

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY)	
OF OKLAHOMA FOR A DETERMINATION)	CAUSE NO. PUD 200500516
THAT ADDITIONAL ELECTRIC)	
GENERATING CAPACITY WILL BE USED)	
AND USEFUL)	
)	
APPLICATION OF PUBLIC SERVICE)	
COMPANY OF OKLAHOMA FOR A)	CAUSE NO. PUD 200600030
DETERMINATION THAT ADDITIONAL)	
BASELOAD ELECTRIC GENERATING)	
CAPACITY WILL BE USED AND USEFUL)	
)	
IN THE MATTER OF THE APPLICATION OF)	
OKLAHOMA GAS AND ELECTRIC COMPANY)	CAUSE NO. PUD 200700012
FOR AN ORDER OF THE COMMISSION)	
GRANTING PRE-APPROVAL TO CONSTRUCT)	(CONSOLIDATED)
RED ROCK GENERATING FACILITY AND)	
AUTHORIZING A RECOVERY RIDER)	

**RESPONSIVE TESTIMONY OF JUDAH ROSE
MANAGING DIRECTOR, ICF INTERNATIONAL
ON BEHALF OF REDBUD ENERGY, LP**

MAY 21, 2007

REDACTED VERSION

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MANAGING DIRECTOR, ICF INTERNATIONAL
ON BEHALF OF REDBUD ENERGY, LP
CAUSE NOS. PUD 200500516, PUD 200600030, PUD 200700012
May 21, 2007**

SECTION I: INTRODUCTION AND PURPOSE

1

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

3 A. My name is Judah Rose. I am a Managing Director of ICF International (“ICF”). My
4 business address is 9300 Lee Highway, Fairfax, Va. 22031.

5 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND
6 PROFESSIONAL EXPERIENCE.**

7 A. After receiving a degree in economics from the Massachusetts Institute of Technology
8 (“MIT”) and a Masters Degree in Public Policy from the John F. Kennedy School of
9 Government at Harvard University, I joined ICF International in 1982. I have been
10 working at ICF International since then and now direct ICF’s wholesale power practice. I
11 have also been a member of the Board of Directors of ICF International and am one of
12 three people in a firm of over 1,800 people to have been given the honorary title
13 Distinguished Consultant.

14

15 **Q. HAVE YOU WORKED WITH PUBLIC SECTOR CLIENTS ON ELECTRIC
16 POWER ISSUES?**

17 A. Yes. ICF has been the principal power consultant to the U.S. Environmental Protection
18 Agency (“EPA”) continuously for over 25 years, and analyzed all the major policy
19 initiatives involving regional controls on power plant emissions such as SO₂, NO_x, and Hg.

1 **Q. DO YOU HAVE OTHER PUBLIC SECTOR CLIENTS?**

2 A. Yes. ICF has worked with the Federal Energy Regulatory Commission (“FERC”), the U.S.
3 Department of Energy (“DOE”), Environment Canada, and the European Union. We have
4 also worked with various state regulatory entities, including those in Ohio, New Jersey,
5 California, South Carolina, New York, Connecticut, Kentucky, and Michigan.

6
7 **Q. DO YOU HAVE PRIVATE SECTOR CLIENTS?**

8 A. Yes. ICF provides assistance to electric utilities including Duke Ohio, Dominion Power,
9 Delmarva Power & Light, FirstEnergy, and Florida Power & Light, financial institutions
10 including Credit Suisse, power marketers including Mirant, fuel companies including
11 Peabody Coal Company, and independent power producers including Sithe Global Power,
12 Kelson Energy and Reliant Energy. ICF also works with Regional Transmission
13 Organizations (“RTOs”) including MISO and PJM.

14
15 **Q. WHAT TYPE OF WORK DO YOU TYPICALLY DO?**

16 A. I have extensive experience in assessing the effects of market and regulatory trends on the
17 wholesale power generation sector and associated fuel sectors. This work regularly
18 addresses capacity expansion, market prices for power, and fuel and environmental
19 controls.

20

1 **Q. ARE THERE OTHER RELEVANT ASPECTS OF YOUR EXPERIENCE?**

2 A. Yes. I have authored numerous articles in industry journals and spoken at scores of
3 conferences. For additional details, please see my attached resume which is labeled
4 Exhibit JLR-1.

5
6 **Q. HAVE YOU TESTIFIED PREVIOUSLY IN THE STATE OF OKLAHOMA?**

7 A. Yes. I have testified on behalf of Redbud Energy, LP (“Redbud”) in Cause No.
8 200500151. I testified that it was important that OG&E (“OG&E”) should be required to
9 properly analyze its options including existing merchant plants, power market purchases,
10 transmission upgrades, and new power plant alternatives in order to ensure that
11 ratepayers were protected. As is discussed below, OG&E’s failure to properly analyze its
12 options at that time has contributed to a repeat of the same problem, with the
13 consequence that OG&E is now pursuing an unbalanced capacity expansion program as
14 more fully described in my testimony below.

15
16 **Q. HAVE YOU TESTIFIED BEFORE OTHER REGULATORS AND**
17 **LEGISLATORS?**

18 A. Yes. I have testified before FERC and in New Jersey, Ohio, Indiana, North Carolina,
19 California, Louisiana, Arkansas, Texas, New York, Pennsylvania, Florida, Kentucky, and
20 Minnesota.

21
22 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

23 A. I am testifying on behalf of Redbud.

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. My testimony responds to the testimony of OG&E and PSO witnesses on the proposal of
3 OG&E and PSO to jointly build and own the Red Rock coal power plant. My testimony
4 also responds to these witnesses related to the stated bases for this build proposal:
5 OG&E's Integrated Resource Plan ("IRP") and associated planning studies, and Public
6 Service Company of Oklahoma's ("PSO's") Request for Proposal ("RFP") for additional
7 base load capacity and its IRP.

8

9 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

10 A. My testimony is organized into five sections. The first section introduces my testimony.
11 The second section summarizes my testimony. The third section discusses the proposed
12 capacity expansion plan of OG&E. The fourth section discusses the PSO RFP, a key
13 basis relied up by both OG&E and PSO for the proposed Red Rock plant. The fifth
14 section discusses the role of the utility IRPs in decision-making. The sixth section
15 presents my conclusions.

16

17 **SECTION II: SUMMARY**

18

19 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

20 A. OG&E's proposed capacity expansion plan *excludes* natural gas combined cycle power
21 plants. This result is not justified by the PSO RFP, the OG&E IRP, or the PSO IRP.
22 Further, there is no OG&E RFP to support this result.

23

1 [REDACTED]

2 [REDACTED]]. Even if the RFP process was properly conducted it cannot be a basis for
3 OG&E's capacity expansion decision making since OG&E's and PSO's circumstances
4 are not the same. OG&E's IRP is based on outdated coal and gas power plant capital cost
5 data which biases the decision against natural gas combined cycles and in favor of coal.
6 Since completing the IRP, OG&E has informed the Commission that coal capital costs
7 are as much as 12 percent higher. [[[REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]]. Neither OG&E nor PSO have redone their IRPs or
13 presented adequately revised analysis consistent with an all-coal proposal.

