

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

**APPLICATION OF PUBLIC SERVICE COMPANY OF)
OKLAHOMA FOR COMMISSION AUTHORIZATION)
OF A PLAN AND COST RECOVERY OF ACTIONS)
OF PSO TO BE IN COMPLIANCE WITH CERTAIN)
ENVIRONMENTAL RULES PROMULGATED BY)
THE UNITED STATES ENVIRONMENTAL)
PROTECTION AGENCY; SUCH ACTIVITIES TO)
INCLUDE, BUT NOT BE LIMITED TO, CAPITAL)
EXPENDITURES FOR EQUIPMENT AND)
FACILITIES; CONSTRUCTION OR PURCHASE OF)
AN ELECTRIC GENERATING FACILITY OR ENTER)
INTO A LONG-TERM PURCHASE POWER)
CONTRACT (AND POSSIBLE EARNINGS ON THE)
CONTRACT); CHANGE IN DEPRECIATION RATES)
AND/OR ESTABLISHMENT AND RECOVERY OF A)
REGULATORY ASSET; AND FOR SUCH OTHER)
RELIEF AS THE COMMISSION DEEMS PSO IS)
ENTITLED)**

CAUSE PUD 201200054

SURREBUTTAL TESTIMONY

OF

SCOTT NORWOOD

ON BEHALF OF

OKLAHOMA INDUSTRIAL ENERGY CONSUMERS

MARCH 22, 2013

REBUTTAL TESTIMONY OF SCOTT NORWOOD

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EXHIBITS:

SN-SR1	Impact of Future EPA Regulations on PSO’s Northeastern Coal Units (PSO’s response to OIEC 17-15)
SN-SR2	No Review of AEP Testimony of Future EPA Regulations in Other Jurisdictions (Chesapeake’s response to OIEC 3-9)
SN-SR3	AEP Assumption on Coal Plant Service Lives in Other Regulatory Cases (PSO’s response to OIEC 20-8)
SN-SR4	PSO Witness Ground was Aware of AEP Testimony on future EPA Regulations in Other Cases (PSO’s response to OIEC 17-18.)
SN-SR5	Increase in Henry Hub Natural Gas Prices Over the Last Year (\$/MMBtu)
SN-SR6	There is no Exhibit SN-SR6
SN-SR7	PSO did not conduct a “No Carbon” Sensitivity Analysis of the EPA Settlement (PSO’s Response to OIEC 3-16.)
SN-SR8	The Proponents have No Direct Knowledge of Details of OERB’s Economic Impact Analysis (PSO’s Response to OIEC 17-7 and Chesapeake’s Response to OIEC 3-11.)

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Scott Norwood. My business address is P.O. Box 30197, Austin, Texas
4 78755.

5
6 **Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?**

7 A. Yes. I filed responsive testimony on behalf of on behalf of Oklahoma Industrial Energy
8 Consumers (“OIEC”) on January 8, 2013 and rebuttal testimony on February 11, 2013.
9 A summary of my background and experience were provided as Exhibit SN-1 of my
10 responsive testimony.

11
12 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

13 A. The purpose of my surrebuttal testimony is to respond to the certain issues raised in the
14 rebuttal testimonies filed by PSO witnesses Fate, Ground and Becker. My surrebuttal
15 testimony also responds to issues raised in the rebuttal testimonies filed by Oklahoma
16 Corporation Commission Staff (“Staff”) and Office of the Attorney General (“OAG”)
17 witness Mr. Craig Roach, Sierra Club witness Mr. Jonathan Wallach, and Chesapeake
18 Energy Corporation (“Chesapeake”) witness Mr. Richard Smead. Hereinafter, I will refer
19 to these witnesses jointly as “the Proponents” since they all generally support the EPA
20 Settlement.

21 More specifically, my rebuttal testimony responds to the following six issues
22 raised by the Proponents:

- 23
24 1) I will explain why the Proponents’ assumption that future EPA regulations
25 will lead to early retirement of the Northeastern coal units is unfounded and
26 inconsistent with AEP’s positions in other cases, and is far to speculative to
27 justify pre-approval of costs of the Settlement;
- 28
29 2) I will explain why the loss of fuel diversity under the EPA Settlement
30 creates a major financial risk for customers which was not adequately
31 accounted for in PSO’s evaluation of the Settlement;
- 32

- 1 3) I will respond to certain attempts by the Proponents to misrepresent my
2 analysis and recommendations regarding the EPA Settlement;
3
4 4) I will address the problems associated with the Proponents' failure to
5 evaluate the long-term rate impacts of the EPA Settlement;
6
7 5) I will explain why PSO witness Fate's estimate of the indirect economic
8 impacts of the EPA Settlement is grossly overstated and will explain how the
9 Settlement is likely to increase Oklahoma gas production by much less than
10 1%.

11
12
13 **Q. HAVE YOU PREPARED ANY EXHIBITS TO SUPPORT YOUR REBUTTAL**
14 **TESTIMONY?**

15 A. Yes. I have prepared 8 exhibits in support of my Surrebuttal testimony.
16

17 **II. IMPACT OF FUTURE EPA REGULATIONS**

18 **Q. WHAT ARE SOME OF THE KEY ISSUES IN JUDGING THE**
19 **REASONABLENESS OF THE PROPOSED EPA SETTLEMENT**

20 A. One of the key issues in assessing the EPA Settlement is whether PSO's assumption that,
21 in absence of the Settlement, future EPA regulations would likely cause the early
22 retirement of the Northeastern coal units by 2030 is reasonable. A second key issue is
23 whether PSO's analysis of the EPA Settlement has properly accounted for the financial
24 risk to ratepayers which will result from the loss of fuel diversity under the Settlement.
25

26 **Q. WHY IS THE IMPACT OF FUTURE EPA REGULATIONS A KEY ISSUE IN**
27 **THIS CASE?**

28 A. As shown below in Table 1, PSO's economic analysis indicates that the EPA Settlement
29 has a significantly higher cost than the Coal Retrofit alternative in all scenarios, except
30 for cases in which the Company assumes that future EPA regulations will force the early
31 retirement of the Northeastern coal units by 2030, when the units would be approximately
32 50 years old.
33

1

Table 1

PSO's August 2012 Environmental Compliance Analysis
 Coal Retrofit Cost/(Savings) vs EPA Settlement
 (\$Millions)

<u>Scenario / Coal Retire Date</u>	<u>2011-2040 Cum NPV</u>	<u>2011-2040 Nominal Cost</u>
Base Fuel / 2030	\$203	\$553
Low Fuel / 2030	\$294	\$779
High Fuel / 2030	\$58	\$195
Base Fuel / 2040	(\$278)	(\$1,860)
Low Fuel / 2040	(\$157)	(\$1,388)
High Fuel / 2040	(\$601)	(\$3,580)
Early CO2 / 2040	<u>(\$196)</u>	<u>(\$1,661)</u>
Avg All Scenarios	(\$97)	(\$995)

Sources are PSO witness Weaver's Substituted Exhibit SCW-8 and
 PSO's response to AG 1-4.

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3

4

**Q. WHAT IS THE POSITION OF THE PROPONENTS REGARDING PSO'S
 ASSUMPTION THAT FUTURE EPA REGULATIONS WILL FORCE THE
 EARLY RETIREMENT OF THE NORTHEASTERN COAL UNITS BY 2030?**

5

6

7

A. Each of the Proponents supports PSO's assumption that future EPA regulations are likely
 to cause the Northeastern units to be retired by 2030. (See Roach Rebuttal page 10,
 Wallach Rebuttal page 13 and Smead Rebuttal page 23.)

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11

**Q. HAVE THE PROPONENTS CONDUCTED ANY INDEPENDENT ANALYSIS TO
 SUPPORT THEIR ASSUMPTION THAT FUTURE REGULATIONS WILL
 REQUIRE THE NORTHEASTERN UNITS TO BE RETIRED BY 2030?**

12

13

14

A. No. The Proponents have not conducted independent analysis to verify the
 reasonableness of PSO's assumption that future EPA regulations would force the early
 retirement of the Northeastern units by 2030. (See Norwood Rebuttal Testimony, pages

15

16

1 7-8.) Mr. Roach acknowledges that it is unclear how future regulations will develop and
2 that reliable analysis of such regulations does not exist. (See Norwood Rebuttal
3 Testimony, page 8.) In essence, these parties have simply relied upon PSO witness Mr.
4 Ground's testimony that EPA regulations will force the early retirement of the
5 Northeastern units.

6
7 **Q. HAS MR. GROUND PROVIDED EVIDENCE TO SUPPORT HIS ASSUMPTION**
8 **THAT EPA REGULATIONS WILL FORCE THE EARLY RETIREMENT OF**
9 **THE NORTHEASTERN COAL UNITS?**

10 A. No. As noted in my responsive testimony, Mr. Ground has acknowledged that it is
11 impossible to predict the timing or impact of future EPA regulations at this time.
12 (Norwood Responsive Testimony, page 44.) Moreover, in response to OIEC's discovery
13 on his rebuttal testimony, Mr. Ground has provided information that indicates that most
14 of the pending or future regulations discussed in his testimony are not expected to apply
15 to or significantly impact the Northeastern units. (See Exhibit SN-SR1, PSO's response
16 to OIEC 17-15.)

