ATXI Exhibit 2.0

ILLINOIS COMMERCE COMMISSION

DOCKET NO. 12-_____

DIRECT TESTIMONY

OF

DENNIS D. KRAMER

Submitted On Behalf

Of

AMEREN TRANSMISSION COMPANY OF ILLINOIS

NOVEMBER, 2012

ATXI Exhibit 2.0

TABLE OF CONTENTS

Page No.

ILLINOIS COMMERCE COMMISSION

DOCKET NO. 12-_____

DIRECT TESTIMONY OF

DENNIS D. KRAMER

Submitted On Behalf Of

Ameren Transmission Company of Illinois

I. INTRODUCTION AND WITNESS QUALIFICATIONS

Q. Please state your name, business address and present position.

A. My name is Dennis D. Kramer, and my business address is One Ameren Plaza 1901 Chouteau Avenue, St. Louis, Missouri 63103. I am currently the Manager of Transmission Policy and Planning at Ameren Services Company ("Ameren Services").

Q. Please summarize your educational background and professional experience.

A. See my Statement of Qualifications attached as an Appendix to this testimony.

Q. What are your duties and responsibilities in your present position?

A. I am responsible for assisting in the development of transmission policy for Ameren Corporation and its transmission-owning affiliates (collectively, "Ameren"), its communication to stakeholders and its eventual implementation through the Midwest Independent System Operator ("MISO") and other regulatory agencies. I am also responsible for the overall planning of the Ameren transmission system to ensure compliance with North American Electric Reliability Corporation ("NERC") Reliability Standards and other applicable reliability standards.

II. PURPOSE AND SCOPE

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the specific electric service needs in the areas served by the Illinois Rivers Project (the "Project"), and to explain how the Project will help meet those needs and improve reliability in those areas. My testimony will cover three topics. First, I will provide an overview of the Ameren Transmission Company of Illinois ("ATXI") transmission system. Second, I will discuss transmission planning for the electric transmission system of Ameren Illinois Company d/b/a Ameren Illinois ("Ameren Illinois") and for the Project specifically. Lastly, I will describe the Project and the reliability benefits of the Project. I would note that the Project includes the proposed transmission line ("Transmission Line"), substations and facilities to be constructed by ATXI. The MISO transmission system, however, is designed and constructed to function in an integrated manner. Due to the integrated nature of the transmission system, additional lines, substations and facilities will need to be constructed, upgraded or relocated by other entities both within and outside the State of Illinois (i.e. MidAmerican Energy, Duke Energy, Ameren Illinois Company, etc.) for the full integration of the Project.

Q. Are you sponsoring any exhibits in support of your direct testimony?

A. Yes. NERC Standard TPL-002-0b is included as ATXI Exhibit 2.1; TPL-003-0a is included as ATXI Exhibit 2.2, Ameren Transmission Planning Criteria as ATXI Exhibit 2.3, and a one-line diagram showing the proposed Project construction sequence as ATXI Exhibit 2.4. I am also sponsoring the exhibits in Section VI related to the reliability benefits of the Project that were identified by Ameren Services.

Q. Will you be referring to any other documents during your testimony?

A. Yes, I will refer to several documents that are publicly available on the MISO website. They are the following:

- The MISO Transmission Expansion Plan 2011, referred to as "MTEP11";
- The MISO Multi Value Project Portfolio Results and Analysis report, referred to as the "MVP Report";
- The MISO Transmission Planning Business Practice Manual 020, referred to as "BPM 020"; and
- MISO Tariff Attachment FF, also referred to as "MISO Tariff Att. FF."

Q. Please summarize how the Project will provide benefits, such as improved reliability, in the Project area.

A. When the Project and the required integration connections (mentioned above) are constructed, the Project will provide additional transmission capacity, local reliability benefits and local area voltage support in Illinois. The Project is also an integral part of a portfolio of Multi-Value Projects ("MVPs") that was approved by the MISO Board of Directors in December, 2011 as necessary to facilitate the delivery of renewable energy, resolve numerous reliability constraints, reduce transmission line losses, and provide economic and efficiency benefits to customers within the MISO territory. ATXI witness, Mr. Frame highlights the economic benefits of the Project in his testimony. As stated by MISO on page 7 of the MVP Report, "The recommended MVP portfolio will enable the delivery of the renewable energy required by public policy mandates, in a manner more reliable and economic that it would be without the associated transmission upgrades. Specifically, the portfolio mitigates approximately 650 reliability constraints under 6,700 different transmission outage conditions, for steady state

and transient conditions under both peak and shoulder load scenarios. Some of these conditions could be severe enough to cause cascading outages on the system."

