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District Electric Company
Docket No.: 19-EPDE-223-RTS
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Before the Kansas Corporation Commission

Direct Testimony

Of

Timothy N. Wilson

December 2018



DIRECT TESTIMONY
OF
TIMOTHY N. WILSON
ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
KANSAS CORPORATION COMMISSION
DOCKET NO. 19-EPDE-___-RTS

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1 **I. INTRODUCTION**

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

3 A. My name is Timothy N. Wilson and my business address is 602 S. Joplin Avenue,
4 Joplin, Missouri, 64801.

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

6 A. I am employed by Liberty Utilities Service Corp. as the Central Region Director
7 of Electric Operations – Services. My primary responsibilities include managing
8 large capital projects in energy supply and operations for The Empire District
9 Electric Company (“Empire” or “Company”), ensuring compliance for Empire’s
10 generation fleet and integrating Empire’s projects in the Company’s regulatory
11 strategy.

12 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?**

13 A. I am testifying on behalf of Empire.

14 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL**
15 **BACKGROUND.**

16 A. I graduated from Pittsburg State University in 2000, with a Bachelor of Science in
17 Education, Mathematics and from Missouri State University in 2010 with a
18 Master of Science in Project Management. In October of 1999, I was hired by

1 Empire as an Associate Planning Analyst in the Strategic Planning Department. I
2 have held various other positions within the Company including Planning
3 Analyst, Energy Trader, Energy Supply Planning and Operations Analyst, and
4 Manager of Renewable and Strategic Initiatives. In 2010, I was named Director
5 of Environmental, Projects and Integration Management and held that position
6 until I moved into my current role.

7 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN A PROCEEDING BEFORE**
8 **THE KANSAS CORPORATION COMMISSION (“KCC” or**
9 **“COMMISSION”) OR BEFORE ANY OTHER UTILITY REGULATORY**
10 **AGENCY?**

11 A. Yes. I have testified on behalf of Empire before this Commission and other
12 regulatory commissions.

13 **II. PURPOSE OF TESTIMONY**

14 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

15 A. I will address three specific issues in my testimony. First, I will explain the
16 Company’s decision to construct an Air Quality Control System (“AQCS”) at its
17 Asbury facility in 2011. I will discuss alternatives to the Asbury AQCS project
18 that were investigated, how the Asbury AQCS was compared to those alternatives
19 and how the ultimate decision to construct the Asbury AQCS was made and
20 communicated to regulators. Second, I will quantify and describe the investment
21 Empire has made in the Riverton 12 Combined Cycle natural gas-fired (“Riverton
22 12 NGCC”) generating unit as well as the process to select the contractor
23 responsible for engineering, procurement, and construction of the unit.

1 **III. ASBURY'S AQCS INVESTMENTS**

2 **Q. PLEASE DESCRIBE THE ASBURY POWER PLANT.**

3 A. The Asbury Power Plant ("Asbury") is a 195 MW coal-fired power plant in
4 northern Jasper County, Missouri, near the Missouri-Kansas state line. Asbury
5 commenced commercial operations on July 1, 1970. The Babcock & Wilcox
6 cyclone boiler was designed to be fueled by bituminous coal from the Pittsburg &
7 Midway mine, which was adjacent to Asbury. Superheated steam from the boiler
8 drove a Westinghouse turbine generator set to generate electrical energy.

9 **Q. PLEASE DESCRIBE THE HISTORY OF EMISSIONS REDUCTIONS AT**
10 **ASBURY.**

11 A. Early pollution controls consisted of an electrostatic precipitator to capture
12 particulate emissions. In the early 1990s, the Environmental Protection Agency
13 ("EPA") created the Acid Rain Program, which required Empire to reduce sulfur
14 dioxide emissions and led to a fuel switch from the local bituminous coal to lower
15 sulfur sub-bituminous coal from the Powder River Basin of Wyoming. This
16 required changes to the fuel handling system to accommodate the higher volume
17 of this less energy dense coal and most notably, the construction of a rotary car
18 dumper to unload the trainloads of coal. In 2008, in anticipation of nitrogen
19 oxides emissions reductions to be required by the Clean Air Interstate Rule,
20 Empire installed a selective catalytic reduction ("SCR") system at Asbury. The
21 SCR injects anhydrous ammonia into the flue gas stream, where in the presence of
22 a catalyst, it reacts with nitrogen oxides to virtually eliminate them.

