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JUN 11 2010

**BEFORE THE CORPORATION COMMISSION
OF THE STATE OF OKLAHOMA**

COURT CLERK'S OFFICE - OKC
CORPORATION COMMISSION
OF OKLAHOMA

**IN THE MATTER OF THE
APPLICATION OF OKLAHOMA GAS
AND ELECTRIC COMPANY FOR AN
ORDER GRANTING PRE-APPROVAL
TO CONSTRUCT THE CROSSROADS
WIND FARM, AND AUTHORIZING A
RECOVERY RIDER**

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CAUSE NO. PUD 201000037

RESPONSIVE TESTIMONY

OF

SCOTT NORWOOD

ON BEHALF OF

OKLAHOMA INDUSTRIAL ENERGY CONSUMERS

JUNE 11, 2010

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EXHIBITS:

- SN-1 Background and Experience of Scott Norwood
- SN-2 OG&E's Responses to OIEC 4-5 and 4-6
- SN-3 OG&E's Response to OIEC 2-10
- SN-4 OG&E's Response to OIEC 4-2

1 I. INTRODUCTION

2

3 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

4 A. My name is Scott Norwood. My business address is P.O. Box 30197, Austin, Texas
5 78755.

6

7 Q. WHAT IS YOUR OCCUPATION?

8 A. I am a consultant specializing in the areas of energy planning, procurement and
9 regulation, and President of Norwood Energy Consulting, L.L.C.

10

11 Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND
12 PROFESSIONAL EXPERIENCE.

13 A. I am an electrical engineer with over 29 years of experience in the electric utility
14 industry. After graduating from the University of Texas in 1980, I began my career as a
15 power plant engineer for the City of Austin's Electric Utility Department. In January
16 1984, I joined the staff of the Public Utility Commission of Texas ("PUC" or
17 "Commission") where I served as Manager of Power Plant Engineering and was
18 responsible for addressing resource planning, fuel and purchased power cost issues which
19 came before the Commission. In 1986 I joined GDS Associates, a Marietta, Georgia
20 based consulting engineering firm. I was elected a Principal of GDS in 1990, and
21 directed the firm's Deregulation Services Department until January 2004, when I left to
22 form Norwood Energy Consulting, LLC. The focus of my current consulting practice is
23 energy planning, procurement and regulation. My resume is attached as Exhibit SN-1.

1

2 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS CASE?**

3 A. I am testifying on behalf of Oklahoma Industrial Energy Consumers ("OIEC").

4

5 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE CORPORATION**
6 **COMMISSION OF OKLAHOMA?**

7 A. Yes. I have testified in a number of past base rate and fuel proceedings before the
8 Oklahoma Corporation Commission ("OCC" or "Commission"), including Oklahoma
9 Gas & Electric Company's ("OG&E") most recent base rate and fuel prudence cases, and
10 prior cases involving the Company's proposed Red Rock coal-fired generating station, the
11 Company's acquisition of the Redbud gas-fired plant and the Company's "Windspeed"
12 345 kV transmission line. In addition, I have testified as an expert on regulatory and
13 electric restructuring matters before the Arkansas House of Representatives and before
14 state regulatory commissions in Arkansas, Georgia, Iowa, Illinois, Louisiana, Michigan,
15 Missouri, New Jersey, Texas, Virginia, and Wisconsin.

16

17 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS CASE?**

18 A. The purpose of my testimony is to present my findings and recommendations regarding
19 OG&E's request for pre-approval of its proposed 197.8 MW Crossroads Wind Farm
20 ("Crossroads") project.

21

1 **Q. WHAT IS OIEC'S POSITION WITH REGARD TO RENEWABLE ENERGY AS**
2 **A RESOURCE FOR SERVING THE FUTURE ELECTRICAL NEEDS OF THE**
3 **STATE OF OKLAHOMA?**

4 A. OIEC has, in the past, consistently supported the use of cost-effective forms of renewable
5 energy, including new wind energy resources, and has been a party to several recent cases
6 involving OG&E wind generation and transmission proposals, including Cause No. PUD
7 200800148 (Windspeed 345 kV transmission line), Cause No. PUD 200900167 (OU
8 Spirit Wind Farm), Cause No. PUD 200900230 (CPV Keenan Wind PPA) and Cause No.
9 PUD 200900231 (Taloga Wind PPA). In each of these cases, OIEC has examined the
10 costs and estimated benefits of OG&E's proposed wind generation and transmission
11 projects, and ultimately supported those projects as a signator of related settlement
12 agreements in each case. OIEC also has been a strong supporter of integrated resource
13 planning and competitive bidding as tools to ensure efficient and cost effective
14 procurement of new generation resources, as provided under OAC 165:35-37 and OAC
15 165:35-34.

16
17 **Q. WHAT IS OIEC'S INTEREST IN THIS CASE?**

18 A. In this case, OG&E is seeking pre-approval of its \$397.6 million investment in the 197.8
19 MW Crossroads wind farm project which is located near Dewey County, Oklahoma.
20 (See OG&E Witness Bryan Scott's Exhibit BJS-2, page 1 of 4.) In addition, OG&E is
21 asking the Commission to find: 1) that its investment in the Crossroads project is
22 prudent; 2) that the Crossroads project will be "used and useful" when placed in service;

1 3) that OG&E be allowed to implement a recovery rider to recover costs of the
2 Crossroads project as the turbines are placed in service; and 4) that OG&E be granted a
3 waiver from the Commission's competitive procurement rules with regard to its
4 acquisition of the Crossroads project. OIEC's interest in this case is to ensure that
5 OG&E's proposed Crossroads project is a prudent investment and is likely to provide
6 energy savings and other benefits to OG&E's customers as described by the Company in
7 its testimony.

