five days before the filing of the Application in this Cause, and almost eight months after AEP's joint development agreement with Invenergy for the Wind Catcher Project. The policy set out in the Commission's rules shows that because of the path that PSO has chosen -- only now requesting the Commission's approval of a generation project that is well underway -- PSO must wait for a later Commission review. Finally, PSO's claim regarding time constraints related to the Company's ability to maintain the Project's eligibility for full PTCs as the reason for its failure to come to the Commission for Project pre-approval before starting construction, is not justifiable. The Internal Revenue Service will consider a project as having begun for eligibility for full PTCs if the taxpayer pays or incurs at least five percent of the total facility cost prior to the statutory deadline (i.e., January 1, 2017). Therefore, because at least five percent of the Wind Catcher Project cost had been incurred prior to January 1, 2017, the Company could have requested pre-approval from the Commission without jeopardizing PTC benefits. There was no need to wait and request a "good cause" exception to the Company's failure to comply with Commission rules. Based on the foregoing, PSO should not be allowed to proceed with its preapproval case. PSO can proceed with the Wind Catcher Project without preapproval, and then seek Commission approval and cost recovery once the Project is in-service to customers.

No Capacity or Other Need Exists for the Wind Catcher Project

Mr. Bohrmann also testified that the Company has not met its statutory burden of demonstrating a need for the construction or purchase of the generating facility. By its own testimony, the Company is not constructing Wind Catcher Project to satisfy a capacity need. Mr. Bohrmann posited that 17 O.S. §286(C) does not exist to provide preapproval with cost recovery for unnecessary capacity; it requires a determination by the Commission that "there is a need for construction or purchase" of new generation facilities. Because PSO has already stated it cannot meet that requirement, this Cause should be dismissed. The Company has suggested low cost energy and a diverse energy supply as qualifying needs under 17 O.S. §286(C). Mr. Bohrmann indicated that Attorney General's expert witness, Mr. Stover, has projected that the Wind Catcher would create a net cost to ratepayers of $320 million on a NPV basis, compared with a $996 million net benefit as alleged by PSO. Furthermore, regardless of the Commission's decision in this Cause, the share of wind in the SPP – South region should approximately double by 2030, according to projections from the U.S. Energy Information Administration. In short, the Wind Catcher Project cannot be characterized as "low cost" or essential to a diverse energy supply. The failure to meet this threshold statutory requirement to prove a "need" for the Wind Catcher Project in order to attain pre-approval dictates that PSO's Wind Catcher Project should be rejected by the Commission at this time.

Reasonable Alternatives to the Wind Catcher Project Exist

Mr. Bohrmann also testified that the Company has not demonstrated that the Wind Catcher Project is the most cost-effective project among all reasonable alternatives, also required by 17 O.S. §286(C)(1). As explained in further detail from other expert witnesses on behalf of the Attorney

General, the Company did not consider at least three (3) reasonable alternatives to the Wind Catcher Project that not only made far better economic sense, but were superior on issues such as network reliability and compliance with SPP and Commission processes and regulations and public policy goals. The Company fails to meet its burden of proof on this basis as well, and as a result, PSO's Wind Catcher Project should now be rejected by the Commission.

Wind Catcher Project Public Policy Concerns

Mr. Bohrmann testified that the Company cannot demonstrate that the Wind Catcher Project is in the public interest or that it adequately addresses public policy concerns, such as the Project's impact on network reliability, its economic impact on ratepayers, its lack of compliance with SPP regulations or Commission processes and regulations, and its substantial risk/reward imbalance for ratepayers. PSO's Wind Catcher proposals raises several substantive policy concerns. First, Attorney General witness Mr. Cevera testified about the significant reliability concerns with the Gen-Tie Line, if built as proposed. Attorney General witness Mr. Stover testified about the Project's estimated net cost to PSO's ratepayers of $320 million on a NPV basis. Attorney General witness Mr. Cevera testified about the Company circumventing SPP rules on regional transmission planning. Mr. Bohrmann testified about the Company circumventing the Commission's rules through its request for a "good cause" exception to OAC 165:35:38:5(e) for its failure to either engage in a competitive bidding process or seek pre-approval of the Project before starting construction. Finally, Mr. Bohrmann testified regarding the need for the Commission to shift the risks associated with the Wind Catcher Project back towards PSO's shareholders and away from its ratepayers.

Ratepayer Protections

Given the overall size and complexity of the Project, Mr. Bohrmann asserted that, if the Commission should decide to approve PSO's application, the Commission should condition such approval on PSO complying with specific ratepayer protection provisions. These ratepayer protection provisions would include, but not be limited to, the following: 1) When the Company recovers the Project's revenue requirements under the proposed WCECA Rider, the Commission should set, for retail Oklahoma regulatory treatment only, the rate of return on the net book value, including ADIT, of the Wind Catcher Project's assets at the cost of PSO's debt ("Lower rate of return provision"); 2) To the extent that ratepayer benefits on a per-ratepayer basis are materially greater due to concessions granted to SWEPCO ratepayers in any jurisdiction and/or conditions for approval imposed by other regulatory jurisdictions made after the Commission grants its approval, PSO would match such incremental per-ratepayer benefits to its Oklahoma retail ratepayers upon order by the Commission ("Most-Favored-Nation provision" or "MFN provision"); 3) Due to the several unknown and unknowable factors that can impact the project's cost-effectiveness, the Commission should impose a maximum amount of costs associated with the Wind Catcher Project eligible for recovery through base rates or the proposed WCECA Rider ("Hard cap provision"); 4) The Company would be denied recovery to the extent that the project's actual revenue requirements for a given year are greater than the revenue requirements of the Company's base case scenario from this Cause for that year, which assumed no new wind resources for PSO (Base Case (i.e., all gas, no wind) scenario provision"); 5) The Commission would order the Company to create a regulatory liability with an initial balance equal to the present value of the production tax credits as of January 1, 2021. Over the first 25 years of the Project's life, the Company would flow this initial balance in equal installments, with interest, back to the ratepayers ("Fixed Production Tax Credit provision" or "Fixed PTC provision"); and 6) If the Wind Facility goes offline due to an unplanned act of nature or man impacting the Gen-Tie that causes the SPP's loss of load to exceed 0.1 days per year, then the Commission shall hold PSO's retail ratepayers harmless from all replacement fuel and power costs from such action ("Gen-Tie provision). The

Commission should grant all six ratepayer protection provisions to adequately and appropriately shift the risks associated with the construction and operation of the U.S. largest, and the world's second largest, wind farm away from ratepayers and towards shareholders.

Mr. Bohrmann opined that economic conditions in Oklahoma are also a relevant consideration to justify imposing conditions on the Commission's approval of the Project. The Oklahoma economy, specifically the Lawton, Oklahoma, and Tulsa, Oklahoma, metropolitan statistical areas ("MSA"), has been decelerating in recent years from strong growth to very tepid growth since 2012. As households and firms struggle to rebound from recent economic hardship, the Commission should implement measures that will limit the risks that ratepayers would bear associated with the Wind Catcher Project.

PUD

GEOFFREY M. RUSH

On July 31, 2017, PSO filed an Application for approval of the cost recovery of the Wind Catcher and future inclusion in base rates for cost recovery of prudent costs incurred. Along with the Application filed by PSO, Mr. Geoffrey Rush reviewed the testimony and supporting exhibits of Company witnesses Karl R. Bletzacker, Johannes P. Pfeifenberger, Kelly D. Pearce, and Steven L. Fate. In addition, PUD issued data requests and Mr. Rush reviewed the responses to data requests issued by PUD and intervenors in this Cause. Numerous onsite audits were conducted at both the Company's corporate headquarters in Tulsa, Oklahoma, and its division office in Oklahoma City, Oklahoma, where PUD reviewed information deemed confidential by the Company.

After reviewing the information, analysis, and inputs, Mr. Rush is unable to conclude that the Company selected the most reasonable estimates regarding forecasted gas prices, that congestion costs are the most reasonable estimates, or that the Wind Catcher will provide the most benefit to customers. Mr. Rush testified that additional analysis and modeling should be conducted through the SPP Integrated Transmission Planning process to ensure that the Company's forecasted gas prices and congestion costs will provide the most benefit to customers.

JASON C. CHAPLIN

Jason Chaplin is employed by PUD of the Commission as a Coordinator in the Energy Group. Mr. Chaplin filed Responsive Testimony in PSO's Cause No. PUD 201700267 on December 4, 2017, specifically addressing the Company's request in determining whether there is a need for the Wind Catcher , the SPP, and certain items of concern for PUD.

On July 31, 2017, PSO filed an Application for approval of cost recovery for the Project, a determination there is a need for the Project, and approval for future inclusion in base rates the cost recovery of prudent costs incurred by PSO for the Project. Mr. Chaplin reviewed the Application, testimony, sponsored exhibits, workpapers of Company witnesses in this Cause, Commission orders and testimony related to areas in prior causes, and data requests and responses.

PUD recommended the Commission deny the Project for the following reasons:

- Due to the strategic processes PSO followed related to the acquisition of the Project and the Company's resource planning, 600 MW might not be the optimal amount of wind to add in 2021;

- PSO's failure to involve SPP in the planning and analysis of the Project related to: SPP's role as the Regional Transmission Organization, future reliability risk and potential increases in SPP operating reserve costs, and future unknown cost of transmission upgrades; and
- The following items which costs and/or future impacts are unknown and could not be determined:

    - PUD is concerned about the Wind Farm not being placed in service by December 31, 2020, because of the amount of generation in the SPP Generation Interconnection Queue. SPP has to run a new study each time results are posted and a generation unit is removed from the study.
    - PUD is concerned the Gen-Tie could potentially be delayed and not placed in service thereby decreasing Production Tax Credit value to ratepayers. With the early development stage of the Gen-Tie and the fact that the right-of-way has not been acquired, there is a concern with the length of time it would take to acquire right-of-way because the proposed route is often changed due to negotiations with landowners.
    - PUD is concerned about the wind capacity factors and the wind energy production due to the size of the Project. The wind capacity factors, including the energy produced, are yet to be known. Given that the energy produced from the Project is the main component of the ratepayer benefits/saving estimates, the actual performance will affect all aspects of this Project.
    - PUD is concerned with the size of the Project. The need for the Gen-Tie is being driven by the size of the Project. PSO ratepayers would pay $487 million for a transmission upgrade related to 1,400 MW of wind that benefits SWEPCO ratepayers.

For these reasons PUD recommended this Commission deny preapproval of the Project. PUD believes this recommendation is fair, just, reasonable, and in the public interest.

DAVID MELVIN

David Melvin is employed by PUD of the Commission as a Public Utility Regulatory Analyst. Mr. Melvin filed Responsive Testimony in PSO's Cause No. PUD 201700267 on December 4, 2017, specifically addressing the Company's request in the following areas: Plant in Service, Production O&M Expenses, and Tie-Line O&M Expenses.

On July 31, 2017, PSO filed an Application for approval of cost recovery for the Wind Catcher, a determination there is a need for the Project, and approval for future inclusion in base rates cost recovery of prudent costs incurred by PSO for the Project. Mr. Melvin reviewed the Application, testimony, sponsored exhibits, workpapers of Company witnesses in this Cause, Commission orders and testimony related to areas in prior causes, and data requests and responses.

After reviewing the Application, schedules, and data responses, attending onsite audits, and performing research on other wind farms and national averages, PUD believes the construction costs of the Wind Catcher and Gen-Tie construction are reasonable, but may not be the lowest reasonable costs because PSO and SWEPCO did not competitively bid the projects. PUD believes the O&M costs for both the Wind Catcher and the Gen-Tie facilities are understated, and may not be the lowest reasonable costs, because PSO and SWEPCO did not competitively bid the O&M functions for either facility. Mr. Melvin testified that unless PSO can guarantee the construction costs and O&M expenses, PUD cannot

recommend the Commission accept the Plant in Service or O&M expenses for the Wind Catcher and Gen-Tie facilities.

PUD believes this recommendation is fair, just, reasonable, and in the public interest.

KATHY CHAMPION

Kathy Champion is employed by PUD of the Commission as a Public Utility Regulatory Analyst. Ms. Champion filed Responsive Testimony on December 4, 2017, in PSO's Cause No. PUD 201700267, specifically addressing the Company's request to recover costs through a temporary rider, the treatment of PTCs, and off-system sales.

Ms. Champion reviewed the Application, testimony, sponsored exhibits, and workpapers of Company witnesses in this Cause, Commission orders, and testimony related to areas in prior causes, and data requests and responses.

Ms. Champion recommended the Commission deny the recovery of the Project costs through a rider. If the Commission should approve rider recovery, Ms. Champion requested the Commission add to the rider an expiration date of December 31, 2023, limit rider recovery to booked costs subject to the guarantees and caps of PUD witness Frank Mossburg, and change the allocation of costs through the use of a blended energy/demand allocator. Ms. Champion also recommended that the Company's proposal to defer part of the PTCs to extend the benefit to customers in the later years of the Project be approved but that the PTCs be recovered through base rates. Finally, Ms. Champion recommended that PSO receive no off-system sales credits for the Project and that 100% of the off-system sales credits be provided to customers as an offset to costs.

Ms. Champion believes that the recommendations are fair, just, reasonable, and in the public interest.

FRANK MOSSBURG

The purpose of Mr. Frank Mossburg's testimony is to present his review of PSO's Application to construct the proposed Wind Catcher, including both the Wind Catcher Facility ("wind farm") and the transmission line – the Gen-Tie line – which will deliver power from the facility.

Broadly speaking, the Project represents a massive investment in wind generation. The Project will consist of a 2,000 MW wind farm costing $2.9 billion, the largest wind farm in the United States. The wind farm will be paired with a 350- to 380-mile, 765 kV "Gen-Tie" line, the only 765 kV line in the SPP, which will cost $1.6 billion and is expected to span a large part of the State of Oklahoma. All told, this is a $4.5 billion investment and PSO ratepayers will be asked to pay over $1.4 billion. The Project is projected to increase PSO's rate base by 68.2%.[3]

The size and scope of the Project bring unique risks. The Project is actually two mega-projects in one – the largest wind farm in the United States and the first 765 kV transmission line in SPP – and both must be fully functional in order to deliver promised benefits to ratepayers. The cost and regulation of the Project is spread out over several jurisdictions, raising issues of subsidization and the risk of a default in one jurisdiction leading to additional cost burdens for other jurisdictions.

[3] PSO Response to data request JCN 2-1.

The goal of the Project is almost entirely to lower costs to ratepayers, not to keep the lights on. The Project is therefore driven by an "economic" need, not a "reliability" need. PSO projects rate reductions of 1.07% to 2.65% for a typical residential customer in the first three years of the Project's operating life.[4]

The Project makes at least four big bets on the future: (i) that the wind farm can fully qualify for the expiring Federal PTC, (ii) that congestion and curtailment costs associated with third-party wind projects will continue to grow and persist, making the hedge provided by the Gen-Tie line valuable, (iii) that market prices will be driven by increasing costs for natural gas and significant decreases in new renewable construction, resulting in savings to ratepayers from this Project, and (iv) that AEP and its counterparties can deliver the entire Project with the price and performance promised.

PSO asks that the Commission determine that there "is a need for low-cost energy delivered into the Tulsa area that can be satisfied by the Project."[5] In addition, among other things, PSO seeks waiver of the Commission's Electric Utility Rules under the Oklahoma Code.[6] PSO states that it did not conduct a competitive procurement to choose the Project, stating that "an RFP would not result in any more favorable alternatives and, thus, would not be in the best interest of customers."[7]

Accordingly, Mr. Mossburg divided his review into two parts. First, he assessed the need for an additional 600 MW of wind-generated power for PSO's ratepayers. Second, he assessed the proposed transactions as compared to what might be obtained from the competitive market.

Mr. Mossburg made the following conclusions: (i) PSO's analysis shows that adding wind to its portfolio could lower costs for ratepayers relative to its "Baseline Case," but contains assumptions regarding future gas prices and wind additions that may overstate the benefits of new renewable supply. Just by using gas prices more reflective of current market conditions PSO's projected benefits drop from between $784 million and $1.2 billion to between $107 million and $784 million on a net present value basis; (ii) PSO's analysis fails to adequately address broader strategic planning issues including changes in the cost of resource options, changes in the planning environment, and alternative investments to solve the issues raised, such as SPP-sponsored transmission projects; (iii) by assuming competitive supply would come from two dozen developments scattered throughout SPP and that no action would be taken to address congestion costs, PSO's "Generic Wind" case fails to accurately reflect the results and methods of PSO's own competitive procurements and fails to justify a waiver of Oklahoma's competitive bidding guidelines; (iv) PSO's own analysis of bids in its 2016 Wind RFP demonstrates that comparable or better offers were available from competitive procurement and that the Project would charge a considerable premium to avoid congestion and curtailment costs; (v) approving the Project now could harm the competitive market by allowing Oklahoma utilities to avoid competitive bidding requirements by proposing multi-jurisdictional mega-projects and by granting PSO an undue advantage in future procurements via control over a pre-paid method to avoid congestion costs – an advantage which may be subject to challenges at the FERC; and (vi) the Project contains risks that are not present in typical third-party wind power purchase agreements such as the risk of construction and O&M cost overruns and asset underperformance. While the MIPA and Gen-Tie Agreement contain several good protections for ratepayers to help manage these risks, the Project still presents risky elements, including: the risk of cost overruns on (or complete failure of) the Gen-Tie

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[4] Direct Testimony of John O. Aaron for PSO, July 31, 2017, (Aaron Direct), page 7, lines 1 to 6.
[5] Direct Testimony of Paul Chodak for PSO, July 31, 2017, (Chodak Direct), page 10, lines 7 to 8.
[6] PSO specifically requests a waiver of OAC 165:35-38-5(e). *See* Direct Testimony of Steven L. Fate for PSO, July 31, 2017, (Fate Direct), page 5, lines 15 to 16.
[7] Fate Direct, page 12, lines 7 to 9.

line, the failure of the Project to qualify for the full PTC, and risk of non-performance by other AEP companies.

Mr. Mossburg made the following recommendations: (i) the Commission should not grant PSO's request because PSO has not shown that acquiring 600 MW of additional wind is a reasonable procurement strategy and has not justified a waiver from competitive bidding requirements; (ii) if PSO wishes to establish the reasonableness of its strategy, it should conduct additional analysis of the benefits of new wind generation with more market-reflective gas prices and new wind entry assumptions. PSO's analysis should also address strategic planning issues by looking at additional alternatives, including alternative transmission investments; (iii) if and when the Commission believes that PSO has demonstrated that acquiring 600 MW of wind generated power is a reasonable path forward, PSO should conduct a competitive procurement to test the Project against market alternatives; and (iv) if and when the Commission approves the Project, PSO should be required to provide additional risk protections for ratepayers in the form of guarantees regarding project cost, full PTC viability, and other items.

WAL-MART

STEVE W. CHRISS

Steve W. Chriss, Director, Energy and Strategy Analysis, with Wal-Mart filed responsive testimony on behalf of Wal-Mart Wal-Mart operates 136 retail units and two distribution centers, and employs over 33,335 associates in the State of Oklahoma. In the fiscal year ending 2017, Wal-Mart purchased $775.5 million worth of goods and services from Oklahoma-based suppliers, supporting 22,604 supplier jobs. Wal-Mart has 49 stores, a distribution center and additional related facilities that take electric service from PSO, primarily on the Large Power and Light Primary Service schedule ("LPL SL3").

Wal-Mart appreciates the Company's efforts to increase the level of renewable generation on its system, and does not oppose the proposed acquisition of the Wind Catcher Facility and construction of the Wind Catcher Generation Tie Line (collectively "the Project"). Due to the unique nature of the transactions and the requested regulatory treatments, however, Mr. Chriss' testimony made several recommendations:

1) For the purposes of this Cause only, Wal-Mart does not oppose the Wind Catcher Energy Connection Asset Rider ("WCECA"), subject to certain conditions:

    a) PSO should be required to file a base rate case as soon as the assets can be included in an historical test year; and
    b) PSO should be required to guarantee the projected revenue requirement reductions of $27.42 million, $44.52 million, and $53.18 million for the years 2021, 2022, and 2023, respectively, to recognize the shift in risk from the Company's shareholders to its ratepayers.

2) If the proposed WCECA is approved, during the period of recovery through the WCECA:

    a) The Project's costs should be allocated among customer classes based on the most recently approved production demand allocator; and

b) The Company's proposal to charge demand-metered classes a $/kWh energy charge should be rejected. Instead, demand-metered classes should be charged a $/kW demand charge.

CLEAN LINE

MARIO HURTADO

INTRODUCTION

On December 4, 2017, Mario Hurtado filed Responsive Testimony on behalf of Plains and Eastern. Mr. Hurtado is employed by Clean Line Energy Partners LLC ("Clean Line") as Executive Vice President and is a co-founder of the company. He also serves as the lead project developer of the Plains and Eastern Clean Line transmission project ("Plains & Eastern Project" or the "Project"). Clean Line is the ultimate parent company of Plains and Eastern, the Intervenor in this proceeding.

For the past eight and a half years, Mr. Hurtado has been responsible for managing all aspects of development of the Plains & Eastern Project, including public outreach, siting, regulatory and environmental permitting, and technical studies. He is ultimately responsible for project budget and schedule. He oversees the efforts of the project development team and functional specialists in legal, financial, environmental, and technical groups, and makes sure that they are aligned towards achieving the Project's objectives. As part of his role, he engages often with local officials, community representatives, landowners, transmission planners and engineers, and other stakeholders in the Project's area.

Mr. Hurtado received his Bachelor of Arts from Columbia University with a major in Political Science. For over twenty years he has developed and managed power plants and other energy infrastructure in the electric power and natural gas industries. He headed all development and operations in Central America and the Caribbean for Globeleq, a successful power developer and operator focused on the emerging markets. While at Globeleq, he oversaw the acquisition and development of thermal and renewable electric generating plants and managed a portfolio of traditional and renewable electric generating plants. As an executive at Reliant Energy and Duke Energy, he led corporate transactions teams and managed commercial issues involving large electric and natural gas utilities and generating plants. While at Duke Energy, he worked on the completion and commercialization of the McClain Energy Facility in Oklahoma, a 500 MW combined cycle natural gas generating plant currently owned by OG&E and OMPA. He has also worked in the development of liquefied natural gas terminals in the United States and Europe.

PSO's Wind Catcher proceeding concerns the development of long-haul electric transmission infrastructure to deliver new wind generation from the Oklahoma Panhandle region to load centers to the east. He stated that Clean Line has spent more than eight years focused on a very similar goal. Mr. Hurtado's responsive testimony provides an update on the Plains & Eastern Project's progress. The development of the Plains & Eastern Project is virtually complete. Given Plains and Eastern's extensive experience developing high-voltage transmission to accommodate the build-out of renewable energy in Oklahoma, Plains and Eastern believes it is important to participate in the Wind Catcher proceeding.

Furthermore, the Plains and Eastern team has received many questions from landowners and other stakeholders in Oklahoma about the Wind Catcher project. The team has been asked if Plains and Eastern can be involved or assist in the Wind Catcher project given that Plains and Eastern has a

construction-ready, long-haul transmission project that runs from the Oklahoma Panhandle to the east and has acquired easements on more than 750 parcels in Oklahoma. After being approached by representatives of PSO, Oklahoma landowners have asked the Plains and Eastern team if they should work with PSO even though they have already signed an easement with Plains and Eastern.

Mr. Hurtado stated that he was testifying to convey two key points to the Commission, PSO, and the other parties in the proceeding: (1) the Plains & Eastern Project is primed to begin construction in 2018, and (2) the Plains & Eastern Project is available to deliver power to interconnection points in eastern Oklahoma for PSO or other load serving entities in the region. Plains and Eastern believes that the Plains & Eastern Project can be extremely helpful for PSO to accomplish the laudable objectives of the Wind Catcher project.

The power markets have evolved substantially since Plains and Eastern received its order from this Commission in the past eight years and eastern Oklahoma is now a strong delivery point for the Plains & Eastern Project. The Project could be utilized to accommodate high-voltage either direct current ("HVDC") and alternating current ("AC") transmission solutions to accomplish this interconnection in eastern Oklahoma and Plains and Eastern is willing to engage to consider either option. Mr. Hurtado stated that he would explain that Plains and Eastern is open to building a first phase of the Project that is located solely in Oklahoma. Finally, Mr. Hurtado stated that he would describe why using the Plains & Eastern Project would greatly benefit ratepayers and consumers in Oklahoma as compared to other solutions.

As detailed in Mr. Hurtado's testimony, it is Clean Line's position that the Plains & Eastern Project could and should be utilized by PSO to deliver energy from the panhandle to load centers in eastern Oklahoma, as it would reduce risk from a development and scheduling perspective, and would achieve savings for Oklahoma ratepayers.

Clean Line is supportive of wind energy and transmission development in Oklahoma, and Clean Line is very supportive of the objectives enunciated by PSO in its Application and as highlighted in the testimony of Paul Chodak. Oklahoma is highly advantaged in being the home to vast resources of low-cost renewable energy. Specifically, the Oklahoma Panhandle is home to a highly competitive environment where multiple wind generators have worked for years with landowners and others to make available the cheapest source of energy for consumers. Construction of wind farms in the Oklahoma Panhandle and delivery to PSO's customers provide a number of benefits:

- Wind farm investments provide years of financial support for Oklahoma farmers, ranchers, landowners, school districts and communities.
- Purchasing wind energy at costs below market power prices to lower customer bills and hedge against future fuel cost increases is both economically advantageous and prudent.
- Customers of PSO and other utilities are demanding greater amounts of cleaner, renewable energy. Many leading commercial and industrial companies have set ambitious goals for sustainability and will only locate new facilities where they are guaranteed sources of low-cost, 100% renewable energy. Consequently, greater supply of lower-cost renewable energy resources will enable economic development.
- Finally, current U.S. tax policy, through the phase-out of the wind production tax credit, provides a unique but time-sensitive opportunity to satisfy demand for renewable energy at the lowest possible cost.

Nonetheless, as PSO's Robert Bradish notes in his testimony, without additional transmission infrastructure, these benefits cannot be fully realized for PSO's customers or other Oklahomans. Congestion costs in the SPP have grown dramatically, and they will continue to grow as more wind farms are installed. SPP has no plans to build new transmission lines in the next decade, making independent transmission necessary to enable large amounts of new wind farms to be built in the Oklahoma Panhandle.

As a company focused on providing transmission solutions to connect renewable generation sources to communities that have a need for low-cost renewable power, Clean Line wants to ensure that new transmission that is developed to unlock these wind resources is done responsibly, and with the public interest in mind. The manner in which Oklahoma builds out the grid to accommodate renewables will have a lasting impact on the future of energy prices and energy security in Oklahoma and around the nation. Utilizing the progress made by the Plains & Eastern Project to deliver Oklahoma Panhandle wind resources to interconnection points in eastern Oklahoma will lower the risks markedly of cost overruns and schedule delays, and hence increase the benefits for ratepayers and the Oklahoma public.

PLAINS AND EASTERN CLEAN LINE OKLAHOMA LLC

Plains and Eastern, an Oklahoma limited liability company, was designated as a transmission only public utility in Cause No. PUD 201000075, Order No. 590530. As a transmission only public utility, Plains and Eastern is developing the Plains & Eastern Project.

Since receiving public utility status in Oklahoma, Plains and Eastern has pursued the development activities that will allow it to construct, own, and operate electric transmission in the state. As discussed in more detail below, Plains and Eastern engaged in a multi-year, stakeholder driven siting process for the Project that culminated in a well-vetted, approved route in Oklahoma. Plains and Eastern has also secured all key regulatory approvals necessary for construction on that route. TheDOE served as the lead federal agency in a multi-year environmental review process that culminated in a Final Environmental Impact Statement ("EIS") under the National Environmental Policy Act ("NEPA"). Plains and Eastern has obtained the environmental permits from the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service necessary to commence construction of the Project. Plains and Eastern has also worked closely with tribes in Oklahoma to avoid impacts on cultural resources.

To date, Plains and Eastern has acquired nearly sixty percent of the required easements in Oklahoma—more than 750 parcels—and easement acquisition continues in the state. Plains and Eastern carried out environmental surveys for biological, aquatic and cultural resources on a majority of the route in Oklahoma. And the company completed major engineering activities, including preliminary geotechnical studies, structure design and testing, and technical studies to firm up interconnection and construction costs and schedule. Completion of this pre-construction work provides for a high degree of certainty around project cost and schedule. Plains and Eastern is the most advanced project for new transmission to deliver wind from the Oklahoma Panhandle.

In the Oklahoma Panhandle, there is a widely undifferentiated, high-quality wind resource where multiple companies have signed leases with landowners and stand poised to build new wind generation projects at a low cost. In a 2013 Request for Information, Clean Line documented more than 11,000 MW of projects. The large majority of these projects have not yet come on-line due to the lack of available transmission.

Clean Line received an overwhelming response to its 2014 open solicitation process for transmission capacity. Fifteen potential customers submitted 29 service requests totaling 17,091 MW of transmission service, or 392% of the project's total 4,355 MW of West-East transfer capacity.

Mr. Hurtado believes that the Plains & Eastern Project is the most studied transmission line project in Oklahoma. Since the Project was started, Plains and Eastern has focused on how best to connect wind farms in the Panhandle and how to find the best route to transport that power to the eastern part of the state and beyond. Plains and Eastern engaged in a lengthy and thorough multi-step process spanning more than five years to identify the location of the Project right-of-way and other facilities. Many Oklahoma agencies and organizations provided input during the Plains & Eastern routing process through pre-permitting meetings. Plains and Eastern also met with landowners and other stakeholders during several rounds of meetings to gather geo-specific information about local areas and potential siting opportunities. This information was used to modify and refine possible routes for the transmission line and to create alternatives that would reduce impacts on key community and landowner resources.

Plains and Eastern used geographic information systems models and other tools to analyze and compare alternative routes using over 70 siting criteria. Plains and Eastern convened a multi-disciplinary team of subject matter experts in engineering, environmental science, land use, and other disciplines to review the model outputs and stakeholder comments, and identify the proposed route. The DOE independently analyzed the proposed route and several alternative routes in its EIS and ultimately approved a preferred route through its Record of Decision. Based on engineering and environmental studies that included input from the public as well as from local, state, and federal agencies, the selected route meets the goals of the Project while best minimizing overall impacts.

