

Exhibit No. _____
Issue: State Line Expansion
Witness: Natalie Rolph
Type of Exhibit: Direct Testimony
Sponsoring Party: Empire District
Case No.: _____
Date Prepared: November 2, 2000

**Before the Public Service Commission
of the State of Missouri**

Direct Testimony

of

Natalie Rolph

Exhibit No. 12
Date 5/29/01 Case No. ER-2001-299
Reporter KRM

November 2000

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI
DIRECT TESTIMONY OF NATALIE ROLPH
ON BEHALF OF THE EMPIRE DISTRICT ELECTRIC COMPANY**

CASE NO.

1 I. INTRODUCTION AND BACKGROUND

2 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?

3 A. Ms. Natalie Rolph, 11401 Lamar, Overland Park, KS 66211

4 Q. WHO IS YOUR EMPLOYER AND WHAT POSITION DO YOU HOLD?

5 A. Black & Veatch is my employer. I hold the title of Chief Economist in the Energy Services
6 Group.

7 Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

8 A. I graduated from the University of Kansas in 1974 with a Bachelor of Science in
9 Economics. I graduated from the University of Missouri at Kansas City in 1978 with a
10 Masters in Economics.

11 Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

12 A. I joined Black & Veatch in 1974 as an economist conducting cost-of-service and rate design
13 studies for utility clients in the Economic and Finance Division as well as some of the first
14 socio-economic portions of environmental impact studies ever conducted in the US. I
15 transferred to the Power Division in 1981 where I directed all econometric load forecasts
16 and became a system planning consultant and project manager for increasingly large
17 domestic and international electric utilities and developers. In 1990, I joined R.W. Beck and
18 Associates as a Senior Consultant responsible for the solicitation and evaluation of
19 purchased power proposals concurrent with the evaluation of self-build options and

1 ultimately the acquisition of a Certificate of Need for three combustion turbine projects in
2 North Carolina. I returned to Black & Veatch in 1992 as head of the Generation Planning
3 Unit where I initiated Black & Veatch's Integrated Resource Planning practice and later
4 their deregulated electric market pricing practice. I currently hold the position of Chief
5 Economist in the Energy Services Group and I have authored numerous papers and articles
6 on planning and trends in the electric power industry.

7 Q. WHAT TYPE OF SERVICES DOES BLACK & VEATCH'S ENERGY SERVICES
8 GROUP (ESG) PROVIDE?

9 A. Black & Veatch currently has about 400 full time equivalent employees working in ESG.
10 These employees provide engineering and consulting services to the power industry. The
11 group provides management consulting services, fuels management services, retrofit
12 engineering services, air quality control and environmental advisory services, all targeted to
13 the electric power industry.

14 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

15 A. To describe the analyses conducted by Black & Veatch in support of the State Line
16 Expansion project, to describe the review by Black & Veatch of the analyses conducted by
17 Empire in support of the State Line Expansion project and to offer an opinion regarding the
18 State Line Expansion project as a least-cost reliable source of additional generating capacity
19 and energy for The Empire District Electric Company (Empire) system.

20 Q. WHAT ANALYSES WERE CONDUCTED BY BLACK & VEATCH AND EMPIRE IN
21 SUPPORT OF THE STATE LINE EXPANSION PROJECT?

22 A. Because of the potential for retail access to be adopted in Missouri within a few years of

1 start-up of any new generation option, Empire retained Black & Veatch to conduct an
2 analysis of an expansion at State Line in the context of a deregulated electric generation
3 market. To ensure that it considered all potential options that could avoid major capital
4 investment, Empire also conducted two solicitations for purchased power. Empire then
5 compared the responses to the solicitation to Empire's own new generation options in the
6 context of regulated utility conditions. Black & Veatch reviewed, and I will testify to, the
7 validity of Empire's evaluation of the purchased power proposals. Finally, once the decision
8 was made that part ownership of the State Line Expansion project was the least-cost option
9 for Empire customers, Black & Veatch assisted Empire in conducting a solicitation and
10 evaluation of partnership proposals. I will testify to Black & Veatch's role in the partnership
11 solicitation and I will offer my professional opinion of Empire's final partnership decision.