8
9 **Q. HAVE YOU PREPARED ANY EXHIBITS TO SUPPORT YOUR TESTIMONY?**

10 A. Yes. I have prepared 4 exhibits as support for my testimony.

11
12 **II. SUMMARY OF TESTIMONY**

13
14 **Q. PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS**
15 **REGARDING OG&E'S CROSSROADS WIND FARM APPLICATION.**

16 A. While OG&E's estimates of the benefits of the Crossroads wind farm project appear to be
17 aggressive, on balance, I believe that the estimated cost and performance of the project
18 compare favorably to other resource alternatives available to the Company at this time.
19 Moreover, it appears likely that the Crossroads project will provide significant production
20 cost savings, fuel diversity and emission reductions benefits to Oklahoma customers over
21 the life of the project, assuming the cost and performance of the project are reasonably
22 consistent with the expected levels projected by OG&E in this case. For these reasons, I

1 recommend that the Commission grant OG&E's request for pre-approval of the
2 Crossroads project subject to certain modifications I am recommending to the Company's
3 proposed Crossroads Rider recovery mechanism. In light of the expected energy cost
4 benefits of the Crossroads project, the Crossroads Rider proposed by OG&E generally
5 appears reasonable to the extent it is modified to: i) cap cost recovery for the project at a
6 level no greater than the level projected by OG&E in this case; ii) flow through 100% of
7 Renewable Energy Credit ("REC") sales revenues produced by the project; and iii)
8 terminate no later than the conclusion of OG&E's 2013 base rate case when the Company
9 will be able to include costs of the project within its base rates. My support for these
10 findings and other details of my recommendations are addressed in the remainder of my
11 testimony.

12

13 **III. OVERVIEW OF CROSSROADS WIND FARM PROJECT**

14 **Q. PLEASE DESCRIBE THE CROSSROADS PROJECT.**

15 A. Crossroads is a proposed 197.8 MW wind farm located at a 20,000 acre site in Dewey
16 County, Oklahoma. (Walker Direct, page 3.) The project is being developed jointly by
17 OG&E, RES Americas and Siemens Energy ("Siemens"). OG&E has executed contracts
18 with Siemens for supply and erection of the Crossroads wind turbine generators, and with
19 RES Americas for preparation of the site and construction of the balance of plant. The
20 project will consist of 86 Siemens SWT-2.3-101 wind turbine generators each with a
21 nameplate rating of 2.3 MW. (Walker Direct, page 3.) OG&E expects the Crossroads

1 project to begin providing energy during the second half of 2011, with full commercial
2 operations anticipated by the end of 2011. (Walker Direct, page 3.)

3 **Q. WHAT IS THE ESTIMATED CAPITAL COST OF THE CROSSROADS**
4 **PROJECT?**

5 A. OG&E has indicated in its direct testimony that the estimated capital cost of the
6 Crossroads project is \$397.6 million, or approximately \$2010/kW. (See OG&E Witness
7 Bryan Scott's Exhibit BJS-2, page 1 of 4.) The final cost of the project may be lower
8 than the amount reflected in OG&E's direct testimony, since 44% of the cost of the
9 Crossroads wind turbine generators is indexed to the value of the Danish Krone, which
10 has declined in recent months. (Walker Direct, page 11.)

11

12 **Q. WHAT IS THE PROJECTED CAPACITY FACTOR OF THE CROSSROADS**
13 **PROJECT?**

14 A. The Crossroads wind turbines will have a 101-meter rotor diameter, which is
15 approximately 10% greater than the rotor diameter of wind turbines at OG&E's OU Spirit
16 wind farm. This increase in wind turbine rotor diameter is expected to produce higher
17 capacity factors when compared to past OG&E wind generation projects. (Walker
18 Direct, page 3.) Based on wind profile modeling analysis of the Crossroads plant site,
19 OG&E is projecting that the Crossroads project will operate at an average annual
20 capacity factor of 46.38%. (Walker Direct, page 5.)

21

1 **Q. HOW WILL THE CROSSROADS PROJECT BE INTERCONNECTED TO**
2 **OG&E'S TRANSMISSION GRID?**

3 A. The Crossroads project will be interconnected to OG&E's 345 kV Windspeed
4 transmission project at the new Tatonga substation. (Walker Direct, page 4.) OG&E
5 indicates that the Crossroads site is capable of supporting an additional 29.7 MW of wind
6 generation capacity above the 197.8 MW announced rating. The Company has asked the
7 Southwest Power Pool (SPP) to study the ability to interconnect this additional capacity
8 to the transmission grid. (Walker Direct, page 4.) If this proves to be feasible, the
9 Company indicates that it will file a separate request with the Commission at a later date
10 for approval to expand the Crossroads wind farm project to 227.5 MW.

11

12 **Q. WHAT FINDINGS ARE REQUESTED BY OG&E WITH REGARD TO ITS**
13 **PROPOSED CROSSROADS PROJECT?**

14 A. OG&E is requesting that the Commission make the following findings:

- 15 • that the Crossroads project is a prudent investment for OG&E;
- 16 • that Crossroads will be "used and useful" when placed in service;
- 17 • that OG&E be permitted to implement a recovery rider so that costs of the
18 Crossroads project can be recovered as the turbines are placed in service; and
- 19 • that it is appropriate to approve a waiver from the Commission's competitive
20 procurement rules.

21

22 (Langston Direct, page 4.)