Following the finalization of the approved route from DOE and the release of the EIS, Clean Line has worked with landowners to make dozens of modifications to the route (micro-siting) where technically feasible and reasonable. These adjustments include consideration of routes along or parallel to existing divisions of land (e.g., roads, transmission lines, and pipelines) with the intent of reducing the impact of the right-of-way on private properties. In summary, the proper development of a transmission route is a lengthy process that should not be rushed. The Plains & Eastern Project took on these tasks for more than five years and is truly construction-ready.

Stakeholder outreach is the foundation of the development process for the Project. Engaging all stakeholders – landowners, local businesses, public officials and conservation groups – to gather feedback is paramount to Plains and Eastern's success in Oklahoma. Plains and Eastern engages with stakeholders directly in person and through direct mail, phone calls, a detailed website and a 1-800 number available 24 hours a day. During the NEPA review of the Project, Plains and Eastern delivered more than 4,000 letters to Oklahoma landowners with an interest in property along the proposed route, alternative routes and route study areas, and met with over a thousand Oklahoma stakeholders. Most importantly, Plains and Eastern has had thousands of one-on-one meetings between Plains and Eastern representatives and individual Oklahomans. Plains and Eastern held dozens of public meetings to introduce the Project, present and receive feedback on the route, and seek information from Oklahoma businesses to assist with development, construction and maintenance of the Project.

Plains and Eastern also engaged early and repeatedly with Oklahoma-based agencies and organizations who provided input on the Project's routing process. These agencies and organizations include:

- Oklahoma Conservation Commission

- Oklahoma Department of Environmental Quality
- Oklahoma Department of Transportation
- Oklahoma Department of Wildlife Conservation
- Oklahoma Tourism and Recreation Department
- U.S. Environmental Protection Agency (Region 6)
- U.S. Fish and Wildlife Service (Sequoyah National Wildlife Refuge [NWR], Deep Fork NWR, Ozark Plateau NWR, OK Ecological Services Field Office)
- U.S. Department of Agriculture Natural Resources Conservation Service
- Oklahoma Association of Conservation Districts
- National Wildlife Federation
- The Nature Conservancy
- Land Legacy
- Sierra Club

As a result of this outreach and consultation, Plains and Eastern was able to incorporate specific input from stakeholders to inform construction methods, agricultural mitigation and financial compensation into final plans and processes for development, construction and operation.

Plains and Eastern's efforts to work with landowners began around the time the company sought formal recognition as a public utility in 2010. Plains and Eastern's careful and open approach to landowner interaction and easement acquisition established the company as a solid partner and good neighbor in Oklahoma. Through discussions during the Commission process and through additional consultation with landowners, Clean Line developed and presented to Oklahoma landowners a compensation package comprised of three components:

1. An easement payment valued at 100% of the fair market value of the land within the easement area;
2. Payment for each transmission structure located on a landowner's property, which will be paid as a one-time payment or annually at the landowner's selection; and
3. Payment for damages, if any, including compensation for marketable timber, lost crops, and other damages specific to a property and its use.

Plains and Eastern conducts landowner communications in a transparent and open manner that seeks to foster direct and productive negotiation and respect for private property rights. Following the approval of the Project's route by DOE, Plains and Eastern engaged two Oklahoma right-of-way services companies to begin in earnest the right-of-way acquisition activities. Clean Line estimates that the Project will make payments valued at over $35 million to Oklahoma landowners who grant easements for the transmission line. Many landowners are exercising their option to receive annual payments as part of the compensation package and will receive these payments every year, escalating at 2% annually, for the life of the Project. Plains and Eastern has acquired easements on more than 750 parcels for the Project in Oklahoma, or nearly 60% of the right-of-way in the state. Plains and Eastern has had more than 4,300 in person meetings with Oklahoma landowners and has logged more than 15,000 phone conversations. Many landowner conversations are on-going, and Plains and Eastern is highly confident that all right-of-way necessary to start construction could be completed in time to allow for construction to start in 2018 and an on-line date in 2020.

The Project was subject to a thorough environmental review, resulting in selection of the route. DOE served as the lead agency on a NEPA review process over the course of more than three years that developed an approximately 100,000-page administrative record, including an EIS that was released in

November 2015. Additionally, the U.S. Fish and Wildlife Service issued a Biological Opinion for the Project on November 20, 2015, and Plains and Eastern executed the Programmatic Agreement with several state and federal agencies on December 12, 2015. These two documents fully contemplate potential impacts to listed threatened or endangered species and cultural resources, respectively. Following selection of the route, Clean Line deployed dozens of teams of biologists and cultural resource specialists to conduct field surveys, including tribal monitors in designated areas of the state to oversee some of the cultural resource survey work. A majority of the Project's right-of-way has been surveyed for biological, aquatic and cultural resources, and Plains and Eastern has secured all necessary environmental permits for construction. Permitting and environmental issues on other transmission projects have caused delays and cost increases. Those risks are largely mitigated for the Plains & Eastern Project.

Plains and Eastern has completed significant engineering and design work necessary for construction of the Project, some of which could not be initiated until a final route was identified. For example, a construction access plan designating existing and new roads necessary for the construction crews and equipment to reach the ROW cannot be properly developed until a final route is ascertained.

Plains and Eastern has worked closely with Quanta Services and Power Engineers for several years on route review and construction planning for the Plains & Eastern Project. The focus of this work has been to develop a route that minimizes construction and engineering challenges while also reducing impacts to landowners' existing land uses and to the existing environmental and cultural resources along the route. Engineering and design work for major equipment, including transmission structures and conductors, has been completed. Additionally Plains and Eastern has completed extensive construction plans, including structure spotting, as well as construction and operations access.

Plains and Eastern worked with GE Energy Connections ("GE") as the provider of the HVDC converter stations in Oklahoma, Arkansas, and Tennessee. GE completed preliminary engineering design work for all converter stations including: site layout, single line diagrams, noise studies, site preparation plans, site specific geotechnical investigations, transformer specifications, and valve hall and control building specifications and layout.

Plains and Eastern has conducted preliminary geotechnical investigations in several locations in Oklahoma as well as an extensive review of existing geotechnical data for areas along the approved route. This work will expedite the construction process and reduce risk. Notably, much of the transmission line engineering work completed to date will work not only for HVDC technology, but also can used for an AC transmission alternative.

FUTURE PLANS FOR OKLAHOMA

The Plains & Eastern Project has an approved final route for a transmission line in Oklahoma that has been thoroughly studied and vetted by Plains and Eastern, several outside parties, and the public. The route has been surveyed for biological, aquatic and cultural resources and a majority of the necessary easements have been acquired and even more are being acquired today. The significant environmental review and engineering work that has been completed on the Project provides for a level of schedule and cost certainty that no other proposed transmission solution in Oklahoma can come close to claiming. Plains and Eastern continues to advance discussions with several potential customers and construction could begin very shortly after firming up these necessary commercial agreements.

Until recently, commercial discussions centered around the Project's proposed delivery stations in Arkansas and Tennessee. However, the market has seen significant changes as more wind energy

has been built in the western SPP region well-ahead of new transmission line construction, resulting in increased congestion costs. Utilities in Oklahoma, such as PSO, have expressed a desire for large amounts of renewable energy from the best wind resources, which tend to be in areas that are already transmission-constrained. Plains and Eastern is focused on meeting the demands of the market, and thus is now prepared to include an interconnection point that would allow for delivery to eastern Oklahoma load and other loads in SPP. If there is a demand for Oklahoma Panhandle wind in eastern Oklahoma, the Project's first phase could be built solely in Oklahoma. Subsequent phases could be built at a later date if market demands warranted such action. This type of transmission build-out is not uncommon in the U.S. grid, where an initial link is built, and that link is upgraded or extended at a later date. In short, Plains and Eastern is proposing that the Project can be utilized by PSO to deliver wind power from the Panhandle to the PSO system.

While Plains and Eastern's efforts have been focused on HVDC transmission, other technical solutions could be constructed in the Project's right-of-way, such as 345kV AC or 765kV AC. All of these high-voltage transmission technologies are feasible in the right-of-way that Plains and Eastern has developed, surveyed, permitted and acquired in Oklahoma. Plains and Eastern's easements generally allow for a right-of-way up to 200 feet wide and would allow for use of AC or DC technologies and differing voltage levels. Plains and Eastern is open to modifying the Project to a different technology or voltage level if it offers the best value to customers. It is important to note that use of DC technology offers the option of greater power transfer—at a voltage of ±600 kV, the Project could deliver about 4000 MW, or double the proposed capacity of the AEP-PSO proposed Gen-Tie. This is an important consideration given the great potential for wind generation in the Panhandle and the probable demand from other utilities and customers. Doubling the line's capacity would in turn greatly increase the potential economic impact in the Panhandle region by enabling the construction of additional wind farms.

The Project begins near Wind Catcher's generation position in the Panhandle and the route runs within 50 miles of PSO's Tulsa North substation, the proposed interconnection point for the Wind Catcher line. Plains and Eastern already designated a transmission corridor to the Wind Catcher wind facility. This corridor was studied in the routing process and approved in the environmental review described previously. In eastern Oklahoma, there are also other potential interconnection points in PSO's service territory that are even closer to the Plains & Eastern Project's route than the Tulsa North substation and could be utilized to serve PSO load and other loads. A map of the Plains & Eastern Project in Oklahoma in relation to the PSO transmission system is attached as Exhibit "A."

Development work completed on the Plains & Eastern Project provides for cost and schedule certainty for a transmission line running from the Oklahoma Panhandle to the eastern part of the state. One of the largest challenges in developing long-distance electric transmission is the sheer number of people involved – thousands of landowners and hundreds of other Oklahoma stakeholders. Because of this, it must be done methodically and with care for those along the line. The quality of the work undertaken during development of the project can determine the timing of and methods used in construction as well as the type and magnitude of impacts. Until a route is determined and substantial progress is made in securing that route, many questions remain unanswered about the design and ultimate construction of a transmission line. Only very rough cost and schedule estimates can be made before the route is known, studied and permitted. As Andrew Rawlins testified, without a route there is no price or schedule certainty. Once a route is in hand, decisions can be made about the location of transmission structures and the plans for mobilizing crews to execute the work can be completed. Uncertainty over route conditions drive risk that activities could take longer than estimated. If a project begins to run behind schedule, costs can escalate very quickly.

It is no secret in the transmission industry that projects are often delayed and take much longer than originally anticipated. Plains and Eastern has a finalized route that is permitted and has secured approximately 60% of the necessary easements. To Mr. Hurtado's knowledge, the Wind Catcher project only has conceptual corridors, little to no survey work completed, only initial landowner interaction, and little or no easements acquired. With only this initial level of development work completed, there is no way to provide more than an estimated cost or schedule based on comparable data, not a bankable budget and firm schedule. Delays will only increase costs. As PSO notes in its testimony, schedule delays could jeopardize the size of the benefit to ratepayers from the production tax credit and even the applicability of the tax credit in its entirety. The Plains & Eastern Project could substantially mitigate the cost and schedule risks for Wind Catcher.

In general, Plains and Eastern is open to discussing the best commercial and technical implementation model that will accomplish the lowest risk and cost for customers. Plains and Eastern is open to PSO or other utilities's customers owning all or a portion of the transmission line, commensurate with their transmission needs. In addition, Plains and Eastern is open to PSO or other utilities managing part or all of the Plains & Eastern Project's construction.

Fundamentally, Plains and Eastern believes that the Wind Catcher proposal is a good idea. AEP-PSO building and owning a transmission line that directly delivers some of the world's cheapest renewable energy to PSO's customers offers many benefits. However, it only makes sense to use the eight plus years of progress already made by Plains & Eastern.

BENEFITS TO OKLAHOMA FROM USING PLAINS & EASTERN PROJECT TO DELIVER OKLAHOMA PANHANDLE WIND TO EASTERN OKLAHOMA

In addition to the market-leading compensation package detailed earlier in this testimony, Oklahoma landowners benefit from certainty of the route developed by Plains and Eastern. Not only was the route developed with significant landowner input, but information on the location and characteristics of the Project and landowner compensation have been public in Oklahoma for more than three years. Through concerted work over several years, Plains and Eastern has been able to address key issues, such as the opportunity for landowners to receive annual payments, and the ability to make route adjustments to minimize impacts to landowners, without the limitations imposed by an expedited and compressed schedule. Plains and Eastern representatives have sustained a dialogue with Oklahoma landowners over an extended period of time.

Many Oklahoma landowners will also receive the benefit of lower rates through receiving the state's lowest cost energy source – wind from the Panhandle delivered by the Project. Further, the Project can assure that Oklahomans receive the benefit of a 100% of the value of the federal production tax credit.

Plains and Eastern believes that energy infrastructure should benefit not only energy consumers but also local communities that host infrastructure projects. The Plains & Eastern Project and the wind farms it will enable will produce substantial economic benefits for Oklahoma. A substantial portion of these benefits will accrue at the local level, in and around the communities where the transmission line and other facilities will be located. The Project is expected to contribute more than more than $300 million in ad valorem taxes to local communities over the first 25 years of operation. Most of these funds will support education.

The Project's $1 billion direct investment in Oklahoma will create thousands of jobs during construction and a $1.9 billion economic impact on the Oklahoma economy according to a 2017 study

performed by Dr. Kyle Dean and Dr. Russell Evans of Economic Impact Group and released through Oklahoma City University. The new energy investments in the Oklahoma Panhandle region, will themselves result in a significant increase in ad valorem tax taxes, landowner payments, and direct economic benefits to rural communities in the state. Based on research done by Dr. Shannon Ferrell of Oklahoma State University, at the current wind capacity in Oklahoma, royalties from wind generators to landowners in Oklahoma are estimated to total nearly $34 million annually. Each new wind turbine could add approximately $10,000 per year in royalties to landowners. Oklahoma wind farms are forecasted to pay approximately $1 billion in ad valorem taxes through 2043. These tax revenues from wind energy could take schools in the Oklahoma Panhandle completely off of school formula funding, allowing funds to go back to the state and ultimately support schools across Oklahoma. Additionally, the economic impact from operations and maintenance for the Project will result in another $34 million impact annually and support more than 100 jobs in Oklahoma.

SUMMARY

The Plains & Eastern Project will provide PSO with the use of a finalized and permitted route that has undergone extensive landowner scrutiny and on which easements for more than 750 parcels have been obtained. The Project can give PSO much greater schedule and cost certainty and will result in lower costs for Oklahoma ratepayers with less disruption to landowners along the route. Wind Catcher and the Plains & Eastern Project together can take advantage of seven-plus years of transmission line development while accomplishing the goal of delivering affordable wind energy to eastern Oklahoma and allowing the state to take advantage of several billion dollars of energy investment.

ANDREW RAWLINS

INTRODUCTION

Andrew Rawlins filed Responsive Testimony on behalf of Plains and Eastern Clean Line Oklahoma LLC ("Plains and Eastern") on December 4, 2017. Mr. Rawlins owns a private consulting firm, Rawlins Transmission Consulting, through which he provides transmission line consulting services to electric utilities and private developers. He graduated from Purdue University with a Bachelor's of Science Degree in Civil Engineering and is a Professional Engineer. He testified that he has 39 years of experience in the electric utility business: five years at the Bureau of Reclamation, six years onsite at Western Area Power Administration's ("WAPA") headquarters with two consulting firms as a project engineer, 18 years with Black & Veatch (a global engineering, procurement, and construction firm) as a project engineer and a project manager, and 10 years as a private consultant working primarily with Black & Veatch. In addition to design experience, he has extensive experience in developing schedules, cost estimates and construction specifications for transmission lines. His experience includes these activities for high voltage projects including AC (345 and 500 kV) and DC lines (+/- 400, 500 and 600 kV). He has testified before the Arizona Power Plant and Transmission Line Siting Committee in Docket No. L-00000AAA-16-0370-00173, Case No. 173, concerning Southline's Application for Certificate of Environmental Compatibility. He testified before the New Mexico Public Regulation Commission in Case No. 17-00040-UT, concerning Southline's Application for Approval of Transmission Facilities. I has also testified before the Colorado Public Utilities Commission in the Docket No. 03A-192E.

Mr. Rawlins stated that the purpose of his testimony was first to provide his view of the status of Plains and Eastern's development work on their transmission project running east from the Oklahoma Panhandle. He then would review the development work to date and cost estimate of Wind

Catcher's proposed transmission line and highlight how using the Plains and Eastern project as the Wind Catcher transmission link could mitigate some of the risk of cost overruns. He stated he would review the proposed schedule of the development and construction of the Wind Catcher transmission line and describe how using the Plains and Eastern project would mitigate schedule risk and make it much more likely that the project comes on-line on time. Finally, he stated he would describe how the Plains and Eastern project could be utilized to deliver power to PSO's service territory in eastern Oklahoma.

ANALYSIS OF PLAINS AND EASTERN'S DEVELOPMENT WORK

Mr. Rawlins stated that the development of the project is essentially complete. Plains and Eastern went through the full NEPA (National Environmental Policy Act) process to determine the best route based primarily on environmental factors and stakeholder concerns. They obtained public input at various stages of the multi-year process via a series of public meetings. During and since that process was completed, Plains and Eastern held thousands of meetings with landowners resulting in routing adjustments to help alleviate landowner concerns. Key environmental permits have been obtained so that the route can be considered fully developed, permitted and approved.

Pre-construction activities are well along for the potential first phase of the project that extends from the Oklahoma panhandle to the Tulsa area. Approximately 60% of the right-of-way("ROW") easements have been obtained and access road plans have been developed. Environmental field surveys have been completed on the majority of the route. Plains and Eastern has completed most of the structure design required and has performed structure spotting along the alignment and several geotechnical investigations and studies. Interconnection studies have been completed and Plains and Eastern has agreements with several Oklahoma businesses to provide goods and services for the project.

Mr. Rawlins stated that several major activities can wreak havoc on a schedule, including acquiring enough right-of-way to begin construction, environmental permitting, and survey activities. Additionally, conversing with the affected landowners requires a lot of back and forth effort to come up with a final right-of-way that addresses landowner concerns without unduly affecting engineering and cost concerns. It took over five years to obtain an approved route on one project I am involved with (not Plains and Eastern) and that route is still being adjusted due to the concerns of landowners, gas pipeline owners, and county road departments. Property surveys have found additional easements that have forced the ROW to shift and the design is being affected by ongoing environmental surveys. The delays and changes are affecting not only the cost of development but the capital cost of the project due to the addition of angle and dead-end structures needed to avoid conflicts. The development and control of a definitive route is Plains and Eastern's biggest accomplishment. The NEPA process takes a long time but results in a selected corridor that is defensible.

Mr. Rawlins stated that these milestones provide much more cost certainty and schedule certainty. Schedule and cost in transmission line construction are inter-related. The less that is known about a route, the greater the potential for increased project costs. Schedule delays in one area can perpetuate schedule delays in other areas and costs can continue to escalate. A right-of-way with less certainty typically can mean more conflict with landowners which translates into higher costs and more scheduling risk. Mr. Rawlins stated that in his experience it is unusual for a fixed price contract to be signed with a construction contractor before the route is known.

ANALYSIS OF WIND CATCHER TRANSMISSION LINE DEVELOPMENT WORK AND COST ESTIMATE

Mr. Rawlins stated that he had reviewed PSO's Wind Catcher testimony, the data requests and responses, and many of the exhibits they produced including the EPC contract and other Confidential

and Highly Sensitive attachments. As a result of this review, Mr. Rawlins stated that Wind Catcher's transmission line development is nowhere near as far along as Plains and Eastern's. Wind Catcher has completed a desk-top study of preliminary routes, though they characterized it as, "purely for the purpose of developing an EPC contract." Wind Catcher signed an EPC contract with Quanta in late July 2017, and Quanta is responsible for performing their own routing analysis. Per the EPC contract, final route selection is to occur by December 22, 2017, though it appears that Quanta is not required to have any contact with landowners prior to that date except for a set of open houses held in October 2017 that presented their preliminary route corridors. As Plains and Eastern experienced, Mr. Rawlins stated that he expects many landowners will want to modify the final route, and even more so if they feel they weren't given ample opportunity to voice their concerns. In Mr. Rawlins' experience, the public's buy-in is much easier if people feel their opinions were seriously considered in the routing phase. Many people won't get involved until a preferred route is chosen, at which point, oftentimes, landowners only learn that their land will be impacted by word of mouth from their neighbors. Mr. Rawlins stated that this is why he felt the affected landowners need to be given the opportunity to weigh in before the preferred route is finalized.

Mr. Rawlins stated that he reviewed the detailed cost estimates of the transmission line provided as part of DR-OIEC-3-13, Attachment 2. The values for Wind Catcher's "Central Route" cost estimate appeared to be similar to the values contained in the EPC contract. Mr. Rawlins stated that he could only assume that the unit pricing utilized came from AEP's experience on 765 kV projects. PSO's transmission line cost estimate worked out to about $[redacted]/mile which appears to be on the low end of the scale when compared to published cost estimates I found for 765 kV. Even AEP's own "Transmission Facts" published in 2008 estimated the cost of 765 kV transmission at $2.6M to $4M/mile. PSO-provided costs for two recent 765 kV projects that were competitively bid were listed at $[redacted]/mile and $[redacted]/mile, excluding ROW and financing costs. Mr. Rawlins suspected one reason the Wind Catcher number is low is because they assumed that about 95% of the structures would be tangents and only the remaining 5% would be angles and dead-end structures. Mr. Rawlins stated he would expect there will be a much higher percentage of angles and dead-ends, which are often necessary to satisfy the legitimate concerns of landowners. DR-OIEC-3-13, Attachment 2 also included an alternatives comparison footnoted with, "Cost estimates based on central line route with few angles/dead-ends." It also showed Quanta's estimate for the total project cost using the central route to be 99.74% of AEP's cost estimate. Though the basis of the EPC contract is not well defined in its attachments, Mr. Rawlins expected the 95%/5% ratio is assumed and that the contract price would increase as more turning structures are added.

The estimate did not include a contingency line item and I was unable to tell if a contingency was included in the individual line items. Due to the accelerated schedule and the degree of uncertainties, a large contingency is warranted. Transmission line schedules developed early in project development are rarely kept and typically see significant delays. Early cost estimates often utilize optimistic assumptions and are susceptible to change. Construction costs always go up when schedules are dragged out due to changes in the assumed work plan.

It is hard to assess what level of certainty to assign the cost estimate given the large number of unknowns, but Mr. Rawlins wouldn't be surprised to see the final EPC price come in 20% above the contract price.

Mr. Rawlins stated that uilizing a route that has been fully vetted (such as Plains and Eastern's) would provide certainty on the number and types of structures required. It would also reduce cost uncertainties due to schedule risk. Plains and Eastern's extensive environmental permitting work would also reduce the risk of added costs from environmental issues that could arise. It does not appear

that PSO has performed much or any right-of-way acquisition nor any environmental surveys. These unknowns could raise project costs substantially.

Mr. Rawlins reviewed PSO's schedule for the transmission line and the revised schedule and noted that the schedule has already begun to get pushed out and has leaked into 2021. This is not surprising since the schedule is extremely aggressive leading up to the start of construction. In particular, their right-of-way acquisition plan looks overly optimistic compared to the time period most owners would allocate to a project of this size. Based upon the language in Exhibit U of the EPC contract, it appears they may be mitigating this risk by limiting the number of contacts made to landowners before beginning eminent domain legal proceedings. Per the contract, those proceedings begin within [redacted] days if [redacted] Based upon these limited attempts to work with landowners, it appears there may need to be a significant number of land parcels acquired through condemnation, which can also create some additional uncertainty. Route certainty and a reasonable level of right-of-way acquisition would go a long way toward making sure construction could begin on time.

Mr. Rawlins stated that transmission line construction often results in schedule delays and cost increases, especially when there is a tight schedule from the outset. Delays occur due to things like landowner/ROW issues, material delivery issues, construction labor/equipment issues, environmental restrictions, weather delays, etc. Initial problems tend to have a cascading effect because everyone's plans are thrown out of whack. Construction labor contracts are particularly susceptible to change orders because delays cause workers to stand around with nothing to do or keep them from moving on to the next job that the contractor has committed to. These delays usually leads to a lot of overtime pay and premiums paid to bring in additional labor. Failure to complete pre-construction activities on time can also delay the overall schedule.

TECHNOLOGY CHOICE/ENGINEERING SPECIFICATIONS

Mr. Rawlins stated that AEP-PSO is proposing to build a 765 kV alternating current transmission line has been using 765 kV for many years for its largest transmission lines. To his knowledge AEP-PSO are the only ones in the country using 765 kV. In the western U.S., the maximum AC voltage utilized is 500 kV, while the maximum voltage used in SPP is 345 kV. Other utilities have shied away from using 765 kV in large part because it puts "too many eggs in one basket". For system reliability purposes, they typically prefer two smaller lines rather than one big line to reduce the impact of a single line outage.

As shown in DR-AG-8-6, Attachment 1, AEP also considered using double-circuit 345 kV transmission lines or ±600 kV HVDC. Their analysis showed the 765 kV alternative to be the most cost effective. From his experience, Mr. Rawlins stated that ±600 kV HVDC may be more suited for a higher capacity line. He suspected the HVDC suppliers could have provided costs for a more optimum, lower voltage, HVDC line had they been asked. On the other hand, the design with a ±600 kV HVDC could allow for about 4,000 MW of transfer capability, double the amount that is proposed by AEP. Double circuit 345 kV is a viable option and could result in lower costs, easier interconnection and reliability benefits.

THE ROLE OF PLAINS AND EASTERN IN WIND CATCHER

It is Mr. Rawlins understanding from Plains and Eastern that they are open to using the project to deliver power from the Panhandle to eastern Oklahoma. The Project's route could be adjusted in

eastern Oklahoma to reach the desired interconnection points in PSO's service territory and a short link could be constructed to connect Wind Catcher's generation site to the Plains and Eastern Project.

Mr. Rawlins stated that it was his understanding that Plains and Eastern is also willing to consider an AC line if that is desired and what the customer wants. A large majority of the development work that has been completed could be used for any type of transmission lines, whether it is AC or DC. Plains and Eastern's easements are typically for up to 200 feet in width which should be sufficient to build AC or DC.

Using the Plains and Eastern Project would mitigate the risks of cost overruns and schedule delays described above.

Oneta Power

M. RAY PERRYMAN

M. Ray Perryman is president and Chief Executive Officer of The Perryman Group ("TPG"), an economic and financial analysis firm. Dr. Perryman testified as to his education and professional experience. Dr. Perryman was retained by Oneta Power, LLC ("Oneta") to review the application of PSO and its affiliate SWEPCO to the Commission for certain approvals related to the purchase of the Wind Catcher Facility and the construction of a 350 to 380 mile Gen-Tie line. The Wind Catcher Facility and the Gen-Tie line are collectively referred to as the Project. The purpose of Dr. Perryman's testimony is to present his findings, conclusions, and recommendations regarding the Project and PSO's participation in the Project from an economic perspective.

In preparing his responsive testimony Dr. Perryman reviewed PSO's Application for the Project filed with the Commission on July 31, 2017 (Cause No. PUD 201700267) and the direct testimony and exhibits filed by PSO's witnesses including the direct testimony of Johannes P. Pfeifenberger of the Brattle Group. Dr. Perryman also reviewed PSO's and SWEPCO's responses to data requests related to its Application before the Commission.

Dr. Perryman determined that the risks associated with the Project have not been adequately studied or reflected in the analysis provided by PSO in support of its Application and appear to potentially outweigh PSO's projected benefits to its customers. Dr. Perryman determined that the analyses, assumptions, and projections that PSO presents in support of the estimated benefits are optimistic and in part incorrect and PSO's analysis fails to comprehensively consider other alternatives which could better meet the objectives of PSO and its customers. When all relevant economic factors are considered in an appropriate economic framework, it is Dr. Perryman's opinion that the Project may not be the best option for PSO's customers.

Dr. Perryman's initial concern with the Project as proposed by PSO is regarding the choice of an unbuilt, very large wind project to provide electricity to its customers as opposed to utilizing already constructed and operational wind or other energy alternatives that could provide similar or greater customer benefits and lower risks to its customers. Dr. Perryman found no testimony by PSO that supports its assumption that the energy resource must be secured by building a new wind power resource.

Dr. Perryman testified that under current and forecasted prices, natural gas generation potentially offers a competitive alternative which has desirable environmental properties relative to other energy resources, such as coal, and does not require backup generation. Specifically, PSO's

analysis as to its proposed Project only considers one alternative (excluding a "Base Case" in which no wind resource additions are assumed) to the Project Case, i.e., a "Generic Wind Case" which assumes procurement of the same amount of wind generation as the Project Case from multiple projects over SPP's regional transmission system. This limitation prevents PSO from properly considering other alternatives and analyses of the costs, benefits, and risks associated with other available energy resources (whether ownedfacilities or acquired energy from third parties).

Dr. Perryman testified that rather than using its "long-standing practice of securing generation resources through open, fair, transparent, and nondiscriminatory competitive solicitations" (PSO's RFP process), PSO did not issue an RFP for the Project under OAC 165:35-38-5(e), nor did PSO request a waiver of the competitive bidding prerequisite, prior to filing its Application in this Cause. Dr. Perryman expressed concerns regarding serving the best interest of PSO's customers through a proposed $4.5 billion estimated cost Project which was "rapidly evaluated and developed" as stated by PSO's witness Paul Chodak.

Dr. Perryman testified that while renewable energy resources such as wind provide the benefit of no fuel costs and zero emissions, there are significant differences between wind resources and more traditional energy resources that should be considered as part of a comprehensive process.

Dr. Perryman testified that although wind generation is often a viable part of utility portfolios, wind generation facilities are inherently less reliable, not because of mechanical related issues, but because the availability of wind can vary significantly. Another determinant of any power generation resource reliability is related to the correlation between the capacity factor (the ratio of actual generation to maximum potential generation) of a new resource facility during any given time period with the overall generation system availability.

As noted by Dr. Perryman and the Energy Information Administration ("EIA"), because a system's energy load must be balanced on a continuous basis, units with variable output capabilities in response to dynamic energy demand "(dispatchable technologies) generally have more value to a system than less flexible units (non-dispatchable technologies)" or units with operation subject to intermittent resource availability.