14

15 Specifically, the OG&E IRP has problems in addition to the inaccurate, out-dated cost
16 data it relies upon. OG&E's IRP effectively ignored the options of wholesale power
17 market purchases and the purchase of existing plants all together and ignored evidence
18 supporting a role for existing merchant combined cycle plants as part of OG&E's new
19 build mix. [[[REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

1 [REDACTED]]. The failure to properly consider existing
2 combined cycle plants is particularly problematic in light of how competitive natural gas
3 combined cycle plants appeared in OG&E's analyses even before the increase in coal
4 plant capital costs, and the decrease in combined cycle costs. In short, there is no basis at
5 this time for an unbalanced capacity expansion proposal totally excluding combined
6 cycle gas fired plants and it would be imprudent for OG&E and PSO to proceed without
7 updated analyses.

8

9 **SECTION III: OG&E AND PSO'S RED ROCK PROPOSAL**

10

11 **Q. WHAT NEW POWER PLANT IS OG&E AND PSO PROPOSING TO BUILD?**

12 A. PSO and OG&E are requesting approval for their plans to jointly build a 950 MW coal
13 fired ultra super critical power plant at the site of the existing OG&E Sooner coal fired
14 power plant, which they are calling Red Rock. OG&E would own 42 percent, PSO
15 would own 50 percent and OMPA would own 8 percent. The proposed owners are also
16 suggesting an investment of over \$70 million to build additional electricity transmission
17 from the plant site to its control area.

18

19 **Q. WHAT IS OG&E'S BASIS FOR PURSUING RED ROCK?**

20 A. There are several stated bases for OG&E's proposal to build Red Rock. However, I must
21 highlight initially that there is no claim in OG&E's testimony in this Cause that the Red
22 Rock plant is the least cost option nor is there any explicit statement as to what is the
23 updated quantitative basis for the proposed build. OG&E only offers the testimony of

1 Mr. Jesse Langston who provides several reasons why OG&E supports the Red Rock
2 build, including that it will “help stabilize future fuel costs and related price increases and
3 help address the impact of gas price volatility on retail rates” and that OG&E estimates a
4 reduction in fuel costs and that “[m]any other factors ultimately must be evaluated in
5 order to determine if a specific resource option is viable, including siting, environmental
6 and transmission considerations.”¹

7 Nowhere does Mr. Langston state that updated analysis using OG&E’s current price
8 estimates shows a coal-only plan is consistent with the actual costs of coal and natural
9 gas power plants. When providing quantitative analysis, Mr. Langston mistakenly relies
10 not on total costs, but only refers to and describes fuel costs.

11
12 **Q. WHAT IS PSO BASIS FOR ITS COAL BUILD DECISION?**

13 A. PSO relies first on the RFP result. The stated need for additional resources and the RFP
14 arises from PSO’s IRP. There is no evidence PSO has analyzed its coal build proposal
15 and the underlying resource planning analyses in light of actual cost data.

16
17 **SECTION IV: THE PSO RFP AND THE RED ROCK DECISION**

18
19 **Q. WHAT DOES MR. LANGSTON OF OG&E SAY ABOUT THE ROLE OF PSO’S**
20 **RFP IN OG&E’S DECISION MAKING?**

21 A. Mr. Langston indicates that OG&E’s decision to build the Red Rock plant
22 depends heavily on the PSO RFP and OG&E believes that the PSO RFP confirms

¹ Langston Direct Testimony, pp. 3 and 7.

1 that Red Rock is superior to base load options in the marketplace. OG&E states
2 that it “believes that the PSO RFP process provided a reasonable test of market
3 alternatives in the region at that time.”²
4

5 **Q. WHAT DOES PSO WITNESS MARK MARANO STATE ABOUT PSO’S RFP?**

6 A. PSO’ witness also indicates that his company relies on the RFP for the decision to
7 proceed with Red Rock. This decision is based on the PSO-developed criteria in the RFP
8 and its internally developed ranking methodology.³
9

10 **Q. WHAT DOES MR. LANGSTON SAY ABOUT WHY OG&E DID NOT ISSUE ITS
11 OWN RFP?**

12 A. Mr. Langston indicates that OG&E placed such heavy reliance on the PSO RFP that it
13 could not conduct its own RFP and conduct its own evaluation of the marketplace options
14 for his company. Although he states OG&E had planned to issue its own RFP, it
15 unilaterally decided not to do so and instead participated in the PSO RFP and awaited its
16 outcome. OG&E represents that had it not been selected the winner, OG&E retained the
17 ability to issue an RFP. In fact, OG&E determined that had it issued an RFP, as is
18 required by Commission rules, it would have adversely affected the chances that OG&E
19 and the Red Rock plant of winning the PSO’s RFP and that Red Rock might not have
20 been viable.⁴
21

² Langston Direct Testimony, p. 17.

³ Marano Direct Testimony, p.17.

⁴ Langston Direct Testimony, p. 16-17.

1 Q. WHAT IS THE PROBLEM WITH RELYING ON THE PSO RFP FOR THE
2 DECISION TO PROCEED WITH RED ROCK?

3 A. Among others, [[REDACTED]
4 [REDACTED]].

5
6 Q. [[REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]].

11
12 Q. WHAT IS YOUR REACTION TO THE CONCERN THAT SOME OF THE
13 PROPOSED TRANSACTIONS WOULD NOT CLOSE FOR AS MANY AS FIVE
14 YEARS AFTER ITS EXECUTION, AND HENCE, THEY SHOULD BE
15 REJECTED AS NON-CONFORMING?

16 A. [[REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]].

20
21 Q. WHAT IS YOUR REACTION REGARDING PSO'S POSITION THAT IT
22 WOULD NOT HAVING LEGAL RECOURSE AND THAT THE DAMAGES

1 **WOULD BE THE COST TO COVER THE POWER AND ENERGY PSO AND**
2 **ITS CUSTOMERS WOULD HAVE BEEN EXPECTING TO RECEIVE?**

3 A. [[[REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]].

12
13 [REDACTED]
14 [REDACTED]
15 [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]].

21 **Q. WHAT DID THE INDEPENDENT MONITOR STATE IN HIS TESTIMONY**
22 **REGARDING THIS DISQUALIFICATION?**

1 A. Mr. Oliver says PSO used its discretion and he did not contest the outcome primarily
2 based on process concerns because of his analysis that PSO clearly identified its credit
3 requirements within the RFP and it provided potential bidders the opportunity to
4 “comment” on the draft RFP.⁵

5
6 Q. [REDACTED]
7 [REDACTED]]?

8 A. [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]].

12
13 Q. [REDACTED]
14 [REDACTED]]?

15 A. [REDACTED]
16 [REDACTED]
17 [REDACTED]
18 [REDACTED]
19 [REDACTED]
20 [REDACTED]
21 [REDACTED]
22 [REDACTED]

⁵ Oliver Direct Testimony, pp. 13-14.
Rose Responsive Testimony
On behalf of Redbud Energy, LP
Cause Nos. PUD 2005-516, 2006-30 and 2007-12

1 [REDACTED]

2 [REDACTED]

3 [REDACTED]

4 [REDACTED]

5 Q. [REDACTED]

6 [REDACTED]?

