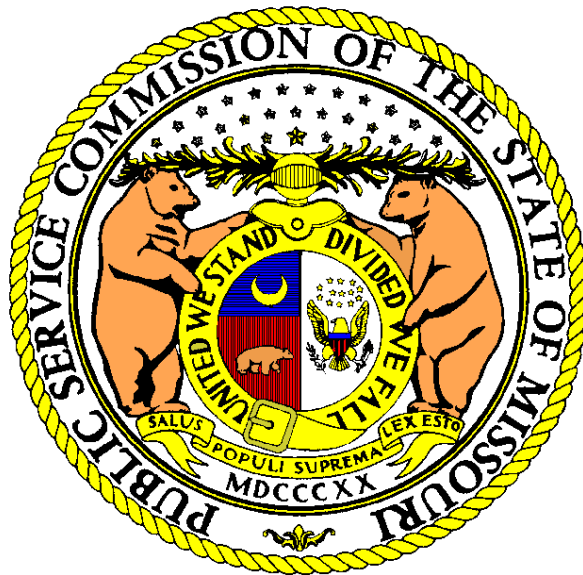


MISSOURI PUBLIC SERVICE COMMISSION

STAFF

REBUTTAL REPORT



CASE NO. EA-2019-0021

*Jefferson City, Missouri
August 20, 2018*

**** Denotes Confidential Information ****

***** Denotes Highly Confidential Information *****

**TABLE OF CONTENTS OF
STAFF REBUTTAL REPORT
CASE NO. EA-2019-0021**

I.	Executive Summary	1
II.	Application Requirements	2
III.	Five Tartan Criteria.....	6
1.	Whether there is a need for the facilities and service	6
2.	Whether the applicant is qualified to own, operate, control and manage the facilities and provide the service.....	8
3.	Whether the applicant has the financial ability for the undertaking	10
4.	Whether the proposal is economically feasible	11
5.	Public Interest	21
IV.	In-Service Criteria.....	25
	Appendix 1 - Staff Credentials	25

STAFF REBUTTAL REPORT

CASE NO. EA-2019-0021

I. Executive Summary

On October 22, 2018, Ameren Missouri filed its Application seeking a CCN authorizing it to construct, install, own, operate, maintain, and otherwise control and manage a wind generation facility to be constructed in Atchison County, Missouri, pursuant to a build transfer agreement (BTA) with the special-purpose entity, Brickyard Hills Project, LLC (Brickyard Hills), which is a wholly owned subsidiary of EDF-RE US Development, LLC. Ameren Missouri is also seeking authority to merge the special-purpose entity into Ameren Missouri, with Ameren Missouri being the surviving entity.

Staff reviewed Ameren Missouri's Application based on the five factors the Commission listed in *In Re Tartan Energy*, GA-94-127, 3 Mo.P.S.C.3d 173, 177 (1994) – need, qualifications to own, operate, control and manage the facilities and provide the service, financial ability, economic feasibility, and promotion of the public interest (“Tartan Criteria”) and submits this Rebuttal Report in response to the Direct Testimony of Ameren Missouri witnesses Ajay Arora and Matt Michels.

Based on Staff's review, Staff recommends the Commission grant Ameren Missouri a CCN, that does not include siting authority for any transmission upgrade or component, notwithstanding the inclusion of the gen-tie line in the BTA¹, for the Brickyard Hills project, under the specific terms of the BTA, with the following conditions:

- A. Ameren Missouri shall file with the Commission quarterly progress reports on the plans, specifications, and permit obtainment.

¹ Staff and Staff Counsel are still evaluating whether the anticipated owner of the gen-tie line would be required to obtain a separate CCN, especially in light of the recently-enacted new rule relating to § 393.170, RSMo., and may file further testimony regarding that evaluation.

- B. Ameren Missouri must receive approval from the Federal Energy Regulatory Commission.
- C. The currently ordered depreciation rate of 6.81% and net salvage percentage of -17% shall be used.
- D. Ameren Missouri will provide the full grossed-up value of PTCs to customers through the Renewable Energy Standard Rate Adjustment Mechanism or in rates when earned.
- E. Ameren Missouri will include the Missouri Department of Conservation (MDC) in all scheduled meetings/conference calls with the United States Fish and Wildlife Service (USFWS) as well as provide MDC a copy of all documents and/or reports related to the Project that are provided to the USFWS.
- F. The Total Designated Network Upgrades will be capped at *** _____ *** to fully interconnect the Brickyard Hills project as contemplated in the BTA and as necessary to fully comply with requirements of all relevant RTOs. In the event Total Designated Network Upgrades exceeds this cap, Ameren Missouri shall provide an analysis comparing the increased costs with the benefits of continuing the project. This analysis will be filed for the Commission's consideration prior to Ameren Missouri's continuation of the project.
- G. Curtailment Sensitivity Analysis: Ameren Missouri shall include a dispatch down and curtailment sensitivity analysis on all future CCN applications for wind and solar projects interconnected at transmission level.

Staff also recommends the Commission grant Ameren Missouri's request to merge the special-purpose entity into Ameren Missouri, with Ameren Missouri being the surviving entity.

Staff Expert/Witness: Jamie Myers

II. Application Requirements

In addition to the requirements for applications found in 4 CSR 240-2.060, the specific application requirements for the granting of a Certificate of Convenience and Necessity (CCN) for construction of electrical production facilities are contained in 4 CSR 240-3.105(1)(B) ²and are generally described below:

² 4 CSR 240-3.105(1)(B), which was rescinded November 30, 2018, was in effect at the time this application was filed.

- A description of the route of construction and a list of utility crossings³ which the proposed construction will cross;
- “The plans and specifications for the complete construction project and estimated cost of the construction project”;⁴
- “Plans for financing”;
- Evidence of approval of affected governmental bodies;⁵ and
- “The facts showing that the granting of the application is required by the public convenience and necessity.”

Ameren Missouri included a list of utility crossings inside the project area in Schedule B of its Application. In addition to the list of utility crossings, plans for the project which are part of the build transfer agreement (BTA) were included in *** _____

 _____ . ***

Ameren Missouri provided in its Application the estimated cost of construction, excluding interconnection costs, stating the estimated cost of construction is *** _____
 _____ . ***⁶ Interconnection costs are not included in that amount, but the BTA includes a

³ “A description of the route of construction and a list of all electric and telephone lines of regulated and nonregulated utilities, railroad tracks or any underground facility, as defined in section 319.015, RSMo, which the proposed construction will cross”.

⁴ Or a statement of the reasons the information is currently unavailable.

⁵ “(C) When no evidence of approval of the affected governmental bodies is necessary, a statement to that effect; (D) When approval of the affected governmental bodies is required, evidence must be provided as follows: 1. When consent or franchise by a city or county is required, approval shall be shown by a certified copy of the document granting the consent or franchise, or an affidavit of the applicant that consent has been acquired; and 2. A certified copy of the required approval of other governmental agencies;”

⁶ Direct Testimony of Ajay K. Arora page 10, lines 1-3.

provision that allows Ameren to choose whether or not to proceed with the project should the costs exceed *** _____ . ***⁷

Ameren Missouri discussed its plans for financing the BTA in its Application, specifically, in a manner consistent with its existing capital structure, using approximately 52% equity and 48% long-term debt. Further discussion regarding financing is provided in the Financial Ability Section of this rebuttal report.

Ameren Missouri states that other than the Commission, there are no governmental bodies that must issue permits authorizing the overall construction of the project, though there are other types of permits that are granted as construction proceeds.⁸ Agreements with Atchison County for road use/maintenance and right-of-way easements were provided with the Application as Schedule C. Ameren Missouri additionally requests a waiver from 4 CSR 240-3.105(2) to the extent necessary to allow construction to begin. This request is unnecessary with Commission practice, in previous CCN requests, to include a condition that required approvals be filed upon receipt as to not delay projects. *** _____

_____ : ***

⁷ Direct Testimony of Ajay K. Arora page 10, lines 7-8 and page 20, lines 9-13. *** _____

⁸ Application paragraph 21. *** _____

Table is HC in its entirety

. ***

Within its application, Ameren has agreed to five conditions in Section IV. Conditions. Staff recommends that Condition A, regarding submission of quarterly progress reports on plans and specifications for the project be included in the CCN. Other Sections of this report will address additional conditions to be included in the CCN.

Staff Expert Cedric Cunigan

III. Five Tartan Criteria

1. Whether there is a need for the facilities and service

The Missouri Renewable Energy Standard ("RES") was enacted as a voter initiative petition in November 2008. Provisions of the resulting statute and regulations require Ameren Missouri (and the other investor-owned utilities) to meet certain requirements regarding the use of renewable energy while not exceeding the one percent (1%) retail rate impact ("RRI") limit. Compliance with the RES is met by the retirement of renewable energy certificates ("RECs") which represent that 1 MWh of electricity was generated with a renewable energy resource. Ameren Missouri operates or has contracted for generation with Keokuk Hydro-electric Generation Station, Horizon Pioneer Prairie II Wind Farm, Maryland Heights Renewable Energy Center, and the O'Fallon Renewable Energy Center. Ameren Missouri also has access to RECs from customer generators who have received solar rebates.⁹

Ameren Missouri needs additional RECs to comply with the RES and has planned to buy RECs for 2019 and 2020 compliance.¹⁰ Matt Michels states in his direct testimony that beginning in 2021 Ameren Missouri will need approximately 4.5 million RECs per year to meet RES.¹¹ Ameren Missouri does need additional sources of RECs to comply with the RES beginning in 2019.¹²

Matt Michels evaluated the RRI impact of Ameren Missouri's proposed RES portfolio, as discussed on page 9, lines 8-15 of his direct testimony. The RRI calculation is a requirement of the annual RES compliance plan and RES statute that compares the utility's cost of compliance

⁹ RSMo 393.1030.3.

