Exhibit No.:
Issues: Public Interest and Modeling
Witness: Sarah L. Kliethermes
Sponsoring Party: MO PSC Staff
Type of Exhibit: Rebuttal Testimony
Case No.: EA-2015-0146
Date Testimony Prepared: October 21, 2015

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF DIVISION

REBUTTAL TESTIMONY

OF

SARAH L. KLIETHERMES

AMEREN TRANSMISSION COMPANY OF ILLINOIS

CASE NO. EA-2015-0146

Jefferson City, Missouri
October 2015

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

NP

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Application of Ameren Transmission Company of Illinois for Other Relief or, in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line from Palmyra, Missouri to the Iowa Border and an Associated Substation Near Kirksville, Missouri	)))))))))	Case No. EA-2015-0146

AFFIDAVIT OF SARAH L. KLIETHERMES

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

COMES NOW Sarah L. Kliethermes and on her oath declares that she is of sound mind and lawful age; that she contributed to the attached Rebuttal Testimony; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Sarah L. Kliethermes

Subscribed and sworn to before me this 20th day of October, 2015.

SUSAN L. SUNDERMEYER
Notary Public - Notary Seal
State of Missouri
Commissioned for Callaway County
My Commission Expires: October 28, 2018
Commission Number: 14942086

Susan L. Sundermeyer
Notary Public

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OF

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CASE NO. EA-2015-0146

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SARAH L. KLIETHERMES

AMEREN TRANSMISSION COMPANY OF ILLINOIS

CASE NO. EA-2015-0146

Q. Please state your name and business address.

A. My name is Sarah L. Kliethermes and my business address is Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

Q. Who is your employer and what is your present position?

A. I am employed by the Missouri Public Service Commission ("Commission") and my title is Regulatory Economist III, Economic Analysis Unit, Operational Analysis Department, Commission Staff Division.

Q. What is your educational background and work experience?

A. A copy of my credentials and case experience is attached as Schedule SLK-R-1.

Summary of Recommendation

Q. Have you reviewed the Ameren Transmission Company of Illinois ("ATXI") conditional application ("Application") to the Missouri Public Service Commission for a certificate of convenience and necessity ("CCN") authorizing it to construct, install, operate, control, manage and maintain a new 345,000 volt ("345-kV") electric transmission line running generally from Palmyra, Missouri, and extending westward to a new substation located near Kirksville, Missouri, and a new 345-kV transmission line extending from the new substation north to the Iowa border, and a 2.2-mile 161,000 volt (161-kV) connector line

from the new substation to an interconnection with the existing Adair substation owned by Union Electric Company d/b/a Ameren Missouri and the direct testimony of Ameren Transmission Company of Illinois (ATXI) witness Todd Schatzki concerning whether ATXI's Mark Twain Project ("Project") meets the criteria related to whether the Application is in the public interest?

A. Yes. I have reviewed these documents, as well as related workpapers and ATXI and Midcontinent Independent System Operator ("MISO") responses to Staff data requests.

Q. Does Staff recommend the Commission approve the Application?

A. Yes. Staff's analysis indicates that, with the imposition of appropriate conditions, the Application is sufficient to address the Commission's *Tartan* criteria.[1] This testimony is summarized by Staff witness Daniel I. Beck, who also addresses applicant qualification and certain environmental regulations. Additionally, Shawn E. Lange addresses need, David Murray addresses financial ability, and Michael L. Stahlman addresses economic feasibility and aspects of the public interest promotion. I also address the promotion of the public interest.

Q. What is the purpose of your testimony?

[1] In *In the Matter of the Application of Tartan Energy Company, LLC, d/b/a Southern Missouri Gas Company*, 3 Mo P.S.C.3d 173, 177 (1994)., the Commission's Order listed five criteria to include in the consideration when making a determination on whether a utility's proposal meets the standard of being "necessary or convenient for the public service." Those factors are:

- Is the service needed?
- Is the applicant qualified to provide the service?
- Does the applicant have the financial ability to provide the service?
- Is the applicant's proposal economically feasible? and
- Does the service promote the public interest?

A. The purpose of my testimony is to present Staff's recommendation that the Commission approve the Application as the Project promotes the public interest. However, there is certain evidence submitted by ATXI that Staff recommends the Commission not rely on in making its determination. In particular, I recommend the Commission not rely on any implications in the testimony of Dr. Schatzki that (1) the Project would reduce Missouri retail electric rates, or that (2) the Project would reduce environmental emissions in Missouri.

Q. Does Staff recommend that the Commission reject the Application unless ATXI presents evidence addressing Staff's concerns?

A. No. As more specifically explained below, Staff only recommends that the Commission not rely on the evidence presented by Dr. Schatzki on the issues of retail rate impact and projected emissions impact. Staff considers a decision regarding ATXI's Application is not dependent upon Dr. Schatzki's analysis.

Q. Does Staff recommend that the Commission find that the Mark Twain Project as proposed in the Application is in the public interest?

A. Yes. As discussed by me more fully below and as discussed by Staff Witness Michael L. Stahlman, Staff recommends that the Commission find the Application is in the public interest.

Recommendation that Mark Twain Line is in the Public Interest

Q. Does Staff recommend that the Commission find that the Mark Twain Project promotes the public interest?

A. Yes. As discussed more fully by Staff witness Shawn E. Lange, the Project resolves a reliability concern on the Ameren Missouri system. Additionally, among the factors indicating consistency with the public interest is the inclusion of this Project in the MISO Multi-Value Projects ("MVPs") portfolio, which was approved by MISO in 2011. The

inclusion of the Mark Twain Project in the MVP portfolio indicates the Project was determined by MISO to appropriately balance the economic tradeoffs considered by MISO at the time MISO undertook those considerations.[2]

Q. Has MISO provided results of its cost benefit analysis for individual line segments or projects?

A. No. The overall cost-benefit ratio for the MVP portfolio, which includes other transmission segments, was estimated to be in a range of 2.0-2.9 for the areas of Missouri located in the MISO region – generally the Ameren Missouri service territory as well as the area served by the City of Columbia (local resource zone). However, a required triennial review of this Project in 2014 increased the projected cost-benefit ratio to 2.3-3.3 for the Missouri local resource zone, Zone 5.[3] A cost benefit ratio of greater than 1 indicates that the benefits are greater than the costs. Staff witness Daniel I. Beck discusses that the Mark Twain Project, in combination with other MVPs, promotes the integration of wind energy into Missouri that would assist Missouri utilities in meeting their Renewable Energy Standard requirements. Staff witness Beck also discusses the implications of the U.S. Clean Air Act Clean Power Plan.