7 A. [REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED].

14 [REDACTED]

15 Q. [REDACTED]

16 [REDACTED]

17 [REDACTED]?

18 A. [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

1 [REDACTED]

2 [REDACTED]]

3

4 **Q. CAN THE COMMISSION RELY ON THE IM IN THIS REGARD?**

5 A. The IM report states on page 46 that: “The eligible bids were subject to a price and non-
6 price evaluation during the April-May timeframe...The IM reviewed and evaluated all
7 the eligible bids and scored the bids from a non-price perspective using the same
8 evaluation criteria developed by PSO’s non-price evaluation team. The IM’s review of
9 the bids and independent evaluation was generally consistent with the results generated
10 by the PSO non-price team, with the ranking of bids identical....The IM reviewed the
11 results of the price evaluation in detail and discussed the results with members of the bid
12 evaluation team.”

13
14 However, the IM report itself provides very little information or insight on the details of
15 the evaluation process, both with respect to the price and non-price factors. [[REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]]?

21 These critical issues are never addressed by the IM.

22

1 Q. [REDACTED]

2 [REDACTED]

3 A. [REDACTED]

4 [REDACTED]

5 [REDACTED]

6 [REDACTED]

7 [REDACTED]

8 [REDACTED]

9 [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]

13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

1 Q. [[[REDACTED]
2 [REDACTED]]]?

3 A. [[[REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]]]

8

9 **Q. WHAT SHOULD OG&E AND PSO HAVE DONE IN LIGHT OF THE**
10 **DEFICIENCIES OF THE PSO RFP?**

11 A. They should have each conducted a separate RFP capable of including combined cycle
12 plants, included actual bids for sales of or power purchases from existing units in an up-
13 to-date IRP analysis or its equivalent. The results of this analysis cannot be known until
14 it is conducted, but without it, no exclusion of these plants should be permitted.

15

16 **Q. WHY IS THE LACK OF AN OG&E RFP PARTICULARLY PROBLEMATIC IN**
17 **THIS CASE?**

18 A. The lack of a RFP is particularly problematic in light of the fact that in both the OG&E
19 control area and the SPP there are uncommitted existing merchant natural gas combined
20 cycle power plants. New construction makes more sense in regions where the system as
21 a whole is capacity deficient, all else equal. This unusual situation of excess capacity in
22 this region is not typical and should not be ignored as such plants have the potential to

1 provide cost savings and other potential benefits. These merchant plants offer the
2 following potential additional advantages:

3
4 • **No or Very Low Transmission Costs** – The existing combined cycle power
5 plants are either already able to reliably deliver power without upgrades to OG&E
6 (e.g., Redbud is within OG&E’s control area and has upgraded its lines to OG&E
7 and offered less than full output) and/or PSO or likely to be able to soon deliver as
8 a result of transmission upgrades under the SPP Transmission Expansion Plan
9 (STEP) process.

10
11 • **No Owners Costs** - The existing combined cycles also do not have owner’s costs
12 which are associated with start up, and a variety of other costs including
13 management of the project which are not relevant to existing plants. [[
14
15]]

16
17 • **No AFUDC** - There is no need to allow for funds used during construction for
18 existing units since there is no construction required.

19
20 • **No Upward Capital Cost Risk** – The existing merchant plants are not subject to
21 the same capital cost pressures affecting other units since they are already
22 complete. These pressures include rising steel, concrete, equipment, construction
23 labor and engineering costs.

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- **No Permitting, Construction and Start-Up Risk** – The existing plants are already operating, and hence, not subject to permitting, construction, and start-up risk.
- **No Lead Time Risk** – The existing plants can be purchased or provide power immediately.
- **No Technological Obsolescence/Performance Risk** – The existing plants are almost brand new and use the latest technology: advanced combustion turbine based combined cycle plant technology. Thus, there is no technology risk.
- **Less Environmental Risk** – The existing plants will have lower emissions, especially CO₂ emissions which decreases environmental risk.
- **Sizing Problems** – Many of the power plants are physically subdivided into separate units, facilitating purchases of less than all of the plant’s capacity or output.

SECTION V: IRP BASIS FOR RED ROCK DECISION

Q. WHAT DOES JESSE LANGSTON OF OG&E STATE ABOUT THE IRP?

1 A. Mr. Langston emphasizes the important role of the IRP and resource planning in its
2 capacity expansion decision making and the decision to proceed with Red Rock. Mr.
3 Langston testifies that “OG&E confirmed that its commitment to Red Rock was part of
4 the optimal resource strategy in its IRP submittal. Red Rock was selected in the "base
5 case" with the lowest NPVRR. In addition to the base case we also ran 11 alternative
6 scenario and sensitivity cases. When we **excluded the scenario and sensitivity cases**
7 **explicitly designed to favor natural gas** and/or wind options, Red Rock was included in
8 the optimal portfolio 78% of the time.” (Emphasis added.)⁶
9

10 **Q. DOES PSO ALSO HIGHLIGHT THE PIVOTAL ROLE OF IRP AND**
11 **RESOURCE PLANNING IN THEIR DECISION?**

12 A. Yes. The decision to proceed with a RFP for base load supply was predicated on the
13 results of its IRP.
14

15 **Q. WHAT DOES MR. LANGSTON STATE ABOUT WHAT HAPPENED TO THE**
16 **CAPITAL COSTS OF THE RED ROCK PLANT SUBSEQUENT TO**
17 **SUBMITTING THE OG&E BID?**

18 A. He indicates that the estimates of the capital costs are now higher by 12 percent,
19 increasing from \$1.614 billion to \$1.807 billion.⁷
20

21 **Q. DO YOU AGREE WITH MR. LANGSTON THAT THE COSTS OF RED ROCK**
22 **HAVE ONLY INCREASED 12 PERCENT SO FAR?**

⁶ Langston Direct Testimony, pp. 15-16.

⁷ Langston Direct Testimony, p. 27.

1 A. No, I do not. In attached Exhibit JLR-2, I show the estimate of the capital costs of a 900
2 MW supercritical brownfield coal power plant used in OG&E's January 2, 2007 IRP
3 analysis. [[REDACTED]]
4 [[REDACTED]]
5 [[REDACTED]]
6 [[REDACTED]]
7 [[REDACTED]].

8
9 **Q. WHY DO YOU SHOW A RANGE?**

10 A. As is discussed in the footnotes to the Exhibit JLR-2, OG&E has not provided adequate
11 responses to our data requests to determine this number more precisely.

12
13 **Q. IS THIS INCREASE SIGNIFICANT?**

14 A. Yes. [[REDACTED]]. The capital costs of
15 a coal power plant are large and account for approximately 60 percent of the costs of a
16 new coal plant on a levelized basis. Put another way, coal is the most capital intensive of
17 the fossil fuel options available to OG&E. Thus, changes in this important parameter
18 could have large effects on OG&E's and PSO's plan, all else remaining equal. In some
19 cases, recent coal power plant capital costs increases have caused utilities to cancel their
20 coal power plant projects, e.g., Westar in northern SPP. [[REDACTED]]
21 [[REDACTED]]
22 [[REDACTED]]
23 [[REDACTED]]. Also, such a

1 large change in new power plant costs is significant because the economic gap between
2 gas and coal plants even in OG&E's own analysis is so small such that this cost increase
3 is critical.

