Exhibit No. _____
Issue: State Line Addition
Witness: Virgil E. Brill
Type of Exhibit: Direct Testimony
Sponsoring Party: Empire District
Case No.:
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Before the Public Service Commission of the State of Missouri

Direct Testimony

of

Virgil E. Brill

_____ Exhibit No. 5
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 VIRGIL E. BRILL
ON BEHALF OF THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Virgil E. Brill. My business address is 602 Joplin Street, Joplin, Missouri.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. The Empire District Electric Company ("Empire" or "Company"), I am Vice President - Energy Supply and a Director of the Company.

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND FOR THE COMMISSION.

A. I was graduated from the University of Missouri at Columbia in 1962 with a Bachelor of Science Degree in Mechanical Engineering. I have since completed course requirements in a thesis program for a Master of Science Degree in Engineering Management from the University of Missouri at Rolla.

Q. WHEN WERE YOU FIRST EMPLOYED BY EMPIRE?

A. In June 1962, immediately following graduation from the University of Missouri at Columbia.

Q. HAS YOUR EMPLOYMENT BEEN CONTINUOUS SINCE THAT TIME?

A. My employment has been continuous with Empire since 1962. I have been an Officer of the Company since 1977 and a Director since 1989. I held the position of Vice President - Finance and Chief Financial Officer from 1983 through 1995. My most recent position is Vice President - Energy Supply that I have held since 1995. Currently, my responsibilities include all of Empire's energy supply, dispatching, and the telecommunications functions.

Q. IN YOUR POSITION AS VICE PRESIDENT - ENERGY SUPPLY, ARE YOU RESPONSIBLE FOR THE NEW STATE LINE COMBINED CYCLE CONSTRUCTION PROJECT?

A. Yes.

Q. HAVE YOU FILED TESTIMONY PREVIOUSLY BEFORE THE COMMISSION?

A. Yes, in various rate proceedings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to generally discuss Empire's decision making process that led to the construction of the new generating plant known as the "State Line Combined Cycle Plant", to describe the project, and to put forward the Company's position as to the in-service criteria that would be proper for the determination of the plant being "used and useful" for service.

I. EMPIRE'S DECISION TO BUILD THE STATE LINE COMBINED CYCLE PLANT

Q. PLEASE DESCRIBE THE VARIABLES THAT CAUSED EMPIRE TO NEED ADDITIONAL CAPACITY.

A. The need for additional capacity was driven by continued load growth in our service area combined with the expiration of purchased power commitments that Empire had made in the early 1990's. The type of resource that ultimately made sense for Empire was driven by our previous decisions to add only simple cycle combustion turbines in 1995 and 1997. These simple cycle additions made the Empire system heavily weighted in peaking type resources. As a direct result, new additions that could economically fill energy needs were crucially important.

Q. HOW MUCH CAPACITY DID EMPIRE PREDICT IT WOULD NEED?

A. Empire's 1997 and 1998 load forecasts indicated that Empire would experience a capacity shortage beginning in 2001 of about 90 Mw relative to Empire's capacity requirement leaving it with a capacity margin of only 5.4%. With continued growth, the shortage would grow to about 135 Mw in 2003 and the capacity margin provided by existing resources would decrease to about 1.7%. Based on these forecasts, it was evident that Empire required additional capacity to serve its customers in 2001 and beyond. Empire commissioned external consultants and in-house personnel to solve this requirement by determining the best economic and reliable option available.

Q. WHEN DID THE ANALYSIS PROCESS BEGIN?

A. The analysis process began in 1997 almost immediately after State Line 2 went commercial. Empire was approached with unsolicited joint development proposals during the second half of 1997 from Pan Energy (now Duke Energy), Houston Industries (now Reliant) and Williams Field Services (now just Williams). All of the parties were interested in expanding the State Line facility and utilizing the existing equipment.

Q. DID EMPIRE DECIDE TO EXPAND THE STATE LINE FACILITY AT THIS TIME?

A. No. Empire's first action was to pursue a firm purchase power contract. To this end, Empire issued an RFP on February 10, 1998. The RFP was sent to about 41 entities. We received only 8 responses. The responses were generally discussion proposals and were contingent upon a variety of conditions. Transmission concerns were also a factor in evaluating the proposals, as limited transmission capacity was becoming more apparent and transmission line loading relief more necessary. Empire screened these proposals on a bus bar and a differential revenue

requirements basis. Empire concluded that none of the proposals were deemed to offer an acceptable, safe, reliable and economic source to meet the Company's requirements. The results of the RFP spurred Empire to retain an expert consultant to assist with analysis and recommendations.