12 Q. SHOULDN'T THE LEAST-COST OPTION IN A REGULATED MARKET AND THE
13 MOST PROFITABLE OPTION IN A DEREGULATED MARKET BE THE SAME?

14 A. Theoretically, yes, because a regulated utility purchases generation off-system when it can
15 do so for less money than it can generate it and sells off-system whenever it can do so and
16 make revenue margins above the marginal cost of production. Both deregulated and
17 regulated analysis methods were utilized by Empire to make sure institutional constraints
18 and occasional lapses in available market information would not yield different answers. Put
19 another way, if the results of the two separate analyses yielded different recommendations, a
20 decision would have been required to do what is best for Empire today regardless of
21 potential future regulatory changes. The fact that the regulated and deregulated answers
22 were the same made for an obvious decision.

1 Q. PLEASE DESCRIBE B&V'S ANALYSIS OF THE DEREGULATED MARKET.

2 A. The Black & Veatch approach to forecasting wholesale electric power prices and State Line
3 Expansion revenues in the Southwest Power Pool (SPP) was based on the premise that, by
4 mid-2001, all generating units in the region would be competitively committed and
5 dispatched to meet the total load in the region. The analysis was performed subject to
6 transmission constraints. It was further assumed that commitment and dispatch will be based
7 on prices which, at a minimum, are set to cover short-run marginal costs of production and
8 include ever greater allocations of fixed costs as the market tightens during high load hours.
9 Recovery of fixed costs, including capital and fixed operating costs, are capped by the long-
10 run marginal cost of capacity. The marginal cost of capacity is set by each year's amortized
11 cost of new generators built to meet growth. The marginal cost of capacity was based on
12 large and efficient simple cycle combustion turbine generators.

13 In developing the fixed cost recovery cap, Black & Veatch amortized the capacity costs
14 of the marginal generator using debt/equity ratios, return and interest rates, loan term, tax
15 and insurance assumptions consistent with merchant plant financing. In developing the
16 projection of regional generator additions in SPP, Black & Veatch utilized its in-house
17 knowledge of new committed projects followed by a least-cost mix of generic simple and
18 combined cycle generators.

19 Black & Veatch conducted the analysis of the potential profitability of the State Line
20 Expansion project in seven basic steps.

- 21 1. Analyze the then-current supply and demand for capacity in the region.
- 22 2. Characterize existing generators in the region and new committed generators.

- 1 3. Develop a least-cost generation expansion plan for the market region beyond the
- 2 committed generators. (Assumes in a deregulated market place, distribution companies
- 3 will be induced to purchase from large central-station generators in order to take
- 4 advantage of economies-of-scale.)
- 5 4. Develop a model of the existing and future electric generation market place in SPP
- 6 and surrounding region.
- 7 5. Use the market model to project the energy revenues and expenses associated with the
- 8 State Line generators with and without the combined cycle expansion.
- 9 6. Analyze the profitability of the State Line Expansion in the context of a pro forma
- 10 cash flow analysis. If the projected revenues, expenses, debt service, and taxes imply
- 11 an investment inducing return, the expansion project is determined to be viable in a
- 12 deregulated market place.
- 13 7. Conduct sensitivity analyses to test the robustness of the initial results under varying
- 14 assumptions of input factors beyond Empire's control.