4
5 **Q. WHAT EVIDENCE DO YOU HAVE THAT THE COMPETITION BETWEEN**
6 **NEW COAL AND GAS PLANTS IS CLOSE IN OG&E'S OWN ANALYSIS EVEN**
7 **BEFORE CONSIDERING THE IMPACTS OF HIGHER CAPITAL COSTS FOR**
8 **NEW COAL FIRED POWER PLANTS INCLUDING RED ROCK?**

9 A. The evidence that the competition between coal and gas in OG&E's own analysis before
10 factoring in higher capital costs is close includes:

- 11
- 12 • **Scenario Results Show Combined Cycles** – The OG&E IRP modeling shows
13 the decision between gas and coal is relatively close in terms of costs, i.e., net
14 present value of revenue requirements. The IRP results show that in seven of the
15 twelve scenarios analyzed by OG&E, natural gas combined cycle is included (see
16 Table IV-22). In all cases, there are high efficiency peaking gas plant builds in
17 the 2011 to 2016 period except the base case and the no energy market cases. In
18 all cases, when the pre-2011 period is included, high efficiency gas units are built.
19 These results argue for a mix of supply additions, not a no-combined cycle
20 expansion plan.

1 • **All Gas and All Coal Perform Poorly** - A mixed strategy involving combined
2 cycles is also a risk mitigation strategy. This is seen by noting that all coal or all
3 gas portfolios are the worst outcomes on Table IV-22.

4
5 • **OG&E Builds Natural Gas Plants in Base Case** - OG&E proposes to bridge
6 itself until the coal plants come on line with a large new gas plant construction
7 program. Under the IRP, between 2007 and 2010, OG&E adds 340 MW of new
8 gas plants. This amount is larger than one Redbud unit. Furthermore, the plants
9 chosen are not traditional peakers but rather have with thermal efficiency
10 performance closer to a new combined cycle than a peaking combustion turbine.

11 [[
12
13]]. Though it is hard to believe, in
14 the midst of excess natural gas power plant capacity being available to the utility
15 within its service territory, OG&E's base case proposes to build more gas plants
16 rather than even considering purchases from, or of, existing units. This is a sign
17 that OG&E believes natural gas plants are attractive, but, believes obtaining bid
18 information from nearby Independent Power Producer (IPP) gas plants in its
19 control area is not needed for major resource commitments.⁹

20 **In response to Attorney General data request 20-1** – [[
21

⁸ The modeling is incorrect in using new and clean heat rates. Actual average degraded heat rates are higher. This becomes important when comparing new units to market.

⁹ OG&E issued an RFP in spring of 2007. The outcome of such RFP has not yet been announced.

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[REDACTED]

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[REDACTED]

[REDACTED]

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[REDACTED]

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[REDACTED]

[REDACTED]

9. [REDACTED]

[REDACTED]

[REDACTED]]

[REDACTED]

[REDACTED]

[REDACTED]]. The scenarios from those set forth in Table IV-8 on page IV-16 of the

January 2, 2007 OG&E IRP include Base, CERA, “Rearview Mirror”, CERA “Shades of

Green”, CERA “Technology Enhanced”, and CERA “World in Turmoil”.

[REDACTED]

[REDACTED]

[REDACTED]

1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]]

8
9 **Q. IS THERE ENOUGH EVIDENCE TO FIRMLY CONCLUDE THAT AN**
10 **EXISTING COMBINED CYCLE PLANT SUCH AS REDBUD SHOULD BE IN**
11 **THE CAPACITY EXPANSION MIX?**

12 A. [[REDACTED]
13 [REDACTED]
14 [REDACTED]]. It is clear that the evidence does not support
15 OG&E's current plan and the biases introduced by out-of-date data point to the all-coal
16 proposal being an error.

17
18 **Q. IS THE FACT THAT CAPITAL COST FOR COAL PLANTS ARE HIGHER**
19 **THAN ANTICIPATED THE ONLY COST PROBLEM WITH THE IRP**
20 **ANALYSIS?**

¹⁰[[REDACTED]]

1 A. No. [[[REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]]]

13
14 **Q. WHAT IS THE IMPLICATION OF UTILITIES RELYING ON ANALYSES**
15 **THAT HAVE INCORRECT CAPITAL COST ASSUMPTIONS?**

16 A. This should, at a minimum, lead to a new analysis using at least the most recent cost
17 estimates for the Red Rock coal power plant and incremental combined cycle supply and
18 a proper process giving combined cycle plants a fair chance through an RFP whose
19 results are properly input into the IRP. This would not be the case if the errors had been
20 offsetting – if coal capital costs and combined cycle costs had been overstated at the same

1 \$/kW. [[REDACTED]]
2 [[REDACTED]].¹¹

3
4 **Q. HOW ELSE WERE OG&E AND PSO ABLE TO DEVELOP AN UNBALANCED**
5 **ALL COAL CAPACITY EXPANSION PLAN?**

6 A. [[REDACTED]]
7 [[REDACTED]] than it assumed in its IRP analysis, neither OG&E
8 or PSO revised its IRP analysis. As such, the predicate for OG&E's and for PSO's
9 decisions are invalid as information favoring more balanced plans was ignored.

10
11 **Q. DID OG&E INCLUDE A CHARACTERIZATION OF THE WHOLESALE**
12 **POWER MARKET SALES AS A PROXY FOR EXISTING MERCHANT**
13 **CAPACITY?**

14 A. Yes, but it was a faulty characterization at odds with forecasts provided to it by its own
15 consultant, CERA. [[REDACTED]]
16 [[REDACTED]]
17 [[REDACTED]]
18 [[REDACTED]]
19 [[REDACTED]]
20 [[REDACTED]]
21 [[REDACTED]]. Capacity prices when added to energy prices firm up
22 market supply of power and make purchases comparable to building new units.

¹¹[[REDACTED]]

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Q. HAVE YOU PREVIOUSLY TESTIFIED IN AN EARLIER PROCEEDING THAT OG&E DID NOT PROPERLY CONSIDER MARKET OPTIONS AND TRANSMISSION CAPACITY EXPANSION?

A. Yes. I testified that the failure of OG&E to properly consider purchases from market and transmission upgrades should be corrected in order to protect ratepayers. This continuing failure plagues OG&E’s process and at a minimum should have been corrected by now, especially given the increased magnitude of the investment costs involved in this case.

Q. ARE THERE OTHER PROBLEMS IN THE OG&E IRP?

A. Yes. One important issue is the extent to which OG&E demand growth may be understated. There is no scenario examined in which peak demand growth exceeds 2.0 percent.¹² However, the model used to forecast OG&E control area demand, even in its most extreme weather case, understated demand growth in 2006 by nearly 6 percent.¹³ [[REDACTED] [REDACTED]]. This creates even greater need for a more balanced approach. Indeed, utility demand forecasts seem to have a fundamental contradiction built into them. On the one hand the utilities assume high gas prices, and on the other hand assume slow demand growth. The only major period of slow demand growth was in the 1985 – 1992 period when gas and oil price declines hurt Oklahoma and decreased electricity demand growth.