Q. WERE THERE OTHER RFP'S FOR CAPACITY IN THIS GENERAL TIME FRAME?

A. Yes. The Public Service Company of Oklahoma, Central and Southwest (now AEP) on behalf of West Texas Utilities (WTU) and Southwestern Electric Power Company (SWEPCO), Missouri Public Service, and Madison Gas and Electric were also issuing RFP's for similar needs in about the same time frame.

Q. DID EMPIRE DECIDE TO EXPAND THE STATE LINE PLANT AFTER THE RESULTS OF THE FEBRUARY 10, 1998 RFP?

A. No. We determined that we should issue a second RFP to be certain that all viable opportunities were uncovered. Once again, Empire issued an RFP on June 16, 1998. The RFP was sent to about 41 entities. We received only 7 responses. Again, the responses were generally discussion proposals and were contingent upon a variety of conditions.

Q. PLEASE GIVE AN EXAMPLE OF A CONTINGENCY.

A. The Southern Company Energy Marketing (SCEM) proposal looked very attractive in our early analysis. Consequently, we telephoned SCEM to determine what types of terms and conditions would need to be included in a contract. SCEM informed us that they were still negotiating with a steam host, and really didn't have a firm offer to make. Instead, they verbally modified their original proposal by raising the proposed heat rate basis. A second proposal that looked promising was the Morgan Stanley proposal. Upon contacting Morgan

Stanley we discovered that the proposal was based on some used FT-8 combustion turbines that would be placed at a yet to be named site.

Q. WHAT WERE THE MARKET CONDITIONS HEADING INTO THE SUMMER OF 1998?

A. The Southwest Power Pool (SPP) was projected to be in a position where reliability might be threatened. According to the **NERC – Reliability Assessment 1997-2006**, "Capacity margins within the Southwest Power Pool, reflecting only planned resource additions, appear to be insufficient for the next several years for several reasons. Some members are assuming that the market will provide needed resources. Capacity margins reflecting only committed (not under construction) additions are of concern because reserve deficiencies could arise in the very near future if only currently committed resource additions were made during this time. In addition, the capacity margins may be somewhat optimistic because projected growth is considerably lower than historical demand growth." Another quote from the same publication says "While economic theory states that the market place will meet demands, system operators had difficulty finding access to resources, regardless of price, in the past two years. This is occurring more frequently, all while the validity of current capacity margin requirements are raised." A memorandum to the SPP Board of Directors from the SPP Reliability Assessment Working Group (RAWG) dated May 8, 1998, stated "URGENT SPP's committed capacity margins are expected to be 11.5% in 1998, 11.0% in 1999, and 8.8% in the year 2000". The memorandum went on to say that "the SPP Board...should develop a plan for the quick investigation and remedy of...the inadequate committed capacity margins expected for the next couple of years". Another excerpt from the RAWG memorandum states "The SPP is caught up in the transition to a fully functioning generation market. The above-described

capacity margins result from the fact the SPP members are not building new capacity (because of the risk of cost recovery) and depending on the generation market to provide new capacity. Unless that market provides the capacity very soon, then there is a very significant risk that capacity margins will be inadequate. The SPP needs to struggle with this dilemma if it expects to keep the lights on." This type of NERC reliability assessment put Empire and other utilities in SPP on notice that a decision not to build was a decision in and of itself.

Q. DID EMPIRE EXPERIENCE EFFECTS OF THE CAPACITY DEFICIT DURING 1998?

A. Yes. We experienced several events that we had not expected. First, our Associated Electric Cooperative (AEC) contract purchase was curtailed on several occasions. Second, transmission line loading relief events (TLR's) began having an effect on the transactions in which Empire could participate and curtailed delivery of our contract purchase with Southwestern Public Service (SPS). Third, the wholesale market began exhibiting extreme volatility. Empire paid as much as 3,840 $/MWh for energy during June 1998.

Q. DID EMPIRE BEGIN TO SERIOUSLY CONSIDER THE BUILD OPTION FOR ITS NEEDS AFTER THE JUNE 1998 EVENTS?

A. Empire had been considering a combined cycle addition since about March of 1998 when Black & Veatch was retained. Black & Veatch had analyzed a block load spreadsheet model of the SPP that showed that an expansion at the State Line facility made economic sense in the wholesale market. Given the effects of the curtailments of contract purchases, TLR's, and price volatility, Empire began to seriously consider alternatives to purchasing power. At this point, Black and Veatch was asked to provide for a more complete analysis of the wholesale market. Details of the Black & Veatch analysis are provided in the Direct Testimony of Empire

witness Natalie Rolph.