Dr. Perryman believes that wind energy and other renewables are a viable part of the power mix going forward. When being considered within the context of a project that will impose substantial risk on customers, however, it is imperative that those considerations be fully explored and evaluated.

Dr. Perryman testified that there are numerous and significant risks associated with PSO's Project and the analysis and assumptions used to support the level of projected benefits to PSO's customers and that it is possible that several assumptions and variables are incorrect and could therefore result in increased costs to its customers.

Dr. Perryman stated that according to PSO, the main benefit of pursing the Project is to benefit from the 100% value of the federal PTC. However, in order for the Project to realize the full value of the PTC, construction must begin prior to January 1, 2017, and commercial operations must begin before January 1, 2021. According to Dr. Perryman, the requirement for commercial operations by January 1, 2021, appears to be a highly optimistic assumption for the Project. One of the most significant risks associated with the Project and PSO's projected completion date is related to the sheer size of the Project. If built, the Project would be the largest wind farm in the U.S. The projected completion date of December 15, 2020, for the Gen-Tie line and the estimated commercial operation date of the Wind Catcher Facility in the fourth quarter of 2020 present extremely tight construction

schedules with little room for unexpected delays or reasonable contingencies. Dr. Perryman testified that given the fact that the final route of the Gen-Tie line has not been finalized and that numerous state and federal permits and regulatory approvals are required for the Project, the projected commercial operation date appears quite speculative.

Dr. Perryman testified that PSO's projected value of the federal PTC would also be negatively impacted by the passage of the "Tax Cuts and Jobs Act, H.R. 1" that is under consideration. According to the current version of H.R. 1, the tiered corporate tax rate schedule would be changed to a flat 20% rate beginning in 2018. According to Dr. Perryman, PSO's estimated marginal tax rate of 38.7% would be reduced which would impact PSO's projected value of the PTC related to the Project, even if all other Project parameters were met. Dr. Perryman testified that while the exact structure of the new tax legislation (or even whether it will happen) remains uncertain, a substantial and permanent reduction in corporate tax rates appears to be a major goal of the majority party in both the United States House and the Senate.

Dr. Perryman testified that there are also proposed modifications to the PTC in H.R. 1 that may negatively impact PSO's projected PTC value. According to PSO's analysis, the impact of a change in the corporate tax rate from 35% to 20% would result in a reduction in the net present value ("NPV") of PSO's projected benefits from $996 million to $873 million (a $123 million or 12.3% decrease). Any modification to the PTC might well have even more profound effects.

Dr. Perryman also testified that PSO may have erred in its calculation of electricity production and sales (MWh) that qualify for the federal PTC. According to Dr. Perryman, the power production subject to the PTC is based on the energy sold to customers (1,900 MW delivered at the Tulsa busbar) rather than the energy delivered (1,950 MW). If 1,900 MW rather than 1,950 MW is appropriate in this regard, the annual energy production subject to PTCs would decrease from 8,951 GWh to about 8,721 GWh based on PSO's projected 52.4% capacity factor. Therefore, the energy subject to federal PTCs may be overstated in PSO's models. Correcting this error would negatively impact PSO's projected benefits to consumers.

According to Dr. Perryman, one condition that must be present in order to realize PSO's estimated value of the PTC is that PSO must have an adequate level of taxable income each year to use the PTC offset. PSO states that it incurred a net operating loss in 2015. While tax loss carryforwards are allowed, the later dates of using the full PTCs as projected would negatively impact PSO's estimated customer savings related to the PTC (in present value terms).

Dr. Perryman testified that the capacity factor of the electrical power generation facility is a key and significant factor. According to Dr. Perryman, PSO appears to have assumed a capacity factor of 51.1% based on the 2,000 MW nameplate capacity of the Wind Catcher Facility and 52.4% based on 1,950 MW produced at the busbar after a 50 MW assumed loss in the collector system. As an economist, Dr. Perryman notes that PSO's assumed capacity factor is substantially above average observed rates reported by the U.S. Department of Energy ("DOE") in the 2016 Wind Technologies Market Report. According to Dr. Perryman, PSO's assumed capacity factor for the Project appears to be optimistic and above the capacity factors experienced to date in actual wind turbine installations in the U.S. Furthermore, degradation in performance over the projected 25-year life of the Wind Catcher Facility should have been reflected in PSO's models that estimated the benefits of the Project to consumers. If the realized capacity factor is in fact lower than projected by PSO, the estimated benefits to consumers would likewise decline and negatively impact the projected benefits. Furthermore, PSO declined to guarantee the capacity factor performance assumed in its analyses.

Dr. Perryman testified that according to PSO, the P90 case model results in a nameplate capacity factor of 46.6% at the busbar. The lower nameplate capacity factor model results in a decrease in the NPV of PSO's projected benefits to ratepayers from $996 million to $770 million (a $226 million or 22.7% decrease). Obviously, this loss would be even more significant if the capacity factor is lower.

According to Dr. Perryman, PSO assumes that the Wind Catcher Facility, including the 800 GE wind turbine generators, will have a 25-year life. PSO's basis for the expected useful life is a section in the MIPA that states that the Project will be designed with a minimum functional design life of 25 years and that GE is obligated to obtain a third-party assessment that the turbines meet a 25-year design life. However, the actual performance of operating turbines appears to contradict or at least call into question the probability of such an optimistic level of long-term turbine performance. Furthermore, it seems improbable that the Project could continue to operate at the installed performance level throughout the 25-year period as some level of performance degradation should be expected.

Dr. Perryman testified that natural gas prices affect the opportunity or avoided costs of the Project. PSO's projected Project benefits include cost savings from avoided electricity generation using natural gas resources. Additionally, natural gas prices impact the market price of electricity and the cost of purchasing power from a third-party supplier. Therefore, lower natural gas prices would reduce PSO's projected benefits to its customers.

Dr. Perryman testified that the AEPSC Fundamentals Forecast includes the natural gas price forecasts utilized by PSO in its models for the Project. The forecast "is a long-term, weather-normalized commodity market forecast" that is made available to all AEP operating companies. As shown in Dr. Perryman's filed testimony, the natural gas prices (base case) from the Fundamentals Forecast are overstated every year over the relevant 25-year period for the Project compared to those in EIA's reference case scenario. For example, the difference between PSO's and EIA's forecasts in 2040 is almost 20%.

As set forth in Dr. Perryman's testimony, there can be significant discrepancies between EIA's projections and actual realized prices in both directions. According to Dr. Perryman, this demonstrates that not only can there be immense discrepancies between projections and realized prices, but also that long-term forecasts are subject to significant errors.

Dr. Perryman testified that projections are based on a set of assumptions contained within market models and do not necessarily accurately reflect what will occur in the market. In fact, according to the EIA, more than 42% of the projections of natural gas prices between 1994 and 2016 were overstated compared to the realized outcomes. Numerous issues can impact projections, including economic growth, oil prices, supplier decisions, regulations and policy changes, and improvements in technology. The EIA cautions those who use its forecasts due to "the uncertainty inherent in long-term projections."

Dr. Perryman testified that in PSO's Generic Wind Case that was considered as an alternative to the Project, PSO estimated the market price for generic wind purchased from multiple sources but without the use of the Gen-Tie line. PSO utilized an initial price of $18.62 per MWh in 2021 with an annual escalation of 2.25%. Therefore, the projected market price for generic wind impacts the value of the Generic Wind Case alternative relative to the Project Case.

According to Dr. Perryman, PSO witness Johannes Pfeifenberger's estimates of PPA prices for generic wind are not consistent with the current and historical publicly available PPA prices. Dr. Perryman testified that historical PPA prices for generic wind have consistently decreased since 2009,

reaching the lowest price to date of $16.79/MWh in 2017. Dr. Perryman testified that by assuming that PPA prices will be $18.62/MWh in 2021 and escalate at 2.25% per year, Dr. Pfeifenberger is assuming that the trend of decreasing prices will reverse itself by 2021 and remain steady (in real terms) for 25 years after that. However, there appears to be no justification for this assumption in the industry. Dr. Perryman testified that given the historical trend, it may well be that Dr. Pfeifenberger's initial PPA price estimate of $18.62/MWh (four years from now) is overly optimistic.

Dr. Perryman testified that data from interconnection queues indicate a significant amount of planned wind development in the future. Dr. Perryman testified that in 2016, there was approximately 142 GW of wind power capacity in the queue, which equals to more than 150% the current installed wind capacity in the country. Dr. Perryman testified that the queued wind capacity in SPP is the second highest in the nation, accounting for 23% of wind power capacity in the interconnection queue. According to Dr. Perryman, in light of the abundant supply of future wind capacity, basic economic theory would suggest downward pressure on prices. Although future prices are unknown and will not necessarily follow historical patterns, very plausible variations in line with recent experience and reasonably anticipated supply could materially impact PSO's calculations.

Dr. Perryman testified that there are several Project related factors that could lead to a downgrade in PSO's credit rating with Moody, such as a more adverse regulatory environment; a "significant increase in capital or operating expenditures that were not able to be recovered on a timely basis;" or the deterioration of other credit metrics, such as the Cashflows from Operations pre-Working Capital to debt ("CFO pre-WC to debt") remaining below 19% or interest coverage falling below 4.5. Dr. Perryman testified that because PSO's CFO pre-WC to debt is currently below 10%, the Company is already in danger of a downgrade in its credit rating from Moody if its current cash flows do not improve. Dr. Perryman believes that it is unlikely that the magnitude of the Project will be beneficial to PSO's CFO pre-WC to debt ratio. Also, a change or even the expectation of possible change in the PTC could also impact the perception of the Company among debt rating agencies.

Dr. Perryman testified that PSO's costs and benefits associated with the Project are based on projections that were evaluated and developed in a very short time period. It is therefore appropriate to explore the extent to which deviations in one or more of these presumed patterns could significantly increase the costs and/or reduce the benefits of the Project. Dr. Perryman testified that any additional costs would be passed on to PSO's customers when PSO files a base rate case, as PSO has declined to cover costs in excess of those projected. Furthermore, it is also PSO's position that its customers will "bear the risk" of any incurred costs that are above the estimate for the Project. Dr. Perryman testified, however, that this approach is implicitly predicated on the notion that costs and benefits have been properly determined based on the best available information and methods. Under such conditions, variations in either direction would tend to randomly and generally reflect unforeseeable conditions. In this instance, however, Dr. Perryman testified that the assumptions appear to be heavily skewed toward PSO's desired outcome. In essence, PSO is using a highly optimistic scenario to create a "win-win" situation for itself in which the increase in its rate base from the additional assets will increase its revenues and returns, while requiring its customers to bear the risks and the responsibility for any increased costs or a shift from a net benefit to a net cost outcome.

Dr. Perryman testified that the discount rate utilized by PSO is inappropriate for the Project for at least two reasons: (1) the discount rate used to calculate the NPV of benefits of the Project "to ratepayers" should be from the perspective of PSO's ratepayers rather than from the standpoint of PSO's average cost of capital and (2) the discount rate should reflect the risks associated with the Project itself rather than the overall existing organization prior to the Project. According to Dr.

Perryman, the discount rate utilized by PSO to calculate the NPV of benefits to its customers is inappropriate and significantly low, thereby substantially inflating PSO's calculated NPV of benefits.

Dr. Perryman also testified that the Project entails significantly greater risk relative to the overall business of PSO. As such, Dr. Perryman incorporated into his testimony an adjustment to the equity rate for the Project based on the relative systematic risk (as measured by beta) of the renewable energy sector to PSO to provide an implied equity and discount rate that is appropriate for the Project.

First, the unlevered beta for the renewable energy sector (0.43) was taken by Dr. Perryman as a conservative proxy of the unlevered beta for the Project. Given the size and time constraints associated with the Project, Dr. Perryman testified that its risk is actually much higher than a typical wind project. Next, the unlevered beta was levered to reflect the financial characteristics of the Project and PSO which results in a levered beta of approximately 0.7 for the Project. Based on PSO's equity return of 10.0% and a risk-free rate of about 2.7% for long-term bonds, Dr. Perryman determined the implied PSO equity premium (beta times the market risk premium) was approximately 7.3%. According to Dr. Perryman, this rate reflects PSO's overall levered beta as well as the market risk premium as reflected in the capital asset pricing model ("CAPM"). Dr. Perryman testified that AEP's beta (0.30) represents a reasonable proxy of the levered beta for PSO although it is somewhat conservative (high in this context) in that AEP also operates in areas without guaranteed rates.

According to Dr. Perryman, incorporating the relative level of the beta for the Project (0.71) to the proxy beta for PSO (0.30) multiplied by PSO's equity risk premium (7.3%) then adding back in the risk-free rate (2.7%) provides an implied equity rate for the Project of 20.0%. Dr. Perryman also noted that PSO's ratepayers would not benefit from the debt levels associated with the Project and would essentially be considered as equity investors in terms of risk. Therefore, from the perspective of PSO's customers, a discount rate of 20.0% is an appropriate rate to apply in net present value calculations of the benefits of the Project.

Dr. Perryman testified that PSO produced two model variations that were prepared in another jurisdiction (cases P90 and P10). These cases represented higher and lower capacity factors than the P50 case included in PSO's filings in this matter. According to PSO, the P90 case represents a nameplate capacity factor of 46.6% which is slightly higher than the capacity factor (44%) that was observed in the actual performance of existing wind farms in the relevant region of the U.S. Dr. Perryman analyzed the impact of incorporating several alternative levels of variables and/or modifications into PSO's Wind Catcher P90 Case Model (the P90 model) that represents a 46.6% nameplate capacity factor. The first two adjustments alone resulted in a decrease in the NPV of customer benefits from $996 million to -$183 million. Dr. Perryman testified that the net result of his modifications is a reduction of the NPV of customer benefits from $996 million to -$221 million. Dr. Perryman testified that when his results are incorporated into the Pearce Wind Catcher Model Final (Total & Split worksheet), the indicated levelized cost of energy for the Project Wind Facility increases from $10.90/MWh to $28.89/MWh including the cost of the Wind Facility and net of the PTCs. Dr. Perryman testified that any modifications or adjustments to any other assumptions, variables or other parameters in PSO's models have the potential to further erode the position of and increase the risk to PSO's customers.

Dr. Perryman testified that it does not appear that PSO considered other alternatives in this Application. According to Dr. Perryman, additional alternatives should have been considered such as the proposals in response to PSO's 2016 Wind RFP and PSO's 2016 Long-Term Capacity and Energy RFP. While these alternatives may have not had the same level of projected benefits as PSO has

claimed in the Application for the Project, the overall risks associated with each alternative must be also be properly considered.

Dr. Perryman testified that PSO presents an economic impact study in support of the Project. The study uses the IMPLAN and JEDI (which uses coefficients from IMPLAN) models to assess the direct, indirect, and induced effects of constructing and operating the generation and transmission facilities across several states.

Dr. Perryman testified that if the costs and sourcing estimates are relatively close to what ultimately occurs, then the impacts from the study should be reasonable in that respect. However, Dr. Perryman testified that the analysis fails to address certain key issues. Dr. Perryman testified that nothing should ever be built simply because the construction effects are large. Using PSO ratepayers' resources to build something when there are better alternatives available does not generate true benefits to the economy. In addition, the analysis deals exclusively with building the Project facilities without consideration of the overall economic context. To the extent that the Project results in additional consumer power costs, these funds would have otherwise been spent on other items. To the extent that the Project results in the displacement of other generation resources, there will be adverse effects. If the Project reduces the amount of power generated by natural gas, there will be offsetting negative consequences to the economy. Similarly, losses will occur at existing power plants to the extent that their usage is curtailed. Dr. Perryman concluded that the impact study provided by PSO is incomplete in its context and does not provide a justification for the Project or pre-approval by the Commission of the Project.

Dr. Perryman expressed concerns regarding the significant land use that wind generation facilities require. Wind generation facilities involve both permanent and temporary land disturbances. In this case the Project requires a significant amount of land for the Wind Catcher Facility and the Gen-Tie line. Dr. Perryman testified that over 308,500 acres of land will potentially be temporarily disturbed. Dr. Perryman estimated that the permanent direct impact area of the Project could be over 1,000 acres. Likewise, the temporary direct impact area of the Project could be over 3,000 acres. These estates exclude the land disturbed related to the construction of the Gen-Tie line. The quantity of land that may be potentially disturbed is significantly greater than the 61-acre site of the existing Oneta NGCC plant. There are also numerous social impacts to consider related to wind farms, such as noise, visual, and other environmental issues associated with the Project wind farm and the transmission lines. Furthermore, it should be noted that taxpayer funds are required to provide the PTCs to the subsidized wind generation facilities that PSO seeks to implement, as well as the resulting harm to true competition for electric power generation that comes from subsidized wind power facilities.

According to Dr. Perryman, the analysis provided by PSO does not adequately support the Project. The risks to customers implicit in the Project are substantial. Specifically, customers are being asked to bear excessive risks of additional costs or reduced benefits, which PSO has not analyzed or addressed, some of which are almost certain to occur given the large number of optimistic assumptions built into PSO's analysis.

Windfall Coalition

THOMAS A. PETRIE

Thomas A. Petrie, Chairman, Petrie Partners, LLC, filed responsive testimony on behalf of the Windfall Coalition regarding the natural gas price forecasts relied on by PSO. Mr. Petrie showed that PSO's natural gas price forecasts are unrealistically high, domestic natural gas supply makes large price

increases unlikely, and more realistic natural gas price forecasts imply substantially less economic benefit from the Wind Catcher project.

Mr. Petrie explains his view of the current supply and demand for natural gas within the United States. He shows the vast technically recoverable reserves and the recent substantial increase in natural gas production within the United States.

Mr. Petrie provides an overview of several different natural gas price forecasts, including futures contracts and professional estimates from the Energy Information Agency and brokers. All forecasts predict natural gas prices to stay around $3.00/MMBtu in the coming years compared to PSO's much higher estimates. Mr. Petrie utilizes supply and demand dynamics to support his assessment, including the break-even price for natural gas production across multiple production regions in the United States. He states if prices rise above $4.00/MMBtu, substantial new supply would likely enter the market driving prices back down.

Mr. Petrie also notes previous PSO forecasts have consistently overestimated future natural gas prices.

Mr. Petrie's firm has also prepared an illustrative net present value analysis based on more realistic natural gas price forecasts. They find the Project uneconomical if natural gas prices average $3.00 or $4.00/MMBtu, with only nominal economic benefit above those levels and break-evens closer to approximately $7.00/MMBtu absent $837 MM of asserted production tax credit benefit.

STATEMENTS OF POSITION

OMPA

OMPA hereby enters its Statement of Position in the above-styled Cause as follows, to-wit:

1. PSO's analysis to support the alleged economies of the project rely on flawed speculative analysis on the future price of natural gas resulting in unrealistically high estimates.

2. PSO failed to use the competitive bidding rules of the Commission which would have likely resulted in a lower overall cost.

3. PSO failed to request pre-approval before commencing construction process.

4. The transmission component of the Wind Catcher Project did not go through the planning process of the SPP, thus circumventing the FERC Order 1000 competitive bidding requirements. It has been proven competitive bidding results in lower construction costs resulting in lower costs for consumers.

5. Even though PSO indicates the cost of the project will be borne by its ratepayers, it is inevitable the transmission component will ultimately be folded into the SPP regional transmission rates when the line is interconnected by others (Bradish p 8, ln 17; p 15 ln 18). Given the significant cost of the line, this will result in a substantial increase in transmission-related charges to all retail consumers in Oklahoma, not just PSO's. Therefore, as stated previously, the transmission line needs to be competitively bid to make sure Oklahoma consumers receive the best value.

6. PSO is claiming the Wind Catcher project will defer future generation under the SPP Criteria (Pearce p 8), however they have not submitted an aggregate study request to SPP to

determine deliverability to the entire PSO load zone. This ignores the potential costs of network upgrades to be identified by SPP.

South Central

BACKGROUND

SCMCN is a transmission-only public utility operating in Oklahoma that is a subsidiary of GridLiance Holdco, LP ("GridLiance"). SCMCN owns and operates approximately 310 miles of 69kV and 98 miles of 115 kV transmission lines and 11 substations in Oklahoma. SCMCN's Oklahoma facilities were purchased in 2016 from Tri-County Electric Cooperative, Inc. ("TCEC") of Hooker, Oklahoma. SCMCN expects to have transmission facilities in Missouri under the functional control of SPP in 2018. Its sister company, GridLiance West Transco LLC, owns and operates over 160 miles of 230 kV transmission lines and three stations under the functional control of the California Independent System Operator Corporation ("CAISO"). For both the Oklahoma and CAISO assets, GridLiance partnered with the local retail service cooperative utility[8] to take responsibility for planning and upgrading its transmission system in order to allow the cooperative to focus on core business objectives of serving member-consumers.

Another example of how these partnerships work is GridLiance's active engagement with renewable developers to design interconnection solutions that optimize benefits to the network as a whole, as well as providing reliable interconnection services, such as SCMCN is doing with its 50 MW interconnection arrangement with Invenergy. In addition, GridLiance has long-term co-development agreements with cooperative and public power utilities operating in Missouri, Oklahoma and Kansas, and is pursuing joint development projects with those and other utilities in many states. GridLiance offers our cooperative and public power partners the opportunity to invest in and benefit from large regional transmission infrastructure.[9]

In this docket, AEP affiliate PSO is requesting various regulatory relief associated with the future purchase of a 2,000 MW wind facility ("Generator"), which includes approximately 52 miles of 345 kV transmission lines and five collection substations ("Collector System"), along with two 345/765 kV substations and a 350+ mile 765 kV line (collectively, the Gen-Tie) that will deliver the energy from the Generator to an existing PSO substation in North Tulsa. AEP plans to provide wind energy for both PSO and its affiliate, SWEPCO. The combined project, to serve PSO and SWEPCO, is referred to herein as the Wind Catcher Project. PSO is requesting approval to recover from its Oklahoma ratepayers 30% of the projected Wind Catcher Project's total $4.5 billion cost, which AEP estimates to be $1.36 billion.

The entirety of the Generator (including the Collector System), one of the two 345/765 kV substations, and approximately 90 miles of Gen-Tie transmission line will be built in TCEC's retail service territory, as well as within SCMCN's transmission footprint. The investment in SCMCN's

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[8] In CAISO, GridLiance is partnering with Valley Electric Association, Inc. (VEA), Pahrump, NV.

[9] For example, when SCMCN participated in the SPP's only competitive transmission solicitation, TCEC and others would have co-owned the project had SCMCN's proposal been selected SCMCN's proposal offered the lowest capital cost and its capital costs were capped. The incumbent that won the project, proposed a lower life-of-the-facility cost, but without caps. *See* SPP, *Industry Expert Panel Recommendation Report: Public Report, RFP-000001 (Walkemeyer – North Liberal 115kV)*, 20-21 (2016), https://www.spp.org/documents/37708/iep%20recommendation%20report%20with%20process%20and%20appendix%20public%20redacted%20041216_redacted.pdf. That was the same for the GridLiance affiliate's proposal submitted in the first Midcontinent Independent System Operator (MISO) competitive solicitation.

footprint solely for the Gen-Tie portion of the project amounts to approximately 25% of the Gen-Tie cost, which is estimated to be over $400 million.[10] While AEP plans significant build-out within SCMCN's transmission footprint, SCMCN currently has a 50 MW Interconnection Agreement with Invenergy, which Invenergy will use to accomplish initial commissioning of the 2,000 MW Generator in time to qualify for PTC. While AEP plans significant build-out within SCMCN's transmission footprint, SCMCN has been unable to obtain information on the build-out plans.

The Windcatcher Project, if built as proposed, will significantly affect SCMCN's ability to plan and build out transmission in its footprint. SCMCN's ability to design the least cost solutions to reliability and economic needs of its system is virtually eliminated. AEP has not followed standard practice, where a utility planning to build facilities in the footprint of another transmission owner ("TO") would involve coordination and joint planning with the incumbent.

STATEMENT OF POSITION

Should the Commission grant PSO a "waiver" of OAC 165:35-38-5(e)?

As noted in PSO's Application, the Cost Recovery Rules state at OAC 165:35-38-5(e): "A Cause shall be opened by the utility for cost recovery if the competitive bidding RFP process established in OAC 165:35-34 is not utilized and the utility wishes to gain approval of cost before construction starts." PSO states it is specifically seeking a waiver of the language "before construction starts" because the wind generation facility is already under construction.[11]

The Cost Recovery Rules found at OAC 165:35-38 were established by this Commission in 2006 to implement rules related to 17 O.S. § 286.[12] Concurrent with the Cost Recovery Rules, the Commission also adopted Competitive Procurement Rules. These rules state that "to obtain a presumption of prudence, a utility shall employ the competitive bidding procedures set forth in this subchapter, when purchasing or self-building of new long-term electric generation, long term purchase power agreements, or long-term fuel supply for self-generation of electricity as set forth in this subchapter."[13] The rules contemplate competitive procurement of generation supply by electric utilities, requiring that any proposed utility self-built generation participate on equal grounds in such process, because a competitive process creates a "presumption of prudence,"[14] and "minimizes ratepayer cost."[15] Thus, in the absence of engaging in such a process, the Cost Recovery Rules are clear that a utility will not be entitled to a presumption of prudency.[16]

Such controls are especially important when the proposal is for self-generation, or any portion of a self-supply project that a utility intends to self-build such as the 350+ mile 765 kV Gen-Tie in question here. A utility has no incentive to control costs, or transfer any share in the risk of a project to its shareholders, absent a requirement to utilize competitive processes or undergo a thorough prudence review. The Cost Recovery Rules ensure that utilities are subject to either or both, but PSO's requests for relief in this proceeding would accomplish a work-around or elimination of each.

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[10] This calculation was made by using the percentage of Gen-Tie miles to be built in SCMCN's footprint (25%) applied to AEP's estimate of the Gen-Tie cost of $1.624 billion.

[11] Application, at p.2.

[12] PSO filed this Cause not only pursuant to the Commission's general supervisory authority under 17 O.S. §§ 151 and 152, but also relies upon 17 O.S. § 286.

[13] OAC 165:35-34-1.

[14] OAC 165:35-34-1(a).

[15] OAC 165:35-34-3(d)(1)(A).

[16] *See* OAC 165:35-34(1)(a) and OAC 165:35-38-5.

Two undisputed facts are important for the Commission to evaluate in this circumstance. One, the generation facility at issue in this case has been under construction for over one year, so the Application on its face does not comply with the requirements of OAC 165:35-38. Two, PSO did not utilize the Commission's Competitive Procurement Rules to solicit or select this long-term generation supply, or any part thereof such as the Gen-Tie, which is to include any proposal to self-build utility generation. The Application therefore does not provide a substantive and supportable basis for the Commission to find AEP to have been prudent in committing to an investment of this magnitude that impacts not only a large generation investment, but also a significant transmission investment – with significant risks and costs to be borne solely by AEP ratepayers.

Should the Commission determine AEP's projected costs are prudent and recoverable in future rates?

PSO is requesting the Commission approve today the future unknown final costs of the Wind Catcher Project. However, significant portions of the costs have yet to be incurred – the Generator is under construction, but the Collector System and 350-plus mile Gen-Tie have yet to be initiated. The Application fails to establish the public interest that would override the well-established law in Oklahoma that cost recovery is reviewed and established when such investments are placed in service, used and useful, and are requested for inclusion in rate base. This allows for the review of known and measurable costs prior to inclusion in rates.

The legislature, through the adoption of 17 O.S. § 286, provides an aberration to this standard, and the Commission adopted rules to address such matters with its Cost Recovery Rules described above. However, PSO has yet to comply with either the Cost Recovery Rules or the Competitive Procurement Rules, so the Commission is denied the opportunity to review the request prior to construction as required by Cost Recovery Rules, denied the opportunity to review results of a competitive process, and therefore, denied the opportunity to evaluate reasonable alternatives as required by 17 O.S. § 286. AEP must establish that the proposal is in the public interest notwithstanding the disregard of Commission rules and subsequent request for a waiver of Commission rules.

At a minimum, the Commission should require AEP to demonstrate why the proposed configuration for the Collector System and a 350-plus mile 765 kV Gen-Tie are the best and least-cost solution for collecting and delivering the power to AEP's ratepayers. The Collector System is completely within and the Gen-Tie, as noted, has substantial presence in SCMCN's transmission footprint. SCMCN is in the best position to evaluate alternatives to the 345 kV collector system and at least the portion of the Gen-Tie within SCMCN's footprint.

Had AEP collaborated with SCMCN (which would normally be involved as the Host TO of the wind farm), it is possible the outcome would offer the ratepayers of Oklahoma a lower-cost solution that could include guarantees to control capital spending and shift the risk of a portion of the project to SCMCN and away from ratepayers. SCMCN has a focus on designing transmission solutions that optimize reliability and economic benefits to the network. As such, the Commission could derive significant benefits for Oklahoma ratepayers by requiring AEP to engage with SCMCN and other local utilities along the Gen-Tie route in order to present the Commission with alternatives from local utilities that could reduce both cost and risk to Oklahoma ratepayers. The Commission would then be positioned to evaluate reasonable alternatives to AEP's project as currently proposed. If appropriate, the Commission could condition approval on AEP contracting with local utilities such as SCMCN to capture such benefits. By discovering alternatives and agreeing to capitalize on them, AEP is better-

positioned to establish the evidence necessary to find the Wind Catcher Project to be in the public interest.

Has AEP adequately reduced the risk and cost of the Wind Catcher Project?

The Application also fails to provide substantial evidence that AEP has adequately reduced the risks and costs of the Wind Catcher Project or that such risks and costs have been adequately evaluated. Without such action and information, AEP has yet to demonstrate the Wind Catcher Project is in the public interest.

There are several questions the Commission can ask itself to determine if it has adequate evidence, or if adequate actions have been taken to reduce the risk of the multi-billion-dollar project:

- What steps has AEP taken to spread risk and costs in a manner that would be beneficial and further the public interest?
- Would a power purchase agreement ("PPA") or partnerships with local utilities such as SCMCN result in lower prices for the wind facility or the transmission line or allocated fewer risks to ratepayers?
- Why has AEP chosen not to jointly develop the cost of the Gen-Tie with local utilities such as SCMCN? Why can't the wind energy benefits be provided to AEP customers absent the proposed Gen-Tie?
- Did AEP seek out any potential transmission solutions other than its proposed 350-plus mile 765kV transmission line? From the record, it appears AEP only compared the proposed 765kV line to its own BOLD 345kV design. The contract for the construction of the transmission line was a sole-source contract not subject to any bidding process, even when AEP acknowledged that it typically competitively bids transmission projects with a value greater than $1 million.[17] The Commission has not been presented with any alternatives for even portions of the Gen-Tie line that local utilities along the siting route, such as SCMCN, potentially can build for less cost, with enhanced system reliability benefits.