III. ATXI ELECTRIC SYSTEM DESCRIPTION

Q. Please describe the ATXI transmission system assets.

A. ATXI owns the Rush-Baldwin 345 kV transmission line, which is a connection between the Ameren Illinois transmission system and the Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri") transmission system.

Q. How does ATXI's transmission system interrelate with the Ameren Illinois system?

A. The ATXI transmission system and the Ameren Illinois transmission system are both integral parts of the MISO transmission system. The systems are planned and operated in an integrated manner.

Q. Please explain how ATXI transmission facilities deliver electricity to customers.

A. ATXI's transmission system interconnects with the Ameren Illinois transmission system at the transmission voltage level. ATXI's transmission system is designed to facilitate movement of large quantities of electrical energy within and across Illinois and therefore currently operates exclusively at the 345 kV transmission voltage level.

Q. Please describe the facilities that provide electric service to the Illinois Rivers Project area.

A. The existing facilities that provide electric service in the Project Area are shown in ATXI Exhibit 4.2 attached to ATXI witness, Ms. Donnell Murphy's testimony.

Q. How long has it been since the area had a major electrical upgrade?

A. No significant transmission system upgrades have been undertaken in the general Project area in more than 20 years. The last 345 kV expansion in the area was a new 345 kV line between the Sidney and Kansas substations in 1983. A few smaller upgrades on the 138 kV system and transformer replacements were completed between 2000 and 2010. The largest of these upgrades are listed below:

- A 3.25 mile, 138 kV line between the Rising and Bondville Route 10 substations was completed in December of 2006;
- Upgraded Pana transformer to 560 MVA in December 2009; and
- Upgraded Rising transformer to 560 MVA in November 2011.

IV. ELECTRIC PLANNING BY ATXI

Q. How is electric transmission planning undertaken by ATXI?

A. Ameren Services provides the transmission planning service for ATXI.

Q. What factors must be considered in developing, operating and maintaining an adequate, efficient, and reliable transmission system?

A. The transmission system is planned and designed to supply all loads during a wide variety of conditions, ranging from peak to minimum load. Ameren Services follows established planning criteria (NERC Standards TPL-002-0b and TPL-003-0a as well as Ameren's Transmission Planning Criteria and Guidelines, ATXI Exhibits 2.1, 2.2, and 2.3) which are applied to ensure the development of a system which will adequately and reliably serve the projected customer loads as well as meet its obligations to its transmission service customers, as part of the interconnected transmission system.

The transmission system is planned to supply all loads and transmission services without violating loading and voltage limits during normal and single contingency outage conditions. The system is planned to allow operation with an outage of any single generating unit or transmission facility. In addition, with any one generator out of service, the system is planned to operate with all equipment loaded at or below its emergency ratings and with voltages within acceptable limits for the loss of any one transmission facility. The transmission system is also planned such that the concurrent outage of any two transmission elements (transmission line or transformer), an outage to a bus section, or failure of a circuit breaker will not cause loss of service to greater than 300 MW of customer load.

In all cases, the system is planned, designed and operated to maintain adequate voltage to the customers. The system is also planned to avoid thermal overload of equipment and minimize the likelihood of catastrophic equipment failure and widespread service outages. The higher voltage lines have greater load carrying capability than the lower voltage lines, and the higher voltage lines can deliver power over greater distances more efficiently, with less energy loss and less voltage drop, than lower voltage lines. As a result, extending higher voltage transmission facilities close to the load will minimize energy losses and improve the delivery voltage.

Q. Why does Ameren Services study contingency conditions as well as normal operating conditions?

A. Planning for contingencies recognizes that system disturbances and equipment failures are inevitable. The effects of these contingency conditions on the system must be evaluated and considered when determining the need for system reinforcement and the development of specific reinforcement plans. The goal is to provide reliable electric service at a reasonable cost.