Q. WHAT WERE THE HIGH LEVEL CONCLUSIONS OF THE BLACK & VEATCH STUDIES?

A. Black & Veatch developed a more detailed model of the SPP utilizing the PROSYM/EMSS simulation tool. The results of the more detailed analysis were consistent with the earlier analysis. Combined cycle made sense in the context of a deregulated wholesale market place.

Q. DID EMPIRE PERFORM ADDITIONAL ANALYSIS IN SUPPORT OF THIS DECISION?

A. Empire performed analysis of the options at every step from receipt of the February 10, 1998 proposals to the decision to proceed with the combined cycle in September 1998. The decision was a large one for Empire and it was not taken lightly. Initially, Empire screened the 1998 proposals utilizing both a bus-bar screening method and a differential revenue requirements method. Our goal was to identify the least cost option for Empire's customers. In response to the June 16, 1998 RFP, Empire also screened on a bus-bar basis. However, we followed this bus-bar comparison up with an analysis utilizing our Corporate Financial Model (CFM), which we had been utilizing since the mid-1980's. The CFM model was combined with our ENPRO production cost model so that we could precisely measure the cost impacts of each proposal. This analysis allowed the officers of Empire to analyze key variables including rate impacts, interest coverage ratios, and financing requirements. The results of the regulated analysis showed that building a 2X1 F class combined cycle with a partner was an attractive alternative, assuming that we could find a partner to utilize a portion of the output.

Q. HOW DID EMPIRE GO ABOUT SOLICITING A PARTNER?

A. In the fall of 1998, Empire, with the assistance of Black & Veatch, sent out an RFP to solicit

partners to be equity owners in the project or to buy purchased power from the unit.

Q. WHAT WAS THE RESULT OF THAT RFP?

A. It was determined that the Western Resources proposal for a 40% equity position in the plant was the best offer. One of the key determinants in selecting Western Resources was that they shared the risk of constructing the plant and fully participated in the cost as the plant was built.

II. THE STATE LINE COMBINED CYCLE PLANT

Q. WHAT IS THE CURRENT STATUS OF THE PROJECT?

A. The project is about 60% complete as measured by man-hours completed. As compared to the estimate prepared for the plant, we are currently behind our anticipated schedule.

Q. HOW IS THE COST OF THE PROJECT COMPARED TO BUDGET?

A. Project costs have increased. Purchase cost of equipment was actually below budget. On the other hand, labor costs have exceeded budget substantially.

Q. PLEASE DISCUSS THE REASON FOR THE INCREASED LABOR COSTS.

A. The increased cost and the delays in the project are both attributable to a critical national shortage of skilled craft labor for this type of project. The project has yet to fill its call for pipe fitters, which are vital to the project. Our goal continues to be to meet the critical in service date of June 1, 2001. Accomplishing this goal and attracting the needed labor is putting additional pressure on labor cost as we compete with other projects for this limited resource.

Q. HOW DO YOU BELIEVE THIS WILL IMPACT THE PLANT AT COMPLETION?

A. As discussed above, the plant will have a nominal rating of 500 Mw and is expected to be on

schedule at completion. The anticipated value of the completed plant will be about $241,000,000 including the existing unit, which was transferred to the project earlier. Empire will own 60% of the plant or about 300 MW and have an investment of about $145 million. The cost of expanding the plant, not including the existing unit, is expected to be about $204 million and Empire will fund about $122.4 million of that requirement.

Q. HOW DO THESE COSTS COMPARE WITH YOUR ORIGINAL ESTIMATES FOR THE PROJECT?

A. The original estimate for expansion cost of the project, which was produced by Black & Veatch after the decision to build was made amounted to about $173 million. That expansion cost is now expected to be about $204 million, which is primarily the result of tight labor markets.

Q. HAVE EFFORTS BEEN MADE TO CONTAIN COST ON THE PROJECT?

A. Yes. We are working with the contractors to improve productivity and attendance and to locate additional labor. Because the contractors are not fully staffed, particularly in the pipe fitter craft, the schedule slipped. Additional costs will be necessary to locate and attract skilled labor to meet the needs of the project and maintain the schedule. Those costs are assumed in the amounts described above. The extra costs in labor will be offset by avoided high replacement costs for power if the unit is available as scheduled and will insure our customers are provided their required service at that time.