As noted above, the Wind Catcher Project will significantly affect SCMCN's ability to plan and build out transmission in its footprint. SCMCN's ability to build least cost solutions to reliability and economic needs is virtually eliminated by AEP's plan to build over the entirety of SCMCN's transmission footprint without coordinating or jointly planning with SCMCN. SCMCN respectfully submits that if OG&E were proposing the same sort of unilateral project in PSO's footprint, PSO would likely have comparable concerns to those of SCMCN in this Docket.

CONCLUSION

SCMCN notes these concerns have been raised in the Responsive Testimony, which will allow AEP and PSO to address deficiencies in the Rebuttal Testimony. It is SCMCN's desire to participate in the proceeding to ensure that the relief requested in the Application be based on substantial evidence that the Wind Catcher Project is in the public interest, as finally configured. SCMCN's failure to address any issue presented by the parties in this Cause should not be taken as objection or support for any specific position or request for relief. SCMCN reserves the right to amend, modify or supplement its position, to cross examine witnesses on all issues related to the Wind Catcher Project, and to address any and all issues raised at the hearing on the merits necessary to protect its interests in this matter.

[17] AEP witness Weber response to OIEC DR 6-6, 9/13/17.

Kiowa Power

KPP enters its Statement of Position in the above-styled Cause filed by Applicant, PSO[18]:

PSO failed to comply with the legal requirements for seeking preapproval with cost recovery for new generation facilities, including PSO's failure to comply with the Commission's competitive bidding or pre-construction review requirements. See 17 O.S. § 286(C) and OAC 165: 35-38-5. PSO has not presented legal authority or evidence warranting a waiver of the Commission's competitive bidding or pre-construction review requirements. PSO's requested relief should be denied by this Commission.

Golden Spread

Golden Spread, and files this Statement of Position in the above-captioned proceeding, pursuant to OAC 165:5-13-3(j) of the Rules of Practice of the Commission and pursuant to the Procedural Schedule ordered herein. In support thereof, Golden Spread shows the following:

I. GOLDEN SPREAD

Golden Spread is a non-profit electric generation and transmission cooperative organized under Texas law with its principal place of business in Amarillo, Texas. Its main corporate purpose is to supply cost effective and reliable wholesale electric power to its sixteen (16) member non-profit distribution cooperatives ("Members").[19] Golden Spread's Members serve about 230,000 retail electric meters serving their Member-Consumers located over an expansive area, including the Panhandle of Oklahoma, the Panhandle, South Plains and Edwards Plateau regions of Texas, and small portions of Southwestern Kansas and Southeastern Colorado.

II. NATURE OF THE CAUSE

PSO and its affiliate SWEPCO apparently entered into an agreement to purchase the Wind Catcher Facility (subject to regulatory approvals and other conditions), with a nameplate capacity of 2,000 MW of wind generation located in the panhandle of Oklahoma. In addition, PSO and SWEPCO will construct an approximately 350-mile generation interconnection tie-line that will deliver the generation to the PSO grid near Tulsa, Oklahoma.

On July 31, 2017, PSO filed its Application asking the Commission for, among other things, approval to including the ability to include in base rated cost recovery for prudent costs incurred by PSO for this Project and a determination of need for the Project to deliver low-cost energy into the Tulsa area.

On October 28, 2017, this Commission entered its Order Granting Motion for Procedural Schedule.

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[18] KPP reserves the right to amend or supplement this Statement of Position as additional data and other information is obtained in this Cause.

[19] Golden Spread serves Tri-County Electric Cooperative, Inc. ("TCEC") (Hooker, Oklahoma) which serves the residents of the Panhandle of Oklahoma and portions of Texas New Mexico, Kansas and Colorado. Golden Spread also serves fifteen (15) distribution cooperative members operating in Texas.

On December 5, 2017, this Commission entered its Order Granting Motion to Intervene of Golden Spread.

III. STATEMENT OF POSITION

The wind facility for which PSO is seeking approval is to be located within the territory served by Golden Spread's member TCEC and also within the SPP. The SPP is an RTO comprised of members in 14 states which provides a vast array of services to its Members from regional scheduling to transmission planning. The SPP is uniquely situated in its role as an RTO to perform regional transmission planning activities. To perform regional transmission planning, the SPP collects data, some of which is confidentially supplied to the SPP, and compiles a transmission plan to integrate loads and generation across the footprint. The costs for these transmission facilities can be allocated either zonally or regionally and then are recovered through rates charged under the SPP Open Access Transmission Tariff ("OATT").

As discussed above, the eligible transmission facilities reviewed and approved by the SPP are recovered through rates charged under the SPP OATT. When there are projects that are constructed outside of the SPP's transmission planning process ("Sponsored Project(s)"), there is another part of the OATT, Attachment "Z2", which contains a cost recovery methodology providing credits to parties which individually incur costs directly assigned by SPP for these Sponsored Projects, which were not identified by SPP as fulfilling a need identified by SPP.

The proposed Wind Catcher Gen Tie-Line is considered to be a Sponsored Project in accordance with the SPP OATT because it is a transmission line providing benefits for both SWEPCO and PSO customers. These entities have stated that the Project is being built to provide immediate economic benefits to customers in the form of reduced energy costs, not to serve growing load. Additionally, the Gen Tie-Line is being built outside of the SPP transmission planning process. As a result, the cost of the project meets the requirements for direct assignment by the SPP to PSO and its affiliates. However, if transmission service is requested by other SPP market participants over this Gen Tie-Line, PSO or one of its affiliates may find it in its interest to request revenue requirements for the Gen Tie-Line be recovered by the SPP from the SPP regional funding process as defined in the SPP OATT. PSO affiliates could attempt such recovery through the Z2 process.

The SPP has developed policies and procedures to implement FERC Order No. 1000 to competitively assign some new transmission projects. Part of this process is to ensure the lowest costs for SPP Members that pay transmission costs. Based on the information in the Application, it does not appear that a SPP competitive bidding process will be used to construct the proposed Wind Catcher Gen Tie-Line; instead, the Gen Tie-Line will be constructed pursuant to an EPC fixed-price contract with a third-party provider, Quanta Services.[20] It is not consistent with SPP's least-cost, footprint wide transmission planning role to provide cost recovery for transmission projects which SPP has not developed or competitively awarded. This Commission should not provide its approval to PSO, which could subsequently be used to offer 'state approval' for a plan inconsistent with SPP procedures.

If a third party requested transmission service on the Gen Tie-Line, Golden Spread asserts that those potential future customers on the Gen Tie-Line should bear the cost of transmission service on this line outside of the SPP regional funding process. This line is planned and would be constructed outside of the SPP transmission planning process. But if it instead had been proposed as part of that process, the project would have faced serious, potentially insurmountable obstacles due to its

[20] *Direct Testimony of Brian D. Weber on Behalf of Public Service Company of Oklahoma* (July 31, 2017) at 3.

extraordinary size and cost and the benefit to cost ratio being skewed in favor of PSO and its affiliates rather than the SPP transmission footprint as a whole. However, under Attachment "Z2" of the SPP OATT a Sponsored Project is allowed to receive credits for additional transmission service provided by the Sponsored Project without respect to voltage size or economic benefit. Therefore, SPP Market Participants could be asked to take on the burden of supporting the revenue requirement for the 765 kv Gen Tie-Line at some time in the future under the under Attachment "Z2" crediting process. PSO does not currently contend that the Project is eligible for any sort of roll-in to transmission rates within the SPP. Still, Golden Spread remains concerned that under the SPP OATT Attachment "Z2" cost recovery methodology, SWEPCO or PSO may make such a claim in the future.

Golden Spread respectfully submits that PSO, and all PSO affiliates, should hold Golden Spread and other SPP transmission customers harmless from any funding of revenue requirements of this Gen Tie-Line through the SPP transmission cost allocation and recovery processes, including Attachment "Z2". PSO and its affiliates should commit up front to refrain from seeking cost recovery from SPP transmission customers for any part of Gen Tie-Line or directly assigned upgrades associated with the project. Golden Spread does not want to preclude the transmission owner from receiving bilateral payments from third parties who wish to directly negotiate with such owner to attach to the Wind Catcher Gen Tie-Line that PSO and its affiliates propose to construct outside of the SPP transmission planning process. However, Golden Spread and other transmission customers should not be held responsible for the significant costs of the Gen Tie0Line. Allowing the shifting of the revenue requirement through the Attachment "Z2" process to SPP transmission customers who do not receive the retail benefits would not be just and reasonable or serve the public interest. This project is solely for the economic benefit of PSO and SWEPCO's retail consumers and not for a larger transmission need in the SPP. Without a firm commitment from PSO or an order of the Commission making this commitment a condition of its approval in this Cause, SPP member participants, including Golden Spread, will be adversely affected.

Golden Spread and its member, TCEC, are non-profit electric cooperative utilities which operate on a cost of service basis, returning all excess margins to their member consumers. These are ratepaying members, and not shareholder investors, and therefore must pay for all of the costs of generation and transmission in their distribution rates. These member consumers, who do not get the benefit of the proposed line, should not be subjected to costs being shifted away from PSO shareholders or customers now or in the future.

IV. RELIEF SOUGHT

Golden Spread respectfully requests the Commission to condition its approval of PSO's requests in this Cause, on requiring PSO, and all PSO affiliates, to hold Golden Spread and other SPP transmission customers harmless from any funding of revenue requirements of this Gen Tie-Line through the SPP transmission cost allocation and recovery processes, including Attachment "Z2". Golden Spread respectfully requests that PSO and its affiliates be required to commit up front to refrain from seeking cost recovery from SPP transmission customers for any part of Gen Tie-Line or directly assigned upgrades associated with the Project.

Novus Windpower

INTRODUCTION

Novus is a front-end developer of wind energy projects with long-standing involvement in work to commercialize the rich wind resource potential of the Oklahoma Panhandle. Operating out of its

company office in Guymon, Oklahoma, Novus has focused its development activities exclusively on the surrounding region, which includes the Oklahoma Panhandle, as well as the North Texas Panhandle. For thirteen years, Novus and its management team have invested considerable time and other resources in Oklahoma and have successfully developed several wind farms now operating in the Novus development area.

Novus, and its development partner Calpine Wind Holdings, LLC ("Calpine"), currently have a 600 MW advanced development-stage wind project (the "Novus Project") located on a site adjacent to the location of the proposed wind farm being built by Invenergy ("Wind Facility") for PSO and SWEPCO, another subsidiary of AEP.[21] The Novus Project is capable of being installed and placed in service prior to the end of 2020, and Calpine has taken the necessary steps to ensure that the Novus Project qualifies for 100% of the federal PTC. As with any other new generation resource in the Panhandle, the Novus Project will be reliant on new transmission resources to deliver the benefits of the Panhandle's wind resources to customers east of the Panhandle.[22]

Novus intervenes in this proceeding as a wind energy project developer that has successfully developed numerous projects operating in the same region as the proposed Wind Facility, which along with a proposed Gen-Tie are hereinafter referred to as the "Wind Catcher Project." Based on its extensive area-specific experience, Novus is well aware that other alternatives are available to PSO in the region.

SUMMARY OF NOVUS POSITION

PSO has applied for various measures of relief (the "Application") from the Commission in connection with its share of the Wind Catcher Project. Such relief is not required for the Wind Catcher Project to move forward - PSO can proceed on this project without the requested relief. However, the Application seeks relief that will shift the financial risk of the Wind Catcher Project from AEP-PSO's shareholders to Oklahoma ratepayers.

PSO is not entitled to this relief under Oklahoma law or under the rules promulgated by the Commission. Novus urges that the Wind Catcher Project, as proposed, would likely have a negative impact on the development of one of Oklahoma's primary resources. The Gen-Tie, as proposed, will be rated at a level that will result in it being fully utilized by the output of the Wind Facility, leaving all other projects in the area stranded unless and until another completely separate, large-scale, long-distance high voltage transmission line is built across the State.[23]

Novus will not present a witness during the hearings on the merits but reserves its right to cross-examine witnesses during the hearings and to fully participate in all aspects of this proceeding. Additionally, Novus reserves any right it has to amend this Statement of Position or offer witnesses based on information gathered through future testimony, discovery, or a significant change in conditions related to this Cause should circumstances change or should information not previously known become available in the course of this proceeding. If any part of this statement is deemed inadmissible, Novus asks that it be considered severed from the document.

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[21] Jay F. Godfrey Direct Testimony on behalf of PSO ("Jay Godfrey"), pg 1:2-8, Paul Chodak Direct Testimony on behalf of PSO ("Paul Chodak"), pg 6:17-23.
[22] Robert W. Bradish Direct Testimony on behalf of PSO ("Robert Bradish"), pg 6:6-8.
[23] PSO Response to Novus Second Data Request, question No. 26.

I. PSO'S APPLICATION DOES NOT COMPLY WITH OKLAHOMA LAW OR COMMISSION RULES

17 O.S. §286(C)(1) allows a regulated utility to seek preapproval for cost recovery to construct new generation facilities. However, reasonable alternatives must be considered and cost recovery ". . . shall be subject to cost recovery rules promulgated by the Commission." [24]

A. PSO Failed to Competitively Bid the Largest Wind Project in the U.S.

The rules implementing Section 286(C) thoroughly outline the RFP competitive bidding procurement procedure and leave little room for ambiguity.[25] Subchapter 34 on Competitive Procurement is designed to establish "a fair, just, and reasonable process that best serves the public interest of all electricity consumers and that will complement and improve the state's economic growth by, among other things, making the most efficient use of Oklahoma's coal, natural gas, and power generation and transmission assets and furthers the policy of the Commission that a competitive procurement process is among the most effective means to achieve these objectives."[26] The rules provide that the Commission has a strong preference for competitive bidding, as "it is the intent of the Commission to create an open, transparent, fair and nondiscriminatory competitive bidding process for the utility to meet its needs." [27] The preference for competitive bidding is so great that a utility is required to pursue the competitive bidding process even if it intends to self-build and own the facility.[28]

Competitive bidding is preferred as it achieves the goals of protecting consumers and preserving and developing Oklahoma resources. Yet PSO chose to eschew this process, claiming there was insufficient time to bid the Wind Facility and still receive the full benefits of the PTC.[29] This assertion by PSO is incorrect.[30]

The Consolidated Appropriations Act, 2016 (the "2016 Act"), which passed on December 18, 2015, extended the PTC. The 2016 Act states that the PTC would start being reduced for wind facilities whose construction began after December 31, 2016.[31] PSO states that the Wind Facility has an accelerated schedule to obtain 100% of the PTC.[32] However, PSO was or should have been aware of the extension of the PTC in December 2015 and has had, and continues to have, sufficient time to develop and implement a bid procedure.[33]

PSO issued an RFP for a much smaller project, soliciting bids in September 2016 ("September 2016 RFP") for 100 to 300 MW of wind energy.[34] It is unclear if the September 2016 RFP was the result of the federal extension of PTC. PSO received bids totaling more than 3,000 MW from PTC-qualified facilities in response to the September 2016 RFP.[35] Despite the significant response, PSO

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[24] 17 O.S. §286(C)(1).
[25] Oklahoma Administrative Code ("O.A.C.") § 165:35-34-1 *et seq.*
[26] O.A.C. § 165:35-34-1(a).
[27] O.A.C. § 165:35-34-1(b).
[28] O.A.C. § 165:35-38-5(c).
[29] Response to Attorney General Fifth Data Request, question No. 14.
[30] Frank Mossburg Responsive Testimony on behalf of Commission Staff ("Frank Mossburg"), pg 38:6-21.
[31] 114 H.R. 2029, Division P, Title II, Sec. 301.
[32] Jay Godfrey, pg 4:3-4.
[33] Frank Mossburg, pg 38:6-21.
[34] Response to OIEC Fifth Data Request, question No. 10, Attachment 1, sections 2.4, 5.7, and 10.2.6.
[35] Response to OIEC Third Data Request, question No. 20, attachment Nos. 1 and 2. While PSO may not have benefited directly from the PTC through a Purchase Power Agreement, it would have received benefits via lower prices allowed by the PTC. *See* Response to the Oklahoma Attorney General Sixth Data Request, question No. 9.

selected only one bid for 100 MW.[36] The single selected bid was subsequently canceled, at least in part due to the Wind Catcher Project.[37]

Prior to the September 2016 RFP, representatives of AEP engaged in discussions regarding an Invenergy project that led to the proposal for the Wind Facility.[38] Internal communications at AEP regarding the Invenergy project were occurring at least as early as June 2016.[39] In July 2016, AEP met with Invenergy and had discussions regarding a large-scale project located in Texas and Cimarron counties.[40] AEP requested some changes to the Invenergy proposal and then presented the Wind Facility to its board in September 2016, the same month PSO issued the September 2016 RFP.[41] The discussions between AEP and Invenergy resulted in the execution of a Joint Development Agreement related to the Wind Facility on November 30, 2016.[42]

PSO maintains competitive bidding was not, and is not, a viable option because of the time requirements to fully qualify for the PTC.[43] The Application attempts to put the Commission in a difficult position, forcing a choice between either upholding the competitive bidding process or allowing Oklahoma ratepayers to obtain the full benefit of the PTC. It is Novus's position that this is a choice the Commission does not have to make, as the project can still be competitively bid and the full benefit of the PTC can be obtained.[44]

PSO witnesses correctly state that the Oklahoma Panhandle has some of the best wind resources available, but PSO did not seek out any other projects in the Panhandle on the same, or similar, terms extended to the Wind Facility.[45] Specifically, the September 2016 RFP requested bids for projects that met the following criteria: 1) have a completed impact study from the SPP, 2) be able to achieve commercial operation by 2018, and 3) be between 100 MW to 300 MW.[46]

The September 2016 RFP limitations prevented any project located in the Panhandle, including the Wind Facility, from being considered.[47] However, the Wind Facility alone was given special consideration in a process completely separate from the September 2016 RFP. The Wind Facility did not, and still has not, had a completed SPP impact study.[48] It will not achieve commercial operation until 2020. [49] And while the September 2016 RFP was limited to 300 MW, the Wind Facility will be the single-source supplier for PSO's entire 600 MW needs— identified in the 2017 update to PSO's 2015 Integrated Resource Plan—and an additional 1,400 MW for SWEPCO for a total of 2,000 MW.[50]

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[36] Steven L. Fate Direct Testimony on behalf of PSO ("Steven Fate"), pg 11:3-6.
[37] Response to Oneta Power, LLC ("Oneta") Fourth Data Request, question No. 1(i).
[38] *See* the first and second entries in PSO's Amended Privilege Log, dated November 7, 2017, provided in response to the Oklahoma Attorney General Ninth Data Request, question No. 9.
[39] *Id.*
[40] Response to the Oklahoma Attorney General Ninth Data Request, question No. 9, Attachment No. 2, page 57. Michael Bright Direct Testimony on behalf of PSO ("Michael Bright"), pg 3:12-13.
[41] Response to the Oklahoma Attorney General Ninth Data Request, question No. 9, Attachment No. 2, page 57.
[42] Paul Chodak, pg 3:12-15.
[43] Steven Fate, pg 12:4-8.
[44] Frank Mossburg, pg 38:6-21.
[45] Michael Bright, pg 4:10, Jay Godfrey, pg 6:13-18.
[46] Response to OIEC Fifth Data Request, question No. 10, Attachment 1, sections 2.4, 5.7, and 10.2.6.
[47] Response to OIEC Third Data Request, Question No. 20, attachment Nos. 1 and 2. In response to the September 2016 RFP, bids were received for projects located in the following counties: Beckham, Kay, Dewey, Ellis, Grant, Woodward, Garfield, Blaine, Noble, Pawnee, Caddo, Canadian, Woods, Alfalfa, Kingfisher, Logan, and Major.
[48] Response to Novus Second Data Request, question No. 16.
[49] Response to OIEC Fifth Data Request, question No. 6.
[50] Jay Godfrey, pg 7:3-4.

Had PSO solicited bids from the Panhandle on the same terms it considered for the Wind Facility, it is likely that additional bids competitive with the price for the Wind Facility would have been submitted. Novus can confidently assert this because the Novus Project could have supplied, and still can supply, 600 MW of wind at a price competitive with the price to be paid by PSO under the MIPA. While Novus cannot definitively speak to the ability of other developers in the Panhandle to provide these benefits, Novus can confidently assert its ability to do so and adds that it strongly believes there are other projects in the Panhandle that would be competitive if given the opportunity to competitively bid.

B. PSO Failed to Timely File its Application and Failed to Demonstrate Good Cause for a Waiver

Though the competitive bid process is favored, there is an alternative for utilities seeking preapproval.[51] If a utility wants to avoid the competitive bidding process but still seek cost recovery, the utility must file a cause with the Commission before construction on the project has begun.[52] (emphasis added). Having filed this Cause seven months after construction on the Wind Facility began, this alternative is not legally available to PSO.[53]

PSO seeks a waiver of the pre-construction filing requirement.[54] PSO requests that the Commission allow it to seek preapproval, arguing that this Cause was filed before the Notice to Proceed date in the MIPA, the date PSO asserts as the crucial date.[55] PSO cites no authority supporting its request for the Commission to use a date PSO has taken upon itself to determine is more important than the actual date in the rules.

PSO also argues it could not file the Cause before construction began because it needed time to evaluate the Wind Facility after construction had begun.[56] PSO fails to show good cause for a waiver and ignores that the purpose of the pre-construction filing requirement is to allow projects to be evaluated prior to commencement of the project. If PSO's waiver is granted, it will undermine the Commission's role in evaluating projects for which preapproval is sought.

By making the claim that additional time was needed to evaluate the Wind Facility after construction was underway, PSO is attempting to sidestep the Commission's rules. By requesting preapproval, PSO seeks to use ratepayers' money for one of the largest projects ever built in Oklahoma while also ignoring the Commission's rules designed to protect ratepayers from exactly this situation. The rules set out that for preapproval with cost recovery to be granted, the utility must either follow the competitive bidding process in O.A.C. § 165:35-34 or seek preapproval for cost recovery before the utility begins construction. PSO did neither.

II. PSO DOES NOT MEET THE REQUIRED STANDARD OF "OPEN, TRANSPARENT, FAIR AND NONDISCRIMINATORY" PROCESS.

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[51] O.A.C. § 165:35-38-5(e) ("A Cause shall be opened by the utility for cost recovery if the competitive bidding RFP process established in 165:35-34 is not utilized and the utility wishes to gain approval of cost *before* construction starts") (emphasis added)

[52] *Id.*

[53] Response to Oneta Fourth Data Request, question No. 2(a), stating that construction began before the end of 2016; *See* PSO's Application in this Cause, filed July 31, 2017.

[54] PSO Application, Allegation of Fact (e).

[55] Response to the Oklahoma Attorney General's Motion to Dismiss or, in the Alternative, Motion to Assess Costs ("AG Motion to Dismiss"), pg 2.

[56] PSO Application, Allegation of Fact (e).

Even if the Commission grants PSO's request for waiver of the "before construction" requirement in O.A.C. § 165:35-38-5(e), PSO's Application for preapproval should still be denied. Utility projects that undergo the competitive bidding process are afforded a presumption of prudence, but projects that do not undergo the competitive bidding process are not granted any such presumption.[57]

A recent Commission decision illustrates the uphill battle projects face when preapproval is sought without going through the competitive bidding process. In 2015, the Commission denied the request of Oklahoma Gas and Electric Co. ("OG&E") for preapproval.[58] In reaching the decision to deny OG&E's application, the Commission stated that the competitive bidding process "provides open, fair and transparent rules for utilities to secure new generation supplies and assist in assuring acquisition of the most cost-effective resources for customers."[59] The Commission went on to say that having bypassed the competitive bidding process, it was incumbent upon OG&E to show it made the decision in "'an open, transparent, fair and nondiscriminatory process comparable to competitive bidding."[60]

Here, PSO failed to show its decision was reached in an open and transparent process that is "comparable to competitive bidding." PSO never completed a comparative analysis between the prices of the bids received in response to the September 2016 RFP and the cost of its portion of Wind Facility.[61] The Wind Facility was given special consideration not extended to any other projects. The restrictions placed upon the September 2016 RFP, which were not applied to the Wind Facility, effectively excluded the many other projects located in the Panhandle, evidenced by the fact that no bids from projects located in the Panhandle were received in response to the September 2016 RFP.

Unlike PSO, OG&E actually followed the Commission's rules and filed its application prior to beginning construction, yet the Commission denied OG&E's application, stating that it failed to show it had operated in an open and transparent way.[62] The same decision is warranted here. AEP's discussions regarding this project, dating back to at least June of 2016, the special consideration extended to the Wind Facility, the failure to solicit any bids from the Panhandle, the failure to analyze real world alternatives, and the failure to file the Application until seven months after construction began all illustrate a lack of transparency and openness. A primary motivation for such single-minded focus on the Wind Catcher Project—which resulted in the bypassing of the competitive bidding process and a failure to explore reasonable alternatives—appears to be the opportunity to "provide a meaningful capital investment [for AEP] and earnings growth opportunity for [AEP's] shareholders."[63] The selection process for the Wind Facility has been anything but "'an open, transparent, fair and nondiscriminatory' process comparable to competitive bidding."[64] Under the standard applied in the OG&E case, PSO still fails to meet the burden required for preapproval.

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[57] O.A.C. § 165:35-34-1.
[58] Final Order, Order No. 647,346 ("Mustang Order"), *Okla. Gas & Elec. Co. Authorization of Plan to Comply with Federal Clean Air Act and Approval of Mustang Modernization,* Okla. Corp. Comm'n No. 201400229 (Dec. 2, 2015).
[59] *Id.* at I(a)2.
[60] *Id.* at I(a)32.
[61] Response to OIEC Sixth Data Request, question No. 19.
[62] Mustang Order, at I(a)33.
[63] Response to the Oklahoma Attorney General Ninth Data Request, question No. 9, Supplemental Attachment 3: 1) "SWEPCO Presentation," Slide 7 and 2) Supplemental Emails, pg 12.
[64] *Id.* at I(a)33.

III. OKLAHOMA WIND RESOURCES WILL BE WASTED AND THE PREVIOUS INVESTMENTS MADE BY OUR STATE WILL BE LESSENED

Oklahoma has invested heavily in the wind industry in the last decade. Because Oklahomans wanted to create jobs and invest in a growth industry, state leaders brought financial incentives not only for the production of wind energy, but also to attract manufacturing facilities for wind turbine and tower components. Career technology centers created programs to train Oklahomans on turbine repair and installation. Companies came to our state to invest. Landowners reaped the benefits of a surging industry that needed long term leases for land.

A. The Oklahoma Panhandle Has a Largely Untapped Resource in Wind

According to the Oklahoma Wind Power Initiative ("OWPI"), in its 2002 study, Oklahoma has only begun to tap this natural resource. The study suggests that the Texas County and the Cimarron County area of the Panhandle have an installed wind capacity potential of just under 5,000 MW, and Plains and Eastern Clean Line Oklahoma, LLC ("Plains and Eastern") has identified potential service requests totaling 17,091 MW of transmission service.[65] However, due to transmission constraints, only a small portion of that potential has been developed to date.[66] The rest is yet to be developed; thus, vast potential remains. The provisions governing competitive bidding are designed to ensure "the most efficient use of Oklahoma's coal, natural gas, and power generation and transmission assets and furthers the policy of the Commission that a competitive procurement process is among the most effective means to achieve these objectives[,]" making the Commission's concern for the responsible development of Oklahoma's natural resources clear.[67]

Novus supports large scale development of wind energy, especially in the Oklahoma Panhandle. However, as proposed by PSO, the current Wind Facility would leave stranded many of the proposed wind farms, especially all those that are in advanced development stages, by excluding them from the transmission capacity needed to export their planned wind-generated energy from the Panhandle. This would result in the prevention or delay of development of wind resources in the Panhandle. Rules like O.A.C. § 165:35-34-1 evidence the Commission's commitment to promote the wise development of Oklahoma's natural resources and to preserve the economic resources of Oklahomans.

The proposed 1.6 billion dollar Gen-Tie, with 2,000 MW of capacity, is designed and proposed to be fully utilized by the Wind Facility.[68] With no available transmission capacity, other wind developers will be unable to transmit energy from their projects to meet the demands of Oklahoma consumers. And PSO has been very clear: The Gen-Tie is only for the use of SWEPCO and PSO.[69]

Novus agrees that "new transmission that is developed to unlock wind resources [should be] done responsibly and with public interest in mind."[70] PSO's proposal puts into question a transmission line that has been in development for more than five years and that would provide the needed transmission capacity to more fully unlock the vast resources in the Oklahoma Panhandle, the concept of which was approved by the Commission in 2011 in *In Re Clean Line*, Cause No. PUD 201000075.

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[65] OWPI Paper 4, Version Date September 13, 2002, Table 2 on page 3. Mario Hurtado Responsive Testimony on behalf of Plains & Eastern Clean Line Oklahoma, LLC ("Mario Hurtado"), pg 7:10-16.
[66] Robert Bradish, pg 6:6-8. Mario Hurtado, pg 4:6-5:12.
[67] O.A.C. § 165:35-34-1.
[68] Brian Weber Direct Testimony on behalf of PSO ("Brian Weber"), pg 10:5-12;
[69] Response to Novus Second Data Request, question No. 26.
[70] Mario Hurtado, pg 5:15-16.

Novus was an intervener in support of the applicant in *In Re Clean Line*. Clean Line has spent significant time and financial resources in its development work to date.

To responsibly add transmission capacity, Novus's position is that additional transmission in the Oklahoma Panhandle should be aimed at unlocking the wind resources in the Panhandle and should have capacity available to wind developers in the area. The additional transmission capacity promotes the Commission's goal of an economically-competitive environment and the resulting possibilities of lower rates for consumers. Novus also asserts that transmission routing that is substantially completed should be preferred, as it would permit more-timely capture of Oklahoma's natural resources.