Contingency planning is commonly used throughout the electric utility industry and has historically provided acceptable reliability at a reasonable cost. In addition, NERC reliability standards require that the electric transmission system be planned so as to be able to withstand certain contingency events.

Q. Are there NERC standards relevant to electric transmission planning in the Project area?

A. Yes. In April 2005, the NERC implemented Reliability Standards associated with system performance following an outage event that could result in the loss of one element (TPL-002-0b), or two or more electric transmission system elements (TPL-003-0a). Compliance with these Reliability Standards, and Ameren Transmission Planning Criteria, requires the simulation or modeling of such an outage event, and the development of a solution that would prevent equipment from being overloaded or low voltages should such an event occur.

Q. Please explain how Ameren Services determines that a plan has the capacity to meet the projected demand for electricity while providing adequate voltage to the customers.

A. An engineering analysis is performed to verify that a plan can meet the projected demand for electricity within the capability of the facilities while providing adequate voltage to the customers. In a typical planning study, the analysis utilizes computer software that evaluates the operation of the system under normal system conditions with all components in service, and under contingency conditions. The electric load on each component is evaluated relative to its thermal rating to ensure there are no overloads under the assumed study conditions. System voltages are also examined to ensure adequate voltage levels are maintained.

Q. Please outline the voltage criteria used to identify low voltage conditions.

A. The voltage criteria used by Ameren Services for system planning has been developed to provide voltages to the customer consistent with the Standards of Service for Electric Utilities contained in 86 Ill. Adm. Code Part 410. Transmission system voltage below 95% of nominal has been established as an indication of a possible deficiency. Conditions which result in 86% - 89% voltages in the steady-state analysis carry significant risk for voltage collapse. It should be noted that 85% is the level at which a voltage collapse is essentially assured.

Q. Does Ameren Services regularly assess the adequacy of existing facilities to transmit and distribute power to customers?

A. Yes. Ameren Services regularly evaluates projected system conditions relative to the Ameren Transmission Planning Criteria (attached as ATXI Exhibit 2.3) to ensure that the performance of both ATXI's and Ameren Illinois' transmission systems meet the NERC planning standards. Assessments of the transmission system are performed annually to meet the NERC standards based on the latest available system and substation load forecast information, generation capacity and control information, transmission network impedance topology, and interchange assumptions. The assessments seek to identify projected transmission facility overloads and voltages outside of established limits during both normal and contingency conditions. Corrective plans are then developed to ensure that ATXI's and Ameren Illinois' transmission system performance meets the requirements of the standards.

Ameren Services' planning activities examine the transmission system in our territory and identify system issues and concerns that then drive the need for system reinforcements. The

information from our analysis and the resulting correction plans serve as input into the MISO Transmission Expansion Planning process that is described in detail in BPM 020.

Q. What is the time frame over which transmission plans are studied?

A. Transmission plans typically cover a time period of up to ten years into the future and include a detailed five year construction plan and a year six through 10 planning horizon strategy. Longer time frame transmission projects have also been identified in order to guide system development.

Q. Why is transmission planning conducted on a planning horizon of up to 10 years?

A. Major transmission and other electric service infrastructure projects have a construction lead time of several years. Ameren Services typically estimates that a transmission project will require one and one-half years for study and regulatory approval and four years for design, right-of-way easement requisition, environmental studies, applying for and receipt of permits, and construction. As a result, transmission planning must look at projected loads several years into the future, and, based on those projected loads, determine where transmission or other infrastructure projects are needed, in order to allow sufficient time for planning and construction of new facilities. Put another way, Ameren Services cannot determine in year one that an area will experience inadequate energy supply or thermal overloads in year two and then construct the needed facilities by year two to allow continued provision of adequate and reliable service – longer planning horizons are required.

Q. Please describe the MISO's role in the transmission planning performed by Ameren Services.

A. MISO is a Regional Transmission Organization responsible for transmission planning, reliability assurance and managing competitive electricity markets throughout a footprint encompassing 11 states, including Illinois, and one Canadian province. Ameren Services performs the analysis and planning required to maintain the reliability of the Ameren transmission system. Ameren Services provides information to the MISO regarding its plans for upgrades and additions to the transmission system. This information includes an annual list of Ameren Services' planned system upgrades and additions in Illinois. As described in BPM 020, MISO reviews the transmission plans from all MISO transmission owners and applies their own analysis to identify synergies between plans and potentially new solutions for identified system problems. The MISO reviews and consolidates the individual transmission plans of the MISO Transmission Owners and identifies potential areas where additional benefit can be achieved through coordination of transmission improvements.