17
18 **Q. HAVE THE PROPONENTS ATTEMPTED TO VERIFY WHETHER PSO'S**
19 **ASSUMPTION IN THIS CASE THAT FUTURE EPA REGULATIONS ARE**
20 **LIKELY TO FORCE THE EARLY RETIREMENT OF THE NORTHEASTERN**
21 **UNITS IS CONSISTENT WITH AEP'S POSITION IN OTHER PENDING**
22 **CASES?**

23 A. I believe that Staff/OAG witness Mr. Roach and the Sierra Club are certainly aware of
24 the pending Flint Creek case in Arkansas, as well as other pending AEP regulatory cases
25 in Kentucky, Texas, Virginia and West Virginia, in which the Company has argued that
26 the retrofit of existing coal-fired units that are even older than the Northeastern units
27 represents the least cost alternative. In fact, I believe that Sierra Club is a party in several
28 of these other AEP cases and therefore certainly knows that PSO's position in this case
29 that future EPA regulations will force the early retirement of the Northeastern units is
30 inconsistent with AEP's position in all other pending cases. Chesapeake witness Mr.
31 Smead admits that he has not reviewed AEP's testimony on the retrofit of existing coal

1 units in other jurisdictions. (See Exhibit SN-SR2, Chesapeake's response to OIEC Data
2 Request No. 3-9)

3
4 **Q. HAS AEP ARGUED THAT FUTURE EPA REGULATIONS WILL FORCE**
5 **EARLY RETIREMENT OF RELATIVELY LARGE AND EFFICIENT COAL**
6 **UNITS SIMILAR TO THE NORTHEASTERN UNITS IN ANY OTHER**
7 **PENDING CASE?**

8 A. No. AEP has supported the retrofit and continued operations of existing coal units as
9 being the least cost option, and has assumed that such coal units would operate for 60
10 years or more in the base case Strategist analyses in other pending cases. (See Exhibit
11 SN-SR3, PSO's response to OIEC 20-8.)

12
13 **Q. IS PSO'S ASSUMPTION THAT FUTURE EPA REGULATIONS WILL FORCE**
14 **THE EARLY RETIREMENT OF THE NORTHEASTERN COAL UNITS**
15 **CONSISTENT WITH AEP'S CURRENT PLANNING RETIREMENT DATES**
16 **FOR OTHER COAL UNITS ON THE AEP SYSTEM?**

17 A. No. For the most part, AEP's planning retirement dates for larger coal units such as the
18 Northeastern units reflect a service life of 60 years or more. (See Norwood Responsive
19 Testimony, pages 47-51 and PSO's Confidential Response to OIEC 3-11.)

20
21 **Q. WAS MR. GROUND AWARE THAT HIS TESTIMONY THAT FUTURE EPA**
22 **REGULATIONS WILL FORCE THE EARLY RETIREMENT OF THE**
23 **NORTHEASTERN COAL UNITS IS INCONSISTENT WITH AEP'S**
24 **TESTIMONY AND PLANNING RETIREMENT DATES FOR OTHER COAL**
25 **UNITS ON THE AEP SYSTEM?**

26 A. Yes. Mr. Ground indicates that he is aware of the testimony of Mr. John Hendricks, the
27 Director of Air Quality for AEP Service Corporation's Environmental Services Division,
28 who supports AEP's proposal to retrofit the Flint Creek coal unit. (See Exhibit SN-SR4,
29 PSO's response to OIEC 17-18.) SWEPCO's Flint Creek coal unit is similar in age and
30 design to the Northeastern units and located less than 100 miles from the Northeastern
31 plant site. Mr. Ground also indicates that he is aware of other recent testimony filed by

1 AEP addressing the treatment of future environmental regulations on existing coal plants
2 and therefore should be aware that AEP has not suggested in any other case that EPA
3 regulations will force the early retirement of existing coal units, as Mr. Ground
4 recommends in this case. (See Exhibit SN-SR4.)

5 Moreover, PSO witness Mr. Becker, who was responsible for conducting the
6 Strategist analysis of the EPA Settlement, indicates that he was directly responsible for
7 managing the Strategist modeling in the Flint Creek case as well as other pending AEP
8 cases in Kentucky, Virginia and West Virginia in which the assumed service lives of
9 AEP coal units was 60 years or more. (See Exhibit SN-SR3.) Mr. Becker also is
10 involved in preparing AEP's integrated resource plans. (Becker Rebuttal Testimony,
11 page 5.) Given this experience, Mr. Becker was certainly aware that Mr. Ground's
12 testimony in this case that EPA regulations will force the early retirement of the
13 Northeastern units after 50 years of service directly contradicts AEP's planning
14 retirement dates and testimony in other pending regulatory proceedings that larger
15 relatively efficient coal units such as the Northeastern units are expected to operate for 60
16 years or more. (See PSO's Confidential Response to OIEC 3-11.)

17
18 **Q. HOW DOES PSO DEFEND ITS ASSUMPTION THAT FUTURE EPA**
19 **REGULATIONS WILL FORCE THE EARLY RETIREMENT OF THE**
20 **NORTHEASTERN UNITS FOR ITS BASE CASE ANALYSIS OF THE EPA**
21 **SETTLEMENT, WHEN SUCH REGULATIONS DO NOT EVEN EXIST?**

22 A. PSO witness Mr. Fate, who has not testified in other pending AEP cases involving retrofit
23 of existing coal plants, argues that the uncertainty regarding future EPA regulations is no
24 different than uncertainty regarding fuel prices, generating service lives, and other cost
25 assumptions underlying its EPA Settlement analysis. (Fate Rebuttal Testimony, page 6.)
26 However, with the possible exception of natural gas prices, the uncertainty underlying
27 PSO's forecasts of future fuel and generation performance and costs is far lower than the
28 uncertainty regarding the impact of future EPA regulations. For example, PSO has long-
29 term fuel supply and purchased power contracts, years of purchasing and operating
30 experience, and access to well-established fuel markets which allow reasonable forecasts

1 of other planning parameters underlying its economic analysis of the proposed EPA
2 Settlement.

3 In contrast, the future EPA regulations which PSO assumes will lead to the early
4 retirement of the Northeastern units do not even exist and may never exist. In fact, as
5 noted in my responsive testimony, PSO admits that it is impossible to know when any
6 such future regulations will be implemented, how they will be structured, if they would
7 apply to PSO's coal units, and whether the costs of compliance would indeed be large
8 enough to force early retirement of the Northeastern units. (See Norwood Responsive
9 Testimony, page 44.) Mr. Fate's suggestion that the near complete uncertainty regarding
10 future EPA regulations is equivalent to the modest uncertainty associated with forecasts
11 of generating unit performance or other plant costs is simply not credible.
12

13 **Q. DID PSO ACTUALLY INCLUDE THE COSTS OF FUTURE EPA**
14 **REGULATIONS IN ITS ECONOMIC ANALYSES OF THE PROPOSED EPA**
15 **SETTLEMENT?**

16 A. Yes. Even though the Company admits that it is not possible to forecast the timing or
17 costs of future regulations, PSO included approximately \$3.7 billion in carbon taxes,
18 approximately \$40 million for retrofits to comply with future CCR regulations which
19 have not been adopted, and approximately \$2 billion in scrubber capital and operating
20 costs which ultimately may not have been required had the Company not entered into the
21 EPA Settlement. Even with these speculative costs, PSO's Strategist analysis indicates
22 that the EPA Settlement is approximately \$1.9 billion more costly than the Coal Retrofit
23 option.
24

25 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS REGARDING PSO'S**
26 **TREATMENT OF FUTURE EPA REGULATIONS.**

27 A. PSO's assumption that future EPA regulations will force the early retirement of the
28 Northeastern units is unfounded and inconsistent with AEP's position in other pending
29 regulatory cases. The EPA Settlement is only economically justified under scenarios in
30 which the Company assumes future EPA regulations will force early retirement of the
31 Northeastern units by 2030, and which include more than \$5.7 billion of assumed

1 compliance cost for such non-existing regulations. PSO's request for pre-approval of
2 costs to implement the EPA Settlement should not be approved on such rank speculation
3 regarding non-existent future EPA regulations, particularly when it directly contradicts
4 the positions taken by AEP in support of retrofit of existing coal units in other
5 jurisdictions.