1 **Q. WHY IS OG&E SEEKING A WAIVER FROM THE COMMISSION'S**
2 **COMPETITIVE BIDDING RULES FOR THE CROSSROADS PROJECT?**

3 A. OG&E negotiated its agreements with RES Americas and Siemens to develop the
4 Crossroads project outside of a formal competitive bidding process as specified by the
5 Commission's rules. The Company indicates that it is requesting a waiver from the
6 Commission's competitive bidding rules in order to obtain pre-approval for the
7 Crossroads project, because it believes the project represents an exceptional opportunity
8 that will benefit its customers and shareholders. (Langston Direct, page 5.)
9

10 **IV. PRUDENCE OF CROSSROADS INVESTMENT**

11 **Q. WHAT EVIDENCE HAS OG&E PRESENTED TO DEMONSTRATE THAT ITS**
12 **PROPOSED CROSSROADS WIND FARM INVESTMENT IS PRUDENT AND**
13 **MERITS A WAIVER FROM THE COMMISSION'S COMPETITIVE BIDDING**
14 **RULES?**

15 A. OG&E has presented the results of certain production cost savings analyses along with
16 comparisons of the Crossroads project to the seven lowest cost bids which were received
17 in February of 2009 in response to the Company's Wind Energy RFP in its testimony.
18 (Langston Direct, pages 5-10.) These benefits analyses appear to be the primary basis for
19 OG&E's waiver request and conclusion that the Crossroads project represents an
20 exceptional opportunity for its customers.

1 In addition, OG&E indicates that its Crossroads project will provide certain other
2 benefits which were not individually quantified, including reduced emissions, a hedge
3 against higher natural gas prices and costly carbon regulations, and a hedge for potential,
4 future, state or federal Renewable Portfolio Standards. (Langston Direct, page 6.)

5

6 **Q. HOW DOES THE PROJECTED COST OF ENERGY FROM THE**
7 **CROSSROADS PROJECT COMPARE TO THE PRICES FROM THE LOWEST**
8 **COST BIDS RECEIVED IN RESPONSE TO OG&E'S 2009 WIND ENERGY**
9 **RFP?**

10 A. According to OG&E's analysis, the projected cost of energy from the Crossroads project
11 is approximately \$37.57 per megawatt-hour (MWh) on a levelized basis. (Walker Direct,
12 page 11.) This levelized cost estimate for the Crossroads project was based on an
13 average capacity factor of 46.38% and was derived over a 25-year estimated project life,
14 including capital and operating costs, production tax credits and REC offsets. (Walker
15 Direct, page 11.) Under these assumptions applied by OG&E, the levelized cost of the
16 Crossroads project is at least 20% lower than the lowest priced bids received by the
17 Company in response to its 2009 Wind Energy RFP. (Langston Direct, Exhibit JBL-1.)

18

19 **Q. DOES OG&E'S COMPARISON OF THE ESTIMATED LEVELIZED COST OF**
20 **THE CROSSROADS PROJECT TO LOWEST COST BIDS FROM ITS 2009**
21 **WIND ENERGY RFP DEMONSTRATE THAT CROSSROADS IS AN**
22 **EXCEPTIONAL VALUE FOR CUSTOMERS?**

1 A. Not necessarily. The comparisons presented in Mr. Langston's Exhibit JBL-1 favor the
2 Crossroads project; however, these comparisons are not entirely consistent to the extent
3 they compare non-binding estimates of the cost of Crossroads to firm price bids for wind
4 energy purchased power agreements. For example, OG&E's direct testimony and
5 discovery responses do not indicate that OG&E is willing to guarantee either the cost of
6 the Crossroads project or the assumed capacity factor performance of the project, as
7 reflected in the levelized prices presented in Exhibit JPL-1. (See Exhibit SN-2, OG&E's
8 Responses to OIEC 4-5 and 4-6.) However, the approximate 20% advantage of the
9 Crossroads project cost over the lowest priced bid from the 2009 Wind Energy RFP
10 provides some assurance that the project is likely to supply energy at a reasonable price.
11 Although it might be possible for OG&E to obtain a more favorable price than provided
12 by its Crossroads project if it sought new competitive bids for wind energy, there is no
13 guarantee that this would be the case. Moreover, the time delay that would result from
14 conducting a new wind energy RFP could ultimately lead to higher equipment costs for
15 the Crossroads project, deferral of production cost savings, and possibly loss of
16 production tax credits for the project. This could significantly reduce or eliminate the
17 customer benefits that would otherwise be provided if the Crossroads project were
18 approved in this case.

19

20 **Q. HAVE YOU REVIEWED THE COST/BENEFIT ANALYSES PREPARED BY**
21 **OG&E TO SUPPORT THE PRUDENCE OF ITS PROPOSED CROSSROADS**
22 **INVESTMENT?**

1 A. Yes. OG&E used resource planning models to estimate potential production cost savings
 2 from the Crossroads project by calculating the difference in total fuel, variable O&M and
 3 emissions costs on its system under a range of scenarios for cases with and without the
 4 Crossroads project. (Langston Direct, page 8.) As summarized below, OG&E's
 5 projected production cost savings for the Crossroads project range from a low of
 6 approximately \$383.6 million for a low natural gas price scenario which assumes no costs
 7 for CO2 control, to a high of \$959.9 million for a scenario that assumes high natural gas
 8 prices and high CO2 control costs.

OG&E Production Cost Sensitivity Analyses for Crossroads Project
 25 Year Present Value Savings (\$000s)

	<u>\$0 CO2</u>	<u>Expected CO2</u>	<u>2X CO2</u>
+35% NG	\$740,196	\$845,372	\$959,916
Expected NG	\$559,597	\$670,253	\$785,936
-35% NG	\$383,591	\$497,264	\$615,720

Source: Langston direct, Table 2.