Summaries of the overall MISO-estimated benefits for the MISO region, and for Zone 5 (Missouri), are attached as Schedules SLK-R-3 and SLK-R-4, respectively.

Q. Does Staff recommend that the Commission defer its finding of public interest or any other determinations to MISO?

[2] Home>Planning>MISO Transmission Expansion Planning (MTEP)>Multi Value Project Portfolio Analysis" https://www.misoenergy.org/PLANNING/TRANSMISSIONEXPANSIONPLANNING/Pages/MVPAnalysis.aspx.

[3] See Schedule SLK-R-2. MISO. (2014). "MTEP 14 Triennial Review: A 2014 review of the public policy, economic, and qualitative benefits of the Multi-Value Project Portfolio." https://www.misoenergy.org/Library/Repository/Study/Candidate%20MVP%20Analysis/MTEP14%20MVP%20Triennial%20Review%20Report.pdf p. 8.

A. No, the Commission retains the ability to reach its own conclusions which may be different than the conclusions reached by MISO.

Limitations of ATXI's Modeling and Results

Q. Is the modeling presented by ATXI appropriate for estimating emissions and retail rate impacts?

A. No. While Dr. Schatzki's analysis is reasonable for estimating the relative impact of the Project on Locational Marginal Prices ("LMPs") under the various scenarios, it is not suitable for projecting the impact of the Project on Missouri retail rates, or projecting the impact of the Project on the ability of the State of Missouri to comply with various emissions requirements. I will describe Staff's concerns with the applicability of his analyses related to his public interest assertion.

Q. Is Dr. Schatzki's analysis satisfactory for purposes of estimating retail rate impact for Missouri retail customers or for purposes of estimating reductions of CO_2, SO_2, NOx, and mercury emissions?

A. No. As I will fully discuss below, reasonably estimating either retail rate impact or emissions impact requires narrowly-tailored production modeling to estimate how many hours a specific plant in a particular generation fleet will run at what net profit, under normal conditions.

Q. Does Staff recommend that the Commission deny the Application on the basis that the analysis provided by ATXI is not sufficient for purposes of estimating retail rate impact for Missouri retail customers?

A. No. Staff does not recommend that the Commission consider retail rate impact for Missouri retail customers in considering the Application for a non-retail electric utility. The entry of any entity into the Missouri electric market, regulated or unregulated, can impact

Missouri retail rates, and that impact may be different for customers of various utilities or for different types of customers. An accurate understanding of the various cost and revenue impacts of a major transmission line addition would require the type of production modeling and cost of energy analysis that is typically used in electric utility general rate cases.

Q. Does Staff recommend that the Commission deny the Application on the basis that the analysis is not suitable for purposes of estimating compliance with various environmental regulations?

A. No. In addition to the limitations in the precisions of the modeling performed by Dr. Schatzki, at this time, there is not sufficient certainty as to how various environmental regulations will impact generation in and around Missouri to suitably predict whether the Project would be an economical means of compliance with various environmental regulations. The impact of environmental regulations is discussed in more detail by Staff witness Daniel I. Beck.

Q. Is it necessary for ATXI to provide modeling at a level of precision necessary to determine whether the Project would cause additional transmission facilities to be built around its interconnection points, or whether the generation facilities in the region will be sufficient to provide the ancillary services with the Project in place?

A. No. MISO is the balancing authority for the region in which the Mark Twain Project is located. MISO has extensively studied the operational impacts of the Mark Twain Project and the associated system improvements. Therefore, it is not necessary for the modeling performed by Dr. Schatzki to address the full range of contingencies and the level of precision that has been sufficiently studied by MISO. The studies performed by MISO are discussed by Staff witnesses Shawn E. Lange and Michael L. Stahlman.

Q. Has ATXI asserted that the Mark Twain Project promotes the public interest due to modeled "reductions in prices, production costs and emissions?"[4]

A. Yes.

Dr. Schatzki states that his analysis found that the development of the Mark Twain Project would be expected to decrease wholesale prices for electric power and decrease the costs of producing electricity to meet customer loads. He asserts that these reductions in production costs "would lead to reductions in the charges for electric power to retail customers in Missouri that far outweigh the impact of transmission charges to Missouri load-serving entities (primarily Ameren Missouri) that would arise from the Project." He also states that "the Project would reduce emissions of carbon dioxide ('CO_2') generated throughout the MISO footprint, as well as reduce emissions of nitrogen oxides ('NO_X'), sulfur dioxide ('SO_2') and mercury from sources within Missouri. In total, these impacts would provide substantial benefits to Missouri, as well as to the MISO region as a whole." (Schatzki Direct, pages 4-5).

Q. How did Dr. Schatzki perform his analysis?

A. Dr. Schatzki used the PROMOD software and a publicly available VYNTEX data set, with limited unit-specific information for existing, contemplated, and hypothetical units.

Q. Is PROMOD useful for estimating market prices under a set of assumed circumstances?

A. Yes. MISO, among others, uses PROMOD modeling to estimate hourly marginal energy prices, hourly nodal congestion components, and hourly nodal line losses under various sets of assumed circumstances.

[4] See Dr. Schatzki Direct, page 9.