15 Q. WHAT SOFTWARE WAS USED FOR THE MARKET SIMULATIONS?

16 A. The initial analysis was based on a blockload model consisting of the total coincident load in

17 the SPP and all the existing and likely future generators in SPP. A test of alternative

18 capacity expansion plans indicated the least cost additions of generating capacity within SPP

19 would be a 50/50 split of simple and combined cycle capacity. A subsequent, more detailed

20 study was conducted using the commercially available market simulation software

21 developed by Henwood Energy Services. The MULTISYM hourly market simulation

22 program and EMSS database were used to simulate the SPP including Entergy, the

1 Nebraska and Iowa portions of the Mid-Continent Area Power Pool and the then Union
2 Electric portion of the Mid America Interconnected Network

3 Q. WHAT CRITERIA DID BLACK & VEATCH USE TO EVALUATE THE
4 PROFITABILITY OF THE STATE LINE EXPANSION PROJECT?

5 A. Black & Veatch estimates the profitability of a power plant in a deregulated market in
6 accordance with the way independent power producers view projects, based on a discounted
7 cash flow analysis in which the deregulated market for energy and capacity determines the
8 revenues and capacity factor for the plant. The operating expenses are projected based on
9 unit costs, finance costs and debt service are estimated consistent with recent merchant plant
10 financings, and taxes are estimated consistent with typical net corporate tax rates. The
11 comparative measure of profitability is the internal rate of return on equity (IRR) over the
12 first 20 years of operation.

13 Q. HOW IS IRR DEFINED?

14 A. It is defined as Net Present Value (NPV) rate at which the Present Value (PV) of future cash
15 flows equal the initial equity investment.

16 Q. WHAT DO THE RESULTS OF THE BLACK & VEATCH MARKET ANALYSIS
17 SUGGEST?

18 A. The combined cycle addition at State Line should provide at least the targeted return
19 necessary to induce merchant plant investment based on an estimated IRR of 20%. The
20 implication is that the State Line Expansion should be attractive in a deregulated market
21 context. Only under very low gas prices and low combustion turbine costs are returns
22 significantly below target.

1 A preliminary feasibility report was produced July 1, 1998, by Black & Veatch using the
2 block load model of the market. The analysis contained in the preliminary feasibility study
3 considered two configurations for the expansion, neither one of which is the ultimate
4 configuration. At the outset, Empire considered the conversion of both the existing 501D5
5 (Unit1) and the 501 F (Unit 2) turbines to combined cycle. In addition, they wished to
6 consider the conversion of Unit 2 alone. In the first case (D5/F), the future profitability of
7 the addition of heat recovery steam generators (hrsg) and steam turbine sized to use the
8 waste heat from both existing turbines was tested. In the second case, the profitability of
9 adding only one hrsg to State Line 2 and a smaller steam turbine was analyzed. The results
10 of the preliminary deregulated analysis indicate the expansion of Unit 2 alone would yield
11 far lower IRR estimates than the expansion using the D5/F configuration. BV also
12 performed deregulated analyses under various scenarios of historical gas price patterns and
13 one scenario with slightly higher summer gas prices. The resultant IRR ranged from 11 to
14 23 percent. Under the scenario of doubled gas prices, the IRR was estimated to increase to
15 38 percent.

16 Q. IS 38% HIGH?

17 A. It is. Higher gas prices should economically allow for greater percentage mix of combined
18 cycles in future expansions. Therefore, higher gas prices should make the combined cycle
19 expansion at State Line an even better decision.

20 Q. WHAT WAS THE PROJECTION OF NATURAL GAS PRICES USED IN THE
21 PRELIMINARY FEASIBILITY ANALYSIS?

22 A. Delivered gas prices were projected to increase at the rate of 4 percent per year from

1 estimates of \$2.31 per MBtu most of the year in 1999 and \$2.21 per MBtu in the summer
2 months. In the high summer gas case, summer gas was projected to increase to \$2.60/ MBtu.

3 Q. SO WHAT EXACTLY WERE THE GAS PRICES ASSUMED FOR THE DOUBLE GAS
4 PRICE CASE?

5 A. The doubled gas price scenario that yielded a return rate of 38 percent IRR mentioned above
6 assumed gas prices of \$4.62 and \$4.41 for the non-summer and summer months,
7 respectively.