9

10 **Q. DO THE ABOVE AMOUNTS REPRESENT PROJECTED CUSTOMER**
 11 **BENEFITS OF THE CROSSROADS PROJECT?**

12 A. No. In order to determine projected benefits of the Crossroads project it is necessary to
 13 subtract the projected revenue requirement of the project from the above production cost
 14 savings estimates. OG&E has estimated the present value of the revenue requirement of
 15 the Crossroads project will be approximately \$314 million over the 25-year covered by
 16 its production cost savings analysis. (Langston Direct, page 9.) This means that, based

1 on the analysis presented in OG&E's direct testimony, the customer benefits of the
 2 Crossroads project are projected to range from a low of approximately \$69.6 million for a
 3 low natural gas price scenario which assumes no costs for CO2 control, to a high of
 4 \$645.9 million for the scenario that assumes high natural gas prices and high CO2 control
 5 costs, as summarized below:

OG&E Projected Customer Benefits for Crossroads Project
 25 Year Present Value Savings (\$000s)

	<u>\$0 CO2</u>	<u>Expected CO2</u>	<u>2X CO2</u>
+35% NG	\$426,196	\$531,372	\$645,916
Expected NG	\$245,597	\$356,253	\$471,936
-35% NG	\$69,591	\$183,264	\$301,720

Source: Langston direct, Table 2 and page 9.

6

7 **Q. WHAT IS YOUR IMPRESSION OF OG&E'S ANALYSIS OF THE PROJECTED**
 8 **COSTS AND BENEFITS OF THE CROSSROADS PROJECT?**

9 A. It appears that OG&E's analysis provides a somewhat optimistic (i.e., high) estimate of
 10 the potential customer benefits of the Crossroads project. For example, the Company's
 11 production cost savings analysis assumes that the Crossroads project produces energy at
 12 an average capacity factor of 46.38% over the 25-year period of the analysis, although the
 13 performance level is not guaranteed and has not been demonstrated, and is approximately
 14 15% higher (i.e., better) than the capacity factor performance achieved to date by other
 15 OG&E wind farms located in western Oklahoma. This capacity factor assumption
 16 significantly increases the projected production cost savings while at the same time
 17 decreasing the Crossroads revenue requirement since PTCs are directly based upon the

1 assumed energy production level of the project. OG&E conducted other savings analyses
 2 with the assumed capacity factor of the Crossroads project set at a more conservative
 3 range of approximately 41.14%. At this reduced operating level, and with appropriate
 4 adjustments to reflect the associated reduction in PTCs, the estimated customer benefits
 5 for the Crossroads project are as follows:

OG&E Projected Customer Benefits for Crossroads Project at 41.14% CF
 25 Year Present Value Savings (\$000s)

	<u>\$0 CO2</u>	<u>Expected CO2</u>	<u>2X CO2</u>
+35% NG	\$308,487	\$407,897	\$505,293
Expected NG	\$155,632	\$253,003	\$356,150
-35% NG	-\$1,452	\$101,168	\$205,563

Source: OG&E's responses to OIEC 2-1a, and OIEC 2-5, Att. 5.

6

7 **Q. ARE THERE OTHER FACTORS WHICH SUGGEST THAT OG&E'S**
 8 **PRODUCTION COST SAVINGS ESTIMATES FOR THE CROSSROADS**
 9 **PROJECT MAY BE OVERLY OPTIMISTIC?**

10 A. Yes. OG&E's production cost savings analysis does not include approximately 1,200
 11 MW of additional new wind generation that the Company plans to add to its system after
 12 Crossroads commences commercial operations during the fourth quarter of 2011, as
 13 reflected in the Company's 2010 Integrated Resource Plan. (See Exhibit SN-3, OG&E's
 14 Response to OIEC 2-10 and Langston Direct, page 7.) This modeling assumption (i.e.,
 15 the exclusion of 1,200 MW of planned new wind generation) results in an unrealistically
 16 high estimate of the production cost savings that potentially could be produced by the
 17 Crossroads project since as additional wind generation is added to OG&E's system, the

1 percentage of coal-fired generation displaced by wind will increase. The effect of this
2 factor is indicated by the reduced percentage of coal-fired energy which is projected to be
3 displaced by the Crossroads project under OG&E's analysis, when compared to similar
4 production cost savings analyses conducted by OG&E for previous wind generation
5 projects. For example, OG&E's analysis of the production cost savings for its OU Spirit
6 wind farm projected that approximately 50% of the energy displaced by the OU Spirit
7 project would be coal-fired generation, while the Company's production cost savings
8 analysis for the Crossroads project projects that only approximately 20% of the energy
9 displaced by Crossroads energy would be energy supplied from coal. (See Exhibit SN-4,
10 OG&E's Response to OIEC 4-2.)

11

12 **Q. ARE YOU ABLE TO QUANTIFY THE IMPACT OF THIS FACTOR ON THE**
13 **ESTIMATED PRODUCTION COST SAVINGS FOR THE CROSSROADS**
14 **PROJECT?**

15 A. It is not possible to precisely quantify the impact of OG&E's decision to disregard 1,200
16 MW of future planned wind generation projects in its analysis of the estimated
17 production cost savings of the Crossroads project. However, the projected reduction in
18 the level of coal-fired energy displaced by the Crossroads project as reflected in OG&E's
19 Crossroads production cost analysis when compared to the level indicated by previous
20 studies (i.e., from approximately 50% to approximately 20%) would generally be
21 expected to significantly reduce the production cost savings which OG&E has estimated
22 for the Crossroads project.