In re Clean Line clearly affirms the Commission's duty and power to "guard the public's interest with regard to utility rates. . . ."[71] The Commission is also charged with the "duty of avoiding wasteful duplication costs."[72] In the separate case of *Public Service Co. v. State ex rel. Corporation Commission,* the Oklahoma Supreme Court specifically held that the "Commission has the responsibility to safeguard against unnecessary duplication of distribution facilities and encumbering the landscape, to prevent the waste of materials and natural resources and to minimize costs to consumers."[73]

Though PSO acknowledges it has not done studies considering the impact of the Wind Facility on other Oklahoma Panhandle projects and the ability of Oklahoma ratepayers to utilize these resources in the future, the Wind Catcher Project would likely have a negative impact on both the development and use of Oklahoma resources and the ability of Oklahoma ratepayers to take advantage of these resources.[74] If the Wind Catcher Project is approved as is, with the Wind Facility having exclusive use of the Gen-Tie, other projects in the Panhandle will be stranded with no access to transmission. These negative impacts suffered by Oklahoma ratepayers, Oklahoma resources, and Oklahoma-based developers will be caused by a project with 70% of the benefit designated for other states.

B. The Risks of the Wind Catcher Project are Unprecedented and Not Adequately Mitigated

The risks associated with the Wind Catcher Project also weigh against its preapproval. "Neither the Company [PSO] or its affiliates, have built generation tie lines similar in scale and cost of the proposed Wind Catcher Gen-Tie line."[75] And, as PSO acknowledges, it is unaware of any transmission project of this size or scale that has been built without competitive bidding.[76] Additionally, there are concerns regarding the Gen-Tie's ability to function in less than ideal circumstances, and, as proposed, the Gen-Tie does not provide for N-1 contingency planning in the event the line is damaged due to a natural disaster.[77]

The Wind Facility is likewise uncharted and untested territory for the parties involved in its development and construction. Invenergy, the single source supplier, has never done a project anywhere near the Wind Facility in size and scope. In fact, the largest project Invenergy ever

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[71] 948 P.2d 713, 717 (1997).
[72] *Id.*
[73] 842 P.2d 750, 753.
[74] Response to Novus Second Data Request, question No. 26.
[75] Response to OIEC Sixth Data Request, question No. 1.
[76] Response to OIEC Sixth Data Request, question No. 5.
[77] Daniel V. Bauerkemper Responsive Testimony on behalf of the Oklahoma Attorney General ("Daniel Bauerkemper"), pg 13:3-15:9.

completed is a 288.6 MW facility.[78] PSO is asking the Commission to use ratepayers' money for an investment in the largest wind energy project in the U.S. with a capacity of 2,000 MW, a giant project with unprecedented risks and limited mitigation measures.

Utilities have recently, and are still, acquiring large scale wind energy projects to take full advantage of 100% of the PTC benefits. For example, under the Northern States Power 2016 RFP, a combined 1,550 MW of new wind energy capacity was sought. According to filings with the Minnesota Public Utilities Commission, a total of seven different wind energy projects were selected, using five different wind development companies for risk diversification.[79] Similarly, Southwestern Public Service Company in March 2017 announced plans to add 1,230 MW, in three different project locations with three different developers.[80]

Similar processes and results are described by PUD experts. Mr. Frank Mossburg discusses current RFPs by PacifiCorp and Empire District, and he illustrates that the companies have sufficient time to complete the RFPs and select projects that are diversified in supply sources and qualify for 100% of the federal PTC.[81] Diversification of the generation is key to prudent mitigation of risks, including, but not limited to: (i) execution risks across the supply chain, development efforts, and construction activities; (ii) financing risks; and (iii) technology risks from using a single wind turbine model.

In summary, Novus supports the concept of acquiring 2,000 MW of wind energy from the Panhandle. However PSO's proposal is missing the very important and critical element of cautious and prudent utility practice in order to protect the ratepayers and citizens of Oklahoma. With sufficient time still available to conduct a competitive bid, the Commission could insure any investment is priced competitively, that adequate risk mitigation measures are in place, and that there is broad diversification in terms of project developers, turbine suppliers, and construction companies.[82]

CONCLUSION

Because PSO did not competitively bid this project and did not file this Cause until seven months after construction had already begun, O.A.C. § 165:35-34-1 et seq. precludes preapproval. Even if the Commission grants a waiver of this rule, PSO failed to conduct its selection of the Wind Facility in anything resembling an open and transparent process as required under the recent OG&E case. The negative effects of PSO's selection process is clear: 1) it omitted viable projects that can verifiably provide the energy required by PSO at a competitive cost; 2) it prevented the fair, open, competitive bidding for PSO's wind resource needs; 3) it subjects ratepayers to the risk of relying on a single supplier; 4) it risks isolating the majority of wind resources in one of the highest quality wind areas on the continent; 5) it potentially subjugates the best interest of PSO ratepayers to that of non-resident customers of SWEPCO; 6) it harms overall development of Oklahoma's wind resources; and 7) it fails to consider the impact on ratepayers and their ability to utilize and benefit from additional wind energy resources from the Panhandle in the future.

Based on the harms and risks explained throughout this Statement of Position, Novus requests the following: The Commission deny PSO's Application for preapproval, or, in the alternative, the

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[78] Response to Oneta Third Data Request, question No. 1(e).
[79] Minnesota Public Utilities Commission, Docket No. E002/M-16-777, Document ID Nos. 20179-135205-01, 20169-125077-01, 20171-127804-01, 20173-129927-06, and 201611-126307-01.
[80] Texas Public Utility Commission, Docket No. 46936, Application, pg 20-21.
[81] Frank Mossburg, pg 38:6-21.
[82] *Id.*

Commission conditions PSO's preapproval on their submission of their wind needs to an expedited bidding process. If the Commission does grant PSO's Application for preapproval, in order that the remainder of Oklahoma's valuable wind resources in the Panhandle are not stranded, Novus requests the Commission require PSO to set aside at least 1,000 MW of capacity on the Gen-Tie to be open to developers not involved in the Wind Catcher Project.

TCEC

Tri-County Electric Cooperative, Inc. ("TCEC") hereby submits its Statement of Position in the above-styled Cause:

1. TCEC is concerned that it not bear any of the costs at any time of the Wind Catcher Energy Connection Project including, specifically, costs of the extra high voltage generation transmission tie-line proposed under the Project that PSO or its affiliates may seek to recover through wholesale rates that would not arise bur for the issuance of a grant of certificate of convenience and necessity in this Cause.

2. TCEC reserves its right to supplement this Statement as may be necessary if additional concerns arise hereafter in the course of this Cause.

REBUTTAL TESTIMONY SUMMARIES

PUBLIC SERVICE COMPANY

PAUL CHODAK

Mr. Paul Chodak, Executive Vice President – Utilities for AEP, provided rebuttal testimony on behalf of PSO.

Mr. Chodak's rebuttal testimony responded to positions brought forward by PUD witnesses Mossburg and Chaplin, Attorney General witness Bohrmann, OIEC witness Norwood, and Oneta witness Perryman. Mr. Chodak testified that in order to secure the full federal PTC value for the benefit of its customers, the Company had to strategically proceed with the Project without implementing a competitive bid process. The Company conducted robust and extensive due diligence and analysis including ensuring the terms of the MIPA and the EPC contract with Quanta provide positive risk protections for the Company and customers. Mr. Chodak also introduced the guarantees the Company is proposing to mitigate customer risk and secure the significant benefits for customers.

According to Mr. Chodak, PSO is proposing to construct the Project because the availability of federal PTCs provides an opportunity for PSO to secure a significant amount of fuel cost and PTC savings for its customers over the next 25 years. Although other parties have characterized PSO's proposal as having cost and performance risk, their arguments boil down to the assertion that not all of the projected costs and savings can be forecasted with complete accuracy at this time. But that is true for any generation project, and for that matter, many transmission projects. The existence of some amount of uncertainty about future costs and revenues is not a reason to reject the proposed Project or to subject it too onerous conditions, as several of the witnesses propose.

Therefore, in an effort to address and meet customer concerns, PSO is proposing the following guarantees:

1. An investment cost cap equal to 110% of PSO's original filed capital estimates, excluding AFUDC;
2. A guarantee that the Project will qualify for 100% of the federal PTC;
3. A guarantee that the Project will produce a minimum annual production at the bus-bar of 2,220 GWh on a 5-year average;
4. A guarantee that 100% of off-system energy sales benefits associated with the Project will be allocated to customers;
5. The Company agrees to notify PUD if terms more favorable to customers are agreed to by SWEPCO in any of the state utility commissions under which it is seeking approval of the Project, and agrees to incorporate them into the guarantees for the benefit of PSO customers;
6. The Company agrees to file a base rate case no later than 180 days after the Project reaches Commercial Operation; and
7. The Company agrees to a 10 year look back of the Project, using the Company's proposed net benefit calculation, and provide credits that will ensure customers do not lose money if wind production is lower than 21,627 GWh over the ten year period and gas prices are at the Company's ultra-low values.

With the guarantees outlined above, even under a low gas price scenario and a corporate tax rate of 21%, the customers of PSO will benefit from the Wind Catcher Project.

Mr. Chodak further testified that the real question presented in this proceeding is whether the Project will lead to meaningful savings for customers over the next 25 years. If the Commission does not find PSO's evidence of likely savings to be credible, it should reject the proposed Project on that basis, not on the basis that the Project did not result from an RFP.

The window provided by federal tax law for gaining 100% of the PTCs has now closed, so if PSO were to start over with a new RFP (assuming that 2,000 MWs could even be found and efficiently delivered on a congestion-free basis to where the energy is needed), it would likely harm customers because any new projects may only be eligible for 60% or less of the PTCs.

According to Mr. Chodak, there are times, such as this unique situation, when substantial customer value should not be sacrificed in favor of following a process. The competitive bid process the Company typically follows would not have allowed, from a timing perspective, the opportunity to lock in the full PTC value for our customers. A competitive bid process is one way to bring value to customers, but it is not the only way.

The intervenors suggest there may be some hypothetical projects at some unknown locations that may produce more savings; but the Company's generic wind case, a proxy for the market as supported by Company witness Pfeifenberger, demonstrates that there is not. These hypotheticals cannot compare to Wind Catcher's delivered cost of $26/MWh congestion- and curtailment-free energy in constant 2021 dollars over a 25-year period.

Mr. Chodak further testified, during 2016, the Company started to observe significant congestion in the SPP marketplace. As a result, it began to consider options on how to avoid future congestion costs. The Company then theorized that a dedicated generation tie-line could deliver this low-cost power from the Oklahoma Panhandle directly to the AEP load zone in SPP. This idea would avoid the congestion and curtailments that would likely substantially reduce the output and value of PTC megawatt hours. The Company recognized the value of delivering thousands of 100% federal PTC qualified megawatts of wind energy from the Oklahoma Panhandle to the AEP load zone in SPP.

A Joint Development Agreement with Invenergy was entered into on November 30, 2016. In January of 2017, AEP engaged the Brattle Group to test the reality of the potential benefits of this integrated project. In parallel, the Company continued its further evaluation of multiple scenarios for voltage, wind farm output selection, additional siting feasibility and preliminary routing. In addition, the Company modeled multiple economic scenarios using various gas price assumptions. A generic wind case was also being developed to determine the value of the Project benefits vs. potential generic wind purchases. Beginning in April of 2017, the Company began to finalize the Project cost estimates and continued negotiating the two multi-billion dollars contracts. All of this work culminated in the regulatory filings made in Oklahoma, Arkansas, Texas and Louisiana in July of 2017.

Mr. Chodak testified that after evaluating the potential benefits of this integrated project, AEP undertook a significant modeling analysis to more precisely quantify the value of the Project to our customers over the life of the Project. Additionally, contracts were negotiated for the construction of the Wind Facility and the construction of the Gen-Tie in order to include refined project cost estimates, as well as significant risk protections for customers, in the overall analysis of the Project net benefits.

While, in many instances, a generation RFP process is an appropriate mechanism for selecting among developed projects, in this instance AEP was presented with a unique opportunity and had to first define and develop the Project over a period of several months. The conception and development of the Project was followed by an intense evaluation period of iterative modeling and analysis. The Company had to convince itself that there was something of robust value for its customers before a request for approval before this Commission could be filed.

Given the deadlines the Company faced, the Company did well to develop this Project in time to allow customers to benefit from the full value of the Production Tax Credit.

JAY F. GODFREY

Mr. Jay F. Godfrey, Managing Director – Energy Marketing & Renewables, submitted rebuttal testimony on behalf of PSO.

Mr. Godfrey's rebuttal testimony responded to certain contentions of PUD witnesses Mossburg and Chaplain, Oneta witness Perryman, and OIEC witness Norwood. His rebuttal testimony addressed: (1) the offers received from PSO's 2016 wind RFP as compared to the Project; (2) concerns cited regarding the projected Wind Facility capacity factor and; (3) other miscellaneous criticisms including a discussion on why it is reasonable to include contingency in the generic wind case modeled by Company witness Pearce.

According to Mr. Godfrey, PUD witness Mossburg is comparing and speculating on two different products with each having its unique benefits and protections.

As with prior wind PPAs PSO has entered into that are standard in the industry, the proposals received from the RFP would have placed all of the congestion and economic curtailment risk including loss of PTC on PSO's customers. In comparison, and as described in the Direct Testimony of Company witnesses Chodak and Fate, the Project has unique benefits for customers, one of which is that it provides congestion-free delivery of a volume of low-cost energy directly to PSO's load. This will drive down the cost to serve PSO's customers through lower congestion costs. The Project also: (1) allows for the development of wind generation in an area with one of the best wind resources in the region and country; (2) maximizes the potential PTC value through a higher capacity factor; and (3) takes advantage of economies of scale during construction. For example, the purchase price of

approximately $1,347/kW for the Wind Facility as defined in the MIPA is lower than the typical costs of developing wind resources in the SPP. The $1,347/kW is the lowest cost that Mr. Godfrey had seen in the past decade.

Mr. Godfrey further testified that congestion decreases the value to the energy output produced by the Project. In the case of generic wind and/or the RFP bids, the congestion either decreases the benefits or increases the cost of wind facilities depending on how one looks at it.

According to Mr. Godfrey, including a provision in the RFP whereby the Seller assumes all congestion risk and delivers the energy to PSO's load in Tulsa would have likely resulted in 1) fewer, if any legitimate offers and 2) offers that would have been likely significantly higher in price. Even if a counterparty submitted a bid under an RFP that assumed congestion risk, the credit requirement alone for the bidder(s) to backstop the congestion risk on a 20-year PPA for 2,000 MW would likely be in the hundreds of millions of dollars.

Mr. Godfrey did not agree with PUD witness Mossburg's statement regarding risk protections in the MIPA. The risk protections for the customer included in the MIPA, are just as strong, if not stronger, than in a PPA according to Mr. Godfrey.

- Recent PPAs typically have availability guarantees that are 90%. In contrast, the Wind Facility has protections in place from Invenergy for greater than 96.0% availability with liquidated damages as described in the O&M Agreement included in Exhibit P of the MIPA.
- There is a risk of re-pricing to the Company if a PPA does not materialize during the contract negotiation phase or development.
- Because transmission expansion has not adequately kept up with the wind generation build-out in SPP, resulting in increased congestion, the Company would be exposed to even larger PTC make-whole payments exposure under a typical "take and pay" PPA.

In response to Mr. Mossburg's testimony that there was still time for PSO to conduct a competitive procurement and have offers resulting from the process qualify for the full PTC, Mr. Godfrey testified there is not enough time for PSO to conduct a competitive bid process and still get the Project completed before the safe harbor deadline. Even if one was to assume that PSO had the ability to develop an RFP for energy delivered to load and issue it by the end of the first quarter of 2018, then receive bids in Summer of 2018, evaluate and negotiate the contracts by the end of the 2018, the Company would still need to go through the regulatory approval process. This then means that the Company could possibly give a Notice to Proceed by the end of 2019 resulting in a little more than 12 months to 1) design and construct a wind project (2,000 MW; 800 wind turbines) and 2) design, permit, acquire the right-of-way, and build a transmission solution. It is doubtful any developer could meet that time schedule or have the financial wherewithal even if they were willing to put up the hundreds of millions in credit support to PSO required to backstop the contractual obligation for delivery of congestion free energy to PSO's customers.

Mr. Godfrey did not agree with the assertions of either of the witnesses or the proposed adjustment of Mr. Norwood regarding the Project's capacity factor. The Company completed substantial due diligence on the wind resources of the Wind Facility and are confident the project will perform according to expectations. The Company's due diligence, including the use of extensive on-site meteorological data correlated to long-term reference weather stations, is the best data that can be utilized to develop long-term wind resource estimates. Anecdotal information such as that proffered by

PUD Witness Chaplin and Oneta Witness Perryman should be given little weight. Similarly, arbitrary reductions in the assumed energy production based on no analysis whatsoever, such as the 10% proposed reduction suggested by Mr. Norwood, provide no meaningful basis for assessing the value of the Project to customers.

In response to Oneta witness Perryman's contention that PSO did not consider turbine and performance degradation (at pages 15, line 7 through page 17, line 11) in the modeling of the benefits of the facility by Company witness Pearce, Mr. Godfrey testified that Mr. Perryman was incorrect in his characterization. The P50 capacity factor presented in the Wind Analysis in Exhibit JFG-4 (at page 29 of 213, Table 5-1) reflects items such as "Turbine and blade degradation" losses that are accounted for in the 51.1% forecasted annual net capacity factor. Because the net capacity factor utilized as an input in the modeling of Company witness Pearce did account for "Turbine and blade degradation" losses.

MICHAEL L. BRIGHT

Mr. Michael L. Bright, Managing Director – Projects, for AEP, filed rebuttal testimony on behalf of PSO.

Mr. Bright's rebuttal testimony responded to positions brought forward by PUDwitnesses Mossburg and Melvin, Oneta witness Perryman, and OIEC witness Norwood. His rebuttal testimony addressed: (1) the low risk associated with construction cost overruns or schedule delays for the Wind Facility; (2) the reasonableness of the amount of contingency estimated for the Wind Facility; (3) the reasonableness of the O&M expenses estimated over the life of the Wind Facility; and (4) the realistic design life of the Wind Facility.

Mr. Bright did not agree with the assessments of PUD witness Mossburg, Oneta witness Perryman, and OIEC witness Norwood. According to Mr. Bright, the total installed capital cost for the Wind Facility is reasonable, and there is a low risk for cost overruns and schedule delays because the MIPA, contains a fixed purchase price, risk protections, and a clearly defined scope for completion of construction for the Wind Facility.

Mr. Bright testified that the MIPA provides significant risk protections substantiating the low risk for installed capital cost overruns and schedule delays associated with the construction of the Wind Facility. Some of the risk protections include:

- A fixed purchase price of approximately $2.7 billion
- Defined, limited adjustments to scope and price
- Liquidated damages for delays
- Reduction of payments if not all wind turbines are completed in time per the MIPA
- Requirement of credit support
- Ability for step-in rights and early closing
- Termination rights

Mr. Bright further testified that a substantial portion of the scope, and thus the risk for cost overruns on the Wind Facility is contained by the fixed price and protections included in the MIPA. There is limited scope outside the MIPA totaling approximately $208 million of 7.1% of the total installed capital cost including the contingency amount of approximately $93 million, or 3.2% of the total installed capital cost. He further testifies the contingency amount is commensurate with the risk

and reasonable based on his eleven years of estimating, planning and delivering complex projects. The fixed purchase price and protections included in the MIPA reduces the buyers' risk (PSO) and therefore the contingency allocation.

Mr. Bright testified that Invenergy has extensive experience in developing and constructing wind farms and has developed 77 wind projects across North America, Latin America, Japan, and Europe, totaling over 10,071 MW and currently owns and operates almost 4,000 MW of wind generation in North America. Invenergy's experience makes them an industry leader recognized by the American Wind Energy Association as the second largest developer and fifth largest owner of wind capacity (MW) for 2016.

In addition, as set forth in the MIPA, Invenergy will leverage a group of pre-qualified (experienced, safe, and financially sound) contractors who have all previously bid and/or completed work with Invenergy on wind projects. Their collective experience is responsible for tens of thousands of MW of wind projects constructed in North America. Invenergy has the experience to install 800 WTG having the same design. Also, a Turbine Supply Agreement with General Electric, a leading supplier of wind turbine equipment in North America, ensures delivery of the turbines to support the construction schedule.

Mr. Bright further testifies by reference to witness Fate's rebuttal testimony as to there being essentially three layers of protection to ensure full eligibility for the PTCs. First, the Wind Facility is being constructed on a very precise timeline that is supported by the terms and protections of the MIPA. Second, the IRS allows for "excusable delays" that the Project would more than likely qualify for in the event of a delay. Finally, in an effort to further guarantee that customers receive the full value of the PTCs, the Company contracted through Invenergy for an alternate point of interconnection to make sure the Wind Farm can be commissioned and reach commercial operation even in the unlikely event the Gen-Tie has not achieved commercial operation by the end of 2020.

According to Mr. Bright, the O&M Agreement includes an Availability Guarantee. Invenergy Services guarantees no less than 96.0% availability or is to pay liquidated damages and provides independently audited results by DNV-GL of Invenergy Services ability to deliver a fleet-wide turbine availability of 96.6% from December 2008 through August 2016.

According to Mr. Bright, the O&M Agreement was included in the MIPA by design not only to obtain a qualified operator for the Wind Facility in the first five years, but also to ensure an efficient start-up, commissioning and transition into the operational period of the Wind Facility. Invenergy Services currently provides wind O&M services to 23 wind farms and approximately 2,000 turbines. The Company contracted with Invenergy, an experienced operator, to provide skilled technicians and subject matter expertise in operating and maintaining the Wind Facility the first five years but also to reduce complexities in transitioning from construction to operation.

Mr. Bright testified that the O&M projections for the Wind Facility have not been understated. The first five years of operation of the facility is based on a fixed operating fee for routine services, as well as the benefits of a two-year warranty from equipment vendors, and support from an experienced, reputable service provider (Invenergy Services) who has, and will, assist with annual budget forecasts such as major maintenance and materials and supplies. The national average cost for wind from the EIA report of $39.70/kw-year (2016$) used by Mr. Melvin in his O&M calculation is based on a single 100 MW wind facility according to the report. The BNEF cost of $29.64/kw-year (2016$) used by the Company is an average of all full service contracts from a database representing 20,500 MW. Mr. Melvin's calculations also did not recognize the warranty provision in Years 1 and 2 that should reduce

O&M costs in those years. The Company's O&M forecast is in line with published industry costs by Bloomberg New Energy Finance ("BNEF") and reflect the amount of expense reasonably expected to be incurred during the expected life of the Wind Facility.

Mr. Bright further testified that the 25-year design life is appropriate. The 2012 UK and Danish report referenced by Mr. Perryman admittedly states that "the reasons for the observed declines in normalised load factors cannot be fully assessed using the data available but outages due to mechanical breakdowns appear to be a contributory factor". In other words, the author of the report concedes that a lack of maintenance is most likely the cause of the shorter operating life in UK and Danish wind facilities.

The Wind Facility O&M forecast is based on maintaining the availability and performance of the turbines through condition monitoring systems, routine preventative maintenance, planned corrective maintenance, and major maintenance and overhauls.

Additionally Mr. Bright testified GE completed a Mechanical Loads Analysis confirming the loads found, using the wind data and turbine siting provided by Invenergy, were within the design loads envelope of the turbine as well as determining the loads are within the design loads for the 25-year design life.

KELLY PEARCE

Mr. Kelly D. Pearce, Director - Contracts and Analysis for AEPSC, provided rebuttal testimony on behalf of PSO.

Mr. Pearce's rebuttal testimony addressed the following:

1) Why the evaluation of the Project differs from the assessment of responses to the Company's 2016 RFPs and the costs of the Project must be considered in total;
2) Why concerns that the Project represents a flaw in the Company's resource planning process are misplaced; and
3) Why the economic benefits of the Project as presented by the Company represent a reasonable range of expected outcomes and the multiple one-sided economic adjustments made by certain intervenors, particularly when combined, do not provide a reasonable view of the Project's benefits for customers.

In response to PUD witness Mossburg making comparisons to the Company's 2016 RFP responses, Mr. Pearce testified that Mr. Mossburg does not appear to dispute that the Project Wind Facility's levelized cost of energy ("LCOE") is less than the LCOE of any response presented in the RFP results prior to the addition of the costs of congestion and losses.

Mr. Pearce did not agree with Mr. Mossburg's characterization of the RFP assessment. According to Mr. Pearce, the Company's primary intent in its assessment of the RFP responses was to compare the RFP responses on a relative basis in order to make award selections. As such, the Company utilized a single data point for congestion, 2019, and then assumed such congestion declined to zero over 25 years. This was a very optimistic assumption about future congestion relief, but was reasonable given the purpose of the RFP. Some parties express concern about certain risks associated with the Project compared to typical PPAs. However, it is important to recognize that PPA projects have no deliverability requirement beyond their own busbar. All downstream costs of congestion and losses are borne by the Company and its customers. This is precisely why, for purposes of its analysis

in this case, the Company modeled the entire SPP RTO to obtain a reliable quantification of congestion in absolute (as opposed to relative) terms.

The generic wind case forecast the congestion and loss costs associated with procuring wind through PPAs.

In response to Mr. Mossburg questioning the Company's strategic planning, Mr. Pearce testified that what Mr. Mossburg is advocating is precisely what the Company has proposed. Wind technology has been dropping in costs and wind projects beginning construction prior to 2017 are eligible to seek qualification for the full PTC. In this instance, making a resource decision within a specific timeframe was in the best interest of PSO customers, as federal law has drawn a clear economic "line in the sand" with the phase out of the PTC. The phase out of the PTC is certain and supersedes any hypothetical or perceived benefit of continuing to analyze and wait on possible future technological advances which would have to overcome the substantial value lost by foregoing the PTC. Furthermore, the Company did compare the Project to a Base Case that met the Company's future resource needs with state-of-the-art natural gas combined cycle ("NGCC") units, and the Project Case is projected to result in significantly lower costs to PSO customers. Thus, to suggest that PSO did not consider resource alternatives is inaccurate.

According to Mr. Pearce, AG Witness Carl Stover made many adjustments to present a modified view of the Project forecasted benefits.

Mr. Pearce agreed with Mr. Stover that the Commission should consider a reasonable range of assumptions and corresponding outcomes. That is why, in support of its Application in this case, the Company presented low, baseline, and high gas price scenarios. In fact, at the request of OIEC, the Company developed, and the Attorney General utilized (Mr. Stover p.18, lines 20-22) an ultra-low gas sensitivity, which still is forecasted to result in roughly break-even Project economics for PSO customers under the anticipated new 21% federal corporate income tax.

Mr. Pearce did not agree with Attorney General witness Stover deducting the capacity value because PSO's portion of the Wind Catcher Project will receive the benefit of 86 MW of capacity in the SPP market as provided for in SPP's own intermittent resource capacity determination methodology. There is no reason to eliminate this benefit of $74 million.

According to Mr. Pearce, Mr. Stover has also eliminated the impact of potential future carbon costs and arbitrarily increased the Gen-Tie Line costs.

Mr. Pearce testified that the Company did not dispute that enough downward adjustments can be concocted – in this case (a) to decrease natural gas prices across the entire 25-year study period to values not seen in any like period in recent history, (b) assume no chance of future environmental costs of carbon over that 25-year future period, (c) assume, contrary to SPP's defined methodology, that the Company will not receive any capacity value from the Project, and (d) assume the capital costs of the Project will increase greatly above its forecasts – to make the Project appear uneconomic. If this approach were used, virtually no investment in beneficial resources would be made and the overall cost of serving customers would undoubtedly increase. Instead, prudent resource planning dictates that the Company make decisions based on the best information available at the time.

OIEC Witness Scott Norwood made no less than seven adjustments to arrive at almost $2 billion of reduced value to the Project.

The two largest adjustments made by Mr. Norwood are mutually exclusive. That is, they *cannot* happen simultaneously and their combined probability is zero. For example, Mr. Norwood first makes the adjustment to the benefits from the Company's base case to reduce it downward by $544 million. This left expected PSO customer benefits at $452 million, which is the benefit shown in my direct testimony Exhibit KDP-3 comparing the Project to the Generic Wind case. This presumes, consistent with Mr. Norwood's later testimony, that the Company should have used a baseline that included generic non-Project wind. In other words, as discussed below, Mr. Norwood argues the Company should have used the Generic Wind Case as the Base Case. Mr. Norwood then goes on to deduct $636 million of benefits in his Table I based on assumed lower natural gas prices. However, because both the Project case and Generic Wind resources would sell energy into the same SPP market, a lower gas price that reduces the SPP market price would bring the value of market energy sales down for both of those resources in a similar manner. Thus, it would not create an additional reduction of value as compared to the Generic Wind case as Mr. Norwood suggests. The relative economics of two wind resource cases are similarly impacted by natural gas and market prices and depend on a comparison of the wind costs, congestion, etc. between the two wind scenarios. While neither of these adjustments are appropriate, they certainly cannot be combined in the manner Mr. Norwood suggests.

Regarding Mr. Norwood's other adjustments, Mr. Pearce testified that the Company provided the Project's forecasted "expected value" to customers in this proceeding and that these adjustments, particularly when combined, should be recognized as having a very low probability. Mr. Pearce deferred to other Company witnesses to opine on the potential and reasonableness of the gas price decreases, capital cost increases, reduction in PTC value, congestion cost decreases, and an assumed 4-year regulatory lag. As the likelihood of each of these assumptions diminishes, the likelihood of them all occurring simultaneously diminishes in a compounded fashion and approaches a remote, Armageddon-like scenario. Conversely, if gas prices exceed expectations, capital costs come in under budget, or the avoided congestion costs increase, customers stand to extract even more value from the Project than the Company's Base Case, and at no additional cost to them or benefit to the Company. These outcomes should also be considered according to Mr. Pearce.

According to Mr. Pearce, Oneta witness Perryman made an arbitrary and unsupported set of adjustments to arrive at a net cost for the Project as shown in his Attachment MRP-6. Generally speaking, his prior comments on such adjustments carryover to Mr. Perryman's adjustments. Mr. Perryman assumes that Wind Catcher will perform at only the P90 level capacity factor as a basis for his benefits assessment, from which point he makes further downward adjustments. Based on the Wind Resource Assessment sponsored by Mr. Godfrey (Exhibit JFG-4), there is only a 10% probability of this outcome alone, and Mr. Perryman provides no substantive critique of the wind report supporting the Wind Facility's projected capacity factor.