Additionally, the MISO performs targeted system studies, which seek to address regional concerns and issues. For example, the MISO initiated a Regional Generation Outlet Study ("RGOS") in 2008 (discussed below) to investigate how best to fulfill various Renewable Portfolio Standard ("RPS") requirements or targets reliably and efficiently by accessing wind resources located across the MISO footprint.

The MISO transmission planning process also seeks stakeholder input. Each year as part of the MISO transmission planning process, regularly scheduled public meetings between the MISO, the transmission owners and interested stakeholders are held to discuss transmission issues, concerns and potential solutions. As part of compliance with the FERC Order 890, the

MISO participates in meetings of the Planning Advisory Committee and Planning Subcommittee as well as conducting Subregional Planning Meetings held periodically throughout the transmission planning cycle to discuss potential transmission projects. Information on planned upgrades and additions to the transmission system is presented at these meetings with active participation by stakeholders, including state regulatory staff. Ameren Services provides information to the MISO to be presented at these meetings on each planned project.

V. TRANSMISSION SYSTEM PLANNING FOR THE PROJECT

Q. Please discuss the background of the Project.

A. The Project arose out of the MISO planning process. As stated by MISO on page 15 of the MVP Report, as early as 2006 it was identified that a new transmission path would be needed across Illinois: "In MTEP06, the Vision Exploratory Study modeled a scenario which included 20% wind energy for Minnesota and 10% wind energy for the other MISO states, for a total of 16 GW. This hypothetical generation scenario was used to evaluate additional high voltage transmission needs. Although this study focused on a 765 kV solution, it determined that transmission would be needed along many of the corridors identified in prior studies. Additionally, it identified that a transmission path would be required across south-central Illinois to efficiently deliver wind energy to load." In subsequent MISO studies, work specific to the Project Area was performed, including an evaluation of various alternatives for expanding transmission capacity across the Project area to accomplish the Project's goals.

The RGOS study identified above was the first step in the very lengthy and detailed analysis of the transmission system that eventually led to the determination that the transmission lines identified as MVPs in the MISO MTEP11 Appendix A (including the Project) are

necessary. As described by MISO on page 12 of the MVP Report, "The MVP portfolio was developed by considering regional system enhancements, from previous MISO analyses, that could potentially provide multiple types of value, including enhanced reliability, reduced congestion, increased market efficiency, reduced real power losses and the deferral of otherwise needed capital investments in transmission."

Q. Please discuss the major elements of the MISO planning process.

A. A major aspect of this planning process was the examination of multiple potential future scenarios. As MISO explains on page 5 of MTEP11: "Uncertainties surrounding future policy decisions create challenges for those involved in the planning function and cause hesitancy for those with the resources to undertake transmission expansion projects. To minimize the risk in building a system under such conditions, the planning process must allow consideration of transmission projects in the context of potential outcomes. The goal is to identify plans resulting in the optimum amount of future value and the least amount of future regrets in areas such as cost incurred, right of way used, and benefits achieved. MTEP11 identified and examined a wide array of future scenarios, which include the following:

- **The Business As Usual (BAU) with Mid-Low Demand and Energy Growth Rates Future Scenario** is considered a status quo future scenario and continues the economic downturn-affected growth in demand, energy and inflation rates.

- **The Business as Usual (BAU) with Historic Demand and Energy Growth Rates Future Scenario** is considered a status quo scenario, with a quick recovery from the economic downturn in demand and energy projections.

- **The Carbon Constraint Future Scenario** models a declining cap on future CO2 emissions. The carbon cap is modeled after the Waxman-Markey Bill, which has an 83 percent reduction of CO2 emissions from a 2005 baseline by the year 2050.

- **The Combined Energy Policy Future Scenario** includes a 20 percent federal RPS, a carbon cap modeled after the Waxman-Markey Bill, a "smart" transmission grid, and electric vehicles."