Q. Of what use are these hourly estimates?

A. So long as reasonable inputs, such as unit capacities, unit heat rates, unit-specific fuel costs, unit-specific minimum run times, unit-specific outage parameters, and reasonable transmission system assumptions are used, a region-wide (or interconnect-wide) PROMOD run can be useful to estimate the Day Ahead ("DA") LMP over time. Those hourly LMPs, in turn, can be useful for creating more narrowly-tailored production modeling that can be useful to estimate how many hours a specific plant in a particular generation fleet will run at what net profit, under normal conditions.

Q. Is Dr. Schatzki's PROMOD analysis reasonable for purposes of estimating which plants will operate at a specific time, at a specific production cost, for a specific net profit, creating a specific level of emissions?

A. No. Dr. Schatzki's modeling did not use the level of detailed inputs that is necessary to reasonably estimate net profits or emissions. The level of detail he used is useful for estimating what DA LMPs might be reasonable for use in performing more narrowly-tailored production modeling, however he has not presented that more narrowly-tailored production modeling. Those more narrowly-tailored models are necessary if one is intending to develop reasonably reliable estimates of the net fuel and purchased power expense that would be incurred by a particular utility with and without the Mark Twain Project, and with and without any additional generation that may be associated with development of the Mark Twain Project.

Q. Does Dr. Schatzki maintain that his model is intended to predict the level of utility-specific plant operations or purchased power activity that would typically be used in setting Missouri retail rates?

A. No. Dr. Schatzki confirmed in a conference call with Staff on October 6, 2015, that the Direct Testimony he presented concerning electric rate impact was intended to be an estimate under the relevant scenarios for the State of Missouri as a whole, as opposed to a prediction for actual retail rate impacts for specific utilities.[5]

Q. Do Missouri investor-owned utilities use a PROMOD analysis similar to the one performed by Dr. Schatzki to estimate variable fuel and purchased power expense, or to estimate net off-system sales revenues to calculate revenue requirements in general rate cases?

A. No. Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company use PROMOD to estimate LMPs for use in fleet-specific production modeling, but those utilities do not rely on the PROMOD runs in isolation to estimate fuel and purchased power expense nor to estimate net off-system sales revenues. Ameren Missouri and The Empire District Electric Company use normalized market prices to develop LMPs for use in detailed fleet-specific production modeling. Staff uses a similar method.

Q. Is it possible to reasonably estimate the impact of the Mark Twain Project and any additional generation – particularly wind generation – that may be associated with development of the Mark Twain Project on emissions levels?

A. Yes. A more narrowly-tailored production modeling using the LMPs generated by Dr. Schatzki's analysis would be useful to estimate how many hours a specific plant will run burning how much fuel, under normal conditions. That information can be used in conjunction with accurate plant-specific information about that plant's fuel mix and the level of various materials in that fuel, the efficiency of the plant in converting that fuel to

[5] See also ATXI response to Staff Data Request No. 55, attached as Schedule SLK-5.

electrical energy, and the air-quality control equipment available to that plant, to reasonably estimate the impact on emissions levels.

Q. If the Commission were to request more accurate estimates of the impact of the Project on how specific plants would operate for purposes of estimating emissions levels and retail rate impact, are there additional factors impacting the appropriateness of the analysis presented by ATXI for purposes beyond estimating the relative impact on LMPs under the various scenarios?

A. Yes. Greater precision is needed in the modeling assumptions concerning unit capacities, unit heat rates, unit-specific fuel costs, unit-specific minimum run times, and unit-specific outage parameters. Additionally, the generation source used by ATXI in its modeling is based on expectations held in the year 2010. While this information was the best available at that time, it is simply not reflective of reality at this time. For example, Dr. Schatzki's data sets with and without the Project include Missouri wind projects that have not been built and as a consequence are not in the MISO interconnection queue.

Q. Does Staff recommend that the Commission reject the Application unless ATXI presents evidence concerning these factors?

A. No. Staff only recommends that the Commission not rely on the evidence presented by Dr. Schatzki on the issues of retail rate impact and projected emissions impact. Staff considers a decision regarding ATXI's Application is not dependent upon Dr. Schatzki's analysis.

Q. Has Staff prepared a summary of Dr. Schatzki's modeling under the various scenarios, with and without the Mark Twain line and associated interconnections including the Zachary substation?

A. Yes. It is attached as Schedule SLK-R-6 and demonstrates that the estimated impact of the line on LMPs varies by utility and scenario.

Q. Does Staff recommend that the Commission grant ATXI's request for a CCN to build and operate the Project as described?

A. Yes. Staff recommends the Commission grant the requested CCN, with the imposition of the conditions described in the testimony of Staff witness Daniel I. Beck.

Q. Does this conclude your rebuttal testimony?

A. Yes.

Sarah L. Kliethermes

MoPSC Employment Experience

Regulatory Economist III (July 2013 – Present)
Economic Analysis Section, Energy Unit, Tariff, Safety, Economic and Engineering Analysis Department of the Missouri Public Service Commission. In this position my duties include providing analysis and recommendations in the areas of RTO and ISO transmission, rate design, class cost of service, tariff compliance and design, and energy efficiency mechanism and tariff design. I also continue to provide legal advice and assistance regarding generating station and environmental control construction audits and electric utility regulatory depreciation.

My prior positions in the Commission's General Counsel's Office, which was reorganized as the Staff Counsel's Office, consisted of leading major rate case litigation and settlement and presenting Staff's position to the Commission, and providing legal advice and assistance primarily in the areas of depreciation, cost of service, class cost of service, rate design, tariff issues, resource planning, accounting authority orders, construction audits, rulemakings and workshops, fuel adjustment clauses, document management and retention, and customer complaints. Those positions were:
Senior Counsel (September 2011 – July 2013)
Associate Counsel (September 2009 – September 2011)
Legal Counsel (September 2007 – September 2009)
Legal Intern (May 2006 – September 2007)

Testimony

Contributor to Staff recommendations concerning Case No. EA-2015-0145, Application of Ameren Transmission Company of Illinois for Other Relief or in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line in Marion County, Missouri and an Associated Switching Station Near Palmyra, Missouri.