¹⁰ Ameren Missouri Renewable Energy Standard Compliance Plan 2018-2020, EFIS Case No. EO-2018-0287.

¹¹ Page 3, lines 15 and 16 of the Direct Testimony of Matt Michels, Case No. EA-2019-0021; Response to Staff Data Request 42.

¹² The RES portfolio requirements steps up to 10% in 2018; to comply the Company will exhaust or nearly exhaust its banked RECs. Staff reviewed Figure 1 on Page 4 of Matt Michels' direct testimony, Ameren Missouri's current REC balance as of December 11, 2018, and response to Staff Data Request 42.

with least-cost renewable generation to the cost of continuing to generate or purchase electricity from entirely nonrenewable sources. The assumptions made in the RRI calculation impact drive the results of the calculation. For example, in the April 2017 RES Compliance Plan Ameren Missouri projected that compliance with the RES utilizing newly built resources would result in Ameren Missouri exceeding the 1% RRI.¹³ However, the April 2018 RES Compliance plan fully met the RES requirements, with the purchase of RECs in some years, and did not exceed the 1% RRI.¹⁴ ***

_____.¹⁵
_____.
_____.¹⁶ _____¹⁷
_____. *** In this case,

Matt Michels does a break-even analysis,¹⁸ asserting that to bring the RRI to the 1% limit would require one of the following:

- 1) a further increase in capital costs of over \$200/kilowatt,
- 2) a further reduction in power prices from the IRP low scenario of approximately another 18%, or
- 3) a reduction in capacity factor to 34%.

Matt Michels asserts that each of the above-listed conditions is very unlikely; his conclusion however, does not consider the cumulative impacts of less drastic changes in each of

¹³ Ameren Missouri Renewable Energy Standard Compliance Plan 2017-2019, EFIS Case No. EO-2017-0268.

¹⁴ Staff report on Ameren Missouri Renewable Energy Standard Compliance Plan 2018-2021, EFIS Case No. EO-2018-0287.

¹⁵ Response to Staff Data Request 0043 Case No. EA-2019-0021, which references response Staff Data request 0053 Case No. EA-2018-0202.

¹⁶ Allowance for Funds Used During Construction.

¹⁷ ***

_____. ***
¹⁸ Direct Testimony of Matt Michels page 10, lines 16-22.

the above listed conditions.¹⁹ Staff disagrees that an increase in capital costs is very unlikely to occur, particularly in light of steel and aluminum tariffs. This may pose a risk for this project and in turn Ameren Missouri's RES compliance strategy as further discussed in Section III regarding economic feasibility.

Power purchase agreements (PPAs) or direct REC purchases could also be used to meet RES requirements, but Ameren Missouri in this case has proposed to own and operate the Brickyard Hills Wind facility. Staff does not object to any method of RES compliance if the decision to utilize the method can be shown to be reasonable and in compliance with applicable rules and statute.²⁰ The proposed wind facility, upon certification by Division of Energy,²¹ will be eligible for compliance with the RES. The project being located in Missouri qualifies it for an additional ¼ credit per megawatt-hour generated, lowering Ameren Missouri's RES compliance obligation. This wind project, if fully completed,²² accounts for approximately 20 percent of Ameren Missouri's near-term planned RES compliance activities.

Staff Expert Cedric Cunigan

2. Whether the applicant is qualified to own, operate, control and manage the facilities and provide the service

The proposed wind facility will be constructed pursuant to the BTA between Ameren Missouri and EDF-RE US Development, LLC (EDF), which incorporates Ameren Missouri's specifications for the project. Ameren Missouri witness Ajay Arora discusses the expertise that wind developers, such as EDF, have in wind development, particularly in the

¹⁹ ***

²⁰ As described in Staff Data Request 28, Ameren Missouri previously provided an analysis comparing the levelized cost of energy of ownership to the price of a PPA for the Terra-Gen High Prairie project and concluded that ownership resulted in lower costs to customers.

²¹ 4 CSR-340-8.010 Certification of Renewable Energy.

²² ***

expeditious manner which is needed to take full advantage of the PTCs, noting that: “This is expertise that Ameren Missouri intends to develop over time, but it is not expertise that Ameren Missouri possesses today.”²³ The project structure allows Ameren Missouri to leverage the experience of EDF in constructing wind generation in a timeframe that corresponds with the 2020 PTC deadline. The BTA includes several provisions that are intended to protect Ameren Missouri, which Ajay Arora discusses on Page 11, lines 12-22 and Page 12, lines 1-3 of his Direct Testimony.

Further, Ameren Missouri’s contract development team *** _____

_____. ***²⁴

*** _____

_____. ***²⁵ EDF’s website currently reports 10 GW of renewable resources developed, 5.2 GW owned, and 14 GW under operations and maintenance.²⁶ Staff does not have any concerns with the qualifications of EDF because of EDF’s experience with operating, maintaining, and developing renewable resources. Also, there are provisions of the BTA which protect Ameren Missouri *** _____ . ***

²³ Direct Testimony of Ajay Arora, page 8, lines 8 through 10.

²⁴ Response to Staff Data Request MPSC 5, which references Confidential Response to Staff Data Requests MPSC 15 and 9 in Case EA-2018-0202.

²⁵ Confidential Response to Staff Data Request MPSC 8 in case EA-2018-0202, file [MPSC 0008-wind rfp resp - edf- Ameren Missouri proposal 2 12 16 final.pdf](#).

²⁶ <https://www.edf-re.com/about/edf-renewable-energy-at-a-glance/>.

Finally, Ameren Missouri has developed the experience necessary over its long history of operating generation facilities to operate the wind facility after acquisition.

Staff Expert Cedric Cunigan

3. Whether the applicant has the financial ability for the undertaking

Ameren Missouri's application indicates that it intends to finance the BTA with a mix of debt and equity consistent with its current authorized capital structure. Staff reviewed projected financial statements Ameren Corporation and Ameren Missouri provided to rating agencies and confirmed Ameren Missouri's projected balance sheets are consistent with its stated intentions. Specifically, during the year in which the transaction is expected to close (2020), Ameren Missouri expects to receive ** _____ ** from Ameren Corporation and directly issue ** _____ ** during the same year. Ameren Missouri's projected financial statements also indicate that it plans to retain all of its income in 2020 to help finance its approximate ** _____ ** in capital expenditures, which is ** _____ ** higher than Ameren Missouri's annual capital expenditures during the previous two years. The retention of equity as well as the planned equity infusion will also cause Ameren Missouri's capital structure to be rebalanced toward its authorized capital structure.

Due to the nature of the BTA transaction, EDF-RE US Development, LLC ("EDF-RE") will incur the construction costs during the development of the Project. This will significantly reduce Ameren Missouri's financing risk associated with the Project.

Staff concludes that Ameren Missouri has the financial ability to acquire the Project from EDF-RE under the proposed BTA transaction.

Staff Expert David Murray

4. Whether the proposal is economically feasible

It is Staff's position that the proposed project is economically feasible for Ameren Missouri.

Ameren Missouri includes in its application several arguments to support the economic feasibility of the EDF Brickyard Hills Wind Farm project:²⁷

1. The project is a cost-effective means of meeting a part of the RES requirements and provides long-term benefits to Ameren Missouri customers.
2. The build transfer agreement ("BTA") structure allows Ameren Missouri to leverage the developer's expertise with wind generation construction and acquire a late-stage wind project in Missouri.
3. The BTA arrangement is the best structure for capturing the entire value of the approximately \$160 million in Production Tax Credits ("PTCs") the Project will generate and to provide the associated cost savings to Ameren Missouri customers.
4. Ameren Missouri has included as part of its application in this CCN proceeding five specific conditions, stemming from intervenor concerns that were addressed through the Stipulation & Agreement in its prior wind CCN case, File No. EA-2018-0202. Those items specifically addressed and agreed to as part of Ameren Missouri's application in this case are:
 - A. Ameren Missouri shall file with the Commission quarterly progress reports on the plans, specifications, and permit obtainment.
 - B. Ameren Missouri must receive approval from the Federal Energy Regulatory Commission.
 - C. The currently ordered depreciation rate of 6.81% and net salvage percentage of -17% shall be used.
 - D. Ameren Missouri will provide the full grossed-up value of PTCs to customers through the Renewable Energy Standard Rate Adjustment Mechanism or in rates when earned.
 - E. Ameren Missouri will include the Missouri Department of Conservation ("MDC") in all scheduled meetings/conference calls with the United States Fish and Wildlife Service ("USFWS") as well as provide MDC a copy of all documents and/or reports related to the Project that are provided to the USFWS.