¹² See OG&E IRP, January 2007, page II-11 where the high growth case is 2.01 percent per year.
¹³ OG&E IRP, January 2007, page II-8. August 10, 2006 OG&E recorded actual demand of 6,473 MW. The 1 in 30 year case was 6,122 MW or 5.7 percent higher.

Rose Responsive Testimony
On behalf of Redbud Energy, LP
Cause Nos. PUD 2005-516, 2006-30 and 2007-12

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Q. WHY IS THIS SIGNIFICANT?

A. The larger the need the easier it is to accommodate a diversified capacity expansion plan and negotiate with owners of existing plants.

Q. ARE THERE OTHER BENEFITS ASSOCIATED WITH PURCHASES OF POWER FROM EXISTING COMBINED CYCLE POWER PLANTS WHICH YOU HAVE NOT ALREADY COVERED IN YOUR TESTIMONY?

A. Yes, not only that the costs of these existing options may be less, and the costs of conducting an RFP to determine same low, the rate impacts might be lower as well. Existing combined cycles may also be able to provide PPA or APA options, and the PPA options would create less rate shock if the costs are levelized or otherwise shaped. In contrast, OG&E is proposing to recover capital costs in a non-levelized manner which maximizes near term rate increases. This is sometimes referred to as “front-end loaded rates”. This capital induced rate increase is magnified by the need to generally upgrade transmission in Oklahoma and the need to retrofit existing coal plants with pollution control equipment. In sum, the lack of consideration of existing combined cycle plants is a fatal flaw, and appears to have contributed to a capacity expansion program which is unbalanced.

1 **Q. WHY IS DIVERSIFICATION ESPECIALLY IMPORTANT FOR OG&E?**

2 A. There are three reasons that together make diversification in capacity expansion
3 especially important and pressing for OG&E and its ratepayers:

4

5 • **Planning Uncertainties** - First, a balanced, diversified set of power plants
6 protects OG&E customers from the extremes of potential future events now
7 facing the utility industry. Specifically, OG&E is best served by being prepared
8 for two types of futures since it cannot be known which will actually occur.
9 OG&E may face a future favoring natural gas generation from combined cycles
10 over coal power plants. Such a future would have relatively low natural gas
11 prices and high CO₂ allowance prices associated with potential future controls on
12 greenhouse gas emissions. Alternatively, OG&E may face a future favoring coal
13 power plants over natural gas combined cycle plants. This future would envision
14 relatively high natural gas prices and low CO₂ allowance prices.

15

16 • **Recent Developments Since the OG&E IRP** - Second, a balanced expansion
17 mix including at least some combined cycle capacity has become even more
18 appropriate in the period since OG&E conducted its IRP. The IRP was filed
19 January 2, 2007 with analysis undoubtedly conducted in the preceding months.
20 This is due to two developments. First, there has been a recent run up in coal
21 power plant capital costs. Capital cost increases disproportionately favor gas
22 power plants since gas power plants are much less capital intensive to construct.
23 Second, the concern about CO₂ emission regulations has grown due to political

1 and other recent developments favoring CO₂ controls. These include a change in
2 the U.S. Congress and a recent Supreme Court decision that the U.S. EPA can
3 regulate CO₂ in some circumstances. These developments make a coal-only
4 expansion strategy harder to justify than a strategy with both types of fuel fully
5 considered— i.e., coal, and gas.

- 6
- 7 • **Existing, Local Combined Cycle Capacity with Transmission Access** - Third,
8 the existence of excess capacity in SPP and large amounts of uncommitted
9 merchant combined cycle power plant capacity creates a presumption that
10 complete exclusion of this capacity should have a firm rationale basis. This is
11 especially true in light of the fact that Oklahoma natural gas-fired combined
12 cycles operate with high reliability, and require no incremental construction
13 related costs. Furthermore, OG&E already has transmission access to a portion of
14 this capacity.

15

16 SECTION VI: CONCLUSIONS

17

18 Q. WHAT ARE YOUR CONCLUSIONS?

19 A. In conclusion, the RFP process was unreasonable, the analysis was wrong and the result
20 appears likely to be wrong which could lead to imprudent actions by the utilities at
21 ratepayers expense. [[

1

[REDACTED]

2

[REDACTED]].

3

In the alternative, the Commission should combine the requirement to redo their IRPs

4

with the requirement to issue appropriate RFPs for any capacity not approved by the

5

Commission. In another alternative, the Commission should require a more balanced

6

strategy involving a fuller range of plants. This can be accommodated by a smaller coal

7

expansion plan supplemented by purchases of existing combined cycle supply, a larger

8

total capacity expansion plan which includes existing combined cycle plants, or a plan

9

with less peaking capacity and more existing combined cycle capacity.

10

11 **Q. DOES THAT CONCLUDE YOUR RESPONSIVE TESTIMONY?**

12 A. Yes.

JUDAH L. ROSE**EDUCATION**

1982 M.P.P., John F. Kennedy School of Government, **Harvard University**

1979 S.B., Economics, **Massachusetts Institute of Technology**

EXPERIENCE

Judah L. Rose joined ICF in 1982 and currently serves as a Managing Director of ICF International. Mr. Rose has more than 25 years of experience in the energy industry, with emphasis on electric power, generation and transmission. Mr. Rose directs ICF International's wholesale power Line of Business (including assistance to electric utilities, financial institutions, law firms, government agencies, fuel companies, and IPPs). Mr. Rose is one of ICF's Distinguished Consultants, an honorary title given to three of ICF's 1,800 employees, and has served on the Board of Directors of ICF International as the Management Shareholder Representative. Mr. Rose co-manages ICF's IPM[®] (Integrated Power Model). Mr. Rose has supported the financing of tens of billion dollars of new and existing power plants and is a frequent counselor to the financial community on power issues. Mr. Rose has also served as lead negotiator, and he frequently provides expert testimony and litigation support in power-related court cases. Mr. Rose received a M.P.P. from the John F. Kennedy School of Government, Harvard University, and an S.B. in Economics from the Massachusetts Institute of Technology.

Mr. Rose has publicly testified in scores of state and other legal proceedings, addressed approximately 100 major energy conferences, authored numerous articles published in Public Utilities Fortnightly, the Electricity Journal, Project Finance International, and written numerous company studies on power, coal, and gas related issues, and managed large consulting projects. Mr. Rose has also appeared in TV interviews. Details are provided below.

PRESS INTERVIEWS

TV: "The Most With Allison Stewart," MSNBC, "Blackouts in NY and St. Louis & ongoing Energy Challenges in the Nation," July 25, 2006
CNBC Wake-Up Call, August 15, 2003
Wall Street Journal Report, July 25, 1999
Back to Business, CNBC, September 7, 1999

Journals: Electricity Journal
Energy Buyer Magazine
Public Utilities Fortnightly
Power Markets Week

Magazine: Business Week
Power Economics
Costco Connection

Newspapers: Denver Post
Rocky Mountain News
Financial Times Energy
LA Times
Arkansas Democratic Gazette
Galveston Daily News
The Times-Picayune
Pittsburgh Post-Gazette
Power Markets Week

Wires: Bridge News
Associated Press
Dow Jones Newswires

TESTIMONY

Rebuttal Testimony, FPL – CO₂ Emissions, Docket No. 070098-EL, March 30, 2007

Electric Utility Power Hedging, on behalf of Duke Energy Indiana, Cause No. 38707-FAC6851, February 9, 2007.