Mr. Pearce further testified that he had identified objective errors in the workpapers supporting witness Perryman's Attachments 5 and 6 that, when corrected, change his calculated net *cost* for the Project of $221 million to a net *benefit* of $167 million. That is, Mr. Perryman's own calculations, when performed correctly, reflect that the Project would be expected to provide customer savings notwithstanding his erroneous adjustments.

Mr. Pearce further testified that the Company does not agree that it is reasonable to assume as a starting point a P90 capacity factor for the Project, as there is a **90% chance** the Wind Facilities will perform better than that and generate significantly more revenues and PTCs to the benefit of customers. Nor does the Company believe the remainder of Mr. Perryman's assumptions, especially taken together, constitute a reasonably likely scenario. However, these corrections to Mr. Perryman's exhibit

demonstrate that, even with Mr. Perryman's highly unfavorable assumptions, the Project would still be expected to produce savings for customers.

According to Mr. Pearce, the Company, through its testimony and discovery has performed an extensive analysis based on a wide range of scenarios and sensitivities. These included the financial risks of reduced corporate tax rates, higher and lower Project construction costs, high, low and ultra-low gas prices, and higher and lower capacity factors. All of these analyses indicated the Project would deliver substantial benefits to customers and provide a reasonable risk-reward range of outcomes.

JOHANNES P. PFEIFENBERGER

Mr. Johannes Pfeifenberger, a Principal with the Brattle Group, testified on behalf of PSO.

Mr. Pfeifenberger's rebuttal testimony responded to positions brought forward by PUD witnesses Mossburg and Rush, Attorney General witness Beling, OIEC witness Norwood, Oneta witness Perryman, and Windfall witness Petrie. Specifically, his rebuttal testimony addressed and explained the following in response to these witnesses:

- The impact that the likely understatement of wind resource additions in SPP's PROMOD models for 2020 and 2025 has on estimated SPP market prices and wind-related congestion costs;
- The simulation results reflect a conservatively low estimate of future wind-related congestion in the SPP footprint;
- The likely understatement of SPP future wind additions has very little impact on the value of the Wind Catcher Project relative to the Base Case and conservatively understated the Project's benefit relative to alternative wind procurement, such as modeled in the Generic Wind Case;
- The combination of the Company's PLEXOS and PROMOD simulations was necessary and reasonable for assessing the Project's benefits;
- The "market heat rates" associated with the simulation results are reasonable;
- The choice of SPP-selected locations for generic wind resources is reasonable;
- The estimated PPA cost for new wind resources is reasonable and consistent with public PPA data and the Company's 2016 RFP results;
- The comparison of the Project Case with the Base Case and Generic Wind Case is a reasonable approach to understanding (1) the overall benefits of obtaining wind resources and (2) the benefit of obtaining wind resources through the proposed Project relative to alternative procurement options; and
- The benefit extrapolation methodology presented by Mr. Petrie under his assumed gas price scenarios is inaccurate and unreasonable.

Mr. Pfeifenberger agreed with PUD witness Mossburg that SPP's ITP10 "Future 3" PROMOD models, which the Company relied on to develop its Base, Project, and Generic Wind cases, understate the likely amount of new wind generation that will be developed in the SPP footprint. Mr. Pfeifenberger concluded that the 2025 SPP PROMOD case likely understates total SPP wind generation by 4,000 to 6,000 MW based on what is known today.

Mr. Pfeifenberger did not agree with witness Mossburg that additional wind generation would "have the effect of depressing market prices and lowering the benefits of additional development." Instead, Mr. Pfeifenberger testified that the net effect of added wind resource deployment in western

SPP has only a very modest impact on market prices is eastern SPP, slightly increases Project benefits relative to the Base Case, and significantly increases of the Project benefits compared to alternative wind resource procurements (such as simulated in the Generic Wind Case), which would be exposed to increased congestion resulting from the additional wind resources.

Mr. Mossburg reaches a contrary conclusion by focusing only on the small negative impact that additional wind resources will have on the LMPs received for Project energy delivered in the eastern portion of SPP. He fails to consider that this same impact also reduces the price of off-system purchases PSO will make, which constitute a greater volume of energy than PSO's portion of Wind Catcher energy. But more importantly, Mr. Mossburg fails to appreciate the much larger impact of incremental congestion that will likely result from the wind resource additions. This congestion impact acutely affects alternative wind resource procurements (as analyzed in the Generic Wind Case) but is avoided by the Project by virtue of the Gen-Tie line.

Specifically, Mr. Pfeifenberger assessed that adding 5,700 MW additional wind resources to the SPP simulations would be estimated to cause a less than 5% reduction in AEP Load LMPs as well as the LMPs at the Wind Catcher Project's Tulsa injection node. He concluded that the combination of these impacts means that adding 5,700 MW of wind to the SPP simulations would reduce the value of Wind Catcher output by less than 5%, while it would simultaneously decrease by approximately the same percentage the cost of all PSO off-system purchases. As Mr. Pearce shows in Exhibit KDP-4 of his direct testimony, the volume of PSO's market purchases is over two and a half times the volume of PSO's share of Wind Catcher generation - which means PSO and its customers would see a small net benefit associated with additional future wind compared to the presented simulation results that contained less future wind in the SPP footprint.

Mr. Pfeifenberger testified that the estimated modest impact of adding additional SPP wind generation on SPP market prices is consistent with other studies of such impacts. For example, a November 2017 study by the Lawrence Berkeley National Laboratory and Argonne National Laboratory ("LBNL-Argonne Study") summarizes eleven other studies that quantified very similar impacts on wholesale power prices of increasing renewable energy shares of total generation supply. While these studies show price impacts in RTOs other than SPP, they indicate that price impacts of additional future wind predicted by SPP's PROMOD models are reasonable in terms of their magnitude.

Mr. Pfeifenberger testified that 5,700 MW of wind additions (which is in line with the likely understatement of incremental wind resources by 2025 in SPP's "Future 3") would mean that SPP wind generation will face approximately $10/MWh higher average congestion charges than reflected in the 2025 PROMOD simulations that support the Company's Application. This would substantially increase the congestion benefit of the Wind Catcher Project over generic wind procurements because the Project's Gen-Tie line would avoid exposure to such congestion charges. He assessed that 5,700 MW of additional wind in SPP would result in an additional $700 million of congestion costs in the Generic Wind Case. In other words, the benefits of Wind Catcher would further increase by approximately $700 million relative to the Generic Wind Case.

Mr. Pfeifenberger testified that as wind capacity has been added to the SPP footprint in recent years, congestion between wind sites and load has already grown significantly. He summarized an analysis he performed of the annual average marginal congestion cost ("MCC") differences between generator locations and AEP load for all existing Oklahoma wind resources over 100 MW. He highlighted that as wind capacity has been added to the SPP footprint in recent years, average hourly congestion between these wind sites and AEP load (weighted by their name-plate capacities, not hourly

output) has already grown almost nine-fold from $0.89/MWh in 2014 to $7.96/MWh in 2017. He noted that because these values are simple averages of hourly MCC data, not wind-output weighted averages that consider that congestion will generally be higher when wind output is high, these hourly averages will understate the true congestion costs associated with these wind resources.

Mr. Pfeifenberger testified that the average level of congestion documented in his analysis is also consistent with the average hourly LMP differences between western SPP (such as the Oklahoma Panhandle) and SPP's eastern load centers, as documented in SPP's State of the Market Reports. By relying on the published SPP average Price Map (covering the period Sep 2016-Aug 2017) from the Summer 207 SPP State of Market Report, Mr. Pfeifenberger showed that the LMP differences between the wind-rich regions with low-cost wind resources and the load centers in eastern SPP range between $10-$15/MWh.

Mr. Pfeifenberger testified that other regional markets with significant wind and transmission development are experiencing congestion trends similar to those observed in SPP. Mr. Pfeifenberger highlighted that a similar pattern exists within ERCOT, which has seen a substantial growth of wind generation, adding more than 10,000 MW of new wind plants since 2011. Despite the 2013 completion of the $6.9 billion Competitive Renewable Energy Zone ("CREZ") transmission project - consisting of 3,600 miles of various 345 kV lines to accommodate a total of 18,000 MW of wind generation - congestion costs faced by ERCOT wind generators are already increasing again. ERCOT's Report on Existing and Potential Constraints and Needs (December 2016) already noted that:

> [t]he Panhandle represents another region of concern due to increasing congestion. Although the export constraint from this area had only the seventh highest amount of congestion rent in 2016, it is expected that it will have the highest amount of congestion in the future due to the increasing amount of generation being added in the area behind the export constraint. ...
>
> To address this expected congestion there are two projects planned for the region. One will add two synchronous condensers; the second will add a second 345 kV circuit to an existing transmission line. Both projects, which are expected to be in-service by 2018, will lessen, but not eliminate, stability constraints associated with exporting a large amount of wind-generated power from the area.

Mr. Pfeifenberger also stated that his colleagues have recently estimated the amount of congestion and marginal loss charges faced by wind generators in the western portion of ERCOT. While these wind generators are projected to realize average generator LMPs of only $17.62/MWh in 2018 (when including SPP-style marginal loss-based market design), ERCOT's 2018 Load LMPs are estimated at $24.83/MWh, a $7.21/MWh price difference.

Given the amount of wind expected to be built in SPP through 2025 and the lack of a CREZ-level transmission plan, high congestion costs faced by wind generators in the wind-rich western portion of SPP will be unavoidable - unless, of course, resources such as Wind Catcher are combined with gen-ties that allow them to inject their output directly into the higher-priced load zones in eastern SPP.

Responding to PUD witness Mossburg's suggestion that the Company's Generic Wind Case overstates congestion and that the Company compounded this overstatement by assuming SPP will take no action regarding congestion beyond projects that have already been approved, Mr. Pfeifenberger explained that SPP will likely plan additional transmission to relieve wind-related congestion only as

the level of that congestion rises to a point where the cost of added transmission can be justified. He cited the LBNL-Argonne Study, which shows that the cost of transmission to regionally integrate wind generation tends to average in the $10-17 20/MWh range. Mr. Pfeifenberger further added that the 2025 PROMOD simulations with 1,900 MW of added wind still result in less than $10/MWh of average annual congestion charges between the SPP-selected generic wind locations and the AEP load LMPs. Given that it is now known that the SPP footprint will have to accommodate significantly more wind than SPP had modeled, the 2025 simulations thus reflect a conservative balance of wind and transmission that assumes significant transmission capabilities exist relative to the amount of wind generation simulated. The extrapolation of the 2025 PROMOD congestion results based on the Company's wholesale power price simulations through 2045 (as discussed above) implicitly assumes that, as more wind is added to the SPP footprint over time, SPP would expand transmission such that the ratio of congestion costs to market prices does not increase beyond those in the 2025 simulation results. Extrapolating this 2025 balance of wind and transmission into the future will thus result in a projection of future congestion costs that yields a conservative estimate of Project-related benefits compared to alternative wind procurements.

Mr. Pfeifenberger responded to PUD witness Mossburg's statement that "PSO is asking ratepayers to pay $18.00/MWH to avoid congestion and loss costs." He first noted that, even if it were true (which it is not), Mr. Mossburg's contention misses the point. The Company's analysis demonstrates that the Project provides considerably more customer savings than a generic wind alternative and, for the reasons explained above, has the Company's analysis conservatively understates those relative savings. Accordingly, whatever price Mr. Mossburg assigns to the congestion avoidance that produces those savings, it is clearly a price worth paying.

In addition, while the Gen-Tie is necessary to integrate 2,000 MW of wind generation in the Oklahoma panhandle and deliver 1,900 MW of it to the Tulsa area, doing so offers many benefits beyond simply reducing congestion- and loss-related costs. As a result, it does not require $18/MWh of avoided congestion and loss costs to make the Gen Tie economic. According to Mr. Pfeifenberger, the Project's Gen-Tie line offers the following range of benefits:

- It allows for the development of 2,000 MW of wind generation in a location that offers the best wind quality in the entire region, as the high capacity factor of the Project demonstrates. Without the Gen-Tie line, less wind generation could be developed in the Panhandle, which would require the Company to procure wind from less desirable, higher-cost wind locations;
- The Company's ability to avail itself of the high capacity factor achievable in the Wind Facility' Panhandle location further allows the Company to maximize the value of the PTCs generated by the Project;
- It allows the Company to realize the significant economy of scale associated with developing a 2,000 MW wind resource. As Company witness Godfrey confirms, the turnkey cost of the Wind Facility at that scale is only about $1,347/kW, which is lower than the typical costs of developing wind resources in SPP;
- Injecting the output of the Wind Facility directly into the very robust transmission system in the Tulsa area avoids the economic curtailments that wind plants in other locations must be expected to face; and
- Injecting the output of the Wind Facility directly into the Tulsa load zone slightly reduces the market prices in the AEP load zone, which reduces the off-system power purchase costs faced by the Company and its customers.

In response to PUD witness Rush, Mr. Pfeifenberger testified that the Company performed the Wind Catcher assessment using the most recent SPP-developed "Future 3" PROMOD model in combination with the Company's PLEXOS modeling approach that is used for the Company's IRP assessments. The value of generation projects has always been assessed through the type of PLEXOS analysis presented by the Company in this case, not by SPP through its transmission system planning processes. From an SPP planning perspective, the Wind Catcher project is a Generation Interconnection project. This means, the Project is appropriately being analyzed through SPP's Generation Interconnection process for feasibility of interconnection and to identify any system upgrades necessary to maintain system reliability with the inclusion of the Project. Like other generators seeking interconnection to the SPP grid, Wind Catcher will go through the SPP's Generation Interconnection approval process to ensure its interconnection to the SPP grid is feasible.

The Company has performed the additional PROMOD simulations relying on SPP's stakeholder-reviewed 2020 and 2025 Cases to estimate the Project's impact on market prices and congestion costs faced by the Company within the SPP footprint in order explain and quantify the full value that the Project offers to the Company's customers. In combination with the PLEXOS modeling and Company's simulated fundamentals market prices for SPP through 2045, this yields a reasonable estimate of the Wind Catcher Project's benefits, including a conservatively-low forecast of congestion-related cost advantages as explained above.

Mr. Pfeifenberger disagreed with Mr. Beling's testimony that the "market heat rates" implied assumed in the Company's ultra-low gas price sensitivity are unreasonable for several reasons. First, the Company did not assume a Market Clearing Heat Rate in developing the results for the ultra-low gas price sensitivity requested by OIEC. Rather, it simulated future wholesale power prices under the ultra-low gas case using the same SPP PROMOD models it employed for the Base, High and Low gas price scenarios presented by witness Pearce in his Direct Testimony. Thus, the ratio of wholesale power prices to natural gas prices—or what industry analysts call the "market heat rate"—is an output of the simulated market conditions, not an input assumption selected by the Company.

Second, the Company's ultra-low gas price simulations, provided in response to intervener requests, were only a sensitivity of an unrealistically-extreme case designed to approximate a break-even gas price. When gas prices are so low that natural gas plants out-compete coal plants, wholesale power prices are decoupled from natural gas prices. This increases the observed market heat rates (which are calculated as the ratio of wholesale power to natural gas prices) to the level observed by Mr. Beling. The PROMOD simulation results for the ultra-low gas price sensitivity document this effect of low gas prices—along with other changes in market fundamentals such as load growth and plant retirements.

In summary, and contrary to Mr. Beling's claim, it is neither unreasonable nor unusual for the ultra-low gas sensitivity to result in implied market heat rates that are higher than the market heat rates in scenarios with higher natural gas prices, such as the Company's Base, Low or High Gas scenarios.

In response to Attorney General witness Mr. Beling's characterization of the Company's location assumptions for generic wind as "highly unfavorable", Mr. Pfeifenberger testified that Mr. Beling's characterization ignores the thorough process employed by SPP to select these sites for modeling future wind generation additions. Specifically, SPP determined these locations by reviewing the SPP Generation Interconnection ("GI") queue, ranking the interconnection locations by their GI statuses and then by wind generation capacity factors. From this ranking, SPP then selected the final site locations based on the following priority:

1. Sites with Interconnection Agreement: On–Schedule
2. Sites with Interconnection Agreement: On–Suspension
3. Sites with Interconnection Agreement: Commercial Operation not fully On-Line
4. Sites with Interconnection Agreement: Pending
5. Sites with Facility Study

SPP assigned the highest ranking sites first by the pricing zone and then by state(s) in which a member utility operates. Based on this process, SPP determined 24 wind locations most likely for future wind development as these sites were the most advanced in the SPP GI process for approval to interconnect to the SPP transmission system. Thus, by employing these same locations to site the wind resources in the Generic Wind Case, the Company employed a well-informed and objective basis for determining likely development locations for procuring generic wind.

Further, the estimated future congestions costs at the 24 sites show that there is a wide spectrum of congestion across the sites, with simulation results for a majority of the locations estimating lower congestion than those already observed today between several wind-rich locations in western Oklahoma and the AEP load zone. The fact that congestion varies substantially across locations and can change significantly over time, a pattern consistent with the experience of recent years, also means that there will always be some locations with unexpectedly high congestion charges.

According to Mr. Pfeifenberger, Attorney General witness Mr. Beling's method of selecting the 9 lowest-congestion locations from the PROMOD simulation results is unreasonable for several reasons. First, actual future congestion patterns at specific locations may be very different from those simulated due to wind additions and other developments that differ from those simulated. Second, his approach is flawed because it assumes that placing all 1,900 MW of wind at only a subset of SPP's generic wind locations would not increase congestion costs at those locations. This is an incorrect assumption as it is likely that procuring additional wind from only nine locations (instead of from the more dispersed 24 locations selected by SPP) would substantially increase simulated congestion costs. As explained above, the Generic Wind Case is designed to alleviate concerns regarding this potential effect by dispersing resources across 24 SPP-selected sites likely to materialize.

In response to Oneta witness Perryman's statement that Mr. Pfeifenberger's estimates are not consistent with the current and historical publicly available PPA prices. Mr. Pfeifenberger testified that to validate the reasonableness of his PPA cost estimate for the Generic Wind Case, he was able to rely on both public sources that reported PPA prices and the Company's actual 2016 RFP offers. Mr. Pfeifenberger notes that the estimated PPA price is consistent with the RFP offers received the Company received in 2016. In terms of public sources, he reviewed the Lazard's reported PPA price range for "subsidized" wind generation from the Lazard Levelized Cost of Energy Analysis the U.S. Department of Energy's Wind Technologies Market Reports' summary of average PPA prices for the interior region. The Lazard Levelized Cost of Energy Analysis shows the levelized costs for wind (when able to take advantage of the PTC) ranged from $14/MWh to $48/MWh across the country. Within that range, the U.S. Department of Energy reported that the average wind PPA prices (averaged by PPA execution date) for the "Interior" region of the nation were approximately $20/MWh for the partial year of 2016 (as reported for two contracts in the 2015 Wind Technologies Market Report). His estimate of $18.62/MWh for generic wind PPAs fell within the reported Lazard ranges and was also close to the DOE-reported "Interior" PPA average. The most recent 2016 Wind Technologies report has updated its estimates of PPA pricing based on additional Interior region contract information, which increased the 2016 Interior region average price to $21.35/MWh, which is further above Mr. Pfeifenberger estimated cost for generic wind PPA prices.

Responding to OIEC witness Norwood's statement that "[PSO's] 'status quo' base case is obviously not a realistic scenario and serves to greatly inflate estimated benefits of the wind catcher project by excluding low cost wind energy alternatives", Mr. Pfeifenberger testified that Mr. Norwood appears to misunderstand the purpose of the Company's Base Case. The Base Case reflects a reference market purchase case without additional wind, and is typical of baseline cases used to demonstrate customer benefits in resource procurement cases. Because the Company recognized that it should not simply assume wind resources would be added to the baseline without first demonstrating the benefit of doing so, the Base Case is necessary to assess the benefit of procuring the proposed amount of wind generation now through the proposed Project. The comparison of the Project Case to this Base Case shows that the Company and its customers can realize substantial benefits from the proposed amount of high-quality, PTC-eligible wind through the Wind Catcher Project. Once the significant benefits of procuring the additional wind resources are recognized, the benefits of proposed Project can be compared to benefits of procuring the additional wind through alternative means. The Company's Generic Wind Case allows for that additional comparison.

C. RICHARD ROSS

Mr. C. Richard Ross, the Director RTO Policy SPP/ERCOT for AEPSC, filed rebuttal testimony on behalf of PSO.

Mr. Ross explained that Operating Reserves is generating capability held in reserve, that is not producing energy, so that that extra generating capability is available in the event of resource contingencies and/or to maintain the proper balance between production and consumption within the SPP Balancing Authority. Mr. Ross' focus was on the portion of Operating Reserves SPP maintains in preparation for generation contingencies. These Operating Reserves are maintained so that SPP always has sufficient generating capability available to call on to produce energy in the event of the sudden loss of a large resource in the region.

Mr. Ross stated that PSO had acknowledged in discovery response to the Attorney General's Data Request 14-20 (EXHIBIT CRR-R1), that there may be an impact to the levels of Operating Reserves SPP maintains each day and that it would be appropriate to make changes to SPP's Operating Reserve practices. Mr. Ross further testified that it is important to understand that the need to review SPP's Operating Reserve practices was already under consideration prior to the Company's proposal to build the Project. Regardless of whether the Project is approved in this docket, the Company expects SPP will propose changes to their Operating Reserve practices.

Regarding concerns over increased SPP and operating reserve costs, the Company has done a preliminary analysis on the impact to Operating Reserves in SPP and the associated incremental Operating Reserve costs to the Company based on the expectation that the Operating Reserve determination and procurement will transition to an hourly requirement as opposed to the current practice of setting a fixed daily value before the Project goes into operation. Rather than maintain excess levels of Operating Reserves under the current daily assessment based on conditions that are expected for only a portion of the day, a transition to an hourly process makes sense to maintain Operating Reserves levels consistent with expected system conditions at that time, in each hour. The purpose of the analysis was to determine how often the Project (both PSO and SWEPCO shares) would be generating at MW levels that could potentially lead SPP to consider carrying additional Operating Reserves in those hours. Using an expected MW duration curve associated with the hourly output of the Project for a given year, the analysis determined the periods of time when the Project would be operating at a levels above the largest unit in the region and also the periods in which it would operate above the second largest unit and below the first largest unit in the region. The result of the review is

found in EXHIBIT CRR-2R. This analysis indicates that in approximately 45% of the hours of the year there will be no impact to the SPP Operating Reserve requirements because the Project will be operating at levels below the second largest unit operating in the region. During the remaining hours of the year, the Company anticipates that a significant portion of these additional Operating Reserve requirements can and will be provided from the Company's other resources at little or no additional incremental cost. The remaining portion of the additional Operating Reserve requirements that are not carried by the Company's own resources may result in purchases of Operating Reserves that are expected to cost less than $100,000 per year for PSO as a load serving entity.

Mr. Ross further testified Mr. Cevera's assertion that Operating Reserves will increase by 960 MW in the SPP region, effectively in all hours, is not a credible or realistic outcome. Furthermore, Mr. Cevera has not quantified nor provided a methodology for calculating the impact of an increase in the Operating Reserve requirements.

Mr. Ross testified that Mr. Bohrmann appears to be confusing SPP Operating Reserve requirements with SPP Planning Reserve requirements. Planning Reserves is an amount of accredited capacity a load-serving member in SPP must have above their peak load responsibility. SPP's Planning Reserve requirement is currently 12%. There is no anticipated impact to the Planning Reserve Requirements, attributable to the Project, for the SPP region, or PSO.

Regarding Mr. Stover's testimony, Mr. Stover incorrectly relies upon statements made by Mr. Cevera to conclude that, under the SPP policies in place today, the Project will not be capable of satisfying PSO's planning reserve requirements in the future. Mr. Stover's conclusion is incorrect since it ignores SPP's pending changes to the capacity adequacy policies. The proposed changes will allow an amount of planning reserve capability from a wind facility, determined to be deliverable by SPP, to be used to satisfy PSO's planning reserve requirements without having Firm Transmission Service in place. Although SPP's initial filing in FERC Docket No. ER17-1098 to implement these changes was rejected by FERC, SPP's Supply Adequacy Working Group has revised the proposal to address the issues identified by FERC. The Company expects this revised proposal to be presented to the SPP Board of Directors for approval at their meeting on January 30, 2018. Following approval by the SPP Board, SPP will file the proposal at FERC with a requested effective date of June 1, 2018. In the unlikely event this filing or subsequent efforts to revise the SPP planning reserves policies are not approved, PSO will still have the option to request Firm Transmission Service from the Project, if securing the service will provide additional value in meeting its capacity obligation in SPP.

Mr. Ross testified that an RFP option does not present a better solution to the Wind Catcher Project. In 2016 PSO experienced a significant increase in congestion cost. The Company went from receiving a net credit in 2015 to a net charge of $23.6 million in 2016 for congestion charges net of Transmission Congestion Rights ("TCR"). The majority of these costs are associated with PSO not being granted TCRs for several of its wind resource locations, despite securing Firm Transmission Service. The addition of other resources not associated with PSO, exacerbated the congestion issues and the cost to PSO.

Mr. Ross testified that there are two primary reasons why PSO has experienced this increase in costs. First, PSO was not granted a sufficient volume of TCRs from several new resource locations to the PSO load location. Second, the amount of wind generation on the SPP system has continued to grow. Many of these generators have not taken the steps necessary to request Firm Transmission Service and expand the SPP transmission system. As a result, the additional injections of energy simply overload an already limited system and drive the cost of congestion higher.

Other SPP members have expressed similar concerns and are impacted in the same or similar manner as PSO.

AEP raised concerns with the SPP about these issues shortly after we began to realize the increased congestion cost. As a result, the SPP Market Working Group ("SPP MWG"), at the direction of the SPP Markets and Operations Policy Committee and SPP Board of Directors, has been focused on these issues and has requested SPP staff to conduct studies and provide information necessary to evaluate solutions to this growing problem. The SPP MWG is continuing to review the information SPP has provided and is evaluating alternatives.

Mr. Ross testified that an RFP solution would expose the Company to the risk of additional cost for congestion from these resources to the Company's load. One distinct advantage of the Project over the bids in the RFP is that the benefits of the Project are not dependent on the current or future efforts of SPP to resolve these market structure issues.

RENEE V. HAWKINS

Renee V. Hawkins, Managing Director, Corporate Finance for AEPSC, filed rebuttal testimony on behalf of PSO.

Ms. Hawkins did not agree with Oneta witness Perryman (Page 27, line 1) statement that PSO is using an inappropriate discount rate by using the overall cost of capital for PSO.

According to Ms. Hawkins, the Project as proposed would be a utility asset and the appropriate discount rate is the weighted average cost of capital for PSO. Witness Perryman builds a premise to support a high discount rate starting with the assumption that Wind Catcher is highly risky (page 29, line 19) and by incorrectly incorporating an additional market risk premium by adding the renewable sector beta and resulting market premium to an assumed PSO equity return of 10% (page 29, lines 11-15). This approach lacks precedent and is not supported by returns earned by the sector.

To address witness Perryman's statement on page 28 of his testimony that the customer risks from this Project are much higher than PSO's overall business risk, Ms. Hawkins testified that contained in witness Fate's testimony are the commitments that the Company is willing to make that reduce the customer's risk from the project. These commitments are agreeing to a price cap on the cost of the project, guaranteeing production tax credit eligibility and committing to a minimum capacity factor. These commitments greatly reduce the risks specific to this project and arguably make this project less risky for customers than other generation choices.

Ms. Hawkins further testified that in 2015, the National Renewable Energy Laboratory published a review of the cost of wind energy and calculated cost of capital of 8.3%.

Ms. Hawkins testified that there is data available on wind farm betas that can be used to derive a discount rate for standalone projects based on the CAPM. Witness Perryman, referenced the green and renewables industry beta information available on the website of Professor Aswath Damodaran for the risk project. Ms. Hawkins did not think that the resulting ROE from using the industry beta is additive to PSO's assumed ROE, but instead stood on its own as a proxy for the required market returns for independent wind farm projects. According to Ms. Hawkins, if this Commission prefers to apply a different risk premium to the discount rate for this project, she believed that using the discount rate based on the industry average for the wind farm sector is the more appropriate alternative approach than what was proposed by witness Perryman.

Ms. Hawkins testified that wind farms are not speculatively built and are less risky than other generation investments that have a much longer construction period than wind turbines. Wind farm projects are either backed by long-term purchased power contracts or similar long-term arrangements.

This asset will only be constructed as a utility asset, which supports the proposed discount rate.

Ms. Hawkins further testified that discussions with various banks have been held with respect to interest in a credit agreement for the Project and there is a great deal of interest. Due diligence strongly indicates that the Company will be able to finance the Project at a reasonable cost.

DAVID M. ROUSH

Mr. David M. Roush, Director, Regulated Pricing and Analysis in the Regulatory Services Department of AEPSC, provided rebuttal testimony on behalf of PSO.

Mr. Roush's rebuttal testimony responded to certain positions brought forward in the responsive testimony of Commission PUD witness Kathy Champion and Attorney General witness Todd Bohrmann.

Mr. Roush adopted the Direct Testimony of John O. Aaron dated July 31, 2017, including associated Exhibits, and any discovery responses prepared by Mr. Aaron.

Mr. Roush did not agree with PUD witness Champion's recommended use of a blended allocator of kWh sales and production demand for the Wind Catcher investment costs.

According to Mr. Roush, the allocation of the Wind Catcher Project investment costs in PSO's analysis is consistent with past decisions of the Commission wherein fixed generation costs are allocated on a production demand basis. This approach is consistent with the Commission's findings with respect to PSO wind power resources in Cause No. PUD 200900031 and is also consistent with the Commission's findings in PSO's base case proceedings with respect to the allocation of the fixed costs of generation. Specifically, the method utilized and authorized in Cause No. PUD 201500208 for the allocation of demand-related production costs is the four coincident peak average and excess (4CP A&E) methodology.

Mr. Roush did not agree with PUD witness Champions inclusion of PTCs as a reduction to the Company's base rates.