²⁷ Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Public Convenience and Necessity Authorizing it to Construct a Wind Generation Facility, pp. 6.

BACKGROUND

In December 2015, Ameren Missouri issued a request for proposal (RFP) to wind project developers to determine if wind projects were the most economically feasible method of meeting the Missouri Renewable Energy Standard (RES) requirements, as discussed previously in this Report.²⁸ Based upon the results of the RFP, Ameren Missouri determined that wind resources are the lowest cost source of renewable energy available at this time to meet RES requirements.

**

_____. **²⁹ Through analysis and cost/revenue modeling Ameren Missouri concluded that ownership of a wind farm is the most cost effective means to meet future RES requirements and that a BTA is the most appropriate method to accomplish that ownership transaction.

Ameren Missouri received thirteen solicited as well as unsolicited offers or “bids” from multiple wind developers and narrowed down the list of potential project candidates to six. While the initial price range for the short listed BTA wind projects was in the range of *** _____ ***, declines in wind turbine pricing along with Ameren Missouri’s continued negotiations with developers allowed it to contract for the current price of *** _____ . ***³⁰ . *** _____

²⁸ Ameren Missouri indicated in its response to Staff Data Request No. 28 that the net present value (NPV) of the wind project was estimated to be a NPV benefit of \$35 million to ratepayers, while the cost of purchasing an equivalent amount of RECS would result in an estimated NPV cost of \$10 million to ratepayers. Analysis performed by Ameren Missouri in EA-2018-0202 demonstrated that ownership of wind resources results in lower long term costs to ratepayers then purchasing through a PPA.

²⁹ ** _____ . **

³⁰ The contract price for the EDF wind farm of *** _____ *** includes approximately *** _____ *** of three ring transmission connection costs. When those transmission costs are removed from the total contract price, the remaining *** _____ *** is just slightly more than the *** _____ *** of base costs for the Terra Gen High Prairie wind project for which the three ring transmission connection costs were not included in the base project costs, but rather were included in the transmission interconnection costs.

:

Table is HC in its Entirety

PRODUCTION TAX CREDITS

Overall, the primary reasons that the wind project is economically feasible for Ameren Missouri are due to the recent decline in costs of construction materials as well as availability of the production tax credit.³¹ For wind projects under construction as of December 31, 2016, and placed in service by 2020, the PTC provides tax credits of \$24 per MWh,³² with annual adjustments for inflation, generated for the first ten (10) years of operation of eligible wind projects. The tax credit is phased down for wind facilities and expires

³¹ ***

³² The current inflation adjusted PTC amount for 2018 is \$24 per MWh per Federal Register / Vol. 83, No. 76 / Thursday, April 19, 2018 / Notices.

for other technologies commencing construction after December 31, 2016. The phase-down for wind facilities is described as a percentage reduction in the tax credit amount described above:

- For wind facilities commencing construction in 2017 and placed in service before December 31, 2021, the PTC amount is reduced by 20%.
- For wind facilities commencing construction in 2018 and placed in service before December 31, 2022, the PTC amount is reduced by 40%.
- For wind facilities commencing construction in 2019 and placed in service before December 31, 2023, the PTC amount is reduced by 60%.

In order for Ameren Missouri to receive full PTC benefits, an eligible project must have “commenced construction” prior to January 1, 2017. The Internal Revenue Service has issued guidance on how it evaluates whether construction has commenced using two methods: a “physical work” test and a 5% “safe harbor” test. The physical work test may establish the beginning of construction by beginning “physical work of a significant nature.” The physical work test is based on the nature of the work performed rather than the cost of the work. The 5% safe harbor test with respect to a facility is demonstrated by showing that 5% or more of the total cost of the facility was paid or incurred by the applicable date. Meeting the criteria of either method is sufficient to demonstrate that construction has commenced and that the project can qualify for PTCs depending on the time frame this qualification is met.³³

³³ Renewable Electricity Production Tax Credit, Energy.Gov, <https://www.energy.gov/savings/renewable-electricity-production-tax-credit-ptc>.

As stated in its application, Ameren Missouri has specifically already agreed to:

...provide the full grossed-up value of PTCs to customers through the Renewable Energy Standard Rate Adjustment Mechanism or in rates when earned (subject to normal billing lags), without any reduction and without a return on any deferred tax assets, regardless of Ameren Missouri's tax position (the "PTC Guarantee"). Notwithstanding the foregoing, this PTC Guarantee will not apply to the extent a change in law or a force majeure event results in a tax position for Ameren Missouri that prevents Ameren Missouri from utilizing the PTCs in the year earned. If the PTC Guarantee did not apply in a given year because of the immediately preceding sentence, the Company will provide to customers the grossed-up value of the PTCs that are earned in that year when and to the extent that those PTCs are actually utilized to reduce the Company's tax liability. For purposes of this agreement, a "force majeure event" is defined as an act of God such as an earthquake, tornado, or severe flood, or a war or act of terrorism.

CONSUMER PROTECTIONS

The BTA allows Ameren Missouri to reject the agreement if the project does not meet several criteria such as a *** _____, *** loss of the PTCs, or MISO transmission study fees being above an acceptable level. *** _____

____. ***³⁴ Ameren Missouri has yet to receive the results of the regional transmission operator (RTO) interconnection agreement study; nor has it received approval of the project by the Federal Energy Regulatory Commission (FERC) at this time. The third phase of the interconnection agreement study is set to be complete by late 2019 and Ameren Missouri plans to receive FERC approval by May 2019.

³⁴ *** _____

Similar to the PTCs, Ameren Missouri has already agreed as part of its application that “Ameren Missouri must receive approval from the Federal Energy Regulatory Commission pursuant to § 203 of the Federal Power Act.”

Staff has requested verification of the transmission interconnection agreement as well as FERC approval once completed.

AMEREN MISSOURI’S FINANCIAL CAPABILITY

In the past, Ameren Missouri has completed projects of a similar size and scope, such as the environmental scrubbers that were placed in service at the Sioux generating facility. The Sioux scrubber project cost approximately \$574.1 million and this investment was included in permanent rates by the Commission as part Case No. ER-2011-0028. Similarly, in the past Ameren Missouri has demonstrated the ability to place into service several complex capital improvement projects that exceed the total cost of the proposed wind project that is the subject of this case. Between January 1, 2002, and December 31, 2006, Ameren Missouri completed approximately \$2.7 billion of capital improvements that were placed into permanent rates by the Commission in Case No. ER-2007-0002. Additionally, in the past Ameren Missouri has successfully placed over \$1 billion of capital investment into service within a single calendar year and subsequently received recovery of those costs in rate cases.³⁵ Most recently, Ameren Missouri completed approximately \$1.6 billion of capital investment between the December 31, 2014, true-up cutoff in Case No. ER-2014-0258 and the December 31, 2016, true-up cutoff in Case No. ER-2016-0179. Ameren Missouri has the ability to own, operate, control, and maintain the proposed wind facility throughout the facility’s expected service life.³⁶

³⁵ In calendar years 2010 and 2014 Ameren Missouri placed approximately \$1.2 billion and \$1.1 billion of capital investment into service.

³⁶ Ameren Missouri was recently granted a CCN by the Commission for an approximately 400 MW wind farm in case No. EA-2018-0202.

Additionally, Staff will have the opportunity to fully review and evaluate the prudence of all project costs in a future Ameren Missouri rate proceeding prior to inclusion in base rates.

Ameren Missouri has provided documentation of its extensive negotiations as well as cost modeling and other analysis to Staff that indicates it has sufficiently evaluated the necessary capital costs, ongoing operating costs and various available project financing options associated with the proposed project. Ameren Missouri has specifically chosen and negotiated the BTA to have the wind project built to its specifications, to receive the desired level of generation, and for the project to be completed on the desired/required timeline. Ameren Missouri has specifically included consumer protections to minimize the financial risk of any cost overruns associated with the wind project.³⁷ Staff has reviewed all responses to the RFP, Ameren Missouri's analysis of those responses, as well as all revenue and cost modeling associated with the project, and has determined that the wind project is economically feasible.

Staff Expert/Witness: Jason Kunst

Transmission Interconnection

Ameren Missouri has initiated the MISO interconnection process for this project, but the expected upgrades, if any, and the total cost for those upgrades is currently unknown and will not be finalized until the third phase of study. This third phase of study is expected to be completed late 2019.³⁸ The Feasibility Study, completed in 2016, of the proposed Brickyard Hills Project (J570), interconnecting on the MidAmerican Cooper-Atchison 345 kV line, showed overloaded transmission elements similar to the MISO Feasibility Study for MISO project number J476,

³⁷ ***

³⁸ Mr. Arora Direct pg. 19 lines 7-8.

a 247.5 MW wind project, near the general location of the proposed Brickyard Hills Project, interconnecting on the MidAmerican Cooper-Atchison 345 kV line.³⁹

A subsequent MISO Definitive Planning Phase (DPP) Study dated September 20, 2018, that included project J476, resulted in allocation of \$112,129,358 of total interconnection costs to Project J476, \$81,907,409 of which is for an improvement involving SPP assets.⁴⁰ Given the interconnection location requested for the Brickyard Hills Project is on a MISO line that terminates at a substation with both SPP and MISO transmission lines, it is unclear if additional SPP network upgrade costs will be incurred.