8 Q. WHAT IS THE CURRENT SPOT PRICE OF NATURAL GAS ON WILLIAMS
9 PIPELINE?

10 A. Publicly available information would suggest gas prices are in excess of \$4.00 per MBtu.

11 Q. BASED ON YOUR PREVIOUS TESTIMONY, THE BLOCKLOAD ANALYSIS OF
12 CONVERTING THE EXISTING UNITS 1 AND 2 AT STATE LINE TO COMBINED
13 CYCLE LOOKED FAVORABLE DEPENDING ON FUTURE NATURAL GAS PRICES
14 AND OTHER FACTORS. WHAT IS YOUR OPINION ABOUT THE FEASIBILITY OF
15 THE FINAL STATE LINE EXPANSION PROJECT THAT CALLS FOR THE
16 ADDITION OF A NEW 501F TURBINE?

17 A. Given the results of the conversion of Units 1 and 2 to combined cycle, and further
18 shortages in wholesale power supply during the summer of 1998, Black & Veatch strongly
19 agreed that Empire should consider the addition of a new 501F turbine to be configured with
20 the existing 501F turbine in combined cycle to yield an additional 300 MW instead of 150
21 MW. The addition of a new 501F turbine and ultimate development of a 2 on 1 combined
22 cycle (two combustion turbines and hrsgs feeding a large steam turbine) offered a slightly

1 better heat rate and a reduction in the \$/kW capital cost in addition to the added capacity.

2 BV analyzed the new 2 on 1 configuration using the MULTISYM Model of the SPP
3 market. As a result, the additional physical characteristics of generators not analyzed in the
4 blockload model such as start times, ramp rates, part-load heat rates and minimum loads
5 were taken into account. System constraints such as spinning reserves and transmission path
6 limits and costs were also modeled. The Baseline scenario, which implies a 20.6 percent
7 return rate, is based on Black & Veatch's then expected projections of new generation
8 additions in SPP, natural gas prices, new generator capital costs, and State Line Expansion
9 capital and operating costs. All but one of the sensitivity cases conducted for the analysis
10 were focused on potential changes in input assumptions that could threaten the financial
11 viability of the project. The objective of such a one-sided analysis was to begin to measure
12 the downside risk associated with the proposed expansion project. The sensitivity cases
13 included the addition of more combined cycle capacity in the region than anticipated in the
14 baseline scenario, 15 percent lower gas prices, a 25 percent reduction in future market
15 payments assumed to be required to induce generation investment to meet growth,
16 additional expansion costs of \$11 million to cover transmission upgrades and a \$1 million
17 increase in annual O&M costs.

18 Q. WHAT WERE THE RESULTS OF THESE SENSITIVITY CASES?

19 A. The expected IRR's decreased 1 to 3 percent from the 20.6 percent baseline projection. The
20 one sensitivity scenario that resulted in higher returns assumed other generator additions in
21 SPP are deferred. The result of that scenario was a 3 per cent increase in return.

22 Q. WHAT WERE THE NATURAL GAS PRICES IMPLICIT IN THE MARKET
23 MODELING OF THE NEW 2 ON 1 CONFIGURATION?

1 A. The 1999 delivered price was projected to average \$2.35 MBtu escalating at 4% per year.

2 Q. SO IF TODAY'S PROJECTION OF GAS PRICES WERE CONSIDERABLY HIGHER,
3 WHAT WOULD THE IMPACT BE ON THE PROJECTED RETURNS ON THE STATE
4 LINE EXPANSION INVESTMENT?

5 A. The projected returns would increase significantly.

6 Q. WHY?

7 A. Higher gas costs favor the efficiency of combined cycle generators when compared to
8 combustion turbines.

9 Q. WHY IS A 2X1 FF COMBINED CYCLE FAVORED OVER THE D5/F COMBINED
10 CYCLE?

11 A. The D5/F option suffers economies-of-scale penalties in both capital and operating costs
12 when compared to the FF option. The fact that Empire was facing the net expiration of 91
13 MW of existing wholesale contracts at the time the commitment to the State Line Expansion
14 also impacted the need for additional capacity and Empire's ability to take advantage of
15 economies-of-scale in a 500 MW combined cycle plant.