Contributor to Staff Class Cost of Service and Rate Design Report, regarding Class Cost of Service; prefiled Rebuttal and Surrebuttal, regarding Class Cost of Service and marginal energy cost, in Case No. ER-2014-0370, In the Matter of Kansas City Power & Light Company's Request for Authority to File Tariffs to Increase Rates.

Provided at hearing, as well as deposed, as well as prefiled Rebuttal, Supplemental Direct, and Rebuttal to Supplemental Direct, regarding marginal revenue calculation, throughput disincentive, earnings opportunity and performance incentive, and customer-related issues, in Case No. ER-2015-0055, Union Electric Company d/b/a Ameren Missouri application under the Missouri Energy Efficiency Investment Act.

Provided at hearing, as well as contributor to Contributor to Staff Cost of Service Report, regarding special contract tariff revenues, and Staff Class Cost of Service and Rate Design Report, regarding Class Cost of Service and miscellaneous tariff issues; prefiled Rebuttal and

Surrebuttal, regarding Class Cost of Service and special contracts, in Case No. ER-2014-0351, In the Matter of The Empire District Electric Company's Request for Authority to File Tariffs to Increase Rates.

Provided at hearing and deposed, as well as contributor to Staff Cost of Service Report, regarding Noranda revenues, and Staff Class Cost of Service and Rate Design Report, regarding Class Cost of Service; prefiled Rebuttal and Surrebuttal, regarding Class Cost of Service, incremental cost of energy, and Noranda rate design, in Case No. ER-2014-0258, In the Matter of Union Electric Company d/b/a Ameren Missouri for Authority to File Tariffs to Increase Rates.

Provided at hearing, as well as prefiled Rebuttal and Surrebuttal, regarding energy price efficiency and transmission, in Case No. EA-2014-0207, Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity.

Contributor to Staff recommendation concerning Ameren Missouri municipal lighting, in Case No. EC-2014-0316, City of O'Fallon, Missouri, and City of Ballwin, Missouri, Complainants v. Union Electric Company d/b/a Ameren Missouri, Respondent.

Contributor to Staff Report, regarding a requested Certificate of Convenience and Necessity, a requested Special Contract tariff sheet, and tariff review, in Case No. HR-2014-0066, In the Matter of Veolia Energy Kansas City, Inc for Authority to File Tariffs to Increase Rates.

Provided at hearing, as well as prefiled Rebuttal and Surrebuttal, regarding average wholesale energy prices, in Case No. EC-2014-0224, Noranda Aluminum, Inc., et al., Complainants, v. Union Electric Company d/b/a Ameren Missouri, Respondent.

Rebuttal, regarding DSIM tariff design, margin rate calculation, and customer-related issues, in Case No. ER-2014-0095, Kansas City Power & Light application under the Missouri Energy Efficiency Investment Act. Case resolved by stipulation.

Contributor to Staff recommendation concerning KCP&L Greater Missouri Operations Company's Application for a Renewable Energy Standard Rate Adjustment Mechanism, in Case No. EO-2014-0151, addressing issues of customer notice and tariff design. Staff recommendation to approve compliance tariffs.

RELATED TRAINING AND EXPERIENCE

Participant in Missouri's Comprehensive Statewide Energy Plan working group on Energy Pricing and Rate Setting Processes.

Presented:
Fundamentals of Ratemaking at the MoPSC (October 8, 2014)
Ratemaking Basics (Sept. 14, 2012)

Attended:
Net Metering presented by Ralph Zarumba (December, 9, 2014)
Fourth Annual Public Utility Law Symposium (October 17, 2014)
Electricity Energy Storage Sources (August 29, 2014)
Combined Heat & Power: Planning, Design and Operation (August 11, 2014)
Today's U.S. Electric Power Industry, the Smart Grid, ISO Markets & Wholesale Power Transactions (July 29-30)
MISO Markets & Settlements Training for OMS and ERSC Commissioners & Staff (Jan. 27 – 28, 2014)
Validating Settlement Charges in New SPP Integrated Marketplace (July 22, 2013)
PSC Transmission Training (May 14 – 16, 2013)
Grid School (March 4 – 7, 2013)
Specialized Technical Training - Electric Transmission (April 18 – 19, 2012)
Legal Practice Before the Missouri Public Service Commission (Sept. 1, 2011)
Renewable Energy Finance Forum (Sept. 29 – Oct 3, 2010)
The New Energy Markets: Technologies, Differentials and Dependencies (June 16, 2011)
Mid-American Regulatory Conference Annual Meeting (June 5 – 8, 2011)
Utility Basics (Oct. 14 – 19, 2007)

EDUCATION

Studied Energy Transmission at Bismarck State College, online (2014 – 2015).
Licensed to Practice Law in Missouri, MoBar # 60024 (Summer 2007).
Juris Doctorate, University of Missouri, Columbia, Missouri (2004 – 2007).
Bachelor of Science in Historic Preservation, Cum Laude, minor in Architectural Design, Southeast Missouri State University, Cape Girardeau, Missouri (2002 – 2004).
2000 – 2002: Studied Architecture and English Literature at Drury University, Springfield, Missouri.
2013Economics courses at Columbia College, Jefferson City campus.