6
7 **III. LOSS OF FUEL DIVERSITY**
8

9 **Q. DO PROPONENTS QUESTION THE FACT THAT THE EPA SETTLEMENT**
10 **WOULD RESULT IN LOSS OF FUEL DIVERSITY ON PSO'S SYSTEM?**

11 A. No. It is an unquestioned fact that the EPA Settlement will result in the virtual
12 elimination of fuel diversity on PSO's system, as coal-fired generation will drop from the
13 present level of approximately 40% of total energy requirements to approximately 3% of
14 total energy requirements by 2027. (See Norwood Responsive Testimony, page 23.)
15

16 **Q. HAVE THE PROPONENTS PRESENTED ANY NEW ARGUMENTS IN THEIR**
17 **REBUTTAL TESTIMONY TO ADDRESS THE LOSS OF FUEL DIVERSITY**
18 **UNDER THE PROPOSED EPA SETTLEMENT?**

19 A. No. Except for PSO witness Mr. Fate, the Proponents largely ignore or downplay the
20 increased risk to customers that would occur due to the loss of fuel diversity under the
21 proposed EPA Settlement and have offered no new arguments to justify the loss of fuel
22 diversity under the Settlement. Mr. Fate addresses the fuel diversity issue on page 5 of
23 his rebuttal testimony as follows:
24

25 All things equal, PSO believes a diverse fuel mix is preferred. PSO also believes
26 fuel diversity should not be the goal at any cost and without consideration of other
27 risks. When fuel diversity comes with the risk of additional future environmental
28 compliance cost, the reasonable choice does not always mean more diversity.
29

30 In essence, Mr. Fate appears to be arguing that the risk associated with future EPA
31 regulations outweighs the significant fuel diversity value provided by coal, since the Coal

1 Retrofit alternative has a much lower cost than the EPA Settlement in all scenarios
2 evaluated by PSO except for the cases wherein the Company has assumed that future
3 EPA regulations will result in early retirement of the Northeastern units by 2030. In fact,
4 if the Northeastern Units operate for 60 years as AEP has assumed for similar coal units
5 in other pending cases, the Coal Retrofit alternative would provide greater fuel diversity
6 and significantly lower costs than under the EPA Settlement.
7

8 **Q. IS MR. FATE'S POSITION THAT THE ENVIROMENTAL RISK OF COAL**
9 **OUTWEIGHS THE NEED FOR PRESERVING FUEL DIVERSITY ON PSO'S**
10 **SYSTEM CONSISTENT WITH AEP'S CORPORATE POLICY?**

11 A. No. Although PSO's senior management has not presented testimony to address the loss
12 of fuel diversity under the EPA Settlement, other top AEP executives have publicly
13 expressed strong support for the need to maintain fuel diversity, notwithstanding future
14 environmental risks of coal and the shale gas revolution. For example, in a speech to the
15 American Chamber of Commerce in April of 2012, at a time when natural gas prices had
16 dropped to a level of just over \$2 per MMBtu, AEP's CEO Nick Akins warned of the
17 need to maintain fuel diversity as a hedge against volatile gas prices and concluded that
18 "betting on just one fuel to power our energy future isn't smart."

19 American Electric Power President Nick Akins warned Thursday against over-
20 reliance on natural gas and blasted pending Environmental Protection Agency
21 regulations, arguing they "make absolutely no sense."

22
23 "If directional drilling and 'fracking' are the game-changers that everyone
24 predicts, our nation may be flush with plentiful and inexpensive domestic natural
25 gas," he said.
26

27 "If that long-term price holds, it will mean significantly more dependence on
28 natural gas to generate electricity. Absent energy policy supporting a diverse fuel
29 supply, it will be difficult to build any other type of electric generation."
30

31 But Akins warned that natural-gas prices, which are hovering around \$2 per 1,000
32 cubic feet, could surge, undercutting the economic rationale behind increased
33 reliance on natural gas.
34

35 "Betting on just one fuel to power our energy fuel isn't smart," Akins said during

1 a speech at the U.S. Chamber of Commerce, pointing to past volatility in the price
2 of natural gas.

3 “Whether that volatility has changed permanently remains to be seen,” he added.

4
5 Akins said natural-gas prices could spike if major environmental issues emerge
6 with hydraulic fracturing, or “fracking,” the natural-gas drilling method that has
7 enabled the shale production boom.

8
9 He also said natural-gas prices are vulnerable to volatile weather conditions,
10 adding that they could increase as export and import facilities for liquefied natural
11 gas are constructed.

12 (See Exhibit SN-SR5)

13
14 A year later, Mr. Akins’ warning about the need to maintain fuel diversity as a
15 hedge against potential gas price volatility has proven true, as natural gas prices are now
16 approaching \$4.00/MMBtu, or nearly double the level that existed at the time of the
17 above comments. (See Exhibit SN-SR5.)

18
19 **Q. HAS THE SHARP RISE IN NATURAL GAS PRICES OVER THE LAST YEAR**
20 **HAD A SIGNIFICANT IMPACT ON PSO’S FUEL CHARGES?**

21 A. Yes. PSO last set its fuel charges in May of 2012 when gas prices were around
22 \$2/MMBtu. Since that time, natural gas prices have risen by nearly 100% to their current
23 level of approximately \$4/MMBtu. As a result, just last month, PSO notified
24 Commission Staff of its intent to increase the Company’s fuel charges by approximately
25 \$0.013/kWh, which represents an increase of more than 50% over the Company’s
26 previous fuel charge. This significant increase in PSO’s fuel charge was no doubt a
27 shock to many of PSO’s customers, and in particular to industrial customers who use
28 high levels of energy for their operations. But for the fact that the cost of fuel supplied
29 from PSO’s Northeastern coal units remains less than half of the level of current gas
30 prices, the recent 50% increase in PSO’s fuel charge would have been even higher. This
31 is a real world example of the fuel diversity benefit that AEP President Akins and other
32 utility executives have wisely recognized when cautioning against regulations that could
33 lead to the retirement of existing coal units, such as the Northeastern units.

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Q. ARE THERE ANY AVAILABLE ALTERNATIVES TO RESTORE FUEL DIVERSITY ON PSO'S SYSTEM ONCE THE EPA SETTLEMENT IS IMPLEMENTED?

A. No. Contrary to Staff/OAG witness Mr. Roach's testimony that the proposed Settlement provides "off ramps" that would allow PSO to return to coal, there is little or no prospect for adding new coal units in the foreseeable future due to the very high cost of carbon control systems that will be required to meet the EPA's new emission standards for new coal units. Similarly, there are presently no prospects for long-term fixed price natural gas supply contracts. (See Norwood Rebuttal Testimony, Exhibit SN-R3.) For these reasons, and other reasons addressed above by AEP's CEO Mr. Akins, it would simply not be smart to prematurely retire the Northeastern coal units, particularly when EPA's RH FIP found that retrofit and continued operations of the Northeastern units is an acceptable compliance option, and when PSO's own economic analysis indicates that it is far cheaper to retrofit and continue operating these units. In fact, to my knowledge, no other AEP operating company is pursuing such a shortsighted, costly and unbalanced strategy as PSO is proposing to comply with new EPA regulations.

Q. CHESAPEAKE WITNESS MR. SMEAD ARGUES ON PAGE 25 OF HIS REBUTTAL THAT THE COAL RETROFIT ALTERNATIVE WOULD REDUCE FUEL DIVERSITY OF PSO'S SYSTEM AND FORCE PSO TO USE COAL EVEN IF NATURAL GAS PRICES WERE LOWER. DO YOU AGREE?

A. No. Mr. Smead's testimony reflects a profound misunderstanding of how electric utility systems are operated. Any fixed costs incurred by PSO to retrofit the Northeastern coal units would have no impact on the subsequent operations of the units, which would be based solely on variable running costs of the units. As a result, under the Coal Retrofit alternative, PSO could simply operate its gas units more and run its coal units less if future gas prices drop to the levels Mr. Smead suggests are likely to occur. This strategy could provide the same opportunity for increased production of Oklahoma natural gas, while at the same time preserving the fuel diversity benefit of coal. In contrast, if the Northeastern coal units are retired early as PSO has agreed to do under the EPA

1 Settlement, and future natural gas prices are higher than forecasted by Mr. Smead, PSO
2 would have no coal alternative to hedge against any future natural gas price increases.
3

4 **Q. MR. SMEAD ASSERTS ON PAGE 20 OF HIS REBUTTAL TESTIMONY THAT**
5 **PSO'S COAL PRICES COULD SIGNIFICANTLY INCREASE IN THE FUTURE**
6 **BASED ON HIS UNDERSTANDING THAT THE COMPANY HAS NO FIRM**
7 **RATE PROVISIONS FOR DELIVERY OF COAL TO THE NORTHEASTERN**
8 **PLANT. IS THIS CORRECT?**

9 A. No. Mr. Smead is apparently not aware that PSO recently signed a new rail
10 transportation contract for the delivery of coal to the Northeastern plant that will
11 guarantee pricing for a substantial number of years. Mr. Smead's comments regarding
12 coal also conflict with PSO's own assessment of the value of coal to the PSO system as
13 expressed on pages 25 and 26 of the Company's 2012 Fuel Supply Portfolio and Risk
14 Management Plan:

15
16 *Coal Procurement Plan*

17
18 PSO has an established coal and transportation procurement process that uses
19 competitive bidding and market offers. The majority of the coal used as boiler
20 fuel on PSO's system is obtained at fixed prices through supply and transportation
21 contracts having a term of one year or greater, with the remaining portion of
22 PSO's coal requirements purchased in the spot market. Currently, PSO has
23 agreements in place for 96 percent of the Company's anticipated coal needs in
24 2012. As it has done in the past, PSO will continue to evaluate its contracts and
25 negotiate reasonable terms.

26
27 PSO maintains a coal inventory to be both proactive and responsive to known and
28 anticipated changes in operating, coal supply and rail transportation conditions. In
29 addition, PSO's coal inventory mitigates risk and allows the Company to take
30 advantage of favorable market conditions. PSO's coal inventories also serve as a
31 physical hedge against price volatility for that volume of coal already secured, on
32 hand, and available for consumption.