16 In addition to the added capacity, the addition of another 501F turbine and two hrsgs and
17 a larger steam turbine also has the advantage of comprising a fairly standard design. Tens of
18 these 2 on 1 F class combined cycle plants are being designed and constructed in the US
19 each year. The designs have been standardized. The design of a 2 on 1 combined cycle plant
20 that would use Empire's existing 501D turbine with its 501F turbine would most likely have
21 been a one-of-a-kind design.

1 Q. MR. BRILL TESTIFIED TO EMPIRE'S SOLICITATIONS OF PURCHASED POWER
2 PROPOSALS. PLEASE DESCRIBE EMPIRE'S EVALUATION OF THE PROPOSALS
3 RECEIVED.

4 A. Empire's analysis of the proposals received in response to the February 10, 1998 RFP was
5 based on a differential revenue requirements comparison of each proposal in the context of
6 the entire Empire system. The differential revenue requirements analysis consisted of
7 system-wide projections of fuel costs, variable O&M and variable purchased power costs
8 from the variable cost portions of each proposal in conjunction with the variable cost
9 portions of the existing Empire generators in the ENPRO economic dispatch model of the
10 Empire system. Constraints on each proposal such as minimum take requirements were
11 modeled, and off-system sales and purchases were priced in accordance with projections of
12 wholesale power costs in the Southwest Power Pool as published in RDI's 1997 report
13 entitled "Outlook for Power". Projections of system-wide variable costs were added to
14 projections of differential fixed costs including fixed O&M and amortized capital costs for
15 new generators and demand charges for capacity purchases including an allowance for
16 transmission service if needed. Off-system capacity purchases and sales were also priced at
17 RDI's projected market value of capacity. Differential revenue requirements were projected
18 for the years 2001 through 2006 and discounted back to 1998 at an after tax discount rate of
19 8 percent. The purchased power proposals were compared to four State Line Expansion
20 plans involving the conversion of one or more of the existing State Line combustion
21 turbines to combined cycle and a new "greenfield" combined cycle option.

1 Q. WHY, IN YOUR OPINION, DID EMPIRE CONSIDER COMBINED CYCLE OPTIONS
2 FOR ITS OWN CAPITAL INVESTMENT OPTIONS AND FOR COMPARISON TO THE
3 PURCHASED POWER PROPOSALS?

4 A. Because the mix of capacity on the Empire system, including committed purchases, is 53
5 percent coal fueled capacity and 47 percent combustion turbine capacity, and because over
6 300 MW of the coal fueled capacity is approaching 30 years of age or older. The logical
7 technology for the next capacity addition was combined cycle combustion turbine.

8 Q. WHY IS COMBINED CYCLE A LOGICAL ADDITION FOR EMPIRE?

9 A. Assuming a new simple cycle unit on the Empire System would dispatch ahead of the
10 existing turbines, which it most likely would, the new turbine would have to operate at a
11 capacity factor above the breakeven capacity factor for simple and combined cycle units
12 even at the then lower gas prices.

13 Q. WHAT WERE THE RESULTS OF THE EVALUATIONS OF THE PROPOSALS
14 RECEIVED IN RESPONSE TO THE FEBRUARY 10, 1998 SOLICITATION?