1 **Q. PLEASE DESCRIBE THE ENVIRONMENTAL REGULATIONS THAT**
2 **ULTIMATELY LED TO THE CONSTRUCTION OF THE ASBURY**
3 **AQCS.**

4 A. The Federal Clean Air Act and state laws regulate air emissions from stationary
5 sources such as electric power plants through permitting and/or emission control
6 requirements. These requirements include maximum emission limits for sulfur
7 dioxide (“SO₂”), particulate matter, nitrogen oxides (“NO_x”), carbon monoxide
8 (“CO”) and hazardous air pollutants, including mercury. In order to comply with
9 current and pending environmental regulations, Empire needed to implement a
10 compliance plan at Asbury if the unit was to continue in service. The regulations
11 primarily driving Empire’s compliance plan are the Mercury and Air Toxics
12 Standards (“MATS”) and the Clean Air Interstate Rule (“CAIR”) and its
13 subsequent replacement rule.

14 **Q. WHAT ARE THE ENVIRONMENTAL AND PUBLIC HEALTH**
15 **BENEFITS OF THE CONSTRUCTION OF THE ASBURY AQCS?**

16 A. The Asbury AQCS is capable of achieving high levels of reduction efficiency for
17 multiple pollutants. Emissions of sulfur dioxide and mercury can be reduced by
18 up to 92%, while particulate matter emissions can be reduced by up to 99.5%. As
19 a co-benefit, the Asbury AQCS will also significantly reduce emissions of
20 hydrochloric acid, hydrofluoric acid and sulfuric acid mist. The reduction in
21 emissions at Asbury will benefit not only those who live in the vicinity of the
22 plant, but, taken in combination with the emission control efforts by other utilities
23 in the region, by everyone throughout the region.

1 **Q. WERE ALTERNATIVES TO CONSTRUCTION OF THE ASBURY AQCS**
2 **INVESTIGATED?**

3 A. Yes. As part of its 2010 Integrated Resource Plan (“IRP”)—a twenty year
4 planning study—Empire developed seventeen different resource cases for
5 analysis. Among the alternative resource cases analyzed, the study considered
6 cases that included the construction of the Asbury AQCS or the retirement of
7 Asbury in 2015. Capacity expansion modeling was done for all cases. New
8 conventional and renewable resources, as well as demand-side management
9 programs, were considered available for the capacity expansion required to meet
10 Empire’s projected future loads. The resources evaluated to replace or
11 supplement the energy produced by Asbury included supercritical coal, simple
12 cycle combustion turbine, combined cycle, nuclear power purchase agreement,
13 distributed generation, integrated gasification combined cycle, wind, biomass and
14 solar thermal.

15 **Q. HOW WAS THE ASBURY AQCS SELECTED OVER THE**
16 **ALTERNATIVES?**

17 A. Each of the seventeen cases analyzed in the 2010 IRP produced an optimized set
18 of supply-side resources resulting in the lowest present value of revenue
19 requirements (“PVRR”) for the scenario represented by that case. Each plan was
20 subjected to stochastic analysis and financial modeling over the planning horizon.
21 Each plan was analyzed at all levels of four critical uncertain factors -
22 environmental costs, market and fuel prices, load forecast and capital and

1 transmission costs and interest rates. This analysis generated seventy-two
2 endpoints for each plan, which make up the risk profiles for the plans.

3 The risk profiles of the cases that utilized the base case assumptions were
4 compared, and the plan with the lowest risk with respect to PVRR was selected by
5 Empire as its Preferred Plan. This Preferred Plan included the installation of the
6 Asbury AQCS in the 2015 timeframe.