Specifically regarding the MVP portfolio, MISO states on page 46 of MTEP11: "The RGOS analysis produced three reliable transmission portfolios. Elements common between these three portfolios, and common with previous reliability, economic and generation interconnection analyses, were identified to create the 2011 Candidate MVP portfolio. This portfolio represented a set of "no regrets" projects which were believed to provide multiple kinds of reliability and economic benefits under all alternate futures studied. The 2011 Candidate MVP Portfolio Analysis hypothesized that this set of candidate projects creates a high value transmission portfolio, enabling MISO states to meet their near term RPS mandates. This study evaluated the Candidate MVP portfolio against the MVP cost allocation criteria to prove or disprove this hypothesis, as well as to confirm that the benefits of the portfolio would be widely distributed across the footprint. The output from the study, a proposed MVP portfolio, will reduce the wholesale cost of energy delivery for the consumer by enabling the delivery of low cost generation to load, reducing congestion costs and increasing system reliability, regardless of the future generation mix."

Finally, as MISO states on page 52 of MTEP11: "The Candidate MVP portfolio was the first portfolio developed for review under the recent Tariff revisions establishing the MVP cost allocation classification. It was developed by considering regional system enhancements that could potentially provide multiple types of value, including enhanced reliability, reduced congestion, increased market efficiency, reduced real power losses and the deferral of otherwise needed capital investments in transmission. The portfolio was designed to enhance and complement the existing system performance, working cohesively with the individual elements

of the portfolio and with the existing transmission grid, to produce a more robust and efficient system. Ultimately, the first portfolio represents a set of "no regrets" projects, providing benefits to the system in all futures scenarios studied." The MISO usage of multiple future scenarios in the analysis will help insure that the Project's expected benefits will be provided under a range of varying conditions.

The potential to reduce system losses was also examined during the development of the MVP portfolio. As part of the MVP portfolio, the Project will help reduce system losses, as stated by MISO on pages 67 and 68 of MTEP11: "The addition of the proposed MVP portfolio to the transmission network reduces overall system losses, reducing the generation needed to serve the combined load and transmission line losses. The energy value of these loss reductions is considered in the congestion and fuel savings benefits, but the loss reduction also helps to reduce future generation capacity needs. Specifically, when installed generation capacity is only just sufficient to meet peak system load plus the planning reserve margin, a reduction in transmission losses creates benefits through reducing the amount of generation that must be built. This creates $111 million to $396 million in present value savings, depending on the timeline of the present value calculations, the discount rate and energy/demand growth rates."

Q. Was Ameren Services area a participant in the MISO process?

A. Yes. Ameren Services was an active participant in the MISO MTEP development process and several MISO targeted studies. In particular, Ameren Services participated in the MISO RGOS and MVP studies over the 2008-2011 timeframe assessing optimum transmission development to integrate the renewable energy resources necessary to meet the states' renewable energy portfolio standards. In conjunction with these studies, Ameren Services has reviewed the

transmission system throughout the Project area. As I discuss below, the Project will produce certain reliability benefits in the Project area.

Q. What factors did Ameren Services consider in planning for the Project?

A. Ameren Services considered established planning criteria including NERC Standards TPL-002-0b and TPL-003-0a, Ameren's Transmission Planning Criteria and Guidelines, and the MISO RGOS and MVP studies, which projected that renewable resources (i.e. wind generation) are necessary to meet state's RPS.

An additional factor that must be considered when implementing a project as large as the Illinois Rivers Project is how best to sequence when the sections of the project are placed in service. Ameren Services has worked extensively with MISO to review the system needs and determine the preferred sequence in which the Project should be implemented. The analysis included minimizing the impact on the current transmission system while attempting to meet the in-service dates that were established when the project was approved by MISO's Board of Directors. A one-line diagram containing the expected sequencing is included as ATXI Exhibit 2. 4. It should be noted that the actual sequence may shift during the construction process due to unforeseen circumstances. Revisions to the construction sequence will be evaluated to ensure system reliability is maintained.

Q. What are the applicable Illinois RPS requirements that the Project would help attain?

A. Generally, the Illinois RPS requires an increasing percentage of each utility's total supply to retail customers to come from cost effective renewable sources, subject to certain cost caps,

with a minimum of 10% by 2015, rising to 25% in 2025. To the extent it is available, the majority of the required amounts must be generated by wind.