It is also unclear if J476 will go forward, causing uncertainty as to whether costs identified in the September DPP may ultimately be required to be incurred to support the Brickyard Hills Project if J476 does not go forward. Additionally, there is uncertainty as to whether some portion of costs incurred to support interconnection of J476, or other projects in the area, may be assignable or allocated, in part, to the Brickyard Hills Project under applicable RTO provisions.

The ultimate interconnection costs of the Ameren Missouri project will largely depend on what projects in previous and current studies actually go forward and are built. Without completed MISO interconnection studies, it is impossible to definitively determine how much interconnection cost will ultimately be incurred by this project.

³⁹ https://cdn.misoenergy.org/GI-FeS-2016-MAY-J570-Report_Rev1100206.pdf.

⁴⁰ MISO DPP 2016 August West Area Phase 1 Study.

41

42

Ameren Missouri's base assumptions include an expected cost of Interconnect Agreement/Network Upgrades cost of *** and worst case of Interconnect Agreement/Network Upgrades cost of ***.

Given the aforementioned uncertainty of the potential Total Designated Network upgrade costs and costs allocated or assigned from other upgrades or projects, Staff recommends that the Commission require Ameren Missouri to provide an analysis, prior to a Generator

41 ***

⁴² Build Transfer Agreement between Union Electric Company and EDF-RE US Development LLC, article 2.5.2 a.

⁴³ Build Transfer Agreement between Union Electric Company and EDF-RE US Development LLC, article 2.5.2 a.

⁴⁴ Ameren-UE_DIR_001_Michels-Att-High Power Prices – Base Assumptions – CONF.xlsx.

Interconnection Agreement being signed, if the Total Designated Network upgrade costs and costs allocated or assigned from other upgrades or projects, exceed *** _____ ***. Such an analysis should compare the increased Total Designated Network upgrade costs including potential costs allocated or assigned from other upgrades or projects, with the benefits of continuing the project. The instant CCN does not include siting authority for any transmission upgrade or component, notwithstanding the inclusion of the gen-tie line in the BTA.⁴⁵

Curtailment/Dispatch Down

Under MISO operating procedures there are times when generation that is otherwise available may be curtailed, or ordered not to generate.⁴⁶ The Brickyard Hills project will operate as “dispatchable intermittent resource” under the MISO tariff, meaning the RTO will have the ability to reduce the level of generation injected from the project in real time. Factors such as regional transmission capacity, regional generation mix, load magnitude and shape, among others, play significant roles in determining the amount of generation curtailed or dispatched down. While curtailments and RTO ordered reductions in generation will reduce the annual generation that would otherwise be produced by Brickyard Hills, Ameren Missouri did not reflect any generation reductions related to RTO curtailments and dispatch.

Two factors that may affect the amount of generation curtailed or dispatched down would be the amount of generation in MISO, as well as the effects of generation in the MISO and SPP seams that would directly affect generation coordination between the two RTOs.⁴⁷

⁴⁵ Staff and Staff Counsel are still evaluating whether the anticipated owner of the gen-tie line would be required to obtain a separate CCN, especially in light of the recently-enacted new rule relating to § 393.170, RSMo., and may file further testimony regarding that evaluation.

⁴⁶ As discussed above, given the proximity to the MISO/SPP seam and SPP facilities, it is possible that SPP system concerns may also impact Brickyard Hills’ output.

⁴⁷ If generation is concentrated in an area that does not have significant load in the hours that the variable intermittent generation is at max or near max generation, absent transmission capacity to fully export that generation, congestion may result in that area that would lead to the transmission operator taking actions to preserve

Reductions to generation would reduce the total market value of the energy produced at the site as well as the level of PTCs received. Staff does not have a specific recommendation for a level of curtailment or dispatch interruption to be modeled, however a sensitivity analysis based on the best available data would be beneficial to understanding the range of likely outcomes. Staff recommends the Commission require Ameren Missouri to include a dispatch down and curtailment sensitivity analysis on all future CCN applications for wind and solar CCN projects interconnected at transmission level.

5. Public Interest

Ameren Missouri has provided documentation of its evaluation of RFP responses, including unsolicited bids, and extensive negotiations which resulted in the BTA; further, Ameren Missouri has specifically chosen and negotiated the BTA to have the wind project built to its specifications, for the desired level of generation, and completion of the project on its desired timeline. Ameren Missouri has specifically included consumer protections to minimize the financial risk of any cost overruns associated with the wind project.⁴⁸ As noted in Ajay Arora's Direct Testimony, all projects of this magnitude carry risks.⁴⁹ The main risks for the Brickyard Hills wind project outlined by Ameren Missouri are:

- Transmission system interconnection;
- Land control
- PTC value qualification; and
- Construction and PTC value retention;

the operational safety of the transmission system. One such option is curtailing the amount of variable intermittent generation accepted from an otherwise available resource.

⁴⁸ ***

⁴⁹ Direct Testimony of Ajay Arora, Page 17, Line 19.

Transmission system interconnection

Transmission system interconnection risks are discussed in Section III regarding economic feasibility. Staff recommends two conditions related to transmission system interconnection risks and curtailment previously discussed in Section III.

Land Control

Ameren Missouri considered land control in its RFP selection process. EDF has already acquired *** _____ of the land rights needed for wind turbine locations

*** _____

_____. ***⁵⁰ EDF retains the right, *** _____, ***⁵¹ to terminate the BTA until the gen-tie line and collection circuit property rights are acquired.⁵²

*** _____ . ***

PTC value qualification

The risks and minimization of risks associated with PTC value qualification are discussed in Section III regarding economic feasibility.

Construction and PTC value retention

As discussed in Section III regarding economic feasibility, one of the primary reasons the wind project is economically feasible is the availability of the production tax credit. To retain 100% value of the PTCs wind projects must be placed in-service, for IRS purposes, by the end

⁵⁰ Response to Staff Data Request 0039 provided on November 19, 2018 and response to Staff Data Request 17s provided on December 11, 2018.

⁵¹ *** _____ ***

⁵² Direct Testimony of Ajay Arora, Page 20, Lines 18-20.

of 2020. Ajay Arora notes in his Direct Testimony that the Project schedule is tight.⁵³ Ameren Missouri has mitigated the risk of schedule delay in a similar manner as the High Prairie wind project. The Project must have *** _____ *** of the wind turbines placed in service by *** _____ *** for Ameren Missouri to close the transaction.

Because the public interest assessment involves essentially a reconsideration of the other Tartan Criteria of need for the project, its economic feasibility, Ameren Missouri's qualifications and financial ability to construct the project, Staff's assessment concludes that the Project under the specific terms of the BTA, with the conditions Ameren Missouri has already agreed to and Staff's recommended condition, is not detrimental to the public interest.

Therefore, Staff recommends the Commission grant Ameren Missouri a CCN, that does not include siting authority for any transmission upgrade or component, notwithstanding the inclusion of the gen-tie line in the BTA⁵⁴, for the Brickyard Hills project, under the specific terms of the BTA, with the following conditions:

- A. Plans and Specifications; Progress Reports: Ameren Missouri shall file with the Commission quarterly progress reports on the plans and specifications for the Project, and the first report shall be due on the first day of the first calendar quarter beginning after the CCN is issued. Ameren Missouri shall also include an update on all permits obtained as part of its quarterly progress reports, and will file complete plans and specifications prior to commencement of construction.
- B. FERC Approval: Ameren Missouri must receive approval from the Federal Energy Regulatory Commission pursuant to § 203 of the Federal Power Act.
- C. Depreciation: Until such time as a different depreciation rate is approved by the Commission for wind facility investments recorded to FERC Account 344, the currently-approved depreciation rate of 6.81% shall be used. Until such time as a different net salvage percentage is approved by the Commission, a net salvage percentage of -17% shall be used and tracked on the Company's books. Prior to the in-service date

⁵³ Direct Testimony of Ajay Arora Page 12, Line 19.

⁵⁴ Staff and Staff Counsel are still evaluating whether the anticipated owner of the gen-tie line would be required to obtain a separate CCN, especially in light of the recently-enacted new rule relating to § 393.170, RSMo., and may file further testimony regarding that evaluation.

for the Project, Ameren Missouri will provide a depreciation study potentially proposing a new depreciation rate for the wind facility investments recorded to FERC Account 344.