1 **Q. DOES THIS MEAN THAT THE CROSSROADS PROJECT WILL NOT**
2 **BENEFIT OG&E'S CUSTOMERS?**

3 A. No, not necessarily. I have raised this issue (i.e., OG&E's decision to disregard 1,200
4 MW of new wind generation in its production cost savings analysis for the Crossroads
5 project) to illustrate one reason why I believe that the Company's benefits estimates for
6 the project may be optimistic.

7

8 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE PRUDENCE OF**
9 **OG&E'S PROPOSED INVESTMENT IN THE CROSSROADS WIND FARM**
10 **PROJECT?**

11 A. Notwithstanding the concerns I have raised regarding OG&E's estimates of the costs and
12 benefits of the Crossroads project, it appears that the cost of the Crossroads project is
13 likely to be competitive with other energy resource alternatives over the life of the
14 project, assuming OG&E's projections of the plant cost, and assuming that the levels of
15 energy production and production tax credits are reasonably accurate. As noted by
16 OG&E, the Company's cost and performance estimates for the Crossroad project
17 generally compare favorably to prices offered by other suppliers in the 2009 Wind
18 Energy RFP. The project will also increase fuel diversity on the OG&E system.
19 OG&E's proposed investment in the Crossroads project will allow the Company to
20 increase its ownership of wind generation at what appears to be a reasonable cost. For
21 these reasons, I have concluded that OG&E's proposed Crossroads project investment is

1 prudent assuming the project costs and performance are reasonably consistent with the
2 levels projected by the Company in this case.

3

4 **Q. HOW IS THE UNCERTAINTY REGARDING COSTS AND PERFORMANCE**
5 **OF THE CROSSROADS PROJECT DIFFERENT THAN THE UNCERTAINTY**
6 **WHICH EXISTS FOR ANY NEW GENERATION PROJECT?**

7 A. Unlike most other types of generation, the costs associated with wind energy projects are
8 almost entirely fixed and it is difficult to accurately predict the level of wind energy
9 because the output of such facilities is generally non-dispatchable and dependent on
10 climate, topography and other such factors which are difficult to control. Moreover,
11 because wind energy projects contribute only slightly to system capacity requirements
12 (~5% of rated capacity) the primary benefit of such projects is in their ability to produce
13 savings by displacing other more costly sources of energy, by reducing emissions and by
14 earning tax credits and REC sales revenues which are directly dependent on the output of
15 the units. Therefore, if wind generation project energy production levels, fixed costs or
16 replacement energy prices differ significantly from the levels forecasted in justifying
17 such projects, the value of wind energy projects to customers may be greatly diminished.

18

19 **V. PROPOSED CROSSROADS RIDER MECHANISM**

20 **Q. WHAT IS OG&E'S PROPOSAL REGARDING RECOVERY OF REVENUE**
21 **REQUIREMENTS OF THE CROSSROADS WIND FARM PROJECT?**

1 A. OG&E is proposing a rider mechanism ("Crossroads Rider") to provide interim recovery
2 of the Oklahoma jurisdictional revenue requirement for its proposed Crossroads project
3 until the project can be fully included in base rates. (Scott Direct, page 2.) The
4 Company expects this Crossroads Rider to be in effect for just over two years,
5 commencing in the fourth quarter of 2011 when the initial Crossroads wind turbines are
6 placed in service, and ending in January 2014 when the Company expects to implement
7 new base rates which would include the full revenue requirement of the Crossroads
8 project. (Scott Direct, page 2.)

9

10 **Q. HOW WILL OG&E'S PROPOSED CROSSROADS RIDER BE DESIGNED TO**
11 **RECOVER COSTS OF THE PROJECT?**

12 A. The proposed Crossroads Rider is attached to OG&E witness Bryan Scott's direct
13 testimony as Exhibit BJS-1 and sample calculations for the rider are provided in Exhibit
14 BJS-3. The proposed rider will be designed to recover the estimated Oklahoma
15 jurisdictional annual revenue of the Crossroads project (e.g., return, taxes, depreciation,
16 O&M and insurance) through a per kilowatt-hour charge, based on projected sales during
17 the period the rider will be in effect. The Company has proposed an annual true-up
18 provision to ensure that revenues recovered under the rider are equal to actual costs
19 incurred for the Crossroads project. The general design of this rider appears to be
20 virtually identical to the OU Spirit Rider which was adopted by the Commission in Cause
21 No. PUD 200900167 and provides a fair and reasonable allocation of wind generation
22 costs to OG&E's various customer classes.

1 **Q. IS OG&E'S PROPOSED CROSSROADS RIDER REASONABLE?**

2 A. OIEC generally opposes rider cost recovery mechanisms since riders provide for
3 piecemeal recovery of costs without considering other factors and whether such recovery
4 is justified. However, under certain special circumstances where new investments are
5 expected to produce significant net benefits for customers and where the proposed rider
6 cost recovery mechanism will be in effect for a relatively short period of time, OIEC has
7 supported riders. In this case, it appears that customers could receive a significant level
8 of fuel cost savings once the Crossroads project is placed in service, assuming the
9 Crossroads project revenue requirement, production tax credits and energy production are
10 consistent with the levels projected by OG&E. While I remain concerned that the
11 estimated benefits of the Crossroads project are not guaranteed by OG&E for its
12 ratepayers, I believe that it would be reasonable to implement a rider mechanism to
13 recover reasonable costs of the Crossroads project similar to that proposed by OG&E in
14 this case, but with certain modifications to OG&E's proposed rider.