33
34 PSO has been able to secure its coal position as (1) coal is a base load fuel, (2) the
35 volume to be used is fairly predictable, and (3) any variances between purchases
36 and consumption can be stockpiled on site for use at a later time at PSO's

1 discretion—unlike the ratable flow restrictions required when pulling natural gas
2 from storage. Also, unlike the natural gas markets, coal suppliers have historically
3 been willing to competitively bid against each other to offer fixed prices which
4 provides PSO with fuel cost certainty for its coal portfolio. In contrast, many
5 natural gas suppliers are unwilling to offer fixed prices to PSO, and those that do,
6 typically include a price premium.

7
8 As I previously noted, Mr. Smead has acknowledged that there are presently no
9 long-term fixed price contracts for natural gas. The lack of long-term gas contracts
10 makes the ability to obtain attractive long-term contracts for coal another reason why
11 PSO’s coal units should not be retired early as required under the EPA Settlement.

12
13 **Q. DO THE NATURAL GAS PRICE COMPARISONS PRESENTED IN MR.**
14 **SMEAD’S REBUTTAL TESTIMONY REASONABLY REFLECT FUTURE**
15 **DELIVERED GAS PRICES FOR THE PSO SYSTEM?**

16 A. No. Because there are no long-term fixed price gas contracts, it is not possible to
17 forecast natural gas prices over 25 year period with any significant degree of certainty, as
18 Mr. Smead suggests in his testimony. Moreover, the gas price comparisons presented by
19 Mr. Smead were derived from EIA’s recently published long-term gas price forecasts for
20 gas delivered at Henry Hub, and do not include the additional transportation charges
21 required for delivery of gas to PSO’s system, nor do such prices reflect costs of future
22 carbon regulations (which are excluded from EIA’s long-term gas price forecasting
23 models). For these reasons, the gas prices presented in Mr. Smead’s testimony would
24 have to be increased significantly in order to be comparable to the delivered gas prices
25 used in PSO’s base case analysis of the EPA Settlement.

26
27 **Q. PLEASE SUMMARIZE YOUR CONCERNS REGARDING PSO’S FAILUE TO**
28 **CONSIDER THE IMPACT ON CUSTOMERS DUE TO THE LOSS OF FUEL**
29 **DIVERSITY UNDER THE EPA SETTLEMENT?**

30 A. The loss of fuel diversity under the proposed Settlement will mean much higher fuel costs
31 and increased price volatility on PSO’s system for the next 25 years or more. These
32 effects are particularly problematic for industries which consume large amounts of
33 energy, but all of PSO’s customers will be adversely impacted. Under the EPA

1 Settlement, many customers will find it very difficult to plan for the unexpected increases
2 in fuel charges which occur when PSO's natural gas prices rise sharply as they have over
3 the last year. While AEP's CEO Mr. Akins appears to appreciate the value of fuel
4 diversity, PSO has unreasonably ignored the value of fuel diversity provided by the Coal
5 Retrofit alternative in its economic analysis of the EPA Settlement.
6

7 **IV. MISREPRESENTATION OF OIEC'S RECOMMENDATIONS**
8

9 **Q. HAVE THE PROPONENTS MISREPRESENTED OIEC'S**
10 **RECOMMENDATIONS REGARDING THE PROPOSED EPA SETTLEMENT**
11 **IN THEIR REBUTTAL TESTIMONY?**

12 A. Yes. In their rebuttal testimonies, the Proponents have misrepresented OIEC's analysis
13 and recommendations on several key issues. First, the Proponents assert that OIEC has
14 attempted to over-emphasize the economic advantage of the Coal Retrofit Option over
15 the proposed EPA Settlement by focusing on nominal cost differences rather than present
16 value cost differences between the revenue requirements of each option. (See Roach
17 Rebuttal page 19, Becker Rebuttal page 7 and Smead Rebuttal page 9.) These
18 complaints are both factually inaccurate and irrelevant to the recommendations presented
19 in my testimony. Throughout my responsive testimony, I have presented both nominal
20 and present value differences between the EPA Settlement and the Coal Retrofit
21 alternative, therefore the claims that I have relied upon or emphasized the nominal cost
22 advantage of the Coal Retrofit option is simply not true. (For example, See Norwood
23 Responsive Testimony, page 5 and Tables 1, 5, 6, 7, 9) Moreover, the proposed EPA
24 Settlement is much more costly than the Coal Retrofit alternative regardless of whether
25 evaluated on a nominal cost or present value basis. Therefore, my conclusion that the
26 Company's own economic analysis demonstrates that the EPA Settlement is not the least
27 cost alternative would not change even if I had relied solely on the present value results
28 of PSO's analysis.
29

30 **Q. WHY DID YOU PRESENT THE NOMINAL COST BENEFITS OF THE COAL**
31 **RETROFIT OPTION OVER THE EPA SETTLEMENT IN YOUR TESTIMONY?**

1 A. As discussed on page 30 of my responsive testimony, I presented the nominal cost results
2 because this represents the costs that PSO's customers will actually pay. Customers are
3 not billed on a present value basis and PSO failed to present long-term rate impacts of its
4 proposed EPA Settlement in its testimony. For these reasons, I believe that it is
5 important for the Commission and public to understand that the cost of the EPA
6 Settlement to customers is expected to be approximately \$1.9 billion higher than the Coal
7 Retrofit alternative.

8

9 **Q. HAVE THE PROPONENTS MISREPRESENTED YOUR TESTIMONY IN**
10 **OTHER WAYS?**

11 A. Yes. The Proponents also misleadingly assert that I am recommending that PSO "do
12 nothing" until all legal appeals regarding MATS and the RH FIP are resolved, that I am
13 recommending that the Company install scrubbers on both units, and that I am taking
14 various positions with regard to the likely outcome of pending legal appeals of MATS
15 and the RH FIP. (See Roach Rebuttal page 8, Wallach Rebuttal page 6 and Smead
16 Rebuttal page 33.) I have testified that it would be premature for the Commission to
17 consider preapproval of expenditures to implement the EPA Settlement until the
18 Settlement has received all necessary ODEQ and EPA approvals because it is not
19 possible to determine whether the Settlement is reasonable until the final terms of the
20 Settlement are known. However, nowhere in my testimony have I recommended that
21 PSO do nothing or add scrubbers or indicated that the outcome of the MATS and RH FIP
22 appeals are certain. In fact, I fully understand that PSO unilaterally entered into the EPA
23 Settlement without regulatory out provisions, *is not* seeking Commission approval of the
24 Settlement in this case and has indicated that it is already proceeding with
25 implementation of the Settlement. (See PSO Witness Mr. Munson's Rebuttal
26 Testimony, pages 9-11.) The discussion of alternatives to the PSO Settlement presented
27 in my testimony was intended to address PSO's claims that appeal of the RH FIP was not
28 a viable alternative to entering into the Settlement. Now that PSO has entered into the
29 Settlement without regulatory out provisions, the Company appears to have little or no
30 flexibility to pursue other lower cost alternatives.

31

1 **Q. WHAT ARE YOUR RECOMMENDATIONS REGARDING THE EPA**
2 **SETTLEMENT?**

3 A. I have presented two specific recommendations to the Commission on page 6 of my
4 responsive testimony. First, I recommend that the Commission deny PSO's request for
5 pre-approval of a capital expenditure plan to implement the proposed EPA Settlement,
6 because PSO's own economic analysis demonstrates that it is not the least cost alternative
7 to comply with *existing* EPA regulations, but rather is justified *only if* one assumes that:
8 1) as of yet unknown future regulations are adopted, and 2) that those new regulations
9 apply to the Northeastern coal units, and 3) that the cost of complying with such
10 regulations is so high that it leads to early retirement of the units by 2030. It is my
11 understanding that Oklahoma's standard for pre-approval of environmental compliance
12 costs requires that such investments are required by existing regulations, not by
13 speculation regarding possible future regulations as proposed by PSO in this case.

14 My second recommendation to the Commission is that it should deny PSO's
15 request for approval of the Calpine PPA, because this contract is only necessary if the
16 EPA Settlement is implemented, and because the Company's own economic analysis
17 shows that the proposed Settlement does not represent the least cost alternative for
18 complying with existing regulations.

19
20 **Q. HAVE THE PROPONENTS MISREPRESENTED YOUR TESTIMONY IN**
21 **OTHER WAYS?**

22 A. Yes. The Proponents complain that my analysis is unbalanced and purposely skewed to
23 make the EPA Settlement look less favorable or to improve the Coal Retrofit alternative.
24 (See Roach Rebuttal page 19 and Smead Rebuttal page 5.) Although reasonable minds
25 may differ on complex issues such regulatory risk, future commodity prices and the
26 merits of the EPA Settlement, I respectfully disagree with the Proponents' criticisms that
27 my recommendations are unbalanced or biased against the Settlement in any way. In
28 fact, my recommendations rely almost entirely upon the economic analyses performed by
29 PSO for cases which assume that the Northeastern units operate until 2040, when they
30 will be approximately 60 years old. This assumption is consistent with AEP's current
31 planning retirement dates and studies in other cases which assume even longer coal plant

1 service lives, and is further supported by actual industry experience for AEP's plants and
2 other coal plants.

3 Furthermore, it is surprising that the Proponents, including PSO, would suggest
4 that I am being extreme or unduly biased by urging that the Commission consider the
5 prospect that gas prices could be higher than forecasted by PSO in the future, or that the
6 loss of fuel diversity on PSO's system under the EPA Settlement is a serious problem for
7 customers. Even AEP's CEO Mr. Akins appears to agree that fuel diversity has great
8 value, and the value of the Northeastern units as a hedge against gas price increases has
9 been proven many times in the past.