15 A. The proposal from Southern Company Energy Marketing (SCEM) was attractive relative to
16 the State Line Expansion options. Similarly, the proposal from Morgan Stanley was
17 evaluated to have a net present value of differential revenue requirements in the middle of
18 the range for the State Line Expansion options. As testified in Mr. Brill's testimony, SCEM
19 refused to make a firm offer when approached by Empire. As testified to in Mr. Brill's
20 testimony, Empire also contacted Morgan Stanley and was told that their proposal was
21 based on an as yet un-sited plant that would use refurbished combustion turbines. Based on

1 the proposal, energy pricing would be based on the actual heat rate, but the basis of that heat
2 rate was not provided. Further, the Morgan Stanley proposal did not provide transmission
3 costs for obvious reasons.

4 Q. WHAT WAS EMPIRE'S CONCLUSION REGARDING THESE PROPOSALS AND DO
5 YOU AGREE WITH THAT CONCLUSION?

6 A. Empire's conclusion was that they could not rely on any of the proposals provided in
7 response to their February 10, 1998 RFP and that they should continue to analyze its
8 alternatives. I agree with that conclusion.

9 Q. MR. BRILL TESTIFIED THAT EMPIRE ALSO ISSUED A JUNE 16, 1998 RFP AND
10 THAT RESPONSES TO THAT RFP WERE ALSO EVALUATED RELATIVE TO THE
11 STATE LINE EXPANSION PROJECT. DID BLACK & VEATCH REVIEW THE
12 EVALUATION OF PROPOSALS IN RESPONSE TO THAT RFP?

13 A. Yes we did. We reviewed the comparison of purchased power and State Line Expansion
14 options.

15 Q. DID EMPIRE USE THE SAME METHODOLOGY TO EVALUATE THE PROPOSALS
16 RECEIVED IN RESPONSE TO THE JUNE 16, 1998 RFP AS IT HAD USED IN THE
17 EVALUATION OF THE FEBRUARY 10, 1998 PROPOSALS?

18 A. Partly. Based on Black & Veatch's review of the evaluation conducted by Empire in
19 response to the June 16, 1998 RFP was more detailed. Empire utilized the ENPRO
20 economic dispatch/production cost model to estimate system-wide fuel and variable O&M
21 costs just as it had done for the responses to the February 10 RFP. For the June 16
22 responses, however, Empire used its Corporate Financial Model (CFM) to estimate the

1 impact on rates to retail customers of each of the proposals and of the State Line Expansion
2 options.

3 Empire's CFM, like most corporate models for investor-owned utilities, reconciles cash
4 and regulated utility accounting to help management balance the needs of customers and
5 investors. The model is comprised of three major components. They are a capital budget,
6 revenue budget and an operating expense budget that includes fuel and purchase power
7 expenses.

8 These three components are combined with other expense items such as interest,
9 depreciation, taxes, etc. to build an expected balance sheet, income statement, and cash flow
10 statement for future years.

11 In evaluating the purchased power proposals, Empire adjusted the baseline 1998-2002
12 fuel and purchased power forecast in the model to include the alternative purchased power
13 proposals as dispatched by the ENPRO model. The State Line Expansion options were
14 reflected in the fuel and purchased power forecast and in the capital budget. Capital
15 requirements and AFUDC calculations were based on capital cost estimates supplied by
16 Black & Veatch and cash flow patterns estimated by Empire. Inputs for the purchased power
17 options were based on proposals or on verbal clarifications provided directly to Empire.
18 Based on our review of the outputs from the ENPRO model and our review of the outputs of
19 the CFM model, Black & Veatch found Empire's evaluation of purchased power proposals
20 and State Line Expansion options to be logical, accurate, and unbiased.

21 Q. WHAT WERE THE RESULTS OF THE CFM COMPARISONS?

1 A. The results of the rate relief comparison of the three purchase proposals modeled and three
2 combined cycle State Line Expansion options showed the cumulative rate relief for the FF
3 State Line Expansion Project to have the lowest rate relief requirements.