Q. Please discuss the results of this study process.

A. The study process produced an assessment of the optimum transmission development to integrate the renewable energy resources necessary to meet the states' renewable energy portfolio standards.

As stated by MISO on page 16 of the MVP Report: "Beginning in MTEP09, MISO began the RGOS. This study was intended, at a high level, to identify the transmission required to support the renewable mandates and goals of the MISO states, while minimizing the cost of energy delivered to the consumers." Additionally, as MISO states on page 2 of MTEP11: "Full implementation of a regional transmission planning approach: The proposed MVP portfolio is the realization of more than eight years of process, policy and engineering analysis. These solutions are premised on the integration of local and regional needs into a transmission solution that, when combined with the existing transmission system, provides the least cost delivered energy to customers."

During these studies, Ameren Services identified potential transmission expansions that were consistent with the regional needs and would also provide reliability benefits to Illinois customers. An overview of the results of the various MISO studies is contained on pages 33, 34, 35, and 42 of the MVP Report. As described on these pages, the Project will ensure the transmission system will continue to operate reliably while delivering the required renewable energy and also providing economic benefits to Illinois customers.

Lastly, as stated by MISO on page 5 of the MVP report: "Common elements between the RGOS results and previous reliability, economic and generation interconnection analyses were identified to create the 2011 candidate MVP portfolio. This portfolio represented a set of "no regrets" projects which were believed to provide multiple kinds of reliability and economic benefits under all alternate futures studied. The 2011 MVP portfolio analysis hypothesized that this set of candidate projects will create a high value transmission portfolio, enabling MISO states to meet their near term RPS mandates. The study evaluated the candidate MVP portfolio against the MVP cost allocation criteria to prove or disprove this hypothesis, as well as to confirm that the benefits of the portfolio would be widely distributed across the footprint. The output from the study, a recommended MVP portfolio, will reduce the wholesale cost of energy delivery for the consumer by enabling the delivery of low cost generation to load, reducing congestion costs and increasing system reliability, regardless of the future generation mix. Over the course of the MVP portfolio analysis, the candidate MVP portfolio was refined into the portfolio that is now recommended to the MISO Board of Directors for approval."

When the analysis was completed, the MISO Board of Directors in December, 2011 approved the portfolio of MVPs, which includes the Project. It should be noted that per FERC Order ER10-1791-000, MVPs must be evaluated in the context of a portfolio and not individual separate projects. Upon the approval of the MISO Board of Directors, the projects are required to be constructed and are eligible for project cost sharing as described in the MISO Tariff Schedule 26A. ATXI therefore determined that the Project was necessary and should be constructed.

Q. Were other alternatives to the Project considered?

A. Yes. Ameren Services and the MISO considered a number of alternative projects to address the system concerns I discuss above. Various overlay transmission alternatives were examined, as stated by MISO on page 16 of the MVP Report: "At the conclusion of the RGOS analyses, a set of three alternative expansion portfolios were identified. These portfolios, designed to meet the renewable energy mandates and goals of the full load for all the states in the MISO footprint, ranged in cost from $16 to $22 billion. They included transmission identified through the previous MTEP analyses, as highlighted earlier. Common transmission projects or corridors were identified between the three scenarios, and these projects formed transmission recommendations for the initial candidate MVP portfolio." Additionally, on pages 62 and 63 of MTEP11, MISO further describes the alternatives that were examined and ultimately discarded. During the studies it was determined that 345 kV was the preferred voltage level for the Illinois portion of the Project.

In addition, during the planning process, alternative project designs for the Project were investigated as described on pages 33, 34, 35, and 42 of the MVP Report. As MISO explains on pages 62 and 63 of MTEP11, where applicable, the MISO analyzed alternatives involving replacements of constrained facilities rather than addition of new transmission, and additions to increase the capacity of the lower voltage transmission systems to relieve constraints. Ameren Services actively participated in the MISO analysis and worked to maximize the reliability benefits that the Project would provide to Illinois customers. I would note that these alternatives represent project alternatives, which are separate and distinct from the routing alternatives discussed by Ms. Murphy.