- D. Production Tax Credits: Ameren Missouri will provide the full grossed-up value of PTCs to customers through the Renewable Energy Standard Rate Adjustment Mechanism or in rates when earned (subject to normal billing lags), without any reduction and without a return on any deferred tax assets, regardless of Ameren Missouri's tax position (the "PTC Guarantee"). Notwithstanding the foregoing, this PTC Guarantee will not apply to the extent a change in law or a force majeure event results in a tax position for Ameren Missouri that prevents Ameren Missouri from utilizing the PTCs in the year earned. If the PTC Guarantee did not apply in a given year because of the immediately preceding sentence, the Company will provide to customers the grossed-up value of the PTCs that are earned in that year when and to the extent that those PTCs are actually utilized to reduce the Company's tax liability. For purposes of this agreement, a "force majeure event" is defined as an act of God such as an earthquake, tornado, or severe flood, or a war or act of terrorism.
- E. Wildlife: Ameren Missouri will provide reasonable advanced notice to the Missouri Department of Conservation ("MDC") of all scheduled meetings and conference calls (related to the Project), if any, with the United States Fish and Wildlife Service ("USFWS"). Ameren Missouri will provide MDC a copy of all documents and/or reports related to the Project, if any, that it provides to the USFWS at the same time as they are provided to the USFWS.
- F. Transmission Interconnection: Ameren Missouri shall file with the Commission an analysis, prior to a Generation Interconnection Agreement being signed, if the Total Designated Network upgrade costs and costs allocated or assigned from other upgrades or projects, exceed *** _____ ***. Such an analysis should compare the increased Total Designated Network upgrade costs including potential costs allocated or assigned from other upgrades or projects, with the benefits of continuing the project.
- G. Curtailment Sensitivity Analysis: Ameren Missouri shall include a dispatch down and curtailment sensitivity analysis on all future CCN applications for wind and solar projects interconnected at transmission level.

Staff Expert Claire Eubanks, PE

IV. In-Service Criteria

Parties to the stipulation and agreement in File No. EA-2018-0202 agreed to file in-service criteria for that wind project by December 31, 2018. Staff and Ameren Missouri have been in negotiations, but all signatories have not yet agreed upon a set of criteria, which will satisfy both the statute and IRS commercial in-service evaluation for High Prairie and which may also be reasonable for this project. If an agreement seems unlikely to occur in this case, Staff will provide supplemental rebuttal testimony regarding its position on in-service criteria.

Staff Expert Claire Eubanks, PE

Appendix 1 - Staff Credentials

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Application of Union Electric)
Company d/b/a Ameren Missouri for Permission and)
Approval and a Certificate of Convenience and)
Necessity Authorizing It to Construct a Wind)
Generation Facility)

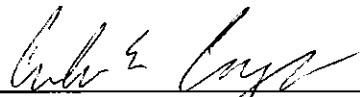
Case No. EA-2019-0021

AFFIDAVIT OF CEDRIC E. CUNIGAN

State of Missouri)
) ss
County of Cole)

COMES NOW Cedric E. Cunigan, and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached *Staff Rebuttal Report*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

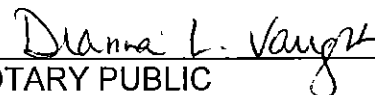


Cedric E. Cunigan

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 20th day of December, 2018.

DIANNA L. VAUGHT Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: June 28, 2019 Commission Number: 15207377



NOTARY PUBLIC

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Application of Union Electric)
Company d/b/a Ameren Missouri for Permission and)
Approval and a Certificate of Convenience and)
Necessity Authorizing It to Construct a Wind)
Generation Facility)

Case No. EA-2019-0021

AFFIDAVIT OF CLAIRE M. EUBANKS, PE

State of Missouri)
) ss
County of Cole)

COMES NOW Claire M. Eubanks, PE, and on her oath declares that she is of sound mind and lawful age; that she contributed to the attached *Staff Rebuttal Report*; and that the same is true and correct according to her best knowledge and belief.

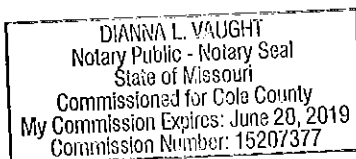
Further the Affiant sayeth not.

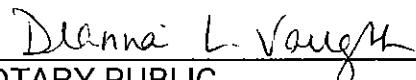


Claire M. Eubanks, PE

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 20th day of December, 2018.





NOTARY PUBLIC

Dianne L. Vaughn
NOTARY PUBLIC

In the Matter of the Application of Union Electric)
Company d/b/a Ameren Missouri for Permission and)
Approval and a Certificate of Convenience and)
Necessity Authorizing It to Construct a Wind)
Generation Facility)

DIANNA L. VAUGHT
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: June 28, 2019
Commission Number: 15207377

CREDENTIALS AND CASE PARTICIPATION
OF
CEDRIC E. CUNIGAN

PRESENT POSITION:

I am a Utility Engineering Specialist III in the Engineering Analysis Section, Operational Analysis Department, Commission Staff Division, of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

In May 2011, I earned a Bachelor of Science in Biological Engineering from the University of Missouri, in Columbia. In May 2013, I earned a Master of Business Administration, also from the University of Missouri. I began work with the Missouri Department of Natural Resources Solid Waste Management Program in August 2013. I started as a Technician and was promoted to an Environmental Engineer I in January 2014. I transferred to the Hazardous Waste Program in September 2014. In January 2015, I was promoted to an Environmental Engineer II. I ended employment with the Department of Natural Resources in January of 2017 and began work with the Missouri Public Service Commission as a Utility Engineering Specialist III.

SUMMARY OF CASE INVOLVEMENT:

Case Number	Utility	Type	Issue
EO-2017-0267	Empire District Electric Company	Memorandum	RES Compliance Report and Plan
EO-2017-0270	KCP&L Greater Missouri Operations Company	Memorandum	RES Compliance Report
EO-2017-0272	KCP&L Greater Missouri Operations Company	Memorandum	RES Compliance Plan
EO-2018-0111	Macon Electric Cooperative & City of Marceline	Memorandum	Change of Supplier
EC-2018-0089	Union Electric Company d/b/a Ameren Missouri	Staff Report	Complaint Investigation
EO-2018-0285	Empire District Electric Company	Memorandum	RES Compliance Report and Plan

*cont'd Credentials and Case Participation of
Cedric E. Cunigan*

Case Number	Utility	Type	Issue
EO-2018-0289	KCP&L Greater Missouri Operations Company	Memorandum	RES Compliance Report
EO-2018-0291	KCP&L Greater Missouri Operations Company	Memorandum	RES Compliance Plan
ER-2018-0145 & ER-2018-0146	KCPL & KCP&L Greater Missouri Operations Company	Cost of Service Report, Rebuttal, & Surrebuttal	Renewable Energy
WR-2018-0328	Middlefork Water Company	Depreciation Workpapers	Depreciation
EA-2018-0202	Union Electric Company d/b/a Ameren Missouri	Staff Report	Certificate of Convenience and Necessity
EC-2018-0376	Union Electric Company d/b/a Ameren Missouri	Staff Report	Complaint Investigation

CREDENTIALS AND CASE PARTICIPATION
OF
CLAIRE M. EUBANKS, PE

PRESENT POSITION:

I am a Utility Regulatory Engineer II in the Engineering Analysis Unit, Operational Analysis Department, of the Commission Staff Division of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

I received my Bachelor of Science degree in Environmental Engineering from the University of Missouri – Rolla, now referred to as Missouri University of Science and Technology, in May 2006. I am a licensed professional engineer in the states of Missouri and Arkansas. Immediately after graduating from UMR, I began my career with Aquaterra Environmental Solutions, Inc., now SCS Aquaterra, an engineering consulting firm based in Overland Park, Kansas. During my time with Aquaterra, I worked on various engineering projects related to the design, construction oversight, and environmental compliance of solid waste landfills. I began my employment with the Commission in November 2012 and was promoted to my current position in January 2017. My primary responsibilities are related to the Renewable Energy Standard. I have also served on work groups related to the Clean Power Plan and Ameren Missouri's Standby Service Rider.

CASE HISTORY:

Case Number	Utility	Type	Issue
EA-2012-0281	Ameren	Rebuttal	Certificate of Convenience and Necessity
EC-2013-0379 EC-2013-0380	KCP&L KCP&L GMO	Rebuttal	RES Compliance
EO-2013-0458	Empire	Memorandum	RES Compliance Plan & Report
EO-2013-0462	Ameren	Memorandum	RES Compliance Report
EO-2013-0503	Ameren	Memorandum	RES Compliance Plan
EO-2013-0504	KCPL	Memorandum	RES Compliance Plan & Report

*cont'd Credentials and Case Participation of
Claire M. Eubanks, PE*

Case Number	Utility	Type	Issue
EO-2013-0505	GMO	Memorandum	RES Compliance Plan & Report
ET-2014-0059	KCP&L GMO	Rebuttal	RES Retail Rate Impact
ET-2014-0071	KCP&L	Rebuttal	RES Retail Rate Impact
ET-2014-0085	Ameren	Rebuttal	RES Retail Rate Impact
ER-2014-0258	Ameren	Cost of Service Report, Surrebuttal	RES, In-Service
EO-2014-0151	KCP&L GMO	Memorandum	RESRAM
EO-2014-0357	Electric	Memorandum	Solar Rebates Payments
EO-2014-0287	KCPL	Memorandum	RES Compliance Plan
EO-2014-0288	GMO	Memorandum	RES Compliance Plan
EO-2014-0289	KCPL	Memorandum	RES Compliance Report
EO-2014-0290	GMO	Memorandum	RES Compliance Plan
ER-2014-0370	KCP&L	Cost of Service Report	RES
EX-2014-0352	N/A	Live Comments	RES rulemaking
EC-2015-0155	GMO	Memorandum	Solar Rebate Complaint
EO-2015-0260	Empire	Memorandum	RES Compliance Plan & Report
EO-2015-0263	KCPL	Memorandum	RES Compliance Report
EO-2015-0264	GMO	Memorandum	RES Compliance Report
EO-2015-0265	KCPL	Memorandum	RES Compliance Plan
EO-2015-0266	GMO	Memorandum	RES Compliance Plan
EO-2015-0267	Ameren	Memorandum	RES Compliance Plan & Report
EO-2015-0252	GMO	Staff Report	Integrated Resource Plan – Renewable Energy Standard
EO-2015-0254	KCPL	Staff Report	Integrated Resource Plan – Renewable Energy Standard
EA-2015-0256	KCP&L GMO	Live Testimony	Greenwood Solar CCN
EO-2015-0279	Empire	Memorandum	RES Compliance Plan & Report
ET-2016-0185	KCP&L	Memorandum	Solar Rebate Tariff Suspension
EO-2016-0280	KCPL	Memorandum	RES Compliance Report
EO-2016-0281	GMO	Memorandum	RES Compliance Report