4 As I have previously discussed, the State Line Expansion configurations considered by
5 Empire to date included the conversion of the existing 501D and 501F turbines to combined
6 cycle, the conversion of the existing 501F turbine to combined cycle and the addition of a
7 new 501F and conversion of the existing and a new 501F to combined cycle. To again be
8 sure that the combined cycle expansion was a decision in the best interest of its customers,
9 Empire also projected the impact on rates of using a new combustion turbine alone to
10 provide Empire's additional capacity needs. As expected, this simple cycle combustion
11 turbine option required significant increases in fuel costs and the highest rate relief
12 requirements of all the other State Line Expansion options and some of the purchased power
13 options.

14 Based on the output provided, I agree with the conclusion that the FF State Line
15 Expansion project should have the least impact on rates to retail customers.

16 Q. MR. BRILL TESTIFIED THAT WRI IS EMPIRE'S 40 % PARTNER IN THE SL
17 PROJECT AND THAT BLACK & VEATCH ASSISTED EMPIRE IN SOLICITING
18 PARTNERS AND EVALUATING PROPOSALS. WHAT WAS BLACK & VEATCH'S
19 ROLE IN IDENTIFICATION OF WRI AS THE BEST AVAILABLE PARTNERSHIP
20 FOR EMPIRE?

21 A. Black & Veatch produced the initial draft of the Request for Proposals for the purchase of
22 capacity and energy from the State Line Expansion project. Black & Veatch worked jointly

1 with Empire to finalize the RFP, to prepare a bidder list and mail the RFP, to receive and
2 answer bidder questions during the bid preparation period, to attend the pre-bid conference
3 and to assist in evaluation proposals. The request solicited both proposals to purchase power
4 from the State Line Expansion project and proposals to purchase equity in the State Line
5 Expansion project.

6 Black & Veatch further assisted further assisted Empire in developing screening curves
7 designed to cull out proposals that would clearly not cover Empire's estimated costs of
8 supplying the offered capacity and energy resulting in Empire customers subsidizing the
9 wholesale sale of capacity and energy from the State Line Project.

10 Q. WHAT WAS THE RESULT OF THE APPLICATION OF THE SCREENING CURVES
11 TO THE PURCHASED POWER PROPOSALS RECEIVED?

12 A. All the purchase power proposals were found to fall below the minimum payment levels
13 required to cover Empire's estimated costs. As a result, all the purchase proposals were
14 rejected and negotiations with three parties offering ownership proposals were pursued.
15 Based on Black & Veatch's involvement in and understanding of the negotiations of
16 ownership proposals, the final bid by WRI offered Empire the highest value lowest risk
17 option.

18 Q. WHY DID EMPIRE HAVE TO COMMIT TO THE STATE LINE EXPANSION SO FAR
19 IN ADVANCE OF ITS NEED FOR CAPACITY?

20 A. At the time of Empire's commitment to the State Line Expansion project, the time from
21 initial order to delivery of F Class combustion turbines was 26 or 27 months. (Current
22 delivery lead times are approximately 40 months.) Empire delayed the decision as long as

1 possible. Only with an expedited construction plan, one in which the hrsgs and steam
2 turbine are installed and tested before the second combustion turbine is delivered, could
3 Empire meet a summer 2001 commercial operation date and order the 501F combustion
4 turbine as late as it did.

5 Q. A LOT OF THINGS HAVE CHANGED SINCE 1998 YET MR. BRILL TESTIFIED
6 THAT THIS IS STILL A GOOD DECISION. IS IT YOUR OPINION THAT THIS IS
7 STILL A GOOD DECISION FOR EMPIRE AND WHY?

8 A. As Mr. Brill stated, the capital costs for the State Line Expansion project have increased
9 largely because of increases in the cost of skilled construction labor. However, increased
10 labor costs have increased the capital costs of all power plants under construction in the US.
11 The initial estimate of labor and contractor furnished material costs at State Line was
12 \$37,000,000. The latest estimate of labor costs of contractor furnished material associated
13 with the State Line Expansion project is \$57,100,100.