7 **Q. WERE ANY OTHER FACTORS CONSIDERED DURING THE**
8 **DECISION TO RETROFIT VERSUS THE RETIREMENT OF THE**
9 **ASBURY UNIT?**

10 A. Yes. As previously mentioned, the economic analyses conducted before, during
11 and after the preparation of the 2010 IRP, found that the Asbury AQCS project
12 was the low cost option for Empire. Additionally, this plan kept approximately
13 189 MW of Empire owned coal-fired capacity in Empire's generation mix, which
14 helps with fuel diversity and fuel price volatility. With the continued operation of
15 Asbury, Empire's owned generation mix is about 33% coal and 63% natural gas.

16 **Q. HOW WAS THE DECISION TO CONSTRUCT THE ASBURY AQCS**
17 **MADE?**

18 A. In March 2010, Empire awarded Black & Veatch an engineering assignment to
19 gather information about Empire's Asbury unit and perform studies to select the
20 preferred technology for reducing emissions – specifically sulfur dioxide,
21 particulate matter and mercury – at the plant. Black & Veatch prepared four
22 individual reports as a result of this assignment:

- 1 • Balanced Draft Conversion Study, which examined the adequacy of the
2 existing draft system, including the forced draft fans and recommended
3 the boiler be converted from forced draft to balanced draft operation.
- 4 • Air Quality Control Technology Description Study, which identified spray
5 dry absorber and circulating dry scrubber (“CDS”) as flue gas
6 desulfurization technologies that should be studied further.
- 7 • Study of the Two Alternative Suites of Air Emission Control Technology
8 Equipment, the further study recommended by the Air Quality Control
9 Technology Description Study, which identified CDS as the preferred
10 technology for flue gas desulfurization at the Asbury unit.
- 11 • Chimney Analysis, which examined the adequacy of the existing chimney
12 at the Asbury unit and recommended the construction of a new chimney as
13 part of the project.

14 These four reports – along with site arrangement drawings, process flow
15 diagrams, cost estimates and schedules – comprise the Asbury Environmental
16 Retrofit Project Definition.

17 The cost estimates in the Asbury Environmental Retrofit Project
18 Definition were incorporated with the estimate Empire used in the 2010 IRP, and
19 used in affirming the decision to move forward with developing and issuing a
20 request for proposals in mid-2011. Five Asbury AQCS construction proposals
21 were received in September 2011, and all but one of the proposals compared
22 favorably to previous estimates of the project cost, further affirming the decision
23 to move forward with the project.

1 **Q. HOW WERE THE CONSTRUCTION PROPOSALS EVALUATED?**

2 A. A matrix was developed for the preliminary evaluation of the proposals. The
3 proposals were evaluated on the following criteria: cost, including construction
4 and operation and maintenance costs; schedule; performance guarantees;
5 commercial terms and conditions; contractor safety record and project experience.
6 Segal, Empire's owner's engineer for the project, aided in the technical evaluation
7 of the proposals without sharing in any pricing or other commercial information.
8 Following preliminary evaluations of the proposals, two bidders were selected to
9 come to Empire's offices to present their experience and their plan to successfully
10 complete the Asbury Environmental Retrofit. Empire's project team
11 recommended to Empire's Board of Directors Strategic Project Committee that a
12 budget be approved to allow for contract negotiations and the completion of the
13 Asbury AQCS. The Board of Directors approved a resolution based on the
14 project team's recommendation at its regular meeting in October 2011.

15 **Q. PLEASE DESCRIBE THE CONSTRUCTION PROGRESS OF THE AQCS.**

16 A. Work on the site began in February 2012, with actual construction activities
17 getting underway in May of that year. Foundations and underground utilities
18 were the first activities to be completed. Construction of the new chimney was
19 also scheduled early in the sequence due to the large personnel exclusion zone
20 that comes with overhead work. Structural steel deliveries and erection began in
21 early 2013 and were completed in late 2013. Construction of the scrubber and
22 baghouse began in May 2013 and finished in the second quarter of that year.
23 Commissioning of Asbury AQCS systems began in January 2014, and the Asbury

1 unit came offline for tie-in of the AQCS on September 11, 2014. Asbury returned
2 to service on November 5, 2014, and initial scrubber tuning began on November
3 8, 2014. In-service testing began on December 7, 2014, and was completed on
4 December 13th. Empire declared the Asbury AQCS in-service on December 15,
5 2014, upon validation of the test results. All performance testing was completed
6 on February 5, 2015.