*cont'd Credentials and Case Participation of
Claire M. Eubanks, PE*

Case Number	Utility	Type	Issue
EO-2016-0282	KCPL	Memorandum	RES Compliance Plan
EO-2016-0283	GMO	Memorandum	RES Compliance Plan
EO-2016-0284	Ameren	Memorandum	RES Compliance Plan & Report
ER-2016-0023	Empire	Report	RES
ER-2016-0156	KCP&L GMO	Rebuttal	RESRAM Prudence Review
EA-2016-0208	Ameren	Rebuttal	Certificate of Convenience and Necessity
ER-2016-0285	KCPL	Cost of Service Report	In-Service, Greenwood Solar
ER-2016-0179	Ameren	Rebuttal	In-Service, Labadie Landfill
EW-2017-0245	Electric	Report	Working Case on Emerging Issues in Utility Regulation
EO-2017-0268	Ameren	Memorandum	RES Compliance Plan & Report
EO-2017-0269	KCPL	Memorandum	RES Compliance Report
EO-2017-0271	KCPL	Memorandum	RES Compliance Plan
GR-2017-0215 & GR-2017-0216	Spire	Rebuttal & Surrebuttal	CHP for Critical Infrastructure
GR-2018-0013	Liberty Utilities (Midstates Natural Gas)	Rebuttal	CHP Outreach Initiative for Critical Infrastructure Resiliency
EO-2018-0287	Ameren	Memorandum	RES Compliance Plan & Report
EO-2018-0288	KCPL	Memorandum	RES Compliance Report
EO-2018-0290	KCPL	Memorandum	RES Compliance Plan
EA-2016-0207	Ameren	Memorandum	Certificate of Convenience and Necessity
ER-2018-0146	GMO	Cost of Service Report	RESRAM Prudence Review
ER-2018-0145 ER-2018-0146	KCPL GMO	Class Cost of Service Report, Rebuttal	Solar Subscription Pilot Rider, Standby Service Rider

*cont'd Credentials and Case Participation of
Claire M. Eubanks, PE*

Case Number	Utility	Type	Issue
EA-2018-0202	Ameren	Staff Report	Certificate of Convenience and Necessity
EE-2019-0076	Ameren	Memorandum	Variance Request – Reliability Reporting

JASON KUNST, CPA

Utility Regulatory Auditor IV

Educational Background and Experience

I graduated from the University of Missouri – St. Louis with a Bachelor’s of Science degree in Accounting in December 2007. I am a Certified Public Accountant (CPA) licensed in the state of Missouri.

Prior to joining the Commission in May 2014, I was employed as an Unemployment Insurance Auditor II with the Missouri Department of Labor and Industrial Relations, Division of Employment Security. As an Unemployment Insurance Auditor, I reviewed employer’s books, payroll records, and other related records to determine accuracy and compliance with Missouri Employment Security Law.

Utility	Case Number	Issue
Ameren/UE	ER-2014-0258	Formal Rate Case: Advertising, Misc. Expenses, Board of Directors Fees, Dues & Donations, Property Taxes, Property Tax Refund Tracker, Customer Accounting Expense to reflect new full page bill format, Plant in Service, Depreciation Reserve, Materials & Supplies, Prepayments, Customer Deposits, Customer Advances, Interest on Customer Deposits
Laclede Gas Company	GO-2015-0269	ISRS Filing
Missouri American Water Company	WR-2015-0301 SR-2015-0302	Formal Rate Case: Payroll & Related Expenses, Employee Benefits, Tank Painting and Inspection Expense Tracker, Waste Disposal, Transportation Expenses, Leases & Rents, Incentive Compensation, Severance Expense, PSC Assessment

*cont'd Credentials and Case Participation of
JASON KUNST, CPA*

Utility	Case Number	Issue
Ameren/UE	ER-2016-0179	Formal Rate Case: Payroll & Related Expenses, Employee Benefits, Incentive Compensation, Severance Expense, Cyber Security Costs, Board of Directors Fees, Dues & Donations, Misc. Expenses, Advertising, Rate Case Expense, Outside Auditor Fees, Scada Revenues & Expenses, Taum Sauk Failure Expenses
Spire, Inc.	GR-2017-0215 GR-2017-0216	Formal Rate Case: Forest Park Property Sale, Rents and Leases, Outside Services, Amortization Expense, NewBlue Software, Credit Card Transaction Fees, Rebranding Costs
Liberty Utilities Corp.	GR-2018-0013	Formal Rate Case: Revenues, Capitalized Depreciation, Rate Case Expense, Cash Working Capital, Outside Services, Postage Expense
Ameren/UE	EA-2018-0373	CCN & RESRAM Application
Missouri American Water Corporation	WO-2018-0373	ISRS Filing

**CREDENTIALS AND CASE PARTICIPATION OF
SHAWN E. LANGE**

PRESENT POSITION:

I am a Utility Regulatory Engineer I in the Engineering Analysis Section, Operational Analysis Department, Commission Staff Division, of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

In December 2002, I received a Bachelor of Science Degree in Mechanical Engineering from the University of Missouri, at Rolla now known as the Missouri University of Science and Technology. I joined the Commission Staff in January 2005. I am a registered Professional Engineer in the State of Missouri. I have spoke at NCDC's workshop on alternative climate normals.

TESTIMONY FILED:

Case Number	Utility	Testimony	Issue
ER-2005-0436	Aquila Inc.	Direct	Weather Normalization
		Rebuttal	Weather Normalization
		Surrebuttal	Weather Normalization
ER-2006-0314	Kansas City Power & Light Company	Direct	Weather Normalization
		Rebuttal	Weather Normalization
ER-2006-0315	Empire District Electric Company	Direct	Weather Normalization
		Surrebuttal	Weather Normalization
ER-2007-0002	Union Electric Company d/b/a AmerenUE	Direct	Weather Normalization
ER-2007-0004	Aquila Inc.	Direct	Weather Normalization
ER-2007-0291	Kansas City Power & Light Company	Staff Report	Weather Normalization
		Rebuttal	Weather Normalization
ER-2008-0093	Empire District Electric Company	Staff Report	Weather Normalization
ER-2008-0318	Union Electric Company d/b/a AmerenUE	Staff Report	Weather Normalization
ER-2009-0089	Kansas City Power &	Staff Report	Net System Input

*cont'd \Credentials and Case Participation of
Shawn E. Lange*

Case Number	Utility	Testimony	Issue
	Light Company		
ER-2009-0090	KCP&L Greater Missouri Operations Company	Staff Report	Net System Input
ER-2010-0036	Union Electric Company d/b/a AmerenUE	Staff Report	Net System Input
ER-2010-0130	Empire District Electric Company	Staff Report	Variable Fuel Costs
		Surrebuttal	Variable Fuel Costs
ER-2010-0355	Kansas City Power & Light Company	Staff Report	Variable Fuel Costs
ER-2010-0356	KCP&L Greater Missouri Operations Company	Staff Report	Engineering Review-Sibley 3 SCR
ER-2011-0004	Empire District Electric Company	Staff Report	Variable Fuel Costs
ER-2011-0028	Union Electric Company d/b/a Ameren Missouri	Staff Report	Net System Input
ER-2012-0166	Union Electric Company d/b/a Ameren Missouri	Staff Report	Weather Normalization
		Surrebuttal	Weather Normalization Maryland Heights In-Service
ER-2012-0174	Kansas City Power & Light Company	Staff Report	Weather Normalization Net System Input Variable Fuel Costs
		Surrebuttal	Weather Normalization
ER-2012-0175	KCP&L Greater Missouri Operations Company	Staff Report	Weather Normalization Net System Input
		Surrebuttal	Weather Normalization
ER-2012-0345	Empire District Electric Company	Rebuttal	Interim Rates
		Staff Report	Weather Normalization
EA-2014-0223	Complaint of Noranda Aluminum	Rebuttal	Weather Normalization
EA-2014-0207	Grain Belt Express CCN	Rebuttal	Safety Interconnection Studies