CPCN for Cliffside Coal Plant, on behalf of Duke Carolinas, Docket No. E7, SUB790, December 2006.

Confidential Expert Report, Nuclear Power Siting, December 2006, South Carolina.

IGCC Coal Plant, Testimony on behalf of Duke Energy Indiana, Cause No. 43114, October 2006.

Expert Report, Chapter 11, Case No. 01-16034 (AJG) and Adv. Proc. No. 04-2933 (AJG), November 6, 2006.

Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, Supplemental Testimony March 20, 2006.

Market Power and the PSEG Exelon Merger on Behalf of the NJBPU Staff, NJBPU, BPU Docket No. EM05020106, OAL Docket No. PUC-1874-05, Surrebuttal Testimony December 27, 2005.

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Brazilian Power Purchase Agreement, confidential international arbitration, October 2005.

Cost of Service and Fuel Clause Issues, Rebuttal Testimony on behalf of Public Service of New Mexico, Docket No. EL05-151, November 2005.

Cost of Service and Peak Demand, FERC, Testimony on behalf of Public Service of New Mexico, September 19, 2005, Docket No. EL05-19.

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Prudence of Acquisition of Power Plant, Testimony on behalf of Redbud, September 12, 2005, No. PUD 200500151.

Proposed Fuel Cost Adjustment Clause, FERC, Docket Nos. EL05-19-002 and ER05-168-001 (Consolidated), August 22, 2005.

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New Air Emission Regulations and Investment in Coal Power Plants, rebuttal testimony on behalf of PSI, April 18, 2005, Causes 42622 and 42718.

Rebuttal Report: Damages due to Rejection of Tolling Agreement Including Discounting, February 9, 2005, CONFIDENTIAL.

New Air Emission Regulations and Investment in Coal Power Plants, supplemental testimony on behalf of PSI, January 21, 2005, Causes 42622 and 42718.

Damages Due to Rejection of Tolling Agreement Including Discounting, January 10, 2005, CONFIDENTIAL.

Discount rates that should be used in estimating the damages to GTN of Mirant's bankruptcy and subsequent abrogation of the gas transportation agreements Mirant had entered into with GTN, December 15, 2004. CONFIDENTIAL

New Air Emission Regulations and Investment in Coal Power Plants, testimony on behalf of PSI, November 2004, Causes 42622 and 42718.

Rebuttal Testimony of Judah Rose on behalf of PSI, Cause No. 42469, August 23, 2004.

Rebuttal Testimony of Judah Rose on behalf of the Hopi Tribe, Case No. A.02-05-046, June 4, 2004.

Supplemental Testimony "Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, May 20, 2004.

“Application of Southern California Edison Company (U338-E) Regarding the Future Disposition of the Mohave Generating Station,” May 14, 2004.

“Appropriate Rate of Return on Equity (ROE) TransAlta Should be Authorized For its Capital Investment Related to VAR Support From the Centralia Coal-Fired Power Plant”, for TransAlta, April 30, 2004, FERC Docket No. ER04-810-000.

“Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, April 15, 2004.

“Application of Southern California Edison Company (U338-E) Regarding the Future Disposition of the Mohave Generating Station,” May 14, 2004.

“Appropriate rate of return on equity (ROE) TransAlta should be authorized for its capital investment related to VAR support from the Centralia coal-fired power plant”, for TransAlta, April 30, 2004.

“Retail Generation Rates, Cost Recovery Associated with the Midwest Independent Transmission System Operator, Accounting Procedures for Transmission and Distribution System, Case No. 03-93-EL-ATA, 03-2079, EL-AAM, 03-2081, EL-AAM, 03-2080, EL-ATA for Cincinnati Gas & Electric, April 15, 2004.

"Valuation of Selected MIRMA Coal Plants, Acceptance and Rejection of Leases and Potential Prejudice to Lessors" Federal Bankruptcy Court, Dallas, TX, March 24, 2004
CONFIDENTIAL.

“Certificate of Purchase as of yet Undetermined Generation Facility”, Cause No. 42469 for PSI, March 23, 2004.

“Ohio Edison’s Sammis Power Plant BACT Remedy Case”, In the United States District Court of Ohio, Southern Division, March 8, 2004.

“Valuation of Power Contract,” January 2004, confidential arbitration.

“In the matter of the Application of the Union Light Heat & Power Company for a Certificate of Public Convenience and Necessity to Acquire Certain Generation Resources, etc.”, before the Kentucky Public Service Commission, July 21, 2003.

“In the Supreme Court of British Columbia”, July 8, 2003. CONFIDENTIAL

“The Future of the Mohave Power Plant – Rebuttal Testimony”, California P.U.C., May 20, 2003.

“Affidavit in Support of the Debtors’ Motion”, NRG Bankruptcy, May 14, 2003.
CONFIDENTIAL

“IPP Power Purchase Agreement,” confidential arbitration, April 2003.

“The Future of the Mohave Power Plant”, California P.U.C., March 2003.

“Power Supply in the Pacific Northwest,” contract arbitration, December 5, 2002.
CONFIDENTIAL

“Power Purchase Agreement Valuation”, Confidential Arbitration, October 2002.

“Cause No. 42145 - rebuttal testimony on behalf of PSI. Filed on 8/23/02.”

“Cause No. 42200 - in support of PSI's petition for authority to recover through retail rates on a timely basis. Filed on 7/30/02.”

“Cause No. 42196 - in support of PSI's petition for interim purchased power contract. Filed on 4/26/02.”

“Cause No. 42145 - in support of PSI's petition for authority to acquire the Madison and Henry County plants. Filed on 3/1/2002.”

“Analysis of an IGCC Coal Power Plant”, Minnesota state senate committees, January 22, 2002

“Analysis of an IGCC Coal Power Plant”, Minnesota state house of representative committees, January 15, 2002

“Interim Pricing Report on New York State’s Independent System Operator”, New York State Public Service Commission (NYSPSC), January 5, 2001

“ The need for new capacity in Indiana and the IRP process”, Indiana Utility Regulatory Commission, October 26, 2000

“Damage estimates for power curtailment for a Cogen power plant in Nevada”, August 2000.
CONFIDENTIAL

“Valuation of a power plant in Arizona”, arbitration, July 2000. CONFIDENTIAL

Application of FirstEnergy Corporation for approval of an electric Transition Plan and for authorization to recover transition revenues, Before PUCO, Case No. 99-1212-EL-ETP, October 4, 1999 and April 2000.

“Issues Related to Acquisition of an Oil/Gas Steam Power plant in New York”, September 1999 Affidavit to Hennepin County District Court, Minnesota

“Wholesale Power Prices, A Cost Plus All Requirements Contract and Damages”, July 1999.
Testimony to U.S. Bankruptcy Court.

“Power Prices.” Testimony in confidential contract arbitration, July 1998.

“Horizontal Market Power in Generation.” Testimony to New Jersey Board of Public Utilities,
May 22, 1998.