10 Proponents' criticisms of my recommendation that carbon taxes be treated as a
11 sensitivity rather than as a base case assumption because of the great uncertainty which
12 exists regarding carbon regulations, fail to recognize that my recommended treatment of
13 carbon taxes is identical to AEP Witness Thomas Brice's recommended treatment of
14 carbon taxes in the Turk coal plant certification proceeding, in which the Company
15 concluded (as I have in this case) that such costs are not known and measurable or
16 sufficiently certain to be included in a base case analysis. (See Norwood Responsive
17 Testimony, pages 45-46.)

18 Finally, the Proponents' criticisms that I have failed to recognize a widespread
19 industry trend of early retirement of existing coal units are refuted by the coal plant
20 retirement survey data attached to the responsive testimonies of Mr. Wallach (Exhibit
21 JFW-2) and Mr. Smead (Exhibit RGS-5.). As noted in my responsive testimony, the
22 Proponents' own data on coal plant retirements indicate that only approximately 10% of
23 existing coal plants are scheduled for retirement between now and 2020 when the MATS
24 and RH rules take effect, that those plants are on average one third the size of the
25 Northeastern units, approximately 18 years older than the Northeastern units, and have
26 capacity factors that are approximately 50% lower than the Northeastern units. (See
27 Norwood Rebuttal Testimony, pages 9-10.) In short, there is no evidence of any trend
28 toward early retirement of relatively large and efficient coal units as claimed by the
29 Proponents. Moreover, the proposed early retirement of the Northeastern coal units
30 under the EPA Settlement is far from the norm for the AEP system and for the electric
31 utility industry.

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Q. HOW DO YOU RESPOND TO THE PROPONENTS' CRITICISMS THAT YOUR ANALYSIS IS UNDULY BIASED AGAINST THE EPA SETTLEMENT?

A. My analysis of the EPA Settlement was focused on determining whether the Settlement represents the lowest reasonable cost alternative for OIEC's members while at the same time preserving fuel diversity on PSO's system. Each of my adjustments to PSO's settlement analysis is consistent with past AEP's recommendations in other proceedings or based on comparison to other AEP units. While I believe these adjustments are reasonable and provide a more accurate measure of the cost of the EPA Settlement, even if no adjustments are made to PSO's base case analysis, the Company's own forecast of the cost of the EPA Settlement is \$1.9 billion higher on a nominal cost basis than the Coal Retrofit alternative, which also provides far greater fuel diversity than the EPA Settlement. The fact that AEP's recent studies in other jurisdictions also indicate that retrofit and continued operation of larger more efficient coal units (like the Northeastern units) represents the lowest reasonable cost alternative, further confirms my conclusion that the Coal Retrofit alternative is far superior to the EPA Settlement from a cost and risk perspective.

Q. HAVE YOU OBSERVED ANY UNDUE BIAS IN THE PROPONENTS' ASSESSMENT OF THE EPA SETTLEMENT?

A. Again, reasonable minds may reach different conclusions when assessing complex proposals such as the EPA Settlement. I will leave it to the Commission to decide whether the unqualified support of the EPA Settlement by the witnesses for Sierra Club and Chesapeake reflects the inherent anti-coal biases of their respective organizations. As a practical matter, however, PSO is fully committed to the EPA Settlement and really has no choice but to advocate the Settlement since there is no regulatory out provision or other option for pursuing lower cost alternatives to the Settlement. This may explain why PSO's economic studies incorporate 50 year service life assumptions for the Northeastern coal units while AEP's studies in other jurisdictions assume much longer lives and favor the Coal Retrofit alternatives.

1 For the most part, Staff/OAG witness Mr. Roach appears to present a more
2 balanced assessment of the proposed EPA Settlement. Unlike the other Proponents, he
3 has expressed some concern regarding loss of fuel diversity and PSO's failure to provide
4 the long-term rate impacts of the EPA Settlement. Mr. Roach recommends that approval
5 of the Settlement be conditioned in part on certain future findings; however, he ultimately
6 concludes that the EPA Settlement is reasonable based on his suppositions that future gas
7 prices are likely to remain low and that future EPA regulations would otherwise likely
8 cause the retirement of the Northeastern coal units by 2030.

9
10 **Q. WHAT EVIDENCE HAS MR. ROACH PROVIDED TO SUPPORT HIS**
11 **CONCLUSIONS THAT FUTURE GAS PRICES ARE LIKELY TO REMAIN**
12 **LOW AND THAT EPA REGULATIONS WILL LIKELY FORCE THE EARLY**
13 **RETIREMENT OF THE NORTHEASTERN UNITS?**

14 A. Mr. Roach has not conducted any independent analysis of future regulations that might
15 impact the Northeastern units, and he apparently does not recognize that this assumption
16 is at odds with AEP's own positions in the Flint Creek case and other pending AEP
17 regulatory cases. On pages 12 and 13 of his rebuttal testimony, Mr. Roach admits that he
18 has relied upon position papers published by environmentalists and President Obama's
19 recent State of the Union comments as support for his conclusion that future EPA
20 regulations will likely cause the Northeastern units to be retired after 50 years in service.
21 In a report prepared for the Commission in May of 2011, Mr. Roach also stated that he
22 believed that service life of the Northeastern coal units would be only 40 years based on
23 his review of an IRP prepared by a California utility. In all due respect, Mr. Roach's
24 opinion that the operating lives of the Northeastern coal units will be 40 to 50 years is not
25 supported by any specific analysis and is inconsistent with industry experience, previous
26 OCC orders, as well as AEP's own coal plant studies and planning retirement dates, all of
27 which suggest that relatively large and efficient coal plants such as the Northeastern units
28 are expected to operate for 60 years or more. Similarly, Mr. Roach's conclusion that gas
29 prices are likely to remain low in the future is simply a guess, even by his own admission.
30 (See Norwood Rebuttal Testimony, page 4.) The Commission should not rely upon

1 unfounded speculation regarding gas prices, future EPA regulations or coal plant service
2 lives as the basis for determining the reasonableness of the EPA Settlement.

3
4 **Q. PSO WITNESS BECKER COMPLAINS THAT YOU HAVE NOT PROPERLY**
5 **QUANTIFIED THE IMPACT OF REMOVING CARBON TAXES FROM THE**
6 **ANALYSIS OF THE EPA SETTLEMENT AND THAT YOUR CRITICISMS OF**
7 **PSO'S LOAD FORECAST IS UNFOUNDED. HOW DO YOU RESPOND?**

8 A. I acknowledge Mr. Becker's criticism that my carbon tax adjustment was not adjusted to
9 reflect the secondary impact of carbon taxes on natural gas and coal prices and that those
10 adjustments would likely offset some of the increase in the savings for the Coal Retrofit
11 option implied by my adjustment. In fact, OIEC requested whether PSO had conducted a
12 no carbon scenario as it has in the Flint Creek case and other cases, but for some reason
13 the Company chose not to do so in this case. (See Exhibit SN-SR7, PSO's response to
14 OIEC 3-16.) OIEC does not have access to PSO's Strategist model or to the Company's
15 fuel price forecasting models, therefore I was not able to precisely quantify the impact of
16 the carbon adjustment as Mr. Becker suggests; however, Mr. Becker could have made
17 these calculations as he did in the "No Carbon" sensitivities he conducted to support the
18 coal retrofit option in the Flint Creek case, but for some reason he chose not to in this
19 case. The point is, removing carbon taxes from the base case analysis, as AEP Witness
20 Brice recommended in the Turk coal plant CCN case, would provide a higher and more
21 balanced base case estimate of the benefits of the Coal Retrofit alternative over the EPA
22 Settlement and more appropriately reflect the fact that it is impossible to know at this
23 time whether or when carbon taxes will be implemented or even if they would apply to
24 the Northeastern units.

25 With regard to Mr. Becker's complaint that my criticism of PSO's load forecast is
26 unfounded, I would again note that the Company has never had a 15 year continuous
27 period of no peak demand growth in its history of operations, as PSO forecasts in its base
28 case analysis in this case. (See Norwood Responsive Testimony, Exhibit SN-16.) Mr.
29 Becker for some reason chose not to even evaluate a "high" load forecast scenario to
30 evaluate how any amount of load growth over the next 15 years would impact the
31 forecasted \$1.9 billion base case cost disadvantage of the EPA Settlement, as he did in

1 the pending Flint Creek case and in other cases. (See Norwood Responsive Testimony,
2 Exhibit SN-17.) Clearly, higher peak demand growth would accelerate the date by
3 which PSO has to procure replacement capacity for the retired Northeastern coal units
4 and therefore would increase the already large base case costs advantage of the Coal
5 Retrofit option over the EPA Settlement. The Commission should not allow PSO to
6 justify the EPA Settlement based on unbalanced and unrealistic assumptions which mask
7 the true cost of the Settlement. Had Mr. Becker simply conducted the same sensitivity
8 analyses of carbon and load growth, consistent with the studies he performed in the Flint
9 Creek case and other pending AEP cases which have shown that retrofitting existing coal
10 units continues to be the lowest reasonable cost alternative, the \$1.9 billion base case cost
11 advantage of the Coal Retrofit option over the EPA Settlement presented by the
12 Company in this case would have been much larger. This was the point of my testimony
13 on these issues.