15

16 **Q. WHAT CHANGES TO OG&E'S PROPOSED CROSSROADS RIDER DO YOU**
17 **RECOMMEND?**

18 A. I recommend two basic revisions to the design of OG&E's proposed Crossroads Rider.
19 First, to address uncertainty which exists regarding the performance and costs of the
20 project, I recommend that the amount recovered through the Crossroads Rider be capped
21 at a level no greater than the level estimated by OG&E in this case (with adjustments to
22 reflect the final contract price of the Crossroads turbines). To this end, I recommend that

1 revenue requirement estimates for 2012 and 2013, as reflected in OG&E witness Bryan
2 Scott's Exhibit BJS-2 be used as the basis for the revenue requirement recovery caps
3 under the modified Crossroads Rider, with appropriate adjustments to reflect: i) the final
4 contract price of the Crossroad turbine generators; ii) future updates to OG&E's return on
5 equity which are authorized by the Commission in OG&E's planned 2011 base rate case;
6 and iii) future credits to ratepayers in the event that OG&E receives payment from
7 Crossroad project vendors for their failure to meet contract completion or performance
8 requirements.

9 In light of the uncertainty which exists regarding the Crossroads project costs and
10 benefits, and to help mitigate costs of the project, I further recommend that 100% of the
11 Oklahoma jurisdictional share of any REC sales revenues produced from the Crossroads
12 project and 100% of the jurisdictional off-system sales margins resulting from the sale of
13 low-cost coal-fired generation or combined cycle generation which becomes available as
14 a result of the Crossroads project be used to reduce the revenue requirement recovered
15 under the Crossroads Rider.

16 In addition to the above modifications which I propose to the Crossroads Rider, I
17 recommend that the performance of the Crossroads project be subject to further
18 Commission review in future, annual fuel prudence proceedings to ensure that the
19 performance of the Crossroads facility is consistent with the project performance as
20 represented by OG&E in its direct testimony filed in this cause. (See Walker Direct,
21 pages 5-6.) Finally, due to the significant impacts of production cost savings and
22 production tax credits on the Crossroads project economics, I recommend that the
23 Company be ordered to provide detailed information in its annual true-up report to OCC

1 Staff and all other parties to this proceeding on the actual level of production tax credits
2 which it was able to use to offset Crossroads revenue requirements and the production
3 cost savings produced by the Crossroads facility in each annual period.

4

5 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

6 A. Yes.

SN-Exhibit 1

Norwood Energy Consulting, L.L.C.

P. O. Box 30197
Austin, Texas 78755-3197
(512) 343-9077

RESUME OF SCOTT NORWOOD

SUMMARY

Mr. Norwood is an energy consultant with over 29 years of experience in electric energy market analysis, regulatory consulting, and energy procurement.

Mr. Norwood founded Norwood Energy Consulting, L.L.C. in January of 2004. The firm specializes in energy regulation and procurement for consumers and consumer-owned utilities. Before founding Norwood Energy Consulting, Mr. Norwood was a Principal of GDS Associates, Inc., a Marietta, Georgia based energy consulting firm. In 18 years with GDS, Mr. Norwood directed a wide range of consulting projects including merchant plant due diligence studies; deregulated market price forecasts; power supply planning and procurement projects; electric restructuring policy analysis; and studies of power plant dispatch and production costs.

His clients include government agencies, publicly-owned utilities, public service commissions, power developers, financial institutions, municipalities and various other electric consumer interests.

Mr. Norwood has presented expert testimony on electric restructuring and regulatory matters before the Arkansas House of Representatives, Virginia's Legislative Committee on Electric Utility Restructuring, and in regulatory proceedings in Arkansas, Georgia, Iowa, Illinois, Michigan, New Jersey, Oklahoma, South Dakota, Texas, Virginia and Wisconsin. His most recent work has been focused on assisting consumers and market participants in addressing business risks and opportunities arising from the restructuring and deregulation of electric power markets.

Before joining GDS, Mr. Norwood served as Manager of Power Plant Engineering for the Staff of the Public Utility Commission of Texas from 1984 through 1986 where he was responsible for directing analysis and testimony on power plant construction and operational issues and cogeneration avoided cost filings. He began his career in 1980 as Staff Electrical Engineer with the City of Austin's Electric Utility Department where he was responsible for electrical maintenance and design projects at three gas-fired power plants.

EDUCATION

B.S. Electrical Engineering, December 1980, University of Texas at Austin. Broad engineering curriculum with emphasis on Electric Power Systems Analysis and Design.

EXPERIENCE

Energy Planning and Procurement Services

Dell Computer Corporation – Negotiated retail power supply agreement for Dell's Round Rock, Texas facilities producing annual savings in excess of \$2 million.

Texas Association of School Boards Electric Aggregation Program – Serve as TASB's consultant in the development, marketing and administration of a retail electric aggregation program consisting of 2,500 Texas schools with a total load of over 300 MW. Program produced annual savings of more than \$30 million in its first year.

S.C. Johnson - Analyzed and presented testimony addressing Wisconsin Electric Power Company's \$4.1 billion CPCN application to construct three coal-fired generating units in southeast Wisconsin.

City of Chicago, Illinois Attorney General, Illinois Citizens' Utility Board - Analyzed Commonwealth Edison's proposed divestiture of the Kincaid and State Line power plants to SEI and Dominion Resources.

Georgia Public Service Commission - Analyzed and presented testimony on Georgia Power Company's integrated resource plan in a certification proceeding for an eight unit, 640 MW combustion turbine facility.

South Dakota Public Service Commission - Evaluated integrated resource plan and power plant certification filing of Black Hills Power & Light Company.

Shell Leasing Co. - Evaluated market value of 540 MW western coal-fired power plant.

Community Energy Electric Aggregation Program – Served as Community Energy's consultant in the development, marketing and start-up of a retail electric aggregation program consisting of major charitable organizations and their donors in Texas.