Q. IS THE PROJECT STILL THE PROPER DECISION IN YOUR JUDGMENT?

A. Yes. It is now a good or better decision than it was when we first decided to build the plant. We were able to lock in a turbine price, which has escalated to a much higher cost today.

Labor is a national problem and is impacting all projects, including some of those we were considering as alternative options at that time and it is worsening as time passes. Our partner in this project, Western Resources, Inc is still pleased with the project and the results, even though the costs have increased because it is still the best option for both our needs.

III. IN-SERVICE CRITERIA

Q. HAVE YOU DISCUSSED PROPOSED IN-SERVICE CRITERIA WITH THE STAFF?

A. Yes. We met with the staff on two occasions to discuss in-service criteria for the plant.

Q. HAVE YOU REACHED AGREEMENT WITH THE STAFF ON THE CRITERIA THAT WOULD BE USED FOR THIS PLANT?

A. No. We have had very good discussions and the items are still in discussion, but we have not come to an agreement as of the time of the writing of this testimony.

Q. DO YOU HAVE CRITERIA THAT YOU ARE PROPOSING TO BE USED?

A. Yes. Schedule VEB-1 contains the criteria that Empire considers to be appropriate to determine if the unit is "used and useful" for purposes of this rate case.

Q. ARE YOU RECOMMENDING SCHEDULE VEB-1 AS THE CRITERIA TO BE USED IN THIS CASE?

A. Yes.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?

A. Yes.

AFFIDAVIT

STATE OF MISSOURI)
) ss
COUNTY OF JASPER)

On the 27th day of October, 2000, before me appeared Virgil E. Brill, to me personally known, who, being by me first duly sworn, states that he is the Vice President - Energy Supply of The Empire District Electric Company 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.

Virgil E. Brill

Subscribed and sworn to before me this 27th day of October, 2000.

Donna M. Longan, Notary Public

My commission expires: January 24, 2004.

DONNA M LONGAN
Notary Public - Notary Seal
STATE OF MISSOURI
JASPER COUNTY
MY COMMISSION EXP. JAN. 24,2004

EMPIRE PROPOSED STAFF IN-SERVICE TEST CRITERIA

State Line Combined Cycle Unit

1. Major construction work, and pre-operational tests have been successfully completed such that The Combined Cycle Unit may be operated and successfully complete items 2 through 7.
2. The Combined Cycle Unit will demonstrate its ability to operate.
3. The Combined Cycle Unit will demonstrate its ability to startup from turning gear operation to nominal capacity on natural gas fuel when prompted by the operator.
4. The Combined Cycle Unit will demonstrate its ability to shut down from load resulting in turning gear operation when prompted by the operator.
5. The Combined Cycle Unit will demonstrate its ability to operate at a minimum load for one hour on natural gas fuel.
6. The Combined Cycle Unit will demonstrate its ability to operate at or above 95% of nominal capacity for four continuous hours on natural gas fuel.
7. Unit will demonstrate its ability to produce an amount of energy (mwhr) within a 168 hour period which would result in a capacity factor of 48.3% during the period when calculated by the formula shown in note 3. (See note 4)
8. Sufficient transmission facilities shall exist to carry the total design net electrical capacity of the combined cycle unit into the system.

NOTES:

1. If the Unit cannot demonstrate its ability to meet any of the criteria for which failure to meet the proposed criteria is judged to be immaterial to the overall in-

service status of the Unit, the Staff for good cause may waive that particular criteria. In making a decision to wave any particular criteria, the Staff may review the completed testing documentation, and any additional unit operating data, to determine if the Unit should be considered in-service, without further testing.

2. It is the Staff's intention, when possible, to witness the Unit's ability to meet the criteria items. Regardless, Empire will provide to Staff all necessary documentation, including operating data logs, clearly demonstrating the capability of the Unit to meet each of the criteria items.
3. Capacity Factor = (Mwhs generated in a 168 hour period) / ((nominal capacity) x (168 hours)).
4. The "nominal capacity" of the combined cycle unit shall be assumed to be 500 megawatts, at ISO conditions (i.e. 59 degrees F and 60% relative humidity. The term "nominal heat rate" shall be defined as 7200 Btu/kWh HHV when operating at nominal capacity. Manufacturer's supplied ambient correction factors will be used when operation occurs at other than ISO conditions.
5. For the purposes of "in-service criteria" calculations, Empire's ownership portion of the combined cycle unit shall be used where appropriate. This condition may result from the operating requirements of joint owner.