Q. What was the conclusion of MISO and Ameren Services upon completing the evaluations and studies?

A. As indicated in ATXI Exhibits 2.5 thru 2.18, Ameren Services concluded that the Project eliminates the projected exposure to several post contingency overloads, and eliminates the projected exposure to low voltages and potential voltage collapse from several double contingency scenarios. As stated by MISO on page 42 of MTEP11: "MISO staff recommends that the proposed Multi Value Project (MVP) portfolio be approved by the MISO Board of Directors for inclusion into Appendix A of MTEP11. This recommendation is based on the strong reliability, public policy and economic benefits of the portfolio that are distributed across the MISO footprint in a manner that is commensurate with the portfolio's costs. In short, the proposed portfolio will:

- Provide benefits in excess of its costs under all scenarios studied, with its benefit to cost ratio ranging from 1.8 to 3.0.
- Maintain system reliability by resolving reliability violations on approximately 650 elements for more than 6,700 system conditions and mitigating 31 system instability conditions.
- Enable 41 million MWh of wind energy per year to meet renewable energy mandates and goals.
- Provide an average annual value of $1,279 million over the first 40 years of service, at an average annual revenue requirement of $624 million.
- Support a variety of generation policies by using a set of energy zones which support wind, natural gas and other fuel sources."

Also as stated by MISO on page 50 of MTEP11: "The Candidate MVP Portfolio Analysis focused on the transmission necessary to economically and reliably meet the state RPS mandates." In addition, the MVP portfolio of projects that includes the Illinois Rivers Project provides additional connectivity that reduces congestion and enables load in Illinois to access a

broader array of resources, as discussed in Mr. Frame's testimony. These improvements increase market efficiency, competitive supply, and provide opportunity for economic benefits to ratepayers well in excess of costs.

Q. Was demand side management considered?

A. Demand side reduction could reduce somewhat the total load demand, and therefore any reductions in load as a result of demand side management ("DSM") incentives have been included in the distribution load projections. The current load projections were used as the basis for powerflow simulations of system conditions which indicate the need for the proposed transmission project. Therefore, MVPs were planned based upon the remaining load after DSM has been accounted for.

VI. PROJECT DESCRIPTION

Q. What transmission system voltage will be used for the Project?

A. The Project consists of 345 kV transmission lines and 345/138 kV transformers. This is the most common type of high voltage network in the Midwestern United States, where it is used for major transmission interconnections.

Q. Please summarize the planning parameters of the new line.

A. The Project lines will be designed and operated at 345 kV. The long-term emergency current carrying capability of the line will be 3000 A.

Q. Please describe the proposed Transmission Line.

A. At its western end, the Project will connect to facilities in Missouri and will extend generally eastward across the Mississippi River to a new 345/138-kV substation near Quincy,

Illinois. From Quincy, a new 345-kV line will extend generally eastward to Meredosia, Illinois, and from Meredosia northeast to Ipava, Illinois. The Project includes a new 345-kV line from Meredosia, Illinois, extending generally eastward to Pawnee Substation. From Pawnee, the Illinois Rivers Project continues generally eastward via a new 345-kV line to the Pana Substation. From the Pana Substation, a new 345-kV line will first extend generally northward to the Decatur, Illinois area to a new 345/138-kV substation near the existing Mt. Zion PPG Substation and then generally eastward to the existing Kansas Substation. From the Kansas Substation, a new line will extend generally eastward and connect to the 345-kV system in Indiana. An additional portion from Sidney, Illinois to Rising, Illinois will consist of a new 345-kV line connecting the existing Sidney Substation and the existing Rising Substation. New breaker stations or expansions of existing stations will be constructed at Quincy, Meredosia, Ipava, Pawnee, Pana, Mt. Zion, Kansas, Sidney, and Rising. A 345/138-kV transformer will be installed at each of the Quincy, Meredosia, Pawnee, Pana, Mt. Zion, and Kansas stations.