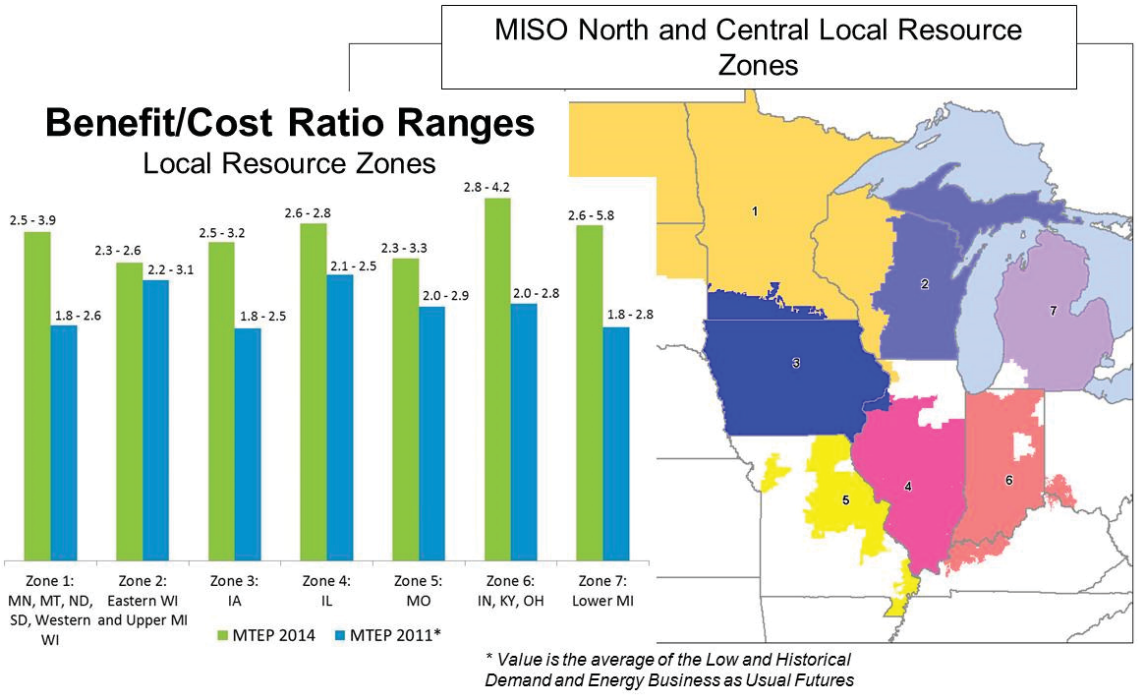
OTHER EMPLOYMENT EXPERIENCE

Law Clerk, Contracting and Organization Research Institute. Performed legal research; analyzed, described, and categorized contracts.
Paid Intern, Southeast Missouri State University. Accessioned and organized artifact collections for the Missouri Department of Natural Resources, Division of State Parks and Historic Sites.
Intermediate Clerk, Missouri Department of Elementary and Secondary Education. Responsibilities included organizing and managing various forms of data.

Distribution of Economic Benefits

The MVP Portfolio provides benefits across the MISO footprint in a manner that is roughly equivalent to costs allocated to each local resource zone (Figure E-3). The MVP Portfolio's benefits are at least 2.3 to 2.8 times the cost allocated to each zone. As a result of changing tariffs/business practices (planning reserve margin requirement and baseline reliability project cost allocation), load growth, and wind siting, zonal benefit distributions have changed slightly since MTEP11.

Benefit-to-cost ratios have increased in all zones since MTEP11



** Value is the average of the Low and Historical Demand and Energy Business as Usual Futures*

Figure E-3: MVP Portfolio Total Benefit Distribution

MVPs Create Jobs, Benefits for States

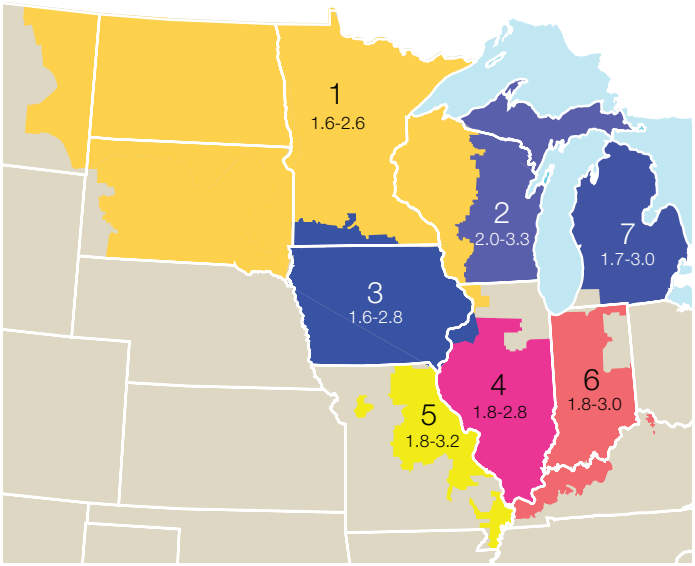
MISO's Multi-Value Projects portfolio, or MVPs, will create thousands of jobs. Estimates include the following:

- Creation of 17,000 - 39,800 direct (construction) jobs
- Between 28,400 and 74,000 total jobs will be created. This includes construction, supplier and other downstream opportunities.

MVPs Save States Money

As a result of MVPs, consumers will see economic benefits ranging from 1.8 to 3.0 times the costs. These benefits include:

- $12.4 billion to $40.9 billion from enabling low-cost generation to displace higher-cost generation
- $28 million to $87 million from more efficient dispatch of operating reserves
- $111 million to $396 million from reductions in energy wasted on transmission losses, reducing future generation investment required to serve those losses
- $1,354 million to $2,503 million in benefits through supporting a regional wind integration methodology
- $1,023 million to $5,093 million from reduced future Planning Reserve Margin Requirements, which reduces installation of future generation to meet this requirement.
- $226 million to $794 million in avoided costs for reliability projects that would otherwise need to be constructed.



Benefit/Cost Ratio Ranges
Local Resource Zones

* 2011 present value dollars

Did you know?