“Basic Generation Services and Determining Market Prices.” Testimony to the New Jersey Board
of Public Utilities, May 12, 1998.

“Generation Reliability.” Testimony to New Jersey Board of Public Utilities, May 4, 1998.

“Future Rate Paths and Financial Feasibility of Project Financing.” Testimony to U.S. Bankruptcy
Court, April 1998.

“Stranded Costs of PSE&G.” Testimony to New Jersey Board of Public Utilities, February 1998.

“Application of PECO Energy Company for Approval of its Restructuring Plan Under Section
2806 of the Public Utility Code.” Rebuttal Testimony filed July 1997.

“Future Wholesale Electricity Prices, Fuel Markets, Coal Transportation and the Cajun
Bankruptcy.” Testimony to Louisiana Public Service Commission, December 1996.

“Curtailment of the Saguaro QF, Power Contracting and Southwest Power Markets.” Testimony on
a contract arbitration, Las Vegas, Nevada, June 1996.

“Future Rate Paths and the Cajun Bankruptcy.” Testimony to the U.S. Bankruptcy Court, June
1997.

“Fuel Prices and Coal Transportation.” Testimony to the U.S. Bankruptcy Court, June 1997.

“Demand for Gas Pipeline Capacity in Florida from Electric Utilities.” Testimony to Florida Public
Service Commission, May 1993.

“The Case for Fuel Flexibility in the Florida Electric Generation Industry.” Testimony to the
Florida Department of Environmental Regulation (DER), Hearings on Fuel Diversity and
Environmental Protection, December 1992.

SELECTED SPEAKING ENGAGEMENTS

Rose, J.L., AESP, NEEC Conference, Rising Prices and Failing Infrastructure: A Bleak or
Optimistic Future, Marlborough, MA, October 23, 2006.

Rose, J.L., Infocast Gas Storage Conference, “Estimating the Growth Potential for Gas-Fired
Electric Generation,” Houston, TX, March 22, 2006.

- Rose, J.L., “Power Market Trends Impacting the Value of Power Assets,” Infocast Conference, Powering Up for a New Era of Power Generation M&A, February 23, 2006.
- Rose, J.L., “The Challenge Posed by Rising Fuel and Power Costs”, Lehman Brothers, November 2, 2005.
- Rose, J.L., “Modeling the Vulnerability of the Power Sector”, EUCI – Securing the Nation’s Energy Infrastructure, September 19, 2005
- Rose, J.L., “Fuel Diversity in the Northeast, Energy Bar Association, Northeast Chapter Meeting, New York, NY, June 9, 2005.
- Rose, J.L., “2005 Macquarie Utility Sector Conference”, Macquarie Utility Sector Conference, Vail, CO, February 28, 2005.
- Rose, J.L., “The Outlook for North American Natural Gas and Power Markets”, The Institute for Energy Law, Program on Oil and Gas Law, Houston, TX, February 18, 2005.
- Rose, J.L. “Assessing the Salability of Merchant Assets – What’s on the Horizon?”, Infocast – The Market for Power Assets, Phoenix, AZ, February 10, 2005.
- Rose, J.L. “Market Based Approaches to Transmission – Longer-Term Role”, National Group of Municipal Bond Investors, New York, NY, December 10, 2004.
- Rose, J.L. “Supply & Demand Fundamentals – What is Short-Term Outlook and the Long-Term Demand? Platt’s Power Marketing Conference, Houston, TX, October 11, 2004.
- Rose, J.L. “Assessing the Salability of Merchant Assets – When Will We Hit Bottom?, Infocast’s Buying, Selling, and Investing in Energy Assets Conference, Houston, TX, June 24, 2004.
- Rose, J. L. “After the Blackout – Questions That Every Regulator Should be Asking,” NARUC Webinar Conference, Fairfax, VA, November 6, 2003.
- Rose, J. L., “Supply and Demand in U.S. Wholesale Power Markets,” Lehman Brothers Global Credit Conference, New York, NY, November 5, 2003.
- Rose, J.L., “Assessing the Salability of Merchant Assets – When Will We Hit Bottom?”, Infocast’s Opportunities in Energy Asset Acquisition, San Francisco, CA, October 9, 2003.
- Rose, J.L., “Asset Valuation in Today’s Market”, Infocast’s Project Finance Tutorial, New York, NY, October 8, 2003.
- Rose, J.L., “Forensic Evaluation of Problem Projects”, Infocast’s Project Finance Workouts: Dealing With Distressed Energy Projects, September 17, 2003.

- Rose, J.L., National Management Emergency Association, Seattle, WA, September 8, 2003.
- Rose, J.L., “Assessing the Salability of Merchant Assets – When Will We Hit Bottom?”, Infocast’s Buying, Selling & Investing in Energy Assets, Chicago, IL, July 24, 2003.
- Rose, J.L., CSFB Leveraged Finance Independent Power Producers and Utilities Conference, New York, NY, “Spark Spread Outlook”, July 17, 2003.
- Rose, J.L., Multi-Housing Laundry Association, Washington, D. C., “Trends in U.S. Energy and Economy”, June 24, 2003.
- Rose, J.L., “Power Markets: Prices, SMD, Transmission Access, and Trading”, Bechtel Management Seminar, Frederick, MD, June 10, 2003.
- Rose, J.L., Platt’s Global Power Market Conference, New Orleans, LA, “The Outlook for Recovery,” March 31, 2003.
- Rose, J.L., “Electricity Transmission and Grid Security”, Energy Security Conference, Crystal City, VA, March 25, 2003.
- Rose, J.L., “Assessing the Salability of Merchant Assets – When Will We Hit Bottom?”, Infocast’s Buying, Selling & Investing in Energy Assets, New York City, February 27, 2003.
- Rose, J.L., Panel Discussion, “Forensic Evaluation of Problem Projects”, Infocast Conference, NY, February 24, 2003.
- Rose, J.L., PSEG Off-Site Meeting Panel Discussion, February 6, 2003 (April 13, 2003).
- Rose, J.L., “The Merchant Power Market—Where Do We Go From Here?” Center for Business Intelligence’s Financing U.S. Power Projects, November 18-19, 2002.
- Rose, J.L., “Assessing U.S. Regional And The Potential for Additional Coal-Fired Generation in Each Region,” Infocast’s Building New Coal-Fired Generation Conference, October 8, 2002.
- Rose, J.L., “Predicting the Price of Power for Asset Valuation in the Merchant Power Financings,” Infocast’s Product Structuring in the Real World Conference, September 25, 2002.
- Rose, J.L., “PJM Price Outlook,” Platt’s Annual PJM Regional Conference, September 24, 2002.
- Rose, J.L., “Why Investors Are Zeroing in on Upgrading Our Antiquated Power Grid Rather Than Exotic & Complicated Technologies,” New York Venture Group’s Investing in the Power Industry—Targeting The Newest Trends Conference, July 31, 2002.
- Rose, J.L., Panel Participant in the Salomon Smith Barney Power and Energy Merchant Conference 2002, May 15, 2002.