14 Q. ARE THERE COST INCREASES GOING ON IN OTHER BLACK & VEATCH
15 PROJECTS?

16 A. Yes, there are. On three other projects estimates have increased from \$26.6M to 36.3M,
17 \$32.3M to \$45.5M, and \$34.1M to \$56.6M respectively for labor and contractor furnished
18 materials. These cost increases are for similarly situated 2 on 1 FF combined cycle projects,
19 one of which is also in the Midwest. Black & Veatch's Estimating Department currently
20 sees no end in site to the shortage of skilled labor. The implication is that the capital costs
21 for all new generating projects are increasing and that the State Line Expansion project may
22 actually be better off because it is far along in the construction cycle.

1 Further, while Empire locked in the price of its 501F combustion turbine by placing an
2 order in September 1998, turbine prices have continued to increase. Black & Veatch's
3 current estimate of F Class combustion turbine costs is \$36 to \$37 million compared to the
4 \$30.5 million paid by Empire.

5 Another factor that has changed since the 1998 analyses is that at present, merchant
6 developers are targeting IRR's of 12 to 14 percent instead of the 20 percent IRR targeted a
7 few years ago. This change serves to slightly reduce the cost of new capacity in an open
8 market context and would be the appropriate criteria for determining the relative
9 profitability of the State Line Expansion project in an open market today. This effect has
10 been offset because banks are requiring larger equity positions in merchant projects today
11 than they required in purchased power type agreements in the past. The third and most
12 important change since the initial evaluations in 1998 is the substantial increase in natural
13 gas prices. In virtually all the Empire build and purchased power options considered to date,
14 the risk of natural gas pricing was placed squarely on Empire. Therefore, changes in gas
15 prices would stand to either enhance or hurt Empire's decision. The selection of the
16 combined cycle option has certainly been enhanced by the increase in gas prices as indicated
17 in Black & Veatch's high gas price sensitivity case. With the nearly doubling of gas prices
18 from those used in the 1998 studies, the efficiency advantage of the combined cycle
19 generators is nearly twice as important as it was in the 1998 studies.

20 Q. SEVERAL NEW GENERATORS HAVE BEEN ANNOUNCED IN THE REGION SINCE
21 1998 AND SOME ARE UNDER CONSTRUCTION. ARE THERE ANY REASONS TO
22 BELIEVE THERE ARE GOOD OPPORTUNITIES AVAILABLE TO EMPIRE IN THESE

1 PROJECTS?

2 A. No one offered capacity out of any of these generators during the solicitations in 1998. In
3 addition, their commercial operation dates are later than that of the State Line Expansion
4 project so they have to be more expensive for the reasons just discussed. Given the low
5 capacity margins in the region, they are also probably fully subscribed.

6 Q. GIVEN YOUR PREVIOUS TESTIMONY, IS IT YOUR OPINION THAT THE
7 CURRENT STATE LINE EXPANSION PROJECT WITH SHARED WRI OWNERSHIP
8 IS THE OPTION THAT OFFERS THE LOWEST COST AND MOST RELIABLE
9 OPTION TO EMPIRE CUSTOMERS OF ALL THE OPTIONS CONSIDERED?

10 A. Given the volatile market conditions and interruptions of previously firm purchased power
11 resources that were occurring at the time Empire made its commitment to the State Line
12 Expansion project, I believe Empire made the best decision for its customers. With
13 continued increases in turbine prices and natural gas prices, I believe that decision may
14 actually be better today than it was at the time of the decision.

15 Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

16 A. Yes it does.

AFFIDAVIT

STATE OF KANSAS

COUNTY OF JOHNSON

On the 25th day of October, 2000, before me appeared Natalie Rolph, to me personally known, who, being by me first duly sworn, states that he is the Manager of Strategic Planning and Market Analysis for the Black & Veatch Energy Services Group and acknowledged that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.


Natalie Rolph

Subscribed and sworn to before me this 25th day of October, 2000.




Deborah A. Fendorf

My commission expires:

March 10, 2001