Austin Energy – Conducted competitive solicitation for peaking capacity. Developed request for proposal, administered solicitation and evaluated bids.

Austin Energy - Provided technical assistance in the evaluation of the economic viability of the City of Austin's ownership interest in the South Texas Project.

Austin Energy - Assisted with regional production cost modeling analysis to assess production cost savings associated with various public power merger and power pool alternatives.

Sam Rayburn G&T Electric Cooperative - Conducted competitive solicitation for peaking capacity. Developed request for proposal, administered solicitation and evaluated bids.

Rio Grande Electric Cooperative, Inc. - Directed preparation of power supply solicitation and conducted economic and technical analysis of offers.

Electric Restructuring Analyses

Electric Power Research Institute - Evaluated regional resource planning and power market dispatch impacts on rail transportation and coal supply procurement strategies and costs.

Arkansas House of Representatives - Critiqued proposed electric restructuring legislation and identified suggested amendments to provide increased protections for small consumers.

Virginia Legislative Committee on Electric Utility Restructuring - Presented report on status of stranded cost recovery for Virginia's electric utilities.

Georgia Public Service Commission - Developed models and a modeling process for preparing initial estimates of stranded costs for major electric utilities serving the state of Georgia.

City of Houston - Evaluated and recommended adjustments to Reliant Energy's stranded cost proposal before the Public Utility Commission of Texas.

Oklahoma Attorney General - Evaluated and advised the Attorney General on technical, economic and regulatory policy issues arising from various electric restructuring proposals considered by the Oklahoma Electric Restructuring Advisory Committee.

State of Hawaii Department of Business, Economics and Tourism - Evaluated electric restructuring proposals and developed models to assess the potential savings from deregulation of the Oahu power market.

Virginia Attorney General - Served as the Attorney General's consultant and expert witness in the evaluation of electric restructuring legislation, restructuring rulemakings and utility proposals addressing retail pilot programs, stranded costs, rate unbundling, functional separation plans, and competitive metering.

Western Public Power Producers, Inc. - Evaluated operational, cost and regional competitive impacts of the proposed merger of Southwestern Public Service

Company and Public Service Company of Colorado.

Iowa Department of Justice, Consumer Advocate Division - Analyzed stranded investment and fuel recover issues resulting from a market-based pricing proposal submitted by MidAmerican Energy Company.

Cullen Weston Pines & Bach/Citizens' Utility Board - Evaluated estimated costs and benefits of the proposed merger of Wisconsin Energy Corporation and Northern States Power Company (Primergy).

City of El Paso - Evaluated merger synergies and plant valuation issues related to the proposed acquisition and merger of El Paso Electric Company and Central & Southwest Company.

Rio Grande Electric Cooperative, Inc. - Analyzed stranded generation investment issues for Central Power & Light Company.

Regulatory Consulting

New York Public Service Commission - Conducted inter-company statistical benchmarking analysis of Consolidated Edison Company to provide the New York Public Service Commission with guidance in determining areas that should be reviewed in detailed management audit of the company.

Georgia Public Service Commission - Presented testimony before the Georgia Public Service Commission in Docket 3840-U, providing recommendations on nuclear O&M levels for Hatch and Vogtle and recommending that a nuclear performance standard be implemented in the State of Georgia.

Georgia Public Service Commission - Analyzed and provided recommendations regarding the reasonableness of nuclear O&M costs, fossil O&M costs and coal inventory levels reported in GPC's 1990 Surveillance Filing.

New York Public Service Commission - Conducted inter-company statistical benchmarking analysis of Rochester Gas & Electric Company to provide the New York Public Service Commission with guidance in determining areas which should be reviewed in detailed management audit of the company.

Oklahoma Attorney General - Analyzed and presented testimony regarding fuel and purchased power, depreciation and other expense items in Oklahoma Gas & Electric Company's 2001 rate case before the Oklahoma Corporation Commission.

City of Houston - Analyzed and presented testimony regarding fossil plant O&M expense levels in Houston Lighting & Power Company's rate case before the Public Utility Commission of Texas.

City of El Paso - Analyzed and presented testimony regarding regulatory and technical issues related to the Central & Southwest/El Paso Electric Company merger and rate proceedings before the PUCT, including analysis of merger synergy studies, fossil O&M and purchased power margins.

Residential Ratepayer Consortium - Analyzed Fermi 2 replacement power and operating performance issues in 1994 and 1995 fuel reconciliation proceedings for Detroit Edison Company before the Michigan Public Service Commission.

Residential Ratepayer Consortium - Analyzed and prepared testimony addressing coal plant outage rate projections in the Consumer's Power Company fuel proceeding before the Michigan Public Service Commission.

City of El Paso - Analyzed and developed testimony regarding Palo Verde operations and maintenance expenses in El Paso Electric Company's 1991 rate case before the Public Utility Commission of Texas.

City of Houston - Analyzed and developed testimony regarding the operations and maintenance expenses and performance standards for the South Texas Nuclear Project, and operations and maintenance expenses for the Limestone and Parish coal-fired power plants in HL&P's 1991 rate case before the PUCT.

City of El Paso - Analyzed and developed testimony regarding Palo Verde operations and maintenance expenses in El Paso Electric Company's 1990 rate case before the Public Utility Commission of Texas. Recommendations were adopted.

Power Plant Management

City of Austin Electric Utility Department - Analyzed the 1994 Operating Budget for the South Texas Nuclear Project (STNP) and assisted in the development of long-term performance and expense projections and divestiture strategies for Austin's ownership interest in the STNP.