14
15 **V. LONG-TERM RATE IMPACTS**

16 **Q. HOW HAVE PROPONENTS ADDRESSED PSO'S FAILURE TO EVALUATE**
17 **THE LONG-TERM RATE IMPACTS OF THE EPA SETTLEMENT IN THEIR**
18 **REBUTTAL TESTIMONY?**

19 A. Sierra Club witness Mr. Wallach and Chesapeake witness Mr. Smead do not mention
20 long-term rate impacts of the Settlement and do not appear to be concerned with the cost
21 of the Settlement to customers.

22 Staff/OAG witness Mr. Roach presents the first year rate impacts of the
23 Settlement and asserts that the Settlement has the lowest rate impact of all options in
24 2016, but does not address the lack of long-term rate impacts of the proposed Settlement
25 (Roach Rebuttal Testimony, page 16.) The implication of this testimony is that the
26 Commission should focus on the initial rate impact in evaluating the reasonableness of
27 the Settlement. The problem with this is that the largest rate impacts of the proposed
28 Settlement occur in later years when the second Northeastern coal unit is retired and
29 when the spread between natural gas and coal prices is forecasted to increase.

1 PSO witness Mr. Fate argues on page 8 of his rebuttal testimony that the
2 Strategist model outputs essentially reflect the long-term rate impacts of the proposed
3 Settlement. However, as noted by PSO witness Mr. Weaver, the Strategist model results
4 do not represent regulated revenue requirements, but are simply forecasts of the impact of
5 the EPA Settlement on production costs of the PSO system, based on levelized capital
6 cost estimates and other simplified adjustments that do not reflect normal ratemaking
7 practices. In addition, the Strategist results are presented on a total company basis and
8 therefore do not reflect the impact of the proposed settlement on individual customer
9 classes, which vary significantly due to differences in load factors and seasonal usage
10 patterns of such customers.
11

12 **Q. WHAT IS THE PROBLEM WITH PSO'S FAILURE TO PROVIDE LONG-
13 TERM RATE IMPACTS OF THE PROPOSED EPA SETTLEMENT?**

14 A. By focusing only on the first year rate impact of the proposed EPA Settlement, PSO has
15 attempted to de-emphasize the much higher long-term rate impacts of the proposed EPA
16 Settlement, which will particularly impact large energy users. This is because the
17 majority of the cost increases under the Settlement are expected to occur after the second
18 Northeastern coal unit is retired in 2026, at which time PSO will have to replace the
19 relatively low cost coal-fired energy with much higher natural gas energy sources. For
20 example, under the EPA Settlement, the cost increase in 2027 (the first year after the
21 second Northeastern unit is retired) is forecasted to be nearly \$170 million when
22 compared to costs PSO otherwise would incur if it retrofitted the Northeastern units with
23 scrubbers, and approximately \$165 million of this total increase occurs in PSO's fuel
24 costs. The Company and Mr. Roach suggest that these future rate impacts of the EPA
25 Settlement are not important. The Commission must not ignore the long-term rate
26 impacts of the proposed EPA Settlement.
27

28 **VI. INDIRECT ECONOMIC IMPACTS**
29

1 **Q. HAVE THE PROPONENTS RAISED ANY NEW ISSUES REGARDING THE**
2 **INDIRECT ECONOMIC IMPACTS OF THE PROPOSED EPA SETTLEMENT**
3 **IN THEIR REBUTTAL TESTIMONIES?**

4 A. Yes. PSO witness Mr. Fate, and Chesapeake witness Mr. Smead both reference a May
5 2012 Oklahoma Energy Resources Board (OERB) report which assesses the impact of
6 Oklahoma's oil and natural gas industry on jobs and other aspects of Oklahoma's
7 economy. (Fate Rebuttal page 18 and Smead Rebuttal page 27.) Mr. Fate uses the
8 results of this OERB report to estimate the economic impact of the forecasted increased
9 in Oklahoma gas production he claims would result from the proposed EPA Settlement.
10 (Fate Rebuttal page 18.)
11

12 **Q. SHOULD MR. FATE'S ESTIMATE OF THE INDIRECT ECONOMIC BENEFIT**
13 **OF THE PROPOSED EPA SETTLEMENT BE RELIED UPON IN JUDGING**
14 **THE REASONABLENESS OF THE PROPOSED SETTLEMENT?**

15 A. No. First of all, Mr. Fate and Mr. Smead admit they have no direct knowledge of the
16 analysis underlying the OERB report, and the authors of the report are not available as
17 witnesses to answer questions necessary to assess the reasonableness of their analysis.
18 (See Exhibit SN-SR8.) Mr. Fate is not an economist and is not familiar with details of
19 the OERB analysis; therefore it is not clear that he has even properly applied the results
20 of the OERB analysis in estimating the benefits of increased gas production due to the
21 EPA Settlement.

22 Moreover, it is clear that the estimated benefit of increased gas production that
23 Mr. Fate attributes to the EPA Settlement is overstated. For example, Mr. Fate's claim
24 that the EPA Settlement will result in an incremental increase in Oklahoma gas
25 production of 39 thousand MMBTU per year ignores the fact that a portion of the
26 increase in natural gas production occurs due to normal load growth on PSO's system,
27 and unrealistically assumes that 100% of the additional gas-fired energy production on
28 PSO's system under the EPA Settlement would be supplied from Oklahoma produced
29 natural gas. Mr. Fate's estimate of the increased gas-fired energy production resulting
30 from the EPA Settlement further assumes that gas-fired energy that PSO plans to
31 purchase from Calpine and Exelon to replace coal-fired energy that is retired under the

1 EPA Settlement would not otherwise have been produced by these suppliers had the
2 Settlement not occurred. This argument is also highly unreasonable since it assumes that,
3 if the EPA Settlement did not occur, Calpine and Exelon would not sell their energy to
4 other parties within the SPP market, which is clearly unrealistic.

5 In addition, Mr. Fate's estimate of the increase in Oklahoma natural gas
6 production due to the EPA Settlement assumes that the increase in gas usage would
7 continue through 2040. This assumption is inconsistent with the Company's position
8 that, but for the EPA Settlement, the Northeastern coal units would be forced to retire by
9 2030 due to future EPA regulations. If PSO's view that the Northeastern units will be
10 forced to retire by 2030 is correct, the increased gas production benefit which Mr. Fate
11 attributes to the EPA Settlement in years after 2030 is invalid, since PSO would have to
12 replace coal fired energy from the retired Northeastern units after that date whether or not
13 the EPA Settlement occurs.

14
15 **Q. ARE YOU SAYING THAT THERE WILL BE NO INCREASE IN OKLAHOMA**
16 **GAS PRODUCTION AND NO RELATED INDIRECT ECONOMIC BENEFITS**
17 **DUE TO THE EPA SETTLEMENT?**

18 A. No. I am simply saying that Mr. Fate's estimate of the benefit of increased gas
19 production under the EPA Settlement is overstated and based on assumptions from the
20 OERB report which have not been verified. Clearly, the Settlement could result in some
21 increased gas production and that would have some indirect economic benefit to
22 Oklahoma. However, a portion of these "benefits" would be recovered as "costs" of the
23 gas that is purchased by PSO and ultimately paid for by PSO's customers. Moreover,
24 although not recognized by Mr. Fate or Mr. Smead, the Coal Retrofit alternative would
25 also result in indirect economic benefits to Oklahoma in the form of more jobs and tax
26 revenues when compared to the retirement of the Northeastern coal units under the EPA
27 Settlement. For example, a recent analysis prepared by the University of Arkansas which
28 was sponsored by a customer group in the Flint Creek case in Arkansas indicates that
29 retrofitting Flint Creek would produce significant benefits to the local economy.

1 **Q. WOULD THE PROPOSED EPA SETTLEMENT SIGNFICANTLY INCREASE**
2 **THE OVERALL LEVEL OF OKLAHOMA GAS PRODUCTION?**

3 A. No. Mr. Fate states on page 18 of his rebuttal testimony that the EPA Settlement would
4 increase Oklahoma natural gas production by approximately 39 thousand MMBtu per
5 year by 2027 although I believe Mr. Fate really means 39 million MMBtu per year.
6 Although I believe this estimate is grossly overstated for the reasons stated above, even if
7 100% of this increased gas production was due to the EPA Settlement and supplied
8 entirely from Oklahoma sources, it still would represent only approximately 1.3% of the
9 total Oklahoma gas production in 2011 (~2.9 million MCF), as published by EIA.
10 Moreover, if properly adjusted for the factors I have noted, I believe the incremental
11 impact of the EPA Settlement is likely to be significantly less than 1% of the total
12 Oklahoma gas production in 2027 (the period covered by Mr. Fate's estimate) and about
13 half that level until Northeastern Unit 3 retires until 2026. It is difficult to see how such a
14 small increase in Oklahoma natural gas production could justify the estimated \$1.9
15 billion increase in costs to PSO's ratepayers and the loss of fuel diversity arising from the
16 proposed EPA Settlement.