- Rose, J.L., "Locational Market Price (LMP) Forecasting in Plant Financing Decisions," Structured Finance Institute, April 8-9, 2002.
- Rose, J.L., "PJM Transmission and Generation Forecast", Financial Times Energy Conference, November 6, 2001.
- Rose, J.L., "U.S. Power Sector Trends", Credit Suisse First Boston's Power Generation Supply Chain Conference, Web Presented Conference, September 12, 2002.
- Rose, J.L., "Dealing with Inter-Regional Power Transmission Issues", Infocast's Ohio Power Game Conference, September 6, 2001
- Rose, J.L., "Where's the Next California", Credit Suisse First Boston's Global Project Finance Capital Markets Conference, New York NY, June 27 2001
- Rose, J.L., "U.S. Energy Issues: What MLA Members Need to Know," Multi-housing Laundry Association, Boca Raton Florida, June 25, 2001
- Rose, J.L., "How the California Meltdown Affects Power Development", Infocast's Power Development and Finance Conference 2001, Washington D.C., June 12, 2001
- Rose, J.L., "Forecasting 2001 Electricity Prices" presentation and workshop, What to Expect in western Power Markets this Summer 2001 Conference, Denver, Colorado, May 2, 2001
- Rose, J.L., "Power Crisis in the West" Generation Panel Presentation, San Diego, California, February 12, 2001
- Rose, J.L., "An Analysis of the Causes leading to the Summer Price Spikes of 1999 & 2000" Conference Chair, Infocast Managing Summer Price Volatility, Houston, Texas, January 30, 2001.
- Rose, J. L., "An Analysis of the Power Markets, summer 2000" Generation Panel Presentation, Financial Times Power Mart 2000 conference, Houston, Texas, October 18, 2000
- Rose, J.L., "An Analysis of the Merchant Power Market, Summer 2000" presentation, Conference Chair, Merchant Power Finance Conference, Atlanta, Georgia, September 11 to 15, 2000
- Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair, Merchant Plant Development and Finance Conference, Houston, Texas, March 30, 2000.
- Rose, J.L., "Implementing NYPP's Congestion Pricing and Transmission Congestion Contract (TCC)", Infocast Congestion Pricing and Forecasting Conference, Washington D.C., November 19, 1999.

- Rose, J.L., "Understanding Generation" Pre-Conference Workshop, Powermart, Houston, Texas, October 26-28, 1999.
- Rose, J.L., "Understanding Capacity Value and Pricing Firmness" presentation, Conference Chair Merchant Plant Development and Finance Conference, Houston, Texas, September 29, 1999.
- Rose, J.L., "Comparative Market Outlook for Merchant Assets" presentation, Merchant Power Conference, New York, New York, September 24, 1999.
- Rose, J.L., "Transmission, Congestion, and Capacity Pricing" presentation, Transmission The Future of Electric Transmission Conference, Washington, DC, September 13, 1999.
- Rose, J.L., "Effects of Market Power on Power Prices in Competitive Energy Markets" Keynote Address, The Impact of Market Power in Competitive Energy Markets Conference, Washington, DC, July 14, 1999.
- Rose, J.L., "Peak Price Volatility in ECAR and the Midwest, Futures Contracts: Liquidity, Arbitrage Opportunity" presentation at ECAR Power Markets Conference, Columbus, Ohio, June 9, 1999.
- Rose, J.L., "Transmission Solutions to Market Power" presentation, Do Companies in the Energy Industry Have Too Much Market Power? Conference, Washington, DC, May 24, 1999.
- Rose, J.L., "Repowering Existing Power Plants and Its Impact on Market Prices" presentation, Exploiting the Full Energy Value-Chain Conference, Chicago, Illinois, May 17, 1999.
- Rose, J.L., "Transmission and Retail Issues in the Electric Industry" Session Speaker, Gas Mart/Power 99 Conference, Dallas, Texas, May 10, 1999.
- Rose, J.L., "Peak Price Volatility in the Rockies and Southwest" presentation at Repowering the Rockies and the Southwest Conference, Denver, Colorado, May 5, 1999.
- Rose, J.L., "Understanding Generation" presentation and Program Chairman at Buying & Selling Power Assets: The Great Generation Sell-Off Conference, Houston, Texas, April 20, 1999.
- Rose, J.L., "Buying Generation Assets in PJM" presentation at Mid-Atlantic Power Summit, Philadelphia, Pennsylvania, April 12, 1999.
- Rose, J.L., "Evaluating Your Generation Options in Situations With Insufficient Transmission," presentation at Congestion Management conference, Washington, D.C., March 25, 1999.
- Rose, J.L., "Will Capacity Prices Drive Future Power Prices?" presentation at Merchant Plant Development conference, Chicago, Illinois, March 23, 1999.
- Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Atlanta, Georgia, February 25, 1999.

- Rose, J.L., "Developing Reasonable Expectations About Financing New Merchant Plants That Have Less Competitive Advantage Than Current Projects," presentation at Project Finance International's Financing Power Projects in the USA conference, New York, New York, February 11, 1999.
- Rose, J.L., "Transmission and Capacity Pricing and Constraints," presentation at Power Fair 99, Houston, Texas, February 4, 1999.
- Rose, J.L., "Peak Price Volatility: Comparing ERCOT With Other Regions," presentation at Megawatt Daily's Trading Power in ERCOT conference, Houston, Texas, January 13, 1999.
- Rose, J.L., "The Outlook for Midwest Power Markets," presentation to The Institute for Regulatory Policy Studies at Illinois State University, Springfield, Illinois, November 19, 1998.
- Rose, J.L., "Developing Pricing Strategies for Generation Assets," presentation at Wholesale Power in the West conference, Las Vegas, Nevada, November 12, 1998.
- Rose, J.L., "Understanding Electricity Generation and Deregulated Wholesale Power Prices," a full-day pre-conference workshop at Power Mart 98, Houston, Texas, October 26, 1998.
- Rose, J.L., "The Impact of Power Generation Upgrades, Merchant Plant Developments, New Transmission Projects and Upgrades on Power Prices," presentation at Profiting in the New York Power Market conference, New York, NY, October 22, 1998.
- Rose, J.L., "Capacity Value – Pricing Firmness," presentation to Edison Electric Institute Economics Committee, Charlotte, NC, October 8, 1998.
- Rose, J.L., "Locational Marginal Pricing and Futures Trading," presentation at Megawatt Daily's Electricity Regulation conference, Washington, D.C., October 7, 1998.
- Rose, J.L., Chairman's opening speech and "The Move Toward a Decentralized Approach: How Will Nodal Pricing Impact Power Markets?" at Congestion Pricing and Tariffs conference, Washington, D.C., September 25, 1998.
- Rose, J.L., "The Generation Market in MAPP/MAIN: An Overview," presentation at Megawatt Daily's MAIN/MAPP – The New Dynamics conference, Minneapolis, Minnesota, September 16, 1998.
- Rose, J.L., "Capacity Value – Pricing Firmness," presentation at Market Price Forecasting conference, Baltimore, Maryland, August 24, 1998.
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EMPLOYMENT HISTORY

ICF Resources Incorporated	Managing Director	1999-Present
	Vice President	1996-1999
	Project Manager	1993-1996
	Senior Associate	1986-1993
	Associate	1982-1986

Confidential

EXHIBIT JLR-2

Coal Plant Capital Costs (2006\$/kW)

TABLE IS CONFIDENTIAL