*cont'd \Credentials and Case Participation of
Shawn E. Lange*

Case Number	Utility	Testimony	Issue
		Surrebuttal	Environmental Impacts
ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Staff Report	Variable Fuel Costs Net System Input
ER-2014-0351	Empire District Electric Company	Staff Report	Variable Fuel Costs Net System Input
ER-2014-0370	Kansas City Power & Light Company	Staff Report	Net System Input Variable Fuel Costs
		True-up Direct	Variable Fuel Costs La Cygne In-service
EA-2015-0146	ATXI CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis
		Surrebuttal	
ER-2016-0023	Empire District Electric Company	Staff Report	Net System Input Variable Fuel Costs
		Surrebuttal	Variable Fuel Costs
ER-2016-0179	Union Electric Company d/b/a Ameren Missouri	Staff Report	Variable Fuel Costs
EA-2016-0385	Grain Belt Express CCN	Rebuttal	Safety Interconnection Studies
		Surrebuttal	Environmental Impacts
ER-2018-0145	Kansas City Power & Light Company	Staff Report	Variable Fuel Costs Market Prices
		Rebuttal	Variable Fuel Costs Market Prices
		True-up Direct	Variable Fuel Costs Market Prices
EA-2018-0327	ATXI CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis

DAVID MURRAY

Educational and Employment Background and Credentials

I am currently the Utility Regulatory Manager of the Financial Analysis Unit for the Missouri Public Service Commission (“Commission”). I accepted the position of a Public Utility Financial Analyst in June 2000 and my position was reclassified in August 2003 to an Auditor III. I was promoted to the position of Auditor IV, effective July 1, 2006. I was employed by the Missouri Department of Insurance in a regulatory position before I began my employment at the Missouri Public Service Commission.

I was authorized in October 2010 to use the Chartered Financial Analyst (CFA) designation. The use of the CFA designation requires the passage of three rigorous examinations addressing many investment related areas such as valuation analysis, portfolio management, statistical analysis, economic analysis, financial statement analysis and ethical standards. In addition to the passage of the examinations a CFA charter holder must have four years of relevant professional work experience.

In May 1995, I earned a Bachelor of Science degree in Business Administration with an emphasis in Finance and Banking, and Real Estate from the University of Missouri-Columbia. I earned a Masters in Business Administration from Lincoln University in December 2003.

In April 2007 I passed the test required to be awarded the professional designation Certified Rate of Return Analyst (“CRRA”) by the Society of Utility and Regulatory Financial Analysts (“SURFA”). I served as a board member on the SURFA Board of Directors from 2008 through 2016. I am not currently an active member of SURFA.