17
18 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

19 A. Yes.

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EXHIBIT SN-SR 1

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY OF)
OKLAHOMA FOR COMMISSION AUTHORIZATION)
OF A PLAN AND COST RECOVERY OF ACTIONS)
OF PSO TO BE IN COMPLIANCE WITH CERTAIN)
ENVIRONMENTAL RULES PROMULGATED BY)
THE UNITED STATES ENVIRONMENTAL) CAUSE PUD 2 01200054
PROTECTION AGENCY; SUCH ACTIVITIES TO)
INCLUDE, BUT NOT BE LIMITED TO, CAPITAL)
EXPENDITURES FOR EQUIPMENT AND)
FACILITIES; CONSTRUCTION OR PURCHASE OF)
AN ELECTRIC GENERATING FACILITY OR ENTER)
INTO A LONG-TERM PURCHASE POWER)
CONTRACT (AND POSSIBLE EARNINGS ON THE)
CONTRACT); CHANGE IN DEPRECIATION RATES)
AND/OR ESTABLISHMENT AND RECOVERY OF A)
REGULATORY ASSET; AND FOR SUCH OTHER)
RELIEF AS THE COMMISSION DEEMS PSO IS)
ENTITLED.)

PUBLIC SERVICE COMPANY OF OKLAHOMA'S RESPONSE TO
OKLAHOMA INDUSTRIAL ENERGY CONSUMERS – SEVENTEENTH SET
OF DATA REQUESTS

Question 15:

Reference Mr. Ground's rebuttal testimony, page 5 and Exhibit HLG-1R, please provide the status of each regulation noted on the exhibit, along with the compliance deadlines and estimated cost impact and actions required to comply with each such regulation for the Northeastern coal units, and provide the forecasted cost of each such regulation that was included in PSO's base case analysis of the EPA Settlement.

Response No. 15:

Please see OIEC 17-15, Attachment 1 for the status of each regulation, estimated compliance deadlines, and actions required at Northeastern where available. The forecasted costs associated with CCR, as well as a carbon tax in lieu of CO2 regulation or legislation are included in Table 8 of Company witness Weaver's (Becker's) Direct Testimony.

Prepared By: Howard L. Ground

Title: Manager, State Governmental and
Environmental Affairs

Regulation	Status	Description	Regulated
Mercury and Air Toxics Standards (MATS)	Final rule published in the federal register on February 16, 2012.	The MATS Rule replaces the former Clean Air Mercury Rule (CAMR) that was vacated in 2008 by the D.C. Circuit Court of Appeals. This rule regulates emissions of hazardous air pollutants (HAPs) from coal and oil-fired electric generating units. HAPs regulated by this rule are: 1) mercury; 2) several non-mercury metals such as arsenic, lead, cadmium and selenium; 3) various acid gases including hydrochloric acid; and 4) many organic HAPs. The MATS rule includes stringent emission rate limits for several individual HAPs, including mercury. In addition, this rule contains stringent emission rate limits for several HAP classifications, e.g., acid gases. For non-mercury metals and acid gases, the MATS rule allows for the use of a surrogate in lieu of having to test for each individual HAP. The surrogate for non-mercury HAP metals is filterable PM while hydrogen chloride (HCl) and/or SO2 (for units equipped with a scrubber) are the surrogate options for acid gases. Organic HAP compounds are regulated via work practice standards (i.e., boiler inspection and tune-up requirements) instead of emissions limits.	C Mercury, non-mercury trace metals (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Ni, Se), Acid Gases, Organic HAPs
Coal Combustion Residuals Rule (CCR)	Proposed	The proposed CCR rule published by the USEPA in June 2010, with final rulemaking anticipated by mid-2013. This rule is intended to address the disposal of byproducts of combustion of coal in power plants (fly ash, bottom ash, etc.). A new CCR rule would require the conversion of all wet ash disposal systems to dry systems, the possible relining or closing of ash ponds, as well as the possible construction of waste water treatment facilities within 5 years of promulgation of the final rule.	5 Fly ash, Bottom ash, FGD byproduct, Boiler slag
Regional Haze Rule (RHR)	The RHR was finalized by EPA in 1999. The ODEQ submitted to state SIP in January 2010. The EPA published a proposed FIP on March 22, 2011 which	The RHR requires states to develop regional haze implementation plans (RHR SIPs) to reduce emissions of pollutants associated with visibility impairment (NOx, SO2, PM). Best Available Retrofit Technology (BART) emission limits are to be specified in the state SIPs for NOx, SO2 and PM. Electric generating units in states that have been subject to the annual SO2	1 NOX, SO2 and PM

<p>Clean Air Interstate Rule (CAIR)</p>	<p>CAIR is currently in effect.</p>	<p>Multi-state cap and trade program intended to significantly reduce NOx and SO2 emissions from large fossil-fuel combustion sources and mitigate interstate transport of NOx, ground-level ozone and fine particulate matter</p>	<p>NOX and SO2</p>
<p>Cross-State Air Pollution Rule (CSAPR)</p>	<p>Vacated (Under Appeal)</p>	<p>CSAPR was promulgated by EPA as a replacement for CAIR - which had been overturned by the DC Court of Appeals in 2008 but left in place until a replacement was finalized. CSAPR is a multi-state cap and trade program, with interstate trading significantly restricted, intended to significantly reduce NOx and SO2 emissions from large fossil-fueled combustion sources to mitigate interstate transport of ground-level ozone and fine particulate matter.</p>	<p>NOX and SO2</p>
<p>Revised National Ambient Air Quality Standards for SO2 and NO2</p>	<p>Final rules for SO2 and NO2 1 hr NAAQS published by EPA in 2010.</p>	<p>The revised SO2 and NO2 NAAQS require additional monitoring and/or modeling, final designations by US EPA, SIP development by each state and final SIP approval by EPA. This process is underway but, at this time, EPA has not yet provided its designations to the states. This is expected by June 2013.</p>	<p>SO2 and NOX</p>

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<p>Revised National Ambient Air Quality Standards for Particulate Matter</p>	<p>Final rule on PM NAAQS signed by EPA on December 14, 2012;</p>	<p>EPA has proposed to lower the 15 ug/m3 PM2.5 standard to within the range of 12 – 13 ug/m3 and retain the 35 ug/m3 24-hour PM2.5 and 150 ug/m3 24-hour PM10 standards.</p>	<p>PM10, SO2, NOx</p>
<p>Revised National Ambient Air Quality Standards for Ozone</p>	<p>EPA has stated that it will propose a rule to revise the ozone NAAQS by December 2013 and issue a final rule by December 2014.</p>	<p>EPA is considering whether, and by how much, it must revise the 8 hr Ozone NAAQS. The current standard is 75 ppb and EPA is considering a revision in the range of 60 - 70 ppb.</p>	<p>NOx</p>
<p>Greenhouse Gas New Plant NSPS</p>	<p>Proposed</p>	<p>The proposed rule was published by EPA on March 27, 2012 and would require new coal plants to meet a GHG emission standard (1,000 lb/MWh) equivalent to the CO2 emitted by a natural gas combined cycle unit. This standard effectively prohibits the construction of new coal units because it would require the commitment to utilize expensive and currently commercially unavailable carbon capture and storage technology to comply with this proposed rule's emissions standards.</p>	<p>CO2</p>
<p>GHG Tailoring Rule</p>	<p>Final Rule</p>	<p>This rule established GHG thresholds for PSD applicability for new plants as well as those undergoing a modification that would result in a increase in GHG above the applicable threshold.</p>	<p>CO2</p>

<p>Steam Electric Power Generation Effluent Limitations Guidelines</p>	<p>Proposal scheduled for April 19, 2013. Final rule expected sometime in 2014.</p>	<p>It is expected that this proposal will include proposed for the following wastewater categories - fly ash sluice wastewater, bottom ash sluice wastewater, FGD systems and coal combustion residual leachate. The exact limits won't be known until EPA's proposal is issued.</p>	<p>Trace metals, nutrients and inorganics</p>
<p>316(b)</p>	<p>Proposed</p>	<p>The proposed 316(b) rule was published by the USEPA on March 28, 2011, with final rulemaking expected in June 2013. The rule's intent is to establish technology standards around the need for, and construction of, cooling water intake structures that would lessen the impact of impingement and entrainment on fish and other aquatic organisms. Compliance requirements for the subcritical coal plants that do not utilize a closed-loop cooling system would have to be determined based on site-specific studies. The implementation schedule for this rule could extend late into this decade due to the site specific nature of the permitting process.</p>	<p>N/A</p>

EXHIBIT SN-SR 2

9. Reference page 23 of Mr. Smead's rebuttal testimony, please provide documentation of any independent analysis conducted by Mr. Smead to assess AEP's stated position regarding the impact of future environmental regulations on coal plant service lives in testimony filed in other jurisdictions to assess whether the position stated in this case is consistent with the Company's stated position in other cases.

RESPONSE:

Mr. Smead has not conducted such a review of AEP testimony in other jurisdictions. He accepts the arguments and reasoning contained within the PSO testimony in this case, as borne out by the reflections of Dr. Roach testifying for the Commission Staff and AG. Mr. Smead considers PSO's reasoning to be a sound exercise of management judgment in the case of these two coal units.

Prepared by: Richard G. Smead

Title: Director, Navigant Consulting, Inc.