While the Company agrees that customers should get the benefit of the PTCs, it is the mechanism and timing for doing so where there is a difference in proposed approach. According to Mr. Roush, the Company proposes to match the benefits of the PTCs with the recovery of the costs necessary to achieve those benefits in the WCECA Rider. Once the costs are reflected in base rates and the WCECA expires, the Company anticipated that the PTCs would be reflected in the FAC Rider since the level of PTC credits will vary under the Company's proposal to moderate the year 11 change in revenue requirement. This is similar to how renewable energy credits are currently treated in the Company's FAC and also similar to the approach approved by the Commission for certain PTCs for OG&E. (Cause No. PUD 201500273, Order No. 662059 dated March 20, 2017, page 11). This approach is significantly simpler and less time consuming than base rate case proceedings and ensures customers get the benefit of the PTCs.

Mr. Roush did not agree with Attorney General witness Bohrmann's base case scenario provision wherein there is an annual comparison of the Wind Catcher revenue requirement to the cumulative annual revenue requirement of a hypothetical alternative.

Setting aside whether the proposed concept is reasonable from a policy or symmetry standpoint, an annual comparison for 25 years of actual costs and benefits to projected costs and benefits is complex to the point of not being workable. It is Mr. Roush's understanding that in his proposal, all assumptions from the forecast would be held constant on one side of the comparison whereas the other side of the comparison would use actual cost information. Notwithstanding the inherent inconsistencies, such as not reflecting actual changes in items such as interest rates, to perform a complete comparison would require a computation of both the actual costs and the associated "but for" benefits or savings resulting from the project. Such a computation would require a number of assumptions which would surely be debated extensively resulting in a lengthy, unworkable process. Further, this concept could create customer bill volatility. For example, a credit from one year could be subject to being paid back in a subsequent year.

TIMOTHY B. GAUL

Timothy B. Gaul, Director of Transmission Line Siting for AEP, testified on behalf of PSO.

In response to Clean Line witness Hurtado, Mr. Gaul testified that it was his understanding based upon public information that Clean Line requested the use of federal powers of eminent domain through an arrangement with the U.S. Department of Energy under Section 1222 of the Energy Policy Act of 2005 for the Clean Line project. This request required the development of an Environmental Impact Statement under the NEPA within which the specific purpose and need for the project, siting considerations, and specific environmental impacts for the Clean Line project were assessed and considered in order to receive final approval through a Record of Decision for the Clean Line project.

Witness Hurtado has not provided any additional insight or discussion in his responses as to what potential additional permitting requirements and schedule risks may be associated with using a portion of right of way for the Clean Line project that was originally acquired for a project that was approved under a different purpose and need, under a different regulatory authority, and potentially, with different permitting requirements. Specifically, it is unclear what additional NEPA process may be required to use portions of the Clean Line project, the scope of any such review (as applicable), what federal and state permits (if any) would be transferrable, and what additional permitting requirements might be expected if a portion of the Clean Line project were used for the Gen-Tie.

Mr. Gaul further testified that the Clean Line route, as shown in Exhibit "A" to Mr. Hurtado's responsive testimony, does not connect to the Wind Catcher wind farm nor provide an interconnection to the Tulsa 345 kV network. According to Mr. Gaul, although the Clean Line route provided in Mr. Hurtado's Exhibit is scaled at a very high level with very few geographic boundaries or demarcations, it appears that the Clean Line route would add additional mileage to the Gen-Tie. Based upon a review of the limited route information provided, Mr. Gaul estimates that use of the Clean Line route for the Wind Catcher Project could result in a route that surpasses 380 miles, which is the assumed line length in the Company's EPC Contract. A specific mileage comparison would depend upon both the length to connect to the Tulsa area 345 kV transmission network and the length to connect the Twin Counties substation to the Clean Line right-of-way, as it may exist.

ROBERT W. BRADISH

Robert W. Bradish, Vice President – Grid Development for AEP, testified on behalf of PSO.

Mr. Bradish responded to positions brought forward by PUD witnesses Chaplin, Mossburg and Melvin, Attorney General witnesses Cevera, Bauerkemper and Stover, and Plains witnesses Rawlins and Hurtado. Specifically, he addressed: 1) the need for the Gen-Tie, 2) an explanation of the appropriate SPP process to interconnect the Wind Facility to the SPP system, 3) the inappropriateness of certain alternative interconnection proposals put forth in responsive testimony, 4) the reliability of the Gen-Tie line, 5) the technical aspects of the Gen-Tie line as compared to a High Voltage Direct Current ("HVDC") solution, 6) the reasonableness of the Gen-Tie O&M estimate, and 7) other miscellaneous arguments put forth in responsive testimony.

Contrary to PUD witness Chaplin's statements that the "need for the Gen-Tie is being driven by the size of the Project" and that "PSO ratepayers would pay $487 million for a transmission upgrade related to 1,400 MW of wind that benefits SWEPCO ratepayers", Mr. Bradish testified the proposed Gen-Tie is needed to reliably "interconnect" the Wind Catcher Wind Facility in a cost-effective way while mitigating congestion. PSO's cost of the Gen-Tie is proportionate to its ownership interest in the Wind Facility, which is 30 percent. This level of ownership is also commensurate to the percentage of total project benefits that will accrue to PSO customers.

According to Mr. Bradish, Mr. Chaplin and other witnesses that present responsive testimony on behalf of intervenors fundamentally misunderstand the interconnection component of the Wind Catcher Project. The Gen-Tie line is not a "transmission upgrade" as Mr. Chaplin incorrectly asserts. The Gen-Tie is a "generation tie line" proposed to interconnect the Wind Catcher Wind Facility to the SPP transmission grid. Therefore, according to the SPP Tariff, the proper review of the Project is through the SPP generation interconnection planning process and not SPP's integrated transmission planning process, which would review "transmission upgrades."

In response to Attorney General witness Cevera's claims that PSO did not follow SPP's process in the development of the Gen-Tie, Mr. Bradish testified that Mr. Cevera appears to misunderstand the applicable SPP process that is to be followed to address a Generation Interconnection. PSO, as ultimate owner, and Invenergy, as developer of the Wind Catcher Wind Facility, are indeed following the SPP Tariff that provides the established process for a new Generation Interconnection.

According to the SPP Tariff, the Wind Facility is a Generating Facility and the Gen-Tie is an Interconnection Customer's Interconnection Facility. As such, according to the SPP Tariff, the Gen-Tie is a sole use facility and is governed by the SPP's Generation Interconnection Procedures (SPP Tariff, Attachment V). Section 2.1 of Attachment V states that these "Generator Interconnection Procedures apply, as specified in this Section 2, to the processing of Interconnection Requests for interconnections to the Transmission System that are subject to FERC jurisdiction".

Consistent with these procedures, in November 2016, Invenergy submitted the Interconnection Request(s) to SPP for the interconnection of the Wind Facility generation at the Tulsa North 345 kV station.

In response to PUD witness Mossburg who states that there are other ways for PSO to secure the proposed benefits, including a request to SPP that they undertake a "high priority study" or "advance the Project as a sponsored upgrade", Mr. Bradish testified that the Gen-Tie is a generator tie line for the proposed Wind Catcher Wind Facility that requires the generator to follow the SPP generation interconnection process, not the SPP transmission planning process. None of these approaches, even if they were possible or allowed for a Generating Facility Interconnection Request, will be as effective, certain or timely in providing for the delivery of congestion-free and curtailment-free energy from the Wind Catcher Project to the AEP load zone.

A High Priority Study as defined by the SPP Tariff is a stakeholder requested study. The results of such study do not require the SPP to issue a Notice to Construct a new transmission project.

According to Mr. Bradish, the SPP Tariff rules also would not allow the Gen-Tie to be approved as a Sponsored Upgrade.

Mr. Bradish testified that the Company's approach to construct the Gen-Tie as a generator lead line with a request for generation interconnection in Tulsa is the appropriate path under the SPP Tariff, and also the best and most efficient approach to completing the Project.

According to Mr. Bradish, the Company does not agree with Attorney General witness Cevera that up to 700 MW of generation could be connected reliably in the Oklahoma Panhandle with no technical problems. Nor does this suggestion consider the congestion impact that would occur as a result of such interconnection. The SPP cases analyzed by Mr. Cevera either have the wind generation in the Panhandle area dispatched at the minimum levels or completely turned off. Thus, the analyzed cases do not offer a realistic assessment of the impact of a 700-MW integration to the transmission system in the Oklahoma Panhandle. In order to properly perform a load flow analysis to determine how much generation in the Oklahoma Panhandle can be connected, the generation needs to be appropriately dispatched and contingency analysis performed per NERC and SPP planning criteria. This will determine the steady state limitations. Following the identification of these steady state limitations, a stability analysis also needs to be performed to determine the stability limit. Based upon PSO's experience with the SPP transmission system and active participation in the SPP's planning processes, the Company does not believe there is any additional generation that can be added to the weak transmission system in the Oklahoma Panhandle without curtailments to generation and significant congestion.

Mr. Bradish testified that Mr. Cevera states that he performed a load flow study analyzing the interconnection of 1,400 MW on the 345 KV system in the Oklahoma panhandle.

Mr. Cevera's own analysis and responsive testimony indicates that there are reliability concerns with trying to integrate a 1,400 MW wind farm into the Oklahoma Panhandle transmission grid. However, he offers no assessment of what it would take to address the reliability problems. In addition, he provides no analysis of the impact that integrating 1,400 MW would have on the congestion within the SPP grid.

Attorney General Witness Cevera simply makes a statement, with no analysis to back up his proposal and supposes that congestion will somehow be better relieved in the next few years. However, based on recent analysis from SPP, integration of 1,400 MW into the Panhandle is likely to be one of the worst places on the SPP grid to attempt to integrate such a large amount of new generation. As described on page 18 of Mr. Bradish's direct testimony, SPP has identified the Woodward and Panhandle areas as the two most congested areas in SPP. Attorney General Witness Cevera's suggestion that another 1,400 MW should be directly integrated into the existing grid in the Panhandle area is the last thing that should be attempted as it will only exacerbate the existing congestion issues on the SPP grid. It is also worth noting that the Woodward-Tatonga-Mathewson 345 kV project that Mr. Cevera refers to in his responsive testimony that "may reduce congestion" was already included in SPP's 2025 model (based upon its 2021 need date). As such, the potential reduced congestion suggested by Mr. Cevera has already been factored in to the Company's economic analysis.

According to Mr. Bradish, Mr. Bohrmann's suggested alternatives were not reasonable for this Project.

Mr. Bohrmann's suggested alternatives, which are partially supported in the responsive testimony of OAG witness Cevera, are not reasonable for the following reasons:

1. Near-term interconnection of the Wind Facility in the Oklahoma Panhandle is **not feasible** from a reliability perspective, and would also subject PSO's customers to costly congestion that cannot be mitigated through alternative market actions;
2. SPP's mandate as a regional transmission planning entity requires that it focus on the "region's needs" through consensus among its stakeholders, and;
3. The imperative for a timely interconnection solution for the Wind Facility that provides for congestion-free and curtailment-free delivery, such that the full economic potential of the federal PTC can be realized.

Mr. Bradish testified that the Oklahoma Panhandle's underlying 115 kV transmission system and lack of extra-high voltage transmission infrastructure is not able to integrate a large generator due to the existing significant overloads on the transmission system. Even with a significant rebuild of the area's transmission system, the energy added to the transmission grid must find its way to the load, which directionally flows to the east.

According to Mr. Bradish, PUD witness Chaplin is concerned that the wind farm could be delayed and not placed in service "related to the amount of generation in the SPP generation queue". This is not a valid concern for two reasons. First, Invenergy has submitted a request to SPP for an Interim Generator Interconnection Agreement ("Interim GIA") pursuant to Section 11A of Attachment V of the SPP Tariff. A generator with pending interconnection requests relating to a project that has an anticipated in-service date prior to the expected completion of the interconnection studies pursuant to Attachment V of the SPP Tariff may request and receive Interim Interconnection Service pursuant to an Interim GIA in accordance with the SPP Tariff. Execution of an Interim GIA and receipt of Interim Interconnection Service is an optional procedure and will not alter the generator's queue position. Additionally, the Company has already analyzed the necessary transmission upgrades at the proposed interconnection point, which are estimated at $50 million. These include the rebuilds and reconductoring of several 138 kV transmission lines in the area and upgrade work at the 345 kV interconnection station in Tulsa. The Commission should take some comfort in these estimates as it is customary for SPP to work closely with the incumbent transmission owner (in this case, PSO) to determine solutions for any reliability violations identified in its impact study.

Mr. Bradish addressed Attorney General witnesses Cevera and Bauerkemper concerns over the reliability of the Gen-tie line. Due to the length of the Gen-Tie line, an extra high voltage ("EHV") solution is necessary. An EHV solution will also allow the Company to minimize rights-of-way requirements to connect the proposed generation to its system. In terms of EHV solutions, 765 kV is the most robust, cost-efficient, and reliable solution.

According to Mr. Bradish, AEP operates a transmission system of nearly 40,000 miles across its combined system and has significant experience in the design and operation of transmission facilities. AEP's transmission facilities are designed to modern and current design codes and will withstand typically expected conditions.

Mr. Bradish testified that he had serious concerns regarding the technical feasibility of a direct current ("DC") solution for this Project as proposed by Plains. The problem is that the 2,000 MW of wind turbines require short circuit capacity at a short circuit ratio of about 2. In addition, HVDC Line Commutated Converter ("LCC") rectifiers will be needed in order to convert and enable delivery of the energy on to PSO's Alternating Current ("AC") transmission system. The HVDC LCC will also

require short circuit ratio minimum of about 2 as well. These short circuit ratios in a situation like this tend to be more additive than sharing, and so the total short circuit capacity required by both the HVDC and the wind plant is approximately (2000 + 2000) x 2 ≈ 8,000 MVA (megavolt ampere). Therefore, the use of HVDC LCC technology would require a source of short circuit capacity. Two potential sources of this capacity would be the use of synchronous condensers or tying the project into the grid in the panhandle. Given the lack of strength in area of the Oklahoma Panhandle transmission system, it is likely the Plains project proposal would need to add synchronous condensers. This adds additional cost and complexity to the HVDC project beyond the HVDC cost estimate provided in the rebuttal testimony of Company witness Weber.

PUD Witness Melvin claims that O&M costs for the Gen-Tie facilities are underrated uses a simplistic and an inappropriate estimation methodology and incorrectly applies it to the Gen-Tie.

PUD witness Melvin has used historical transmission O&M cost and circuit mileage data, as sourced from the Company's FERC Form 1 filings, to develop a $/mile O&M cost, which he then applies to all 350 miles of the Gen-Tie to determine an annual O&M cost.

His approach utilizes a method for determining an overall O&M rate for an entire multi-element transmission system of various voltages, vintage year, and material and construction type (wood vs. steel, single pole vs. lattice tower, etc.). It is not appropriate to factor in the higher level of blended costs to operate and maintain a mixture of newer and older vintage transmission facilities of varying voltage and transmission design to develop a proxy cost for a newly constructed steel line like the proposed Gen-Tie. The Gen-Tie will afford a low $/mile O&M cost relative to one based upon a large system's average rate. Additionally, as addressed in PSO witness Weber's testimony, the Company has a 3-year warranty for all installed equipment on the Gen-Tie facilities, further providing comfort for the Gen-Tie O&M estimate.

BRIAN D. WEBER

Mr. Brian D. Weber, Managing Director – Transmission Business Development for AEPCO, provided rebuttal testimony on behalf of PSO.

Mr. Weber's rebuttal testimony responded to positions brought forward in responsive testimony by Clean Line witnesses Rawlins and Hurtado, Attorney General witness Bauerkemper and PUD witness Melvin. His rebuttal testimony addressed 1) the reasonableness of the Company's risk reducing and low-cost fixed-price EPC Contract for the Gen-Tie scope of work, 2) concerns regarding the viability of the Company's project schedule for the Gen-Tie and 3) certain assertions and issues raised in a comparison of the Clean Line Project and the Company's Gen-Tie project.

Mr. Weber testified that the estimated cost of the Gen-Tie, inclusive of AFUDC, is $1.624 billion. The majority of this cost is supported by the fixed price agreement with Quanta to EPC the Gen-Tie under a fixed price contract (the "EPC Contract"), which provides for actual contracted costs for design, material procurement, construction labor and equipment with a known schedule including milestones with meaningful performance guarantees from a qualified and financially stable company with significant financial backstops. The remaining costs for right of way acquisition and internal support costs are a small portion of the project.

OAG witness Bauerkemper does not provide any justification for his statement that the Gen-Tie may be understated by as much as $414 million.

There appears to be no basis for his $1.889 billion estimate beyond the opinion of Mr. Bauerkemper and his reliance upon conceptual planning estimates, which provides for additional potential costs without consideration that the fully executed EPC Contract has cost control measures that do not allow for such cost increases.

According to Mr. Weber, Mr. Bauerkemper's comparison of planning-level estimates with the EPC Contract's actual contracted costs for design, material procurement, construction labor and equipment with a known schedule, including milestones with meaningful performance guarantees from a qualified and financially stable company with significant financial backstops is inappropriate.

Mr. Weber testified that PSO did not have enough time to run a RFP process for the Gen-Tie scope of work while also maintaining a Guaranteed Completion Date backstopped with associated performance guarantees prior to December 31, 2020, prior to the schedule needed to initiate the regulatory proceedings for the Wind Catcher Energy Connection Project. Furthermore, while the Company would have preferred to run a competitive process for the Gen-Tie scope of work, undertaking a full RFP process for the EPC Contract was not feasible within the timeframe necessary for this Project while prudently managing risks and ensuring completion by December 31, 2020. Further, the Company did not have a final scope of work for the selected Gen-Tie configuration until June 2017.

While the Gen-Tie scope was being determined, Quanta provided advanced design and pricing work on two different scopes (345 kV BOLDTM and 765kV), at no cost to PSO, which culminated in a final committable price and informed the decision to determine the preferred scope of 765 kV. This was a significant undertaking, which itself took 6 months.

Mr. Weber testified that to ensure successful construction of the Gen-Tie, a contractor which had the most demonstrated 765 kV expertise, financial capability and access to manpower needed to be engaged to complete this work. Quanta was the most qualified contractor to deliver the Gen-Tie on time and within expected quality.

In response to Attorney General witness Bauerkemper, Mr. Weber testified that AEP has never communicated to any contractor that they could not provide budgetary pricing, nor would AEP view a relationship with any of its contractors more poorly simply because they provided estimate information in a regulatory proceeding. Attorney General witness Bauerkamper provides no specificity to the names, exact statements or even quantity of the contractors which provided this alleged input, so it is not possible to respond directly to these claims. However, providing more than the conceptual planning-level estimates, which Mr. Bauerkamper sponsors elsewhere in his testimony, would require contractors to be both qualified to design and construct 765 kV projects and willing to make a significant investment in reviewing the scope of work and design and procurement activities, such that firm estimates could be provided.

According to Mr. Weber, the EPC Contract's Contract Price is based upon a route of 380 miles. The "Central Route," as identified by Clean Line witness Rawlins, represented one potential route identified in the Company's feasibility study for conceptual routing, which totaled 351 miles.

In response to Clean Line witness Rawlins's statement that the Gen-Tie schedule has "leaked into 2021", Mr. Weber testified that this statement is a mischaracterization of the Gen-Tie schedule. The Guaranteed Completion Date and Substantial Completion Date remain December 15, 2020. As outlined in the response to Clean Line upon discovery, the Preliminary Schedule incorporated in Exhibit B of the EPC Contract is exactly that, preliminary. As outlined in Section 12.1 of the EPC

Contract, the Key Project Date(s) are the milestones which the Contractor must meet. The Guaranteed Completion Date is a Key Project Date which also triggers significant liquidated damages if it is not met pursuant to Section 33 of the EPC Contract. The Project Schedule is the governing document which the Company will use to monitor the progress of the Gen-Tie against the key milestones and is provided within 5 business days of the Contract Date pursuant to Section 12.3 of the EPC Contract. As further outlined in Section 12.3 of the EPC Contract, this Project Schedule is a living document, is updated weekly, and is provided to the Company at least every two weeks.

In response to Clean Line witness Hurtado's statement that "with only this initial level of development work done, there is no way to provide more than an estimate costs or schedule based on comparable data." Mr. Weber testified that this statement ignores the EPC Contract, and the substantial protections within it, which acknowledge and address the very issue of time constraints and the development work in support of the Gen-Tie, which is already underway. In contrast to the high level statements of potential cost and risk reductions made by Clean Line witnesses Hurtado and Rawlins, the EPC Contract provides for actual contracted costs for design, material procurement, construction labor and equipment with a known schedule including milestones with meaningful performance guarantees from a qualified and financially stable company with significant financial backstops.

Mr. Weber testified that Clean Line has not indicated whether they have an assignable construction contract or can otherwise offer the level of certainty that the EPC Contract offers. At this stage, even if the Gen-Tie could be wrapped into the Clean Line project from a technical and schedule perspective, undertaking the work to re-scope and fully contract for it to the level of the EPC Contract would add significant delay risk.

Further, the Clean Line Project and the Wind Catcher Gen-Tie do not address the same need. According to its website, the Clean Line project is designed to deliver 3,500 MW of wind energy from western Oklahoma to customers located in Arkansas and Tennessee. As outlined in the testimony of Clean Line witness Hurtado, Clean Line has service requests for 17,091 megawatts compared to its 4,355 megawatts of west to east transfer capability.

According to Mr. Weber, the Gen-Tie line is a dedicated facility with transfer capacity, which as designed, will deliver only the output of the Wind Catcher Wind Facility to AEP's load zone in the Tulsa area. Based upon witness Hurtado's statements, approximately 9,000 to 15,091 megawatts of wind generation remain available for utilization by the Clean Line project, and there is no need to combine the Clean Line and the Wind Catcher Project.

There is significant wind and associated demand for transmission in the Oklahoma panhandle, which in total could more than fully utilize both the Wind Catcher Gen-Tie and the Clean Line project.

RICHARD G. SMEAD

Mr. Richard G. Smead, Managing Director, Advisory Services, for RBN Energy LLC ("RBN"), testified on behalf of PSO.

Mr. Smead testified that the purpose of his rebuttal testimony is to evaluate the reasonableness of the natural gas price analysis incorporated in the Wind Catcher proposal.

For purposes of assessing the long-term costs and benefits of this project, Mr. Smead believes that the AEP Fundamentals Analysis relied upon by PSO uses a reasoned methodology to reach a range of prices that are appropriate to use, as explained by Mr. Bletzacker.

According to Mr. Smead, the prices yielded by the AEP Fundamentals Analysis are higher in the near term than the current experience in the industry or the short-term outlook. However, over the extended period that must be assessed in evaluating Wind Catcher, a period that does not start for three more years and ends in over a quarter century, it is essential to employ the sophistication and complexity of a full fundamentals model, not merely make assumptions from a current snapshot or from the gas futures market. PSO has done so, in a process quite similar to what the U.S. EIA does each year in its AEO.

None of the responsive witnesses challenged the methodology or assumptions used in the AEP fundamentals analysis. Uniformly their criticism, at least with respect to natural gas prices, relates solely to their belief that the answers should be different, based on recent experience, the futures market, and current progress in shale development.

Mr. Smead testified that dealing with future variability is exactly what long-term fundamentals analysis is all about, to examine scenarios in which multiple variables interact to cause a variety of possible outcomes, in order to inform long-term commitments. In other words, a 30-year decision cannot be made based on a short-term snapshot. An example of that type of long-term scenario analysis is what EIA does with its National Energy Modeling System, which balances a multitude of variables to determine the forward trajectory of prices for all energy commodities as those variables interact. The AEP Fundamentals Analysis used by PSO is similar in its approach.

The current EIA long-term forecasts support the reasonableness of the PSO estimates. Shale abundance is recognized throughout EIA's estimates.

EIA's rapid and steady progression of recognizing shale's contribution to abundance and low prices has essentially reached a stable level. Accordingly, Mr. Smead has a great deal of confidence relying on EIA's range of estimates in testing the reasonableness of PSO's analysis.

According to Mr. Smead, Mr. Perryman compared only with EIA's "reference case," one out of eight scenarios in a very complex fundamentals analysis. The reference case essentially freezes facts and trends at their current state, not taking into account proposed legislation, changes (positive or negative) in the rate of technological progress, or other fundamental changes. In order to deal with uncertainty about the future, EIA produces the multiple scenarios. In Mr. Smead's opinion, it is not valid to use EIA's estimates as a single scenario--the agency has intentionally examined a broad range of outcomes specifically because no one knows the future with any certainty. Mr. Smead had frequently heard comments from senior EIA officials to the effect that because the reference case does not include probable changes in facts, policies, or assumptions, it is not dispositive. Thus, Mr. Perryman's comparison is not a valid evaluation of the reasonableness of the PSO fundamentals analysis.

In November, the International Energy Agency ("IEA"), the multinational agency that examines energy dynamics across the globe, issued its World Energy Outlook ("WEO2017"). At page 373, WEO2017 included Henry Hub price estimates in constant dollars, which Mr. Smead converted to nominal dollars for comparative purposes.

The IEA estimate is squarely in the middle of both the EIA estimates and PSO's estimates. In Mr. Smead's view, although IEA has not presented multiple price scenarios, this corroborates the confirmation of PSO's analysis derived from the EIA estimates.

Mr. Smead examined the Energy Markets Outlook (non-governmental analysis) produced this year by his former colleagues at Navigant. Mr. Smead confirmed that its primary case is virtually identical to IEA's estimates.

According to Mr. Smead, PSO's analysis is almost perfectly consistent with the EIA average, which takes into account not just EIA's reference case, but all of EIA's plausible variance cases.

As explained by Mr. Bletzacker, the Company used a multiple-scenario, fundamentals-based long-term forecast, with full awareness of and familiarity with the evolution of shale development and natural gas demand markets. The end result of the analysis is borne out by both the Federal authority charged with estimating future energy prices and the international agency that performs that function for the world. The international agency's estimate is consistent with the long-term industry view produced by a reputable expert. Most importantly, the Company analysis fulfills the need for a multi-scenario, balanced approach to support long-term capital choices, as opposed to relying upon current and short-term factors that can experience various changes over the life of the subject project. Accordingly, consistent with Mr. Smead's own longstanding faith in the reality of and potential for shale abundance, with the resulting production of reasonably priced gas supply in the long term, Mr. Smead testified that he strongly believes PSO's analysis to be a valid, reasoned approach to making its long-term economic choices, and that the results are reasonable for the intended life of Wind Catcher.

It is Mr. Smead's understanding that the largest share of PSO's planned new generation units over the next twenty-five years are gas-fired combined-cycle. Consistent with that, Mr. Smead understands that PSO's recently filed 2017 IRP includes 972 MW of gas-fired combined-cycle and combustion turbine capacity during the 2018 through 2027 planning period (70 percent more than the Wind Catcher capacity), along with 800 MW of solar. The IRP also includes expansion of wind capacity, the bulk of which is satisfied by Wind Catcher.

Mr. Smead testified that for long-term investment decisions, such as is at issue in this proceeding, the futures market is irrelevant.

Futures prices are nothing but a compilation of commitments made by individual entities, for whatever reasons motivate their decisions. Estimating the future price of natural gas by relying on far-out futures prices is, in his opinion, akin to predicting the PowerBall winner by averaging the numbers of all the bets.

Mr. Smead further testified that Dr. Zhu's allegation would suggest that a futures price with no takers, no sellers and no buyers, or with only one or two, is a valid price for the entire market, reflecting all the information available to all market participants. The allegation is not even slightly valid. It is the equivalent of arguing that an election with no votes reached some sort of result. Meanwhile, the loss of liquidity in further-out years is a very real phenomenon, and it happens quickly for natural gas.

According to Mr. Smead, the reasons individual parties commit or do not commit to futures prices for some period can be many, and do not necessarily tell us anything about the real future price of the natural gas. And in examining distant future periods when virtually no one has committed to a price, the futures market offers no truly useful information for making a long-term capital decision.

Regarding Mr. Petrie's testimony, Mr. Smead testified that as with all the other responsive witnesses, he never appears to address any of the assumptions or mechanics that led to the pricing results of the PSO analysis. When he refers to "forecast assumptions," he appears to mean simply the

price levels yielded by the analysis. It must be noted that the prices used by PSO are the result of a complex analysis and are not "assumptions."

Mr. Petrie did not offer an alternative fundamentals analysis for the time frame relevant to Wind Catcher.

Mr. Petrie explains thoroughly and well the current state of the natural gas industry and its short-term prospects. However, the only calculations in his testimony and exhibits that actually extend beyond the start-up date for Wind Catcher in 2021 are in the table on page 13 of his testimony and the net present value analysis on page 24 of the exhibit labeled as No. TAP-1, wherein he applies his assumptions about prices.

Both instances of future calculations simply assume three constant price levels. Mr. Petrie does not present any long-term analysis that derives price estimates. Conversely, PSO's analysis econometrically derives future natural gas price levels for the PSO scenarios.

Mr. Smead's own firm's view of current and four-to-five-year fundamentals is consistent with Mr. Petrie's as far as he knows. His disagreement with Mr. Petrie has to do with how to consider the longer term, and the role that these analyses need to play in decisions such as Wind Catcher, a role that really requires the kind of comprehensive fundamentals analysis conducted by PSO.

According to Mr. Smead, the most important incorrect statement is at page 14, lines 1-11, in which Mr. Petrie asserts a lack of difference between a decision by private sector investors and a capacity-choice decision by a regulated utility. Mr. Smead agreed with his belief that the underlying analysis must be credible. However, there are two major differences between the investment and utility-choice situations: First, it is critical to recognize that PSO's obligation as a utility is not simply to invest in moneymaking ventures, but to provide reliable, reasonably priced, environmentally responsible electricity to Oklahomans. The economics of new capital commitments are one, albeit important, element, but only one. By contrast, for the private-sector investor with whom Mr. Petrie is intimately familiar, the economics of the investment frequently constitute the entire question. Secondly, unlike private-sector, unregulated investors, it is necessary for PSO, as a regulated utility, to accommodate policy priorities that may or may not have an economic element. Examples of such policy priorities could be movement toward renewables, movement toward portfolio balance, or other non-economic factors.

There are three types of plausible exposures that could increase prices over time. Restrictions on development or infrastructure, requirements causing additional cost, and changes in performance success.