- **Transmission planning ensures greater reliability throughout MISO, identifying areas of congestion and recommending transmission upgrades.**
- **MISO matches the appropriate cost allocation method with each project's driver and business case to ensure project costs are spread commensurate with benefits.**
- **Multi-Value Projects provide benefits beyond just meeting local energy and reliability needs.**

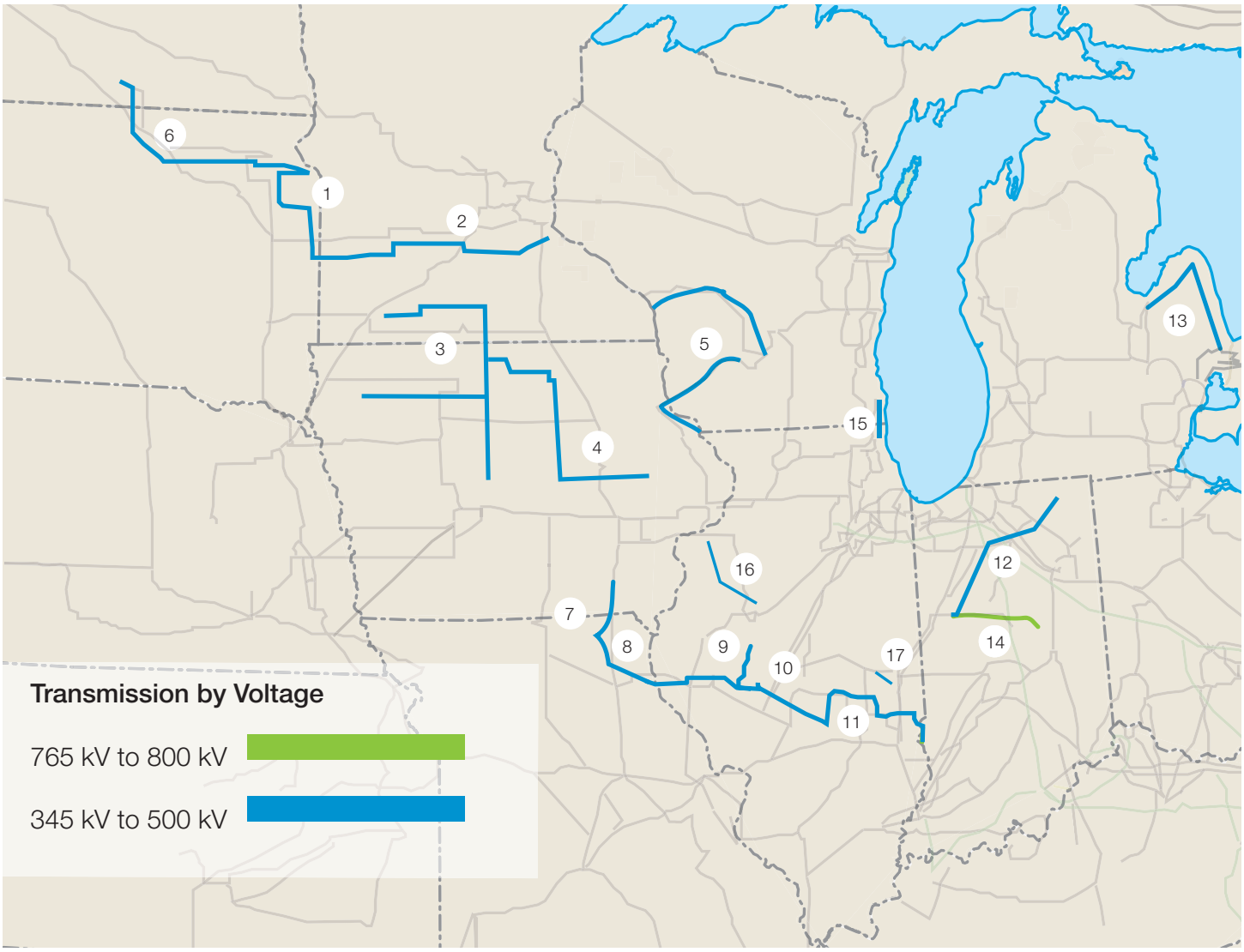
Regional Benefits

MISO projects the 2011 MVP portfolio will realize the following benefits for the entire MISO footprint:

- Average residential customer's return on investment: $23 annual return on an $11 per year investment.
- Projected benefits: $15.6 billion - $49.3 billion*
- Proposed capital cost: $5.2 billion*

MISO Zones & Planning

The MVP portfolio will deliver reliability, public policy and economic benefits across the system. MISO's energy zones are designed to optimize wind generation placement and to minimize distance to other fuel sources such as natural gas. When connected to the overall grid by the MVP projects, the zones will enable access to low-cost energy for the entire MISO footprint.



2011 Multi-Value Project Portfolio

Project Name	State(s)	Voltage
1. Big Stone – Brookings	SD	345 kV
2. Brookings – SE Twin Cities	SD/MN	345 kV
3. Lakefield Jct.-Winnebago – Winco – Burt area & Sheldon – Burt area – Webster	MN/IA	345 kV
4. Winco – Lime Creek – Emery -Blackhawk – Hazleton	IA	345 kV
5. N. LaCrosse-N. Madison-Cardinal & Dubuque Co.-Spring Green-Cardinal	WI	345 kV
6. Ellendale – Big Stone	ND/SD	345 kV
7. Adair – Ottumwa	IA/MO	345 kV
8. West Adair – Palmyra Tap	MO	345 kV
9. Palmyra-Quincy-Meredosia-Ipava & Meredosia-Pawnee	MO/IL	345 kV
10. New Pawnee-Pana	IL	345 kV
11. Pana-Mt. Zion-Kansas-Sugar Creek	IL	345 kV
12. Reynolds-Burr Oak-Hiple	IN	345 kV
13. Michigan Thumb Loop Expansion	MI	345 kV
14. New Reynolds-Greentown	IN	765 kV
15. Pleasant Prairie-Zion Energy Center	WI/IL	345 kV
16. Fargo-Oak Grove	IL	345 kV
17. Sidney-Rising	IL	345 kV