7 **Q. HOW DID THE FINAL COSTS OF THE ASBURY AQCS PROJECT**
8 **COMPARE TO THE ESTIMATES USED IN THE 2010 IRP?**

9 A. The final cost of this project through January 2017 was \$112,109,024 excluding
10 allowance for funds used during construction (AFUDC) and \$124,555,675
11 including AFUDC, which compares to the estimate in the IRP of \$112-130
12 million excluding AFUDC.

13 **Q. HAVE THE ASBURY AQCS PROJECT COSTS BEEN REVIEWED BY**
14 **ANY OF EMPIRE'S OTHER REGULATORY AGENCIES?**

15 A. Yes. On June 24, 2015, in Missouri Docket ER-2014-0351, the Missouri Public
16 Service Commission issued an order finding that the AQCS system at Asbury was
17 fully operational and used for service. No AQCS costs were disallowed by the
18 MPSC and no adjustments to the Missouri jurisdictional portion of the AQCS
19 investments were recommended by the MPSC Staff or other intervenors.

20 **Q. HAVE THERE BEEN ANY ADDITIONAL PROJECTS COMPLETED AT**
21 **ASBURY SINCE 2011?**

22 A. In July 2012, Empire entered into a contract with Siemens to perform the Asbury
23 turbine retrofit project. This project takes advantage of improvements made over

1 the years by the turbine’s original manufacturer to improve turbine efficiency and
2 offset capacity that will be consumed by the air quality control system (AQCS).

3 **IV. RIVERTON 12 NGCC INVESTMENTS**

4 **Q. PLEASE BRIEFLY EXPLAIN THE RIVERTON 12 NGCC ADDITION.**

5 A. The Riverton 12 NGCC project involved converting the existing Riverton Unit 12
6 simple cycle gas turbine, which went into service in 2007, to a combined cycle
7 gas turbine. The conversion included the installation of a heat recovery steam
8 generator, steam turbine generator, auxiliary boiler, cooling tower, and other
9 balance of plant equipment. The Riverton 12 NGCC will be the most efficient
10 generator in Empire’s fleet and was identified in Empire’s 2013 IRP, filed with
11 the Missouri Public Service Commission (“MPSC”) in Docket No. EO-2013-
12 0547, as a least cost option to comply with environmental regulations including
13 the Cross State Air Pollution Rule (“CSAPR”).

14 **Q. PLEASE DESCRIBE THE “PREFERRED PLAN” ASSOCIATED WITH**
15 **MISSOURI IRP RULES.**

16 A. The Missouri Electric Utility Resource Planning rules “require the utility to select
17 a preferred resource plan, develop an implementation plan, and officially adopt a
18 resource acquisition strategy.” In addition, among other conditions, “in the
19 judgment of the utility decision-makers, the preferred plan, in conjunction with
20 the deployment of emergency demand response measures and access to short-term
21 and emergency power supplies, [must have] sufficient resources to serve load
22 forecasted under extreme weather conditions pursuant to 4 CSR 240-22.030(8)(B)
23 for the implementation period.” Also, among the fundamental objectives of the

1 resource planning process included in the Missouri IRP rules is that a utility shall
2 “[u]se minimization of the present worth of long-run utility costs as the primary
3 selection criterion in choosing the preferred resource plan, subject to the
4 constraints in” 4 CSR 240-22.010(1)(C).

5 **Q. WAS THE RIVERTON 12 NGCC CONVERSION PROJECT SELECTED**
6 **AS PART OF THE PREFERRED PLAN IN MPSC DOCKET EO-2013-**
7 **0547?**

8 A. Yes. The preferred plan, which included the Riverton 12 NGCC conversion
9 project, was selected among 18 alternative resource plans developed by Empire in
10 MPSC Docket EO-2013-0547.