**CASE PARTICIPATION OF
DAVID MURRAY, CFA**

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
12/11/2018	EA-2016-0358	Grain Belt Express Clean Line, LLC	Rebuttal Report	Financial Ability
9/28/2018	EA-2018-0202	Union Electric Company d/b/a Ameren Missouri	Surrebuttal	Financial Ability
8/7/2018	WR-2018-0170	Liberty Utilities (Missouri Water), LLC d/b/a Liberty Utilities	Surrebuttal	Rate of Return Capital Structure
8/3/2018	WR-2018-0170	Liberty Utilities (Missouri Water), LLC d/b/a Liberty Utilities	Rebuttal	Rate of Return Capital Structure
5/9/2018	GR-2018-0013	Liberty Utilities (Midstates Natural Gas) Corp., d/b/a Liberty Utilities	Surrebuttal	Rate of Return Capital Structure
4/13/2018	GR-2018-0013	Liberty Utilities (Midstates Natural Gas) Corp., d/b/a Liberty Utilities	Rebuttal	Rate of Return Capital Structure
3/2/2018	GR-2018-0013	Liberty Utilities (Midstates Natural Gas) Corp., d/b/a Liberty Utilities	Cost of Service Report	Rate of Return Capital Structure
11/21/2017	GR-2017-0215 & GR-2017-0216	Spire Missouri Inc. (LAC and MGE Divisions)	Surrebuttal	Rate of Return Capital Structure
10/17/2017	GR-2017-0215 & GR-2017-0216	Spire Missouri Inc. (LAC and MGE Divisions)	Rebuttal	Rate of Return Capital Structure
9/8/2017	GR-2017-0215 & GR-2017-0216	Spire Missouri Inc. (LAC and MGE Divisions)	Cost of Service Report	Rate of Return Capital Structure
1/27/2017	ER-2016-0285	Kansas City Power & Light Company	Surrebuttal	Capital Structure
1/20/2017	ER-2016-0179	Union Electric Company d/b/a Ameren Missouri	Rebuttal	Capital Structure
12/30/2016	ER-2016-0285	Kansas City Power & Light Company	Rebuttal	Capital Structure/Cost of Debt
12/09/2016	ER-2016-0179	Union Electric Company d/b/a Ameren Missouri	Cost of Service Report	Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
3/04/2016	WR-2015-0301	Missouri-American Water Company	Surrebuttal	Rate of Return Capital Structure
2/11/2016	WR-2015-0301	Missouri-American Water Company	Rebuttal	Rate of Return Capital Structure
12/23/2015	WR-2015-0301	Missouri-American Water Company	Cost of Service Report	Rate of Return Capital Structure
10/21/2015	EA-2015-0146	Ameren Transmission Company of Illinois	Rebuttal	Financial Ability
8/24/2015	GF-2015-0181	Laclede Gas Company	Rebuttal	Financing
3/20/15	EO-2015-0055	Union Electric Company d/b/a Ameren Missouri	Rebuttal	Demand-Side Programs
2/6/2015	ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Surrebuttal	Rate of Return Capital Structure
1/16/2015	ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Rebuttal	Rate of Return Capital Structure
12/5/2014	ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Cost of Service Report	Rate of Return Capital Structure
9/15/2014	EA-2014-0207	Grain Belt Express Clean Line, LLC	Rebuttal	Financing
8/8/2014	GR-2014-0086	Summit Natural Gas of Missouri	Surrebuttal	Rate of Return Capital Structure
7/11/2014	GR-2014-0086	Summit Natural Gas of Missouri	Rebuttal	Rate of Return Capital Structure
5/30/2014	GR-2014-0086	Summit Natural Gas of Missouri	Cost of Service Report	Rate of Return Capital Structure
4/29/2013	SR-2013-0016	Emerald Pointe Utility Company	Surrebuttal	Rate of Return
1/30/2013	EA-2013-0098	KCP&L; KCP&L Greater Missouri Operations; Transource Missouri, LLC	Rebuttal	Financing
11/13/2012	ER-2012-0175	KCP&L Greater Missouri Operations Company	True-up Rebuttal	Rate of Return Capital Structure
11/13/2012	ER-2012-0174	Kansas City Power & Light Company	True-up Rebuttal	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
10/10/2012	ER-2012-0175	KCP&L Greater Missouri Operations Company	Surrebuttal	Rate of Return Capital Structure
10/8/2012	ER-2012-0174	Kansas City Power & Light Company	Surrebuttal	Rate of Return Capital Structure
9/12/2012	ER-2012-0175	KCP&L Greater Missouri Operations Company	Rebuttal	Rate of Return Capital Structure
9/7/2012	ER-2012-0166	Union Electric Company d/b/a Ameren Missouri	Surrebuttal	Rate of Return Capital Structure
9/5/2012	ER-2012-0174	Kansas City Power & Light Company	Rebuttal	Rate of Return Capital Structure
8/14/2012	ER-2012-0166	Union Electric Company d/b/a Ameren Missouri	Rebuttal	Rate of Return Capital Structure
8/9/2012	ER-2012-0175	KCP&L Greater Missouri Operations Company	Cost of Service Report	Rate of Return Capital Structure
8/2/2012	ER-2012-0174	Kansas City Power & Light Company	Cost of Service Report	Rate of Return Capital Structure
7/6/2012	ER-2012-0166	Union Electric Company d/b/a Ameren Missouri	Cost of Service Report	Rate of Return Capital Structure
04/15/2011	ER-2011-0028	Union Electric Company d/b/a Ameren Missouri	Surrebuttal	Rate of Return Capital Structure
03/25/2011	ER-2011-0028	Union Electric Company d/b/a Ameren Missouri	Rebuttal	Rate of Return Capital Structure
02/28/2011	ER-2010-0356	KCP&L Greater Missouri Operations Company	True-up Rebuttal	Rate of Return Capital Structure
02/28/2011	ER-2010-0355	Kansas City Power & Light Company	True-up Rebuttal	Rate of Return Capital Structure
02/22/2011	ER-2010-0356	KCP&L Greater Missouri Operations Company	True-up Direct	Rate of Return Capital Structure
02/22/2011	ER-2010-0355	Kansas City Power & Light Company	True-up Direct	Rate of Return Capital Structure
02/08/2011	ER-2011-0028	Union Electric Company d/b/a Ameren Missouri	Cost of Service Report	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
1/12/2011	ER-2010-0356	KCP&L Greater Missouri Operations Company	Surrebuttal	Rate of Return Capital Structure
1/05/2011	ER-2010-0355	Kansas City Power & Light Company	Surrebuttal	Rate of Return Capital Structure
12/15/2010	ER-2010-0356	KCP&L Greater Missouri Operations Company	Rebuttal	Rate of Return Capital Structure
12/08/2010	ER-2010-0355	Kansas City Power & Light Company	Rebuttal	Rate of Return Capital Structure
11/17/2010	ER-2010-0356	KCP&L Greater Missouri Operations Company	Cost of Service Report	Rate of Return Capital Structure
11/10/2010	ER-2010-0355	Kansas City Power & Light Company	Cost of Service Report	Rate of Return Capital Structure
05/06/2010	WR-2010-0131	Missouri-American Water Company	Surrebuttal	Rate of Return Capital Structure
04/15/2010	WR-2010-0131	Missouri-American Water Company	Rebuttal	Rate of Return Capital Structure
03/09/2010	WR-2010-0131	Missouri-American Water Company	Cost of Service Report	Rate of Return Capital Structure
03/05/2010	ER-2010-0036	Union Electric Company d/b/a AmerenUE	Surrebuttal	Rate of Return Capital Structure
02/11/2010	ER-2010-0036	Union Electric Company d/b/a AmerenUE	Rebuttal	Rate of Return Capital Structure
12/18/2009	ER-2010-0036	Union Electric Company d/b/a AmerenUE	Cost of Service Report	Rate of Return Capital Structure
10/14/2009	GR-2009-0355	Missouri Gas Energy	Surrebuttal	Rate of Return Capital Structure
09/28/2009	GR-2009-0355	Missouri Gas Energy	Rebuttal	Rate of Return Capital Structure
08/21/2009	GR-2009-0355	Missouri Gas Energy	Cost of Service Report	Rate of Return Capital Structure
04/09/2009	HR-2009-0092	KCP&L Greater Missouri Operations Company	Surrebuttal	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
04/09/2009	ER-2009-0090	KCP&L Greater Missouri Operations Company	Surrebuttal	Rate of Return Capital Structure
04/07/2009	ER-2009-0089	Kansas City Power & Light Company	Surrebuttal	Rate of Return Capital Structure
03/13/2009	HR-2009-0092	KCP&L Greater Missouri Operations Company	Rebuttal	Rate of Return Capital Structure
03/13/2009	ER-2009-0090	KCP&L Greater Missouri Operations Company	Rebuttal	Rate of Return Capital Structure
03/11/2009	ER-2009-0089	Kansas City Power & Light Company	Rebuttal	Rate of Return Capital Structure
02/13/2009	HR-2009-0092	KCP&L Greater Missouri Operations Company	Cost of Service Report	Rate of Return Capital Structure
02/13/2009	ER-2009-0090	KCP&L Greater Missouri Operations Company	Cost of Service Report	Rate of Return Capital Structure
02/11/2009	ER-2009-0089	Kansas City Power & Light Company	Cost of Service Report	Rate of Return Capital Structure
08/01/2008	HR-2008-0300	Trigen-Kansas City Energy Corporation	Cost of Service Report	Rate of Return Capital Structure
01/18/2008	GR-2008-0060	Missouri Gas Utility, Inc.	Cost of Service Report	Rate of Return Capital Structure
07/31/2007	WR-2007-0216	Missouri-American Water Company	Surrebuttal	Rate of Return Capital Structure
07/13/2007	WR-2007-0216	Missouri-American Water Company	Rebuttal	Rate of Return Capital Structure
06/05/2007	WR-2007-0216	Missouri-American Water Company	Direct	Rate of Return Capital Structure
12/27/2006	GR-2006-0422	Missouri Gas Energy	True-up Direct	Rate of Return Capital Structure
12/11/2006	GR-2006-0422	Missouri Gas Energy	Surrebuttal	Rate of Return Capital Structure
11/21/2006	GR-2006-0422	Missouri Gas Energy	Rebuttal	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
10/13/2006	GR-2006-0422	Missouri Gas Energy	Direct	Rate of Return Capital Structure
08/18/2006	ER-2006-0315	Empire District Electric Co.	Surrebuttal	Rate of Return Capital Structure
07/28/2006	ER-2006-0315	Empire District Electric Co.	Rebuttal	Rate of Return Capital Structure
06/23/2006	ER-2006-0315	Empire District Electric Co.	Direct	Rate of Return Capital Structure
12/13/2005	ER-2005-0436	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Surrebuttal	Rate of Return Capital Structure
11/18/2005	ER-2005-0436	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Rebuttal	Rate of Return Capital Structure
10/14/2005	ER-2005-0436	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Direct	Rate of Return Capital Structure
11/24/2004	ER-2004-0570	Empire District Electric Co.	Surrebuttal	Rate of Return Capital Structure
11/04/2004	ER-2004-0570	Empire District Electric Co.	Rebuttal	Rate of Return Capital Structure
09/20/2004	ER-2004-0570	Empire District Electric Co.	Direct	Rate of Return
07/19/2004	GR-2004-0209	Missouri Gas Energy	True-Up Direct	Rate of Return Capital Structure
06/14/2004	GR-2004-0209	Missouri Gas Energy	Surrebuttal	Rate of Return Capital Structure
05/24/2004	GR-2004-0209	Missouri Gas Energy	Rebuttal	Rate of Return Capital Structure
04/15/2004	GR-2004-0209	Missouri Gas Energy	Direct	Rate of Return Capital Structure
03/11/2004	IR-2004-0272	Fidelity Telephone Company	Direct	Rate of Return Capital Structure
02/13/2004	GR-2004-0072	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Rebuttal	Rate of Return Capital Structure
02/13/2004	ER-2004-0034	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Surrebuttal	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
02/13/2004	HR-2004-0024	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks-L&P	Surrebuttal	Rate of Return Capital Structure
01/26/2004	HR-2004-0024	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P	Rebuttal	Rate of Return Capital Structure
01/26/2004	ER-2004-0034	Aquila, Inc. dba Aquila Networks-MPS and Aquila Networks L&P	Rebuttal	Rate of Return Capital Structure
01/09/2004	WT-2003-0563	Osage Water Company	Rebuttal	Rate of Return Capital Structure
01/09/2004	ST-2003-0562	Osage Water Company	Rebuttal	Rate of Return Capital Structure
01/06/2004	GR-2004-0072	Aquila, Inc.	Direct	Rate of Return Capital Structure
12/19/2003	ST-2003-0562	Osage Water Company	Direct	Rate of Return Capital Structure
12/19/2003	WT-2003-0563	Osage Water Company	Direct	Rate of Return Capital Structure
12/09/2003	ER-2004-0034	Aquila, Inc.	Direct	Rate of Return Capital Structure
12/09/2003	HR-2004-0024	Aquila, Inc.	Direct	Rate of Return Capital Structure
12/05/2003	WC-2004-0168	Missouri-American Water Co	Surrebuttal	Rate of Return Capital Structure
12/05/2003	WR-2003-0500	Missouri-American Water Co	Surrebuttal	Rate of Return Capital Structure
11/10/2003	WR-2003-0500	Missouri-American Water Company	Rebuttal	Rate of Return Capital Structure
11/10/2003	WC-2004-0168	Missouri-American Water Company	Rebuttal	Rate of Return Capital Structure
10/03/2003	WC-2004-0168	Missouri-American Water Company	Direct	Rate of Return Capital Structure
10/03/2003	WR-2003-0500	Missouri-American Water Company	Direct	Rate of Return Capital Structure
03/17/2003	GM-2003-0238	Southern Union Co. dba Missouri Gas Energy	Rebuttal	Insulation
10/16/2002	ER-2002-424	The Empire District Electric Company	Surrebuttal	Rate of Return Capital Structure

*cont'd Case Participation of
David Murray, CFA*

Date Filed	Case Number	Company Name	Testimony Type	Issue(s)
09/24/2002	ER-2002-424	The Empire District Electric Company	Rebuttal	Rate of Return Capital Structure
08/16/2002	ER-2002-424	The Empire District Electric Company	Direct	Rate of Return Capital Structure
08/06/2002	TC-2002-1076	BPS Telephone Company	Direct	Rate of Return Capital Structure
01/22/2002	ER-2001-672	UtiliCorp United Inc. dba Missouri Public Service	Surrebuttal	Rate of Return Capital Structure
01/22/2002	EC-2002-265	UtiliCorp United Inc. dba Missouri Public Service	Surrebuttal	Rate of Return Capital Structure
01/08/2002	ER-2001-672	UtiliCorp United Inc. dba Missouri Public Service	Rebuttal	Rate of Return Capital Structure
01/08/2002	EC-2002-265	UtiliCorp United Inc. dba Missouri Public Service	Rebuttal	Rate of Return Capital Structure
12/06/2001	ER-2001-672	UtiliCorp United Inc. dba Missouri Public Service	Direct	Rate of Return Capital Structure
12/06/2001	EC-2002-265	UtiliCorp United Inc. dba Missouri Public Service	Direct	Rate of Return Capital Structure
05/22/2001	GR-2001-292	Missouri Gas Energy, A Division of Southern Union Company	Rebuttal	Rate of Return Capital Structure
04/19/2001	GR-2001-292	Missouri Gas Energy, A Division of Southern Union Company	Direct	Rate of Return Capital Structure
03/01/2001	TT-2001-328	Oregon Farmers Mutual Telephone Company	Rebuttal	Rate of Return Capital Structure
02/28/2001	TR-2001-344	Northeast Missouri Rural Telephone Company	Direct	Rate of Return Capital Structure
01/31/2001	TC-2001-402	Ozark Telephone Company	Direct	Rate of Return Capital Structure