MISO

MVPs Create Jobs Benefits for Missouri

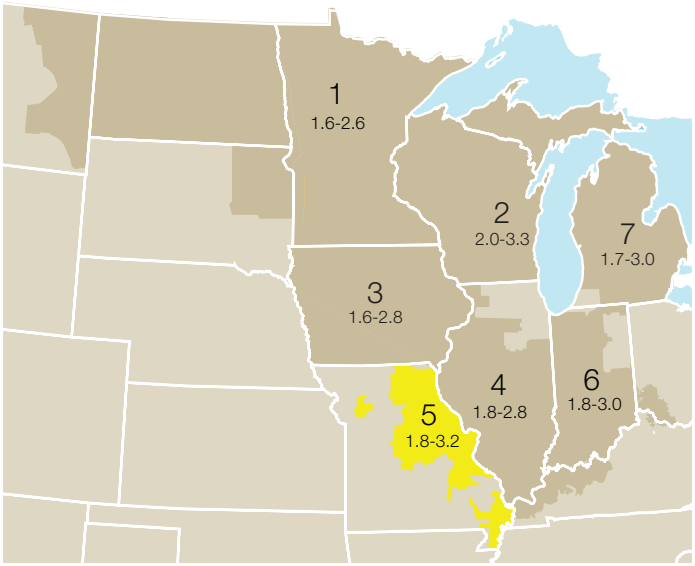
MISO's Multi-Value Projects portfolio, or MVPs, will create thousands of jobs for Missouri. Estimates include the following:

- Creation of 1,600 - 3,800 direct (construction) jobs
- Between 2,700 and 7,000 total jobs will be created. This includes construction, supplier and other downstream opportunities.

MVPs Save Missouri Money

As a result of MVPs, Missouri consumers will see economic benefits ranging from 1.8 to 3.2 times the costs. These benefits include:

- $1.2 billion to $4.4 billion from enabling low-cost generation to displace higher-cost generation
- $3 million to $9 million from more efficient dispatch of operating reserves
- $11 million to $39 million from reductions in energy wasted on transmission losses, reducing future generation investment required to serve those losses
- $141 million to $260 million in benefits through supporting a regional wind integration methodology
- $101 million to $501 million from reduced future Planning Reserve Margin Requirements, which reduces installation of future generation to meet this requirement.
- $6 million to $23 million in avoided costs for reliability projects that would otherwise need to be constructed.



Benefit/Cost Ratio Ranges
Local Resource Zones

* 2011 present value dollars

Did you know?

- **Transmission planning ensures greater reliability throughout MISO, identifying areas of congestion and recommending transmission upgrades.**
- **MISO matches the appropriate cost allocation method with each project's driver and business case to ensure project costs are spread commensurate with benefits.**
- **Multi-Value Projects provide benefits beyond just meeting local energy and reliability needs.**

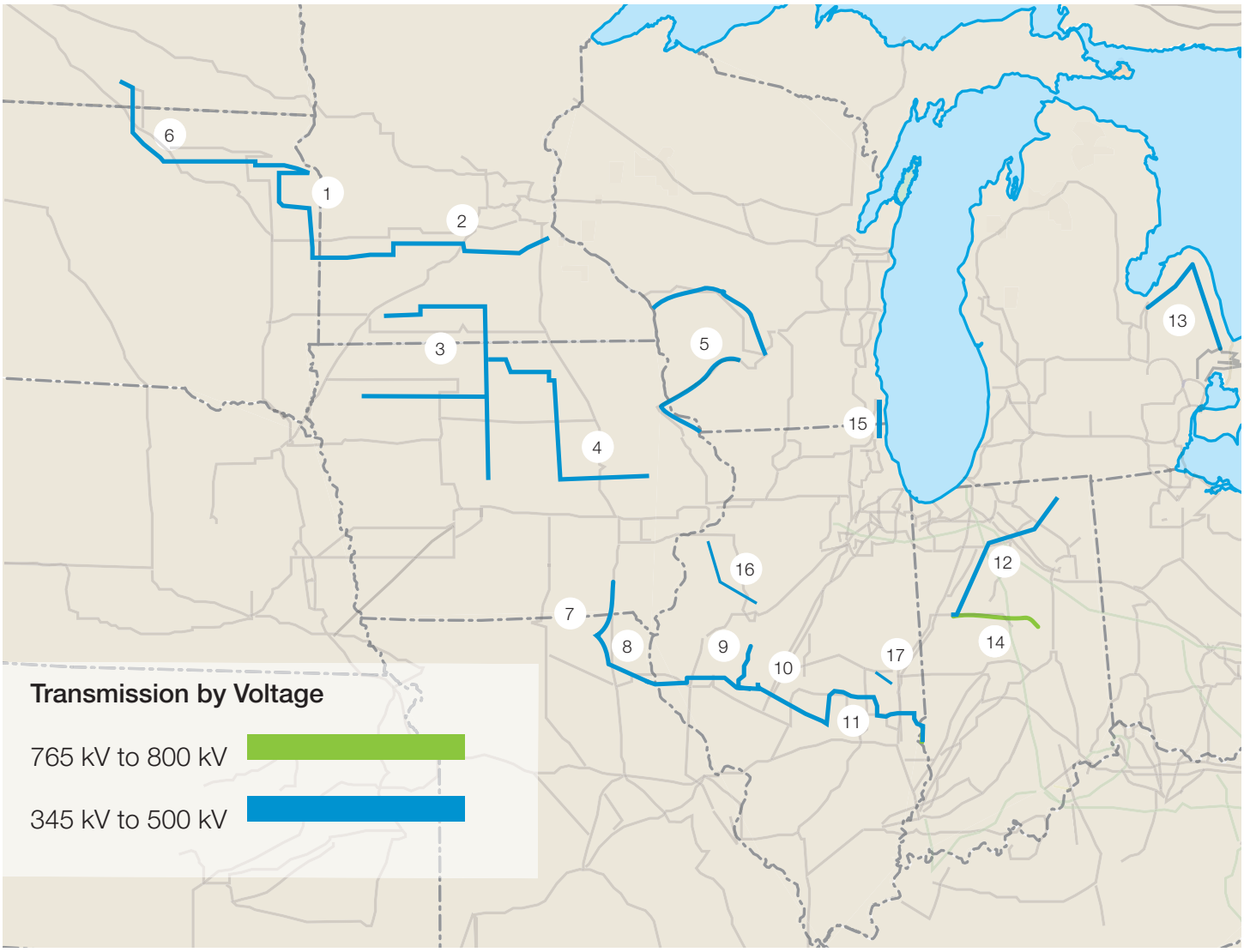
Regional Benefits

MISO projects the 2011 MVP portfolio will realize the following benefits for the entire MISO footprint:

- Average residential customer's return on investment: $23 annual return on an $11 per year investment.
- Projected benefits: $15.6 billion - $49.3 billion*
- Proposed capital cost: $5.2 billion*
- Cost/Benefit Ratio: 1.8 to 3.0 times the cost
- Annual construction jobs created: 17,000 to 39,800
- Total annual jobs created: 28,400 to 74,000

MISO Zones & Planning

The MVP portfolio will deliver reliability, public policy and economic benefits across the system. MISO's energy zones are designed to optimize wind generation placement and to minimize distance to other fuel sources such as natural gas. When connected to the overall grid by the MVP projects, the zones will enable access to low-cost energy for the entire MISO footprint.



2011 Multi-Value Project Portfolio

Project Name	State(s)	Voltage
1. Big Stone – Brookings	SD	345 kV
2. Brookings – SE Twin Cities	SD/MN	345 kV
3. Lakefield Jct.-Winnebago – Winco – Burt area & Sheldon – Burt area – Webster	MN/IA	345 kV
4. Winco – Lime Creek – Emery -Blackhawk – Hazleton	IA	345 kV
5. N. LaCrosse-N. Madison-Cardinal & Dubuque Co.-Spring Green-Cardinal	WI	345 kV
6. Ellendale – Big Stone	ND/SD	345 kV
7. Adair – Ottumwa	IA/MO	345 kV
8. West Adair – Palmyra Tap	MO	345 kV
9. Palmyra-Quincy-Meredosia-Ipava & Meredosia-Pawnee	MO/IL	345 kV
10. New Pawnee-Pana	IL	345 kV
11. Pana-Mt. Zion-Kansas-Sugar Creek	IL	345 kV
12. Reynolds-Burr Oak-Hiple	IN	345 kV
13. Michigan Thumb Loop Expansion	MI	345 kV
14. New Reynolds-Greentown	IN	765 kV
15. Pleasant Prairie-Zion Energy Center	WI/IL	345 kV
16. Fargo-Oak Grove	IL	345 kV
17. Sidney-Rising	IL	345 kV

Ameren Transmission Company of Illinois's
Response to MPSC Data Request

In the Matter of the Application of Ameren Transmission Company of Illinois for Other Relief or, in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line from Palmyra, Missouri, to the Iowa Border and an Associated Substation Near Kirksville, Missouri.
Data Request

Data Request No.: MPSC 0055 - Nathan Williams

The Staff would appreciate it if this Staff Data Request could be answered in advance of the filing date of Staff's Rebuttal Testimony on October 21. The Staff would like some verification of what it thought it heard in the conference call with Dr. Schatzki on Tuesday afternoon, October 6, 2015. Would it be correct to characterize Dr. Schatzki's responses on October 6 to some of Sarah Kliethermes' questions as the following regarding Dr. Schatzki's Direct Testimony filed on May 29, 2015 in File No. EA-2015-0146: The Direct Testimony Dr. Schatzki has presented concerning his analysis regarding the effect of the Mark Twain Project on electric utility rates for the state of Missouri is intended to be a broad view, e.g., the effect of the Mark Twain Project should be a decrease in retail electric rates for the state of Missouri for the electric utilities examined, under the scenarios identified, in Dr. Schatzki's Direct Testimony. Dr. Schatzki's analysis is not intended to be a precise predictor of the actual retail rate impact of the Mark Twain Project on Missouri electric rates for the specific utilities identified in Dr. Schatzki's Direct Testimony. Data Request submitted by Nathan Williams (nathan.williams@psc.mo.gov).

RESPONSE

Prepared By: Dr. Todd Schatzki
Title: Vice President, Analysis Group, Inc.
Date: October 10, 2015

My Direct Testimony considered the question of whether the Mark Twain Project ("Project") is "economically feasible" and "in the public interest"--two of the five so-called *Tartan* factors (Direct Testimony of Dr. Todd Schatzki, pp. 3-4.). What is meant

or intended by the phrase "broad view" in the data request is not entirely clear. As a part of the evaluation of the whether the Project meets these *Tartan* factors, I estimated the change in the costs of production needed to meet Missouri customer loads ("Missouri Productions Costs") as a result of placing the Project into service (as compared to if the Project were not in service). My finding that the Project would lead to substantial reductions in production costs in excess of the costs of developing the Project was one of the key findings supporting the conclusion that the Project is in the public interest and economically feasible.

As discussed in my testimony, because rates to Missouri customers are set based on the cost of service of the load serving entities ("LSE") that provide them with service, the estimated changes in Missouri production costs provide an estimate of the changes in payments for such service that Missouri customers would expect if the Project were developed. This measure was developed solely for the purpose of assessing whether the Project meets the relevant *Tartan* factors, and is not intended as an estimate of the change in costs of service that should be used for the purposes of establishing rates to be charged by LSE's to their customers.

My testimony and analysis does substantiate that the Project's development would be expected to decrease wholesale prices for electric power and decrease the costs of producing electricity to meet customer loads. Further, the estimated reduction in production costs would be expected to lead to reductions in payments for electric service by retail customers that are greater than the cost associated with the Project. The actual rates to be charged to customers are established through processes and using mechanisms that reflect many factors beyond the scope of my study.

Schedule SLK-R-6

Is Deemed

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