EXHIBIT SN-SR 3

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY OF)
OKLAHOMA FOR COMMISSION AUTHORIZATION)
OF A PLAN AND COST RECOVERY OF ACTIONS)
OF PSO TO BE IN COMPLIANCE WITH CERTAIN)
ENVIRONMENTAL RULES PROMULGATED BY)
THE UNITED STATES ENVIRONMENTAL) CAUSE PUD 2 01200054
PROTECTION AGENCY; SUCH ACTIVITIES TO)
INCLUDE, BUT NOT BE LIMITED TO, CAPITAL)
EXPENDITURES FOR EQUIPMENT AND)
FACILITIES; CONSTRUCTION OR PURCHASE OF)
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CONTRACT (AND POSSIBLE EARNINGS ON THE)
CONTRACT); CHANGE IN DEPRECIATION RATES)
AND/OR ESTABLISHMENT AND RECOVERY OF A)
REGULATORY ASSET; AND FOR SUCH OTHER)
RELIEF AS THE COMMISSION DEEMS PSO IS)
ENTITLED.)

PUBLIC SERVICE COMPANY OF OKLAHOMA'S RESPONSE TO
OKLAHOMA INDUSTRIAL ENERGY CONSUMERS –TWENTIETH SET OF DATA
REQUESTS

Question 08:

Reference PSO's response to OIEC 18-5, please provide the assumed coal plant service lives for the base case Strategist analyses of the Flint Creek scrubber retrofit project, as well as the Amos and Mitchell asset transfer studies presented in regulatory proceedings currently pending in Kentucky, Virginia and West Virginia and indicate Mr. Becker's involvement in the modeling studies for each of these cases.

Response No. 08:

The assumed service life in the Strategist cases for Flint Creek was 62 years and 67 years and 69 years for Amos and Mitchell, respectively. Mr. Becker had direct oversight for the modeling of these cases.

Prepared By: Mark A. Becker

Title: Manager – Resource Planning

EXHIBIT SN-SR 4

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY OF)
OKLAHOMA FOR COMMISSION AUTHORIZATION)
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PUBLIC SERVICE COMPANY OF OKLAHOMA'S RESPONSE TO
OKLAHOMA INDUSTRIAL ENERGY CONSUMERS – SEVENTEENTH SET
OF DATA REQUESTS

Question 18:

Reference Mr. Ground's rebuttal testimony, page 9, did Mr. Ground review the testimony filed within the last 18 months by John Hendricks and other AEP witnesses which address the appropriate treatment of estimated costs of future environmental regulations on coal-fired plants?

Response No. 18:

Mr. Ground is aware of the testimony of Mr. Hendricks and other AEP witnesses, but did not review their testimony in great detail nor rely on it to formulate his own testimony. But, Mr. Ground is also aware that SWEPCO made similar assumptions associated with a carbon tax and CCR costs that were also included in the economic modeling of Scott Weaver for the Flint Creek case (APSC Docket No. 12-008-U) referenced in the Responsive Testimony of Mr. Norwood.

Prepared By: Howard L. Ground

Title: Manager, State Governmental and
Environmental Affairs

EXHIBIT SN-SR 5

Exhibit SN-SR5

Henry Hub Natural Gas Prices (\$/MMBtu)

Actual

Feb-2012	\$2.51
Mar-2012	\$2.17
Apr-2012	\$1.95
May-2012	\$2.43
Jun-2012	\$2.46
Jul-2012	\$2.95
Aug-2012	\$2.84
Sep-2012	\$2.85
Oct-2012	\$3.32
Nov-2012	\$3.54
Dec-2012	\$3.34
Jan-2013	\$3.33
Feb-2013	\$3.33

NYMEX Futures

Apr-13	\$3.96
May-13	\$3.99
Jun-13	\$4.02

Source for historical prices is EIA:

<http://www.eia.gov/dnav/ng/hist/rngwhhdm.htm>

Utility president warns of natural-gas price volatility

By Andrew Restuccia - 04/26/12 02:46 PM ET

American Electric Power President Nick Akins warned Thursday against over-reliance on natural gas and blasted pending Environmental Protection Agency regulations, arguing they “make absolutely no sense.”

“If directional drilling and ‘fracking’ are the game-changers that everyone predicts, our nation may be flush with plentiful and inexpensive domestic natural gas,” he said.

“If that long-term price holds, it will mean significantly more dependence on natural gas to generate electricity. Absent energy policy supporting a diverse fuel supply, it will be difficult to build any other type of electric generation.”

But Akins warned that natural-gas prices, which are hovering around \$2 per 1,000 cubic feet, could surge, undercutting the economic rationale behind increased reliance on natural gas.

“Betting on just one fuel to power our energy fuel isn’t smart,” Akins said during a speech at the U.S. Chamber of Commerce, pointing to past volatility in the price of natural gas.

“Whether that volatility has changed permanently remains to be seen,” he added.

Akins said natural-gas prices could spike if major environmental issues emerge with hydraulic fracturing, or “fracking,” the natural-gas drilling method that has enabled the shale production boom.

He also said natural-gas prices are vulnerable to volatile weather conditions, adding that they could increase as export and import facilities for liquefied natural gas are constructed.

Coal makes up a major portion of American Electric Power's (AEP) generating capacity, but low natural-gas prices and new EPA air pollution regulations have driven the Ohio-based company to diversify its fuel mix.

AEP has said it will retire more than 5,000 megawatts of coal-fired power, switching to natural gas and other fuel sources.

“By 2020, only 50 percent of our generation fleet will burn coal,” Akins said during his remarks Thursday.

Akins took aim at pending EPA air pollution regulations, arguing they will “will unnecessarily increase electricity prices and put the reliability of the grid at risk in several parts of the country.”

AEP **has been very critical** of EPA in the past.

The regulations “make absolutely no sense” amid the Obama administration’s efforts to boost the economy and create jobs, he said.

Akins touted **legislation authored by Sens. Joe Manchin (D-W.Va.) and Dan Coats (R-Ind.)** to delay the compliance period for EPA’s Cross-State Air Pollution and Utility MACT (maximum available control technology) rules.

The cross-state rule aims to limit air pollution that crosses state lines. The Utility MACT requires power plants to limit the release of mercury and other air toxics.

Read more: <http://thehill.com/blogs/e2-wire/e2-wire/224035-aep-president-warns-of-natural-gas-price-volatility#ixzz2OI4j08rN>

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EXHIBIT SN-SR6

THERE IS NO EXHIBIT SN-SR6

EXHIBIT SN-SR 7

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

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PUBLIC SERVICE COMPANY OF OKLAHOMA'S RESPONSE TO
OKLAHOMA INDUSTRIAL ENERGY CONSUMERS -THIRD SET OF DATA
REQUESTS

Question 16:

Did PSO evaluate a "no-carbon" sensitivity case in its August 2012 follow-up analysis of the EPA Settlement and Northeastern retrofit Option #1 as was done in Mr. Weaver's analysis in support of retrofit of Flint Creek in Arkansas PSC Docket No. 12-008-U? If not, please explain why not. If so, please provide the complete results and supporting workpapers and assumptions for this no carbon sensitivity analysis and explain why it was not presented in PSO's testimony in this case..

Response No. 16:

No. The base case used in evaluating the Northeastern environmental compliance options included the company's best estimate of the most likely greenhouse gas regulation and provided a reasonable basis for its decision making.

Prepared By: Steven L. Fate

Title: Director, Business Operations
Support

EXHIBIT SN-SR 8

BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

**APPLICATION OF PUBLIC SERVICE COMPANY OF)
OKLAHOMA FOR COMMISSION AUTHORIZATION)
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**PUBLIC SERVICE COMPANY OF OKLAHOMA’S RESPONSE TO
OKLAHOMA INDUSTRIAL ENERGY CONSUMERS – SEVENTEENTH SET
OF DATA REQUESTS**

Question 07:

Reference Mr. Fate’s rebuttal testimony, page 18, please provide independent analysis conducted by Mr. Fate of the assumptions, analysis and conclusions of the referenced May 2012 report including the 1.762 multiplier.

Response No. 07:

Mr. Fate did not conduct an independent analysis of the 1.762 economic multiplier contained in the May 2012 OERB report. However, we would point out that in the IHS Global Insight report provided by the Sierra Club in response to OIEC 2-2, on page 9 (Shale Gas Value Added Contribution table) IHS estimates the U.S. economic multiplier to be 2.6 in 2010. This is consistent with the 1.762 economic multiplier estimated in the May 2012 OERC report as one would expect the U.S. multiplier to be somewhat higher than a state or smaller region.

Prepared By: Steven L. Fate

Title: Director, Business Operations
Support

11. Reference page 27 and Exhibit RGS-Rebuttal 5 of Mr. Smead's rebuttal testimony, please provide documentation of any independent analysis conducted by Mr. Smead to establish the reasonableness of the assumptions, analysis and conclusions of the referenced May 2012 report and indicate whether Chesapeake had any involvement in the commissioning of or funding of this report.

RESPONSE:

Mr. Smead is aware of the OERB report, as an academically based produced analysis and observation regarding the role of the oil and gas industry in Oklahoma's economy. He was particularly struck by the language he quoted, as to oil and gas being Oklahoma's defining industry, and certainly agrees with that statement. He has not attempted to question or independently verify the quantitative work contained within the report. Chesapeake played no role whatsoever in the funding of the OERB study and report.

Prepared by: Richard G. Smead

Title: Director, Navigant Consulting, Inc.