11 **Q. PLEASE BRIEFLY EXPLAIN THE REQUEST FOR PROPOSAL (“RFP”)**
12 **PROCESS FOR THE ENGINEERING AND CONSTRUCTION OF**
13 **RIVERTON 12 COMBINED CYCLE.**

14 A. Black and Veatch, an engineering firm based in Kansas City, Kansas was
15 contracted by Empire to serve as Owners Engineer in the development of the RFP
16 for the Riverton 12 NGCC Engineer, Procure, Construct (“EPC”) Contract. The
17 EPC Contract RFP included Commercial and Technical Sections for the
18 construction of Riverton 12 NGCC. Also included in the EPC contract were
19 Commissioning activities. Work began on the RFP specifications in September
20 2012 and was completed in December 2012. The RFP was sent out on January 3,
21 2013, to six different firms: Burns & McDonnell, SEGA Engineering, Kiewit
22 Construction, Enerfab, Alberici Constructors, Sargent & Lundy, and Fluor. Bids

1 were due on April 9, 2013. A Pre-bid meeting was held on January 16, 2013, at
2 the Riverton site.

3 **Q. WERE ALL ASPECTS OF THE RIVERTON 12 NGCC INCLUDED IN**
4 **THE EPC CONTRACT RFP?**

5 A. The EPC contract did not include Empire labor & overheads, professional
6 services, permitting, fuel costs net of market revenue, and site preparation.

7 **Q. WHAT WERE THE RESULTS OF THE RFP FOR THE EPC**
8 **CONTRACT?**

9 A. Proposals were received from four bidders: Burns & McDonnell, Enerfab, Segal,
10 and Riverton Partners – a joint venture of Alberici Constructors and Sargent &
11 Lundy. Proposals were reviewed for technical acceptability and completeness by
12 Empire and Black & Veatch. Commercial Terms and Conditions were reviewed
13 by the Empire Team. The proposals were evaluated on the following criteria:
14 cost, schedule; performance guarantees; commercial terms and conditions;
15 contractor safety record and project experience. Black & Veatch, Empire's
16 owner's engineer for the project, aided in the technical evaluation of the proposals
17 without sharing in any pricing or other commercial information. Burns &
18 McDonnell was ultimately selected as the preferred EPC contractor and the EPC
19 contract was agreed to by both parties on July 9, 2013.

20 **Q. PLEASE BRIEFLY EXPLAIN THE RIVERTON 12 NGCC**
21 **CONSTRUCTION AND PROJECT MANAGEMENT PROCESS.**

22 A. Burns & McDonnell performed all Engineering, Procurement, and Construction
23 aspects of Riverton 12 NGCC. All engineering documents including design,

1 layout, construction, and equipment supplier information was reviewed by the
2 Empire Riverton 12 Project Team and Black & Veatch for technical acceptability.
3 Any questions regarding such documents were submitted to Burns & McDonnell
4 for clarification. Weekly telephone conference calls were held between Burns &
5 McDonnell, the Empire Riverton 12 Project Team and Black & Veatch
6 throughout the project. In addition, monthly progress meetings were held either at
7 Burns and McDonnell in Kansas City or at the Riverton 12 site. Burns &
8 McDonnell provided construction management services while subcontracting
9 major aspects of the project. Daily on site construction meetings were held each
10 morning with on-site contractors to discuss daily activities and issues. Weekly
11 construction and schedule meetings were held with each on-site contractor
12 separately to discuss construction progress and schedule. The Empire team
13 attended all daily and weekly on-site meetings. The Empire team was in the field
14 directly observing and witnessing construction and commissioning activities.
15 Where appropriate, the Empire team was direct participants in the construction
16 and commissioning process. Weekly construction progress meetings were held
17 by the entire Empire Riverton 12 Project Team.