City of Austin Electric Utility Department - Analyzed and provided recommendations regarding the 1991 capital and O&M budgets for the South Texas Nuclear Project.

Sam Rayburn G&T Electric Cooperative - Developed and conducted operational monitoring program relative to minority owner's interest in Nelson 6 Coal Station operated by Gulf States Utilities.

KAMO Electric Cooperative, City of Brownsville and Oklahoma Municipal Power Agency - Directed an operational audit of the Oklaunion coal-fired power plant.

Sam Rayburn G&T Electric Cooperative - Conducted a management/technical

assessment of the Big Cajun II coal-fired power plant in conjunction with ownership feasibility studies for the project.

Kamo Electric Power Cooperative - Developed and conducted operational monitoring program for client's minority interest in GRDA Unit 2 Coal Fired Station.

Northeast Texas Electric Cooperative - Developed and conducted operational monitoring program concerning NTEC's interest in Pirkey Coal Station operated by Southwestern Electric Power Company and Dolet Hills Station operated by Central Louisiana Electric Company.

Corn Belt Electric Cooperative/Central Iowa Power Cooperative - Perform operational monitoring and budget analysis on behalf of co-owners of the Duane Arnold Energy Center.

PRESENTATIONS

Quantifying Impacts of Electric Restructuring: Dynamic Analysis of Power Markets, 1997 NARUC Winter Meetings, Committee on Finance and Technology.

Quantifying Costs and Benefits of Electric Utility Deregulation: Dynamic Analysis of Regional Power Markets, International Association for Energy Economics, 1996 Annual North American Conference.

Railroad Rates and Utility Dispatch Case Studies, 1996 EPRI Fuel Supply Seminar.

Quantifying Potentially Stranded Costs: Modeling and Policy Issues, 1996 NASUCA Annual Meeting.

SN-Exhibit 2

Oklahoma Industrial Energy Consumers
4th Set of Data Requests to OG&E
Cause No. PUD 201000037

4-5 Reference OG&E's responses to OIEC 3-11, please indicate whether OG&E is providing a capital cost cap equal to the amount estimated for the Crossroads project as presented in the Company's testimony in this case.

Response*: OG&E did not propose such a capital cost cap in its testimony filed in this case.

Response provided by: Jesse Langston
Response provided on: June 1, 2010
Contact & Phone No: Kimber Shoop 553-3023

***By responding to these Data Requests, OG&E is not indicating that the provided information is relevant or material and OG&E is not waiving any objection as to relevance or materiality or confidentiality of the information or documents provided or the admissibility of such information or documents in this or in any other proceeding.**

Oklahoma Industrial Energy Consumers
4th Set of Data Requests to OG&E
Cause No. PUD 201000037

4-6 Reference OG&E's responses to OIEC 3-12, please indicate whether OG&E is providing a capacity factor performance guarantee as a condition of regulatory approval of the Crossroads project.

Response*: OG&E did not propose such a capacity factor performance guarantee in its testimony filed in this case.

Response provided by: Jesse Langston
Response provided on: June 1, 2010
Contact & Phone No: Kimber Shoop 553-3023

*By responding to these Data Requests, OG&E is not indicating that the provided information is relevant or material and OG&E is not waiving any objection as to relevance or materiality or confidentiality of the information or documents provided or the admissibility of such information or documents in this or in any other proceeding.

SN-Exhibit 3

Oklahoma Industrial Energy Consumers
2nd Set of Data Requests to OG&E
Cause No. PUD 20100037

2-10 Reference page 7 of Mr. Langston's testimony, please provide the wind additions beginning in 2016 from OG&E's January 2010 IRP which were excluded from the Crossroads benefit analysis and provide the amount by which excluding these future wind additions increased or decreased projected benefits of the Crossroads projects.

Response*: Please see the table below for the wind additions beginning in 2016 from OG&E's January IRP that were excluded from the Crossroads benefit analysis. OG&E has not performed this analysis.

Year	Wind Addition
2016	150 MW
2017	150 MW
2018	150 MW
2019	150 MW
2020	150 MW
2021	150 MW
2022	150 MW
2023	---
2024	150 MW

Response provided by: Jesse Langston
Response provided on: April 29, 2010
Contact & Phone No: Sheri Bunn 553-3747

*By responding to these Data Requests, OG&E is not indicating that the provided information is relevant or material and OG&E is not waiving any objection as to relevance or materiality or confidentiality of the information or documents provided or the admissibility of such information or documents in this or in any other proceeding.

SN-Exhibit 4

Oklahoma Industrial Energy Consumers
4th Set of Data Requests to OG&E
Cause No. PUD 201000037

4-2 **Reference OG&E's responses to AG 2-8, Attachment 2, please explain why OG&E's production cost analysis indicates that only approximately 20% of the energy displaced by the Crossroads project is estimated to be coal-fired energy while the Company's production cost analysis of the OU Spirit project as provided in response to OIEC 2-5 in Cause No. PUD 200900167 indicated that approximately 50% of the energy displaced by that project would be coal-fired energy.**

Response*: As stated in Langston Testimony on page 7, the Crossroads analysis relied on updated information, including but not limited to updated assumptions related to regional haze requirements. In addition, the analysis for both projects relied on wind profiles that are unique to each location.

Response provided by:	<u>Jesse Langston</u>
Response provided on:	<u>June 1, 2010</u>
Contact & Phone No:	<u>Kimber Shoop 553-3023</u>

*By responding to these Data Requests, OG&E is not indicating that the provided information is relevant or material and OG&E is not waiving any objection as to relevance or materiality or confidentiality of the information or documents provided or the admissibility of such information or documents in this or in any other proceeding.