Mr. Smead stated that he would be optimistic that the industry will be able to grow supply and access without material restrictions. However, given the level of political pressure in negative directions, in designing a balanced generation portfolio, it is essential for utilities such as PSO to take a balanced approach to future estimates and not simply assume that today's situation will never change.

Mr. Smead testified that the most material type of restriction could relate to bars on hydraulic fracturing, the core extraction process underlying the shale revolution, along with the potential for restrictions on infrastructure development.

Mr. Smead testified that there are two broad categories of cost increase exposures the industry could face, operation and remediation. In the operational area, Mr. Smead would include the fact that

after the collapse of oil prices in 2014, oil field service companies offered deep cuts in their fees for drilling, for completion, and for all the necessary services they provide. As the industry regains its health, one would expect those companies to want to return to profitability by charging more. Remediation relates to the kind of additional costs the industry might have to incur to avoid losing its "social license to operate," including enhanced water treatment, new disposal options, repiping to avoid methane emissions, etc.

Mr. Smead testified that the potential for changes in performance success relate to the unknown impact of scaling back up to higher production levels, wherein drilling departs from the highest-productivity "sweet spots," and ventures into geological regimes where there is less experience.

Mr. Smead concluded that Mr. Petrie's testimony appears to adopt the premise that whatever the state of the industry is today, the industry over the next three decades can be assumed to be essentially identical, a premise that Mr. Smead indicates PSO cannot blindly rely upon in its long-term planning.

KARL R. BLETZACKER

Mr. Karl Bletzacker, Director, Fundamentals Analysis, AEPSC, provided rebuttal testimony on behalf of PSO.

Mr. Bletzacker did not agree with PUD witness Mossburg and OAG witness Zhu's assertion that NYMEX natural gas futures contract values should be substituted for the Company's fundamentals forecast values for reasons including the following:

1) The NYMEX natural gas futures contract is priced for uniform hourly and daily rates of flow over the course of the delivery month. In contrast, the Company's natural gas price forecasts are: i) projections of daily spot prices presented as monthly or yearly averages (of those daily spot prices); ii) not volume-specific throughout the month; and iii) inclusive of prices associated with intra-month periods of both high and low daily demands.
2) A goal of many energy futures market participants is the capture of price spreads between time periods and between different commodities. Hedging, or "locking in," price spreads between time periods is necessary, for example, to assure a natural gas storage operator can capture the seasonal or month-to-month values of physical natural gas injected and withdrawn. Similarly, price spreads between: i) natural gas, propane and other natural gas liquids ("fractionation spread"), ii) natural gas and electricity ("spark spread"), and, iii) coal and electricity ("dark spread") also illustrate this widely accepted use of spread-trading energy futures contract prices to hedge recovery of the capital and operating costs of certain physical assets. NYMEX natural gas futures market participants who hedge the price spreads between time periods and different commodities are indifferent to the current or future spot market price of the commodity – they are only interested in the spread in price.
3) Open Interest (the total number of open futures contracts of a given commodity) is extremely low, or zero, for NYMEX natural gas futures beyond the near term. Price propositions shown for this period of little or no open interest may not reflect actual NYMEX transactions, and should any attempt be made to purchase natural gas futures contracts in this period, the increased demand would likely run up prices. Consequently, the lack of futures market liquidity beyond the near term does not even provide clarity to the traditional energy futures market participants.

4) In addition to the illiquidity of the NYMEX natural gas futures contract beyond the near term, NYMEX natural gas futures contracts are not available at all beyond the next twelve years. The Company's natural price forecasts extend thirty years.
5) The twelve-year life of a NYMEX natural gas futures contract will present a wide range of trading values. The lifetime trading range of these futures contracts was as much as $8.92 (March 2012) and as little as $3.04 (March 2017). Upon expiration, each NYMEX futures contract will settle to a terminal value and converge to the actual value of natural gas at the Henry Hub, but a snapshot of those trading values at any given point over the contract's lifetime provides no insight as what that value may be.
6) Energy futures market volatility is synchronized to the volatility of current spot market prices rather than factors relevant to the long-term. NYMEX natural gas futures contract values are tethered to current spot market prices, even though there may be no structural change in the long-term supply and demand fundamentals. Long-term futures contract values follow nearby spot market prices and present considerable variation and uncertainty for long-dated futures market prices – even within the short timeframe shown. By contrast, a judicious long-term fundamentals-based energy market forecast is not driven by such nearby events such as the Polar Vortex, the warmest winter on record in the lower 48 states, or periods of illiquidity in a futures market contract.

Mr. Bletzacker further testified that Mr. Norwood's substitution of NYMEX futures prices for judicious, model-driven, fundamentals-based assessments (Norwood Resp. Testimony, page 27, lines 7-11), as are the EIA's and Company's forecasts, is erroneous for the reasons already described. Furthermore, Mr. Norwood misrepresents that he is using actual "current NYMEX futures prices" (Norwood Resp. Testimony, page 25, lines 13-16). In reality, Mr. Norwood has fabricated an arbitrary extension of NYMEX futures prices beyond their twelve-year trading period with gas prices resulting from his own inferred values and escalation rate. Mr. Norwood represents to the reader that he has evaluated the benefits of the Wind Catcher Project based upon "current NYMEX futures prices for natural gas." But, to the contrary, Mr. Norwood himself has produced two-thirds of those natural gas prices for his subsequent Wind Catcher Project benefit evaluation.

According to Mr. Bletzacker, the comparisons of the Company's natural gas price forecasts to the EIA, as presented by PUD witness Mossburg and Oneta witness Perryman, do not incorporate the entire range of potential outcomes proposed by the EIA.

Mr. Mossburg (Mossburg Resp. Testimony, page 25, lines 2-5) and Mr. Perryman (Perryman Resp. Testimony, page 18, lines 3-13 and page 18, lines 1-5) compare only one "Case" of the EIA's 2017 natural gas price forecast to the Company's Low and Base Cases, respectively. The EIA states, in the Overview/Key Takeaways portion of the 2017 Annual Energy Outlook ("AEO"), that "many of the events that shape energy markets and future developments and technologies, demographics, and resources cannot be seen with certainty." To bound this uncertainty, the EIA presents six plausible Side Cases: High and Low Oil, High and Low Economic Growth, and, High and Low Oil and Gas Development Technology in addition to their Reference Case.

Mr. Bletzacker reasonably concluded: 1) the Company's forecast range is at, or below the centerline of the EIA's bounding range of plausible cases; 2) beyond 2035, the Company's forecast escalation is minimal and beyond 2040, the EIA's escalation is also minimal; 3) both the EIA and Company forecasts demonstrate a rise in natural gas prices between 2025 and 2035 in response to potential carbon regulations; and 4) neither forecast substitutes NYMEX natural gas futures for model-driven, fundamentals-based assessments of natural gas supply, demand and the resulting price.

Mr. Bletzacker did not agree with OAG witness Stover's assertion that the Company's fundamentals forecast is not supported by the current status of carbon regulations.

According to Mr. Bletzacker, Mr. Stover asserts (Stover Resp. Testimony, page 4, lines 13-17) that the Company's Fundamentals Forecast presents high carbon costs which are not supported by the current status of carbon regulations. However, a long-term forecast is not merely concerned with the current status of regulations and other current conditions that affect prices, but instead must also reflect reasonable expectations regarding future conditions that affect prices. For nearly one decade, the Companies' Fundamentals Forecast Base Case has consistently included a carbon price proxy. This carbon price proxy is intended to reflect the risks and costs associated with the regulation of carbon dioxide emissions from fossil fuel-fired power plants. The United States Environmental Protection Agency ("EPA") has determined carbon dioxide to be a pollutant under the Clean Air Act which makes emissions subject to further limitation. On December 18, 2017, the EPA issued an Advance Notice of Proposed Rulemaking to solicit information from the public about a potential future rulemaking to limit greenhouse gas emissions from electric power plants. Moreover, the stark contrast between the current Presidential Administration's policies (and current EPA approach) and the prior Administration's policies highlights the potential for change regarding carbon emission regulations and the need to account for the reasonable possibility of carbon emission costs in the future. The study period employed in Mr. Pearce's economic analysis extends 25 years into the future. As such, the carbon price proxy used for fundamentals forecasting is a reasonable assessment of future costs based on the current status for carbon regulations and potential changes thereto.

STEVEN L. FATE

Mr. Steven L. Fate, Vice President, Regulatory and Finance for the PSO, provided rebuttal testimony.

Mr. Fate's rebuttal testimony addressed four claims somewhat common among various witnesses that: 1) the Wind Catcher places too much risk on customers; 2) the Company's forecast of benefits is too optimistic and uncertain; 3) the Company did not follow an appropriate process to ensure the Project is the lowest reasonable cost option to customers; and 4) the requested WCECA is not necessary or reasonable.

Mr. Fate testified that the Company does not necessarily agree with the parties' assessments of the overall risk. In recognition of their desire to reduce customer risk, the Company is proposing certain cost, performance, and tax benefit guarantees based on the Company's confidence in its substantial due diligence. The suite of guarantees is estimated to result in customer savings of $163 million net present value under the Company's Lower Band Case, assuming a 21% Federal Corporate Tax Rate.

According to Mr. Fate, PSO still believes, and has demonstrated, that under the most likely outcome, customers will enjoy very significant benefits. While the $163 million net present value savings assumes a combination of pessimistic assumptions, though perhaps in isolation are reasonable, but in aggregate highly unlikely, the most likely benefits to occur are $890 million net present value, even with the likely federal corporate tax reform.

Mr. Fate described six guarantees:

1) Cost Cap
PSO proposes a cost cap for the Wind Facility, Gen-Tie, and all SPP-assigned generation interconnection costs of $1.444 billion, excluding AFUDC, which is 110% of the estimated

amount of PSO's 30% share of the Project. If the Commission agrees with this cap, any costs incurred above the cap would have no presumption of prudence in a subsequent request for approval, and would not be recoverable through the WCECA rider.

2) PTC Eligibility for 100% Value

The Company is very confident that the Project will qualify for the 100% value of the PTCs and will provide guarantees of that eligibility under current law.

3) Performance Guarantee

The Company is willing to provide a guarantee that the Project will generate a minimum annual production at the bus-bar of 2,220 GWH on a 5-year average (i.e. 42.2% net capacity factor). If the minimum production guarantee is not met, the make whole payment will include lost off-system energy sales revenues and PTCs and will flow to customers through the Fuel Cost Adjustment Rider. A lack of sufficient wind velocity will not be considered a force majeure event.

4) Off-System Energy Sales and Renewable Energy Credit Margins

The Company agrees to flow 100% of the incremental off-system energy sales margins that would not have occurred but for the Project, and the net proceeds from the sale of renewable energy credits associated with the Project to customers through the Fuel Cost Adjustment Rider.

5) Most Favored Nation

The Company agrees to notify PUD if terms more favorable to customers related to (1) the underlying net capacity factor of the Production Guarantee, (2) the PTC Eligibility, or (3) the Cost Cap percentage are agreed to by Southwestern Electric Power Company in any of the state utility commissions under which it is seeking approval of the Project, and the respective terms, and agrees to incorporate them into the guarantees for the benefit of PSO customers.

6) WCECA Rider

The Company agrees to file a base rate case no later than 180 days after the Project reaches Commercial Operation, wherein prudently incurred Project costs will be included in base rates and the WCECA rider terminated, and PTC's will begin to flow through the Fuel Cost Adjustment Rider.

7) Net Benefit Guarantee

The Company agrees to track net savings for customers for the initial ten years of the Project's commercial operation. The Company will compensate customers for any net cost increase if the Project does not provide a net benefit. Specifically, the net benefit calculation will provide a credit to customers in the event that in combination (1) natural gas prices over the initial ten years of the Project's commercial operation are at or lower than the Company's ultra-low gas price sensitivity and (2) the Company's ownership allocation of the delivered energy production from the Project is at or less than 21,627 GWh over the same ten-year period.

While these guarantees do not result in a completely risk-free proposal, they do mitigate a significant amount of risk for customers, and set a floor of at least $163 million in savings over the life of the project. It is important to point out that if the Project goes away, the savings will be zero. According to Mr. Fate, this Project, including the material guarantees and the likely significant benefits to ratepayers, is reasonable and in the public interest.

In response to parties who criticized PSO for not following competitive bidding in rates, Mr. Fate testified that the argument ignores the fact that the Company has brought to the Commission an opportunity that is expected to save customers a billion dollars over the next 25 years. Regardless of process, if the Commission finds the Company's analysis persuasive, it should approve the requested relief.

The Commission rules allow for an exception to the competitive bidding rules. That exception exists for situations such as this where it would be illogical to bypass such a significant opportunity to reduce rates in the name of form over substance.

The opportunity for a project with this level of customer benefits will slip away due to the phase out of the PTCs, and customers may forever forgo the opportunity to realize such significant savings if the Project is not approved.

Mr. Fate also pointed out two examples, Cause No. PUD 200800086 wherein the Commission approved a settlement granting OG&E pre-approval of the purchase and recovery of the costs of the Redbud Generating Facility, and OG&E's Crossroads Wind Farm case, Cause No. PUD 201000039, Order No. 577371.

Mr. Fate responded to the argument by Attorney General witness Bohrmann that PSO's request should be denied because it did not demonstrate a need. Mr. Fate testified that Mr. Bohrmann mischaracterizes 17 O.S. § 286(C) by stating that the statute requires a determination of need based on capacity. Implicitly recognizing that his argument is flawed, Mr. Bohrmann goes on to argue that the Company has not demonstrated there is a need based on economic benefit or diversification of energy supply. None of these arguments are persuasive for the following reasons.

First, 17 O.S. § 286(C) says nothing about capacity being the only factor to determine if there is a need. In fact, the Commission has approved several of PSO's wind Renewable Energy Purchase Agreements (REPAs) under 17 O.S. § 286(C), and in doing so, they recognized the REPAs satisfied an energy need. As an example, in Order No. 621229 of Cause No. PUD 201300188, the Commission found "...that the Renewable Energy Purchase Agreements will provide significant net benefits for PSO's customers such as enhancing fuel diversity and providing a guaranteed low-cost source of energy for 20 years, and will provide primarily energy costs savings from buying wind power instead of market purchases" (at page 9, emphasis not in the original).

Mr. Fate testified that PSO has justified a waiver from competitive bidding rules. The allegation that the Company had the time and that the market could supply a more cost effective solution is not true. Company witness Chodak's rebuttal testimony sets forth the lengthy process the Company went through to define the Project and the due diligence necessary to determine if such a unique project would benefit customers. Mr. Bohrmann's erroneously suggests (at page 10, line 8 through page 11, line 16) that the bids received in the 2016 Wind RFP demonstrate of the Company's ability to conduct an RFP and procure resources with the same characteristics as the Project. A fundamental distinction between the RFP and the Project is that the RFP bids have significant congestion and curtailment risk, especially with the increased level of wind resource deployment highlighted by the parties. Moreover, an RFP for wind generation and a 350-mile gen-tie would be unprecedented.

Mr. Fate responded to Mr. Mossburg's allegations that the bids received in PSO's 2016 wind RFP were as good or better than the Project.

According to Mr. Fate, it is important to note that the bids received through the RFP do not share the same beneficial characteristics as the Project—the benefits of being insulated from almost all future congestion and curtailment risk. While the Company employed optimistic assumptions regarding congestion and curtailment consistent with the purposes of the RFP evaluation (as explained by Messrs. Pearce, Godfrey, and Pfeifenberger), those assumptions can and do change overnight when additional wind is brought into service in the vicinity. And parties have noted the significant amount of new wind resources currently in the SPP queue and likely to be deployed. In contrast, if additional wind is developed around the Project, it likely increases the relative economics of the Project compared to alternatives (as explained in rebuttal testimony of Mr. Pfeifenberger), as the Project is insulated from congestion and curtailment risk through the Gen-Tie to Tulsa.

Mr. Fate further testified that in 2016, PSO began experiencing congestion and curtailment costs related to several of its wind REPAs. As further explained in the rebuttal testimony of Company witness Ross, the Company was not granted sufficient volume of Transmission Congestion Rights ("TCR") to effectively hedge congestion costs even with Firm Transmission Service. Although the SPP is currently working to address some of these issues, the advantage of the Project over the bids in the RFP is that the benefits of the Project are not dependent on the current or future resolution of any of these market structure issues.

Mr. Fate responded to Attorney General witness Stove's testimony that PSO failed to include congestion and loss costs in its 2017 IRP update, while congestion and loss costs are included in the generic wind case.

According to Mr. Fate, PSO's IRP process has never assumed congestion and/or loss costs associated with any resource modeled – including wind resources. In the overall resource acquisition process, the IRP is often a high-level first screening. At the IRP level of analysis the focus is on the estimated load demand or need and the proxy resources that can economically serve the load. The proxy resources included in an IRP analysis are not location specific, so it would be impractical to estimate a congestion and/or loss costs or benefits to the various resource options included in an IRP analysis. The evaluation of specific resource options, including locational issues is typically completed in later stages of the resource selection process.

In contrast to the IRP, as witness Pfeifenberger discusses, in the Wind Catcher Generic Wind Case, the projects selected for analysis were based on announced projects that were in the SPP interconnection queue; so, specific locations and sizes were available that allowed PSO to make reasonable assumptions regarding congestion.

Mr. Fate testified that the Wind Catcher project is unique and is projected to bring substantial value to PSO customers across a wide range of reasonable scenarios and sensitivities. The Project's uniqueness, along with the timing constraints that result from when the Project was identified and when necessary due diligence was completed, necessitates a good cause waiver of the competitive bidding rules so the Company can bring this Project online in time to save customers approximately $1 billion, diversify its energy mix, and bring the economic development impact of a $4.5 billion investment to the state.

THOMAS A. FINN

Mr. Thomas A. Finn, employed by AEP, Director, Tax Planning and Analysis, testified on behalf of PSO.

In response to Oneta witness Perryman, Mr. Finn testified about the requirements for a taxpayer to claim the PTC.

Mr. Finn testified that on December 18, 2015, the PATH Act extended the PTC for two years with respect to certain wind powered electric generation facilities the construction of which began before January 1, 2017, and further extended the PTC for wind facilities the construction of which begins before January 1, 2020, with the PTC phasing out over four years. For the PTC, wind projects that started construction in 2016 receive a full value PTC of 2.4 cents per kilowatt-hour. For projects that begin construction in 2017, the credit is at 80 percent of full value; in 2018, 60 percent; and in 2019, 40 percent.

According to Mr. Finn, this is the only statutory reference to the applicability of the PTC to a wind facility. All guidance put forth by the IRS has been in the form of various notices issued from 2013 to 2017. Taxpayers have nothing to rely upon other than these notices (no other analogous tax law). The IRS has also announced that it will not issue any Private Letter Rulings in this area.

Under the applicable IRS Notice 2013-29, a taxpayer can establish the beginning of construction by satisfying either (1) the "physical work test" or (2) the "five percent safe harbor." Both tests require continuous progress towards completion once construction has begun. This is known as the "continuity requirement."

Both the physical work test and the five percent test are facts and circumstances tests. The "physical work test" is satisfied when physical work of a significant nature has begun before the "beginning of construction" date, and the construction has been continuous (the continuity requirement). The "five percent safe harbor" is satisfied when at least five percent of the total cost of the facility has been incurred before the "beginning of construction" date, and the construction has been continuous.

The continuity requirement can be satisfied under one of two methods. The first method is whether a taxpayer makes continuous efforts to advance towards completion of the facility and will be determined by the relevant facts and circumstances.

The second method is a Continuity Safe Harbor such that if a facility is placed in service on or before the last day of the fourth calendar year after the calendar year during which construction of the facility began, the facility will be considered to satisfy the Continuity Safe Harbor.

For Wind Facility, it is PSO's position it has satisfied the physical work test because construction began in 2016 and will meet the continuity requirement through one or both of the methods. Invenergy, as developer of the Wind Facility, began active construction in 2016 such that the IRS guidelines under the "physical work test" are expected to be satisfied, and is executing a plan to maintain continuous progress toward completion of the project. As a result, Wind Facility is expected to qualify for 100% of the PTCs.

Mr. Finn further testified that in the construction of a wind facility, a taxpayer can be faced with various delays. IRS guidance has provided a non-exclusive list of construction disruptions that will not be considered as indicating that a taxpayer has failed to maintain a continuous program of construction or continuous efforts to advance towards completion of the facility.

According to Mr. Finn, the requirement to achieve commercial operation prior to January 1, 2021, is only necessary if a taxpayer desires to satisfy the Continuity Safe Harbor as extended under

IRS Notice 2016-31. Otherwise, a taxpayer is required to make continuous efforts to advance toward completion of a wind facility. If the 2021 date is not met, the Company intends to qualify for the full PTCs through the facts and circumstances analysis concerning continuous construction or excusable delays.

Mr. Finn did not agree with Attorney General witness Bohrmann's proposed regulatory treatment. According to Mr. Finn, a regulatory liability would only be recorded when PTCs have been generated and earned but deferred and not credited to customers because of the Company's proposed shaping of the revenue requirement. The Company's proposed regulatory treatment would not affect the estimated amount of PTC benefit assumed in the economic analysis of the Project.

Mr. Finn testified that there will not be a regulatory liability as of January 1, 2021, much less one that is over $900 million as advocated by Mr. Bohrmann. PSO specifically asked Mr. Bohrmann in PSO's Questions 2-1 through 2-5 what the journal entry would be, the source of the funds for the $900.9 million, would those funds be received by January 1, 2021, and if not, when PSO would receive such funds. As can be seen in Mr. Bohrmann's response to these questions, he had no answers. Instead, he simply restates portions of his responsive testimony and refers to a Company witness exhibit. In other words, he did not provide the journal entry, the source of the funds, or the date the funds would be available to the Company.

Mr. Finn testified that it is unclear whether Mr. Bohrmann's journal entry would result in a $900 expense for PSO or maybe a $900 million asset. An expense would devastate PSO's financial condition, while an asset would off-set the regulatory liability and result in no change to rate base. The source and timing of the funds is critical to determine if a rate base reduction is appropriate.

According to Mr. Finn, it was his understanding this treatment could be considered a violation of Generally Accepted Accounting Principles. In reality, PSO will not have $900.9 million on January 1, 2021. As Mr. Bohrmann recognizes, the PTCs are generated by the output of the Project and accrue over time. In addition, the PTCs will be flowed back to customers as the Company receives the credit. Therefore, there will not be any funds available for PSO to utilize, and, thus no need to reduce rate base unless PSO retains some funds. If PSO were to retain such funds, then PSO would agree a reduction to rate base or PSO paying carrying costs to customers would be appropriate.

PSO's accountants had advised Mr. Finn that regulatory liabilities are accrued under Generally Accepted Accounting Principles when they are incurred.

Mr. Finn agreed that a reduced Federal corporate income tax rate of 20% would reduce the Project's value.

In response to Mr. Perryman, Mr. Finn testified that the PTCs should be based on the 1950 MW which is the measured amount of electricity produced. Internal Revenue Code section 45(a) provides a renewable electricity production credit (the PTC) to a taxpayer that produces electricity from wind at a qualified facility and the electricity is sold to an unrelated person during the taxable year.

According to Mr. Finn, PSO files a consolidated Federal income tax return as a member of AEP's affiliated group of corporations. Filing a consolidated tax return allows the utilization of tax credits among the various members of the consolidated group. To the extent PSO does not have adequate levels of taxable income in any one year to provide a tax liability that will offset the PTC generated in that year, the taxable income of other members of the group can be utilized to provide that tax liability. In the event there is some portion of PTCs not utilized because AEP does not have

sufficient tax liability to utilize all of the PTCs, the unutilized PTCs will be recorded in FERC Account 190 (Accumulated Deferred Income Taxes) with an offsetting credit to FERC Account 411.1. Current tax law provides for a twenty-year carryover period of any unutilized PTC. At this time, AEP believes adequate levels of taxable income will exist for PSO to utilize the PTCs generated from the Project.

OIEC

MARK E. GARRETT

Mark Garrett is the President of Garrett Group LLC, an Oklahoma based firm specializing in public utility regulation, litigation, and consulting services. Mr. Garrett provided his rebuttal testimony in this Cause on December 22, 2017. Mr. Garrett is testifying on behalf of OIEC. The purpose of his rebuttal testimony is to address issues raised in the responsive testimonies of PUD Witness Kathy Champion and Wal-Mart Witness Steve Chriss.

Mr. Garrett testified that PSO recommended following Commission precedent for the allocation of the Wind Catcher costs to the customer classes, by using the same production cost allocation of Wind Catcher costs that is used for all other production plant. However, PUD witness, Kathy Champion, recommended deviating from Commission precedent for the Wind Catchers assets, and base their allocation on a blend of both energy and demand instead. Specifically, Ms. Champion testifies at page 9 of her testimony:

> Traditionally, regulated electric utilities in the State of Oklahoma allocate fuel costs using kWh sales. While PUD recognizes that the Wind Catcher project provides some capacity value, that capacity offset is second to the value of the fuel cost reduction. PUD believes that using both kWh sales and the production allocator provides a more reasonable and representative distribution of costs and maintains the cost causer/cost payer matching principle more accurately.

Mr. Garrett testified that this recommendation is inappropriate for several reasons: (1) in Oklahoma, all production plant is allocated with the same methodology whether the plant is base load, mid-level, peaking or renewable energy; (2) in Oklahoma, this issue is already well-settled, having been litigated extensively in a prior PSO docket and decided in other cases as well; (3) both PSO and OG&E allocate both their company-owned wind and their wind purchased power agreements using a 4 Coincident Peak Average and Excess allocation ("4CP A&E"), and customers need to be able to depend on the certainty of this treatment; (4) PUD's rationale for changing the methodology is that the allocation of wind should be based on both demand and energy, but the 4CP A&E used in Oklahoma already contains a blend of both energy and demand; (5) PUD's recommendation is too vague to be used, as it does not state what the blend between energy and demand should be and did not provide any exhibits or workpapers showing what the blend should be; (6) PUD's recommendation is poor public policy because it puts more of the wind costs on the high load factor industrial customers, thus promoting the wind industry at the expense of the manufacturing industry in Oklahoma.

Mr. Garrett testified that, in Oklahoma, the utilities use the same allocation factor for all production plant in rate base. In other words, utilities do not use one allocation for base load plants and another for peaker plants. In Oklahoma, the Commission uses a 4CP A&E methodology. This methodology allocates all production costs up to the system average (the "Average") using an energy allocation and all costs in excess of the system average (the "Excess") using an average of the 4 monthly coincident peaks, because the systems in Oklahoma are 4-month peaking systems. Since there is already a blend of energy and demand in an A&E methodology, there is no need to use different

allocation methods for generation assets that are used more to provide energy from those that are used more to meet peak demand.

Moreover, in Oklahoma, this cost allocation issue is already well-settled. The issue was litigated in Cause No. PUD 200900031. In its final order in that cause, Order No. 568769, the Commission found that "It is the Commission's understanding that PSO's production cost allocator contains components of both demand and energy and is therefore acceptable to allocate the costs of wind power." The Commission addressed the issue again in Order No. 621229 in Cause No. PUD 201300188.

As stated above, Mr. Garrett testified that from 2009 forward, PSO and OG&E have allocated both their company-owned wind assets (in rate base) and their wind purchased power agreements using a 4CP A&E method. Large customers need to be able to depend on the continuity and consistency of Commission policy on issues like this, which are large enough to impact manufacturing plant citing decisions.

With respect to PUD's rationale for changing the methodology – that the allocation of wind should be based on both demand and energy – Mr. Garrett explained that the 4CP A&E used in Oklahoma already contains a blend of both energy and demand. Production costs up to the system average are allocated with energy and costs above the system average are allocated with a 4CP. This is the balance this Commission has chosen consistently in prior decision between energy and demand in the allocation methodology used for production plant in this state.

Finally, Mr. Garrett reiterated that PUD's recommendation was poor public policy. PUD's proposal would put more wind costs on high load factor industrial customers. The effect of this change would be to promote the wind industry at the expense of the manufacturing industry. In Mr. Garrett's opinion, the Commission should not promote one industry over others.

Regarding Mr. Chriss's testimony, Mr. Chriss explains that PSO proposed to allocate the Wind Catcher costs to the classes using its production cost allocator (4CP A&E discussed above) but wants to collect those costs from customers through a $/kWh charge. He explained why this is not the correct collection approach for customer classes with demand meters. Mr. Chriss explained how collecting demand costs through energy rates causes rate tilt in the large customer classes and forces the more efficient high load factor customers to subsidize the less efficient low load factor customer in that class. His recommendation is to collect the Wind Catcher costs in the class with demand meters through a demand charge rather than through an energy charge. Mr. Garrett testified that Mr. Chriss is correct. The Wind Catcher costs collected through the proposed rider should be collected through a demand charge in those classes with demand meters.

ATTACHMENT "B"

LIST OF HEARING EXHIBITS

Exhibit 1	PSO's Response to Attorney General's Ninth Set of Data Requests
Exhibit 2	52nd EEI Financial Conference, "Boundless Energy"
Exhibit 3	52nd EEI Financial Conference, 2017 AEP Fact Book
Exhibit 4	Oklahoma Corporation Commission's 2016 Report on the Oklahoma Energy Security Act
Exhibit 5	Q2 2017 Earnings Call – AEP
Exhibit 6	Southwestern Electric Power Co. Initial Brief, PUC Texas Docket No. 46901
Exhibit 7	AEP Requests for Proposals: Long-Term Capacity and Energy
Exhibit 8	PSO's Response to Attorney General's Ninth Data Requests
Exhibit 9	PSO's Response to Attorney General's Twelfth Data Requests
Exhibit 10	2017 Plan Update to the 2015 Integrated Resource Plan
Exhibit 11	PSO's Response to Attorney General's Eleventh Data Requests
Exhibit 12	PSO's Response to PUD's Data Request JCN-2
Exhibit 13	Changes to Prefiled Testimony of PSO Witness Pearce
Exhibit 14	PSO's Response to AG's Ninth Set of Data Requests
Exhibit 15	Exhibit JOA-1 Errata
Exhibit 16	Summary of AG Economic Adjustments to PSO Guarantees
Exhibit 17	PSO's Amended Response to OIEC's Eighth Data Requests
Exhibit 18	Exhibit ZZ-SR-1 "Smead/PSO Price"
Exhibit 19	US SEC Form 10-K