18 **Q. WHAT REPORTS WERE GENERATED AND SUBMITTED DURING**
19 **THE CONSTRUCTION PROCESS?**

20 A. Burns & McDonnell submitted monthly reports describing engineering,
21 procurement, and construction efforts. Included in this report were engineering
22 and construction progress reports discussing completed activities and upcoming
23 activities. Construction issues were also discussed as well as schedule impacts.

1 The Empire Riverton 12 Project Team also generated a monthly report discussing
2 construction progress, project financial information, and any project issues.

3 **Q. HOW DID THE FINAL COSTS OF THE RIVERTON 12 NGCC PROJECT**
4 **COMPARE TO THE COST ESTIMATE USED IN THE 2013 IRP?**

5 A. The final cost for this project through May 2017 was \$168,065,246 excluding
6 AFUDC and \$182,031,998 including AFUDC, which compares to the IRP
7 estimate of \$165-\$175 million excluding AFUDC.

8 **Q. HAVE THE RIVERTON 12 NGCC COSTS BEEN REVIEWED BY ANY**
9 **OF EMPIRE'S OTHER REGULATORY AGENCIES?**

10 A. Yes. On August 10, 2016, in Missouri Docket ER-2016-0023, the Missouri
11 Public Service Commission issued an order approving a settlement agreement that
12 determined that Riverton 12 was fully operational and used for service. No
13 Riverton 12 costs were disallowed by the MPSC and no adjustments to the
14 Missouri jurisdictional portion of the Riverton 12 investments were recommended
15 by the MPSC Staff or other intervenors.

1 V. **PLANNED FUTURE GENERATION PROJECTS-CAPITAL COST**
2 **RECOVERY RIDER**

3 Q. **DOES THE COMPANY HAVE ANY PLANNED FUTURE GENERATION**
4 **CAPITAL INVESTMENTS?**

5 A. Yes. The Company plans for the next five years and engages in a prioritization
6 process to determine what capital investments will be made. In addition, Empire
7 prepares and files a detailed IRP every three years in Missouri, with annual
8 updates. An executive summary of those Missouri IRP filings are provided to the
9 KCC Staff since Kansas does not have a formal IRP process. The IRP provides
10 detailed analysis and models which provide further support for the Company's
11 capital investment projects. Empire's 2019 triennial IRP, which will be
12 completed in April 2019, will show Empire anticipates the need to invest over
13 \$212 million over the next 6 years in its existing generation fleet.

14 Q. **DO YOU HAVE A BREAKDOWN BY YEAR OF THE CAPITAL**
15 **INVESTMENT EMPIRE EXPECTS TO MAKE OVER THE NEXT FIVE**
16 **YEAR PERIOD WITH RESPECT TO ITS EXISTING GENERATION**
17 **FLEET?**

18 A. Yes. The capital investments related to environmental compliance projects and
19 various plant additions relating to our existing generation fleet are as follows:

- 20 (1) 2019: \$35 million;
- 21 (2) 2020: \$68 million;
- 22 (3) 2021: \$48 million;
- 23 (4) 2022: \$21 million;

1 (5) 2023: \$18 million; and

2 (6) 2024: \$22 million.

3 Also included with this testimony is the Company's six-year Capital Budget for
4 our generation plants that includes each project name categorized by plant and
5 year. See Confidential Direct Exhibit TNW-1.

6 **Q. HOW DOES THE COMPANY PROPOSE TO RECOVER ITS PLANNED**
7 **FUTURE INVESTMENTS IN ITS EXISTING GENERATION FLEET?**

8 A. As stated in Mr. Mertens Direct Testimony and supported by Company Witnesses
9 Bob Hevert and Timothy Lyons, the Company proposes to establish a rider that
10 will allow Empire to begin recovering the cost of these investments, along with
11 the capital costs relating to Empire's improvements to its distribution system, on
12 an interim basis and subject to refund from the date those investments are placed
13 in service until Empire's next rate case. The proposed rider is similar to how
14 Empire has been allowed to recover its investment in the Asbury and Riverton
15 plant additions that I discussed earlier in my testimony.

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

17 A. Yes, it does.