Q. Does the scale and scope of a project impact the type of planning and analysis that is performed?

A. Yes. As the above description indicates, the Project is much larger in size and scope than the more common reliability transmission projects that, for example, Ameren Illinois has recently submitted for approval to the Commission. For example, the recent Bondville – SW Campus project (Docket 12-0080) addressed a relatively narrowly defined local system problem identified by Ameren Services. The Bondville – SW Campus project had a small number of possible solutions and the analysis was limited to addressing only the identified system problem. By comparison, the Project is part of a portfolio of MVPs and their associated interconnections

to the existing grid, which span the breath and width of the MISO footprint and have been designed to provide multiple benefits and address many system problems. The Project represents the culmination of a multi-year collaborative effort between MISO, Ameren Services, other MISO Transmission Owners, and stakeholders to create a portfolio of projects that will provide multiple benefits as described by MISO on pages 33, 34, 35, and 42 of the MVP Report. Additionally, the Project provides both market efficiency benefits as described by Mr. Frame in his direct testimony as well as the reliability benefits that I have described. Thus, from a planning perspective and to be consistent with the requirements contained in the MISO Tariff Attachment FF, the Project needs to be considered as a whole and not as a collection of individual reliability projects.

Q. Please summarize, for planning purposes, how the substation sites listed above were identified.

A. As described by MISO on pages 33, 34, 35, and 42 of the MVP Report, the MISO studies determined that 345 kV construction was the preferred voltage level and a central Illinois route was the preferred line location due to the performance advantages it provided. For the benefits of the Project to be realized, the Project must connect to the existing system and deliver energy to the load. The substations selected provide access to numerous 138 kV lines which distribute the energy throughout Illinois.

Several configurations were studied as part of the RGOS and MVP studies, which included some alternate locations for connecting to the existing system. The studies determined that the approved MVP portfolio was the preferred configuration. A summary of the planning

rationale for selecting the chosen substations, as general connection or "drop off" points, is provided below:

- **SE Quincy (Herleman)** - The proposed new Quincy area 345/138 kV substation is near two existing 138 kV lines, which provides the opportunity to create four (4) separate 138 kV circuits out of the new substation. The Quincy area 345/138 kV transformer will relieve loading on the Palmyra transformer and eliminate overloading concerns for certain category B contingency events. The 345/138 kV transformer will also provide capacity to serve additional load in the Quincy area, improve the area voltages for certain contingencies, and increase the overall reliability to the largest load pocket in west central Illinois.

- **Meredosia** - With approximately 550 MW of Meredosia generation out of service, the local voltage support is reduced. Power flow patterns in the area have changed as the existing Meredosia 138 kV switchyard, with its five (5) 138 kV lines and two (2) 138-69 kV transformers is no longer a strong source to the area. The connecting of 345/138 kV transformers to the existing Meredosia 138 kV plant switchyard provides west-central Illinois with significant transmission system support.

- **Ipava** – The Meredosia-Ipava 345 kV line will provide an additional outlet for Duck Creek Plant, which will improve reliability. The line will also provide a second supply to the Ipava 345/138 kV Substation to enhance reliability in the area, and will create another complete 345 kV path from central Illinois to the Chicago area to help reduce transmission congestion. In addition, it will provide a third 345 kV supply to Meredosia.

- **Pawnee** - The Meredosia-Pawnee 345 kV line combined with the Pawnee-Pana 345 kV line will provide additional 345 kV sources to the Pawnee 345/138 kV Substation and enhance reliability to the loads in the area south and west of Springfield, Illinois. Establishing a 345 kV hub at Pawnee will reduce congestion in Central Illinois as well as provide another connection to supply load in the area.

- **Pana** - Establishing a 345 kV hub at Pana with connections to Pawnee, Kincaid, Coffeen, and Mt. Zion will reduce congestion in Central Illinois and provide another connection to supply load in the area.

- **Mt Zion** - The proposed new Mt Zion area substation will be located near existing 138 kV lines and with its 345/138 kV transformer provides an additional source to serve load in the Decatur, Illinois area. The new substation will relieve loading on existing transmission facilities and enhance reliability in the Decatur area by providing transmission support for certain multiple contingency events. This will reduce the exposure to dropping large amounts of customer load due to potential low voltage conditions.

- **Kansas** - The Project will connect to the existing Kansas substation which has extensive connections to the lower voltage transmission system, including four existing 138 kV lines, two 138/69 kV transformers and a 345/138 kV transformer. Connecting the Project at the Kansas substation will enhance local reliability and will provide additional outlet capability for potential wind development near this location.

- **Sidney / Rising** - The Sidney-Rising 345 kV line will reduce the loading on the Rising transformer and the Champaign area 138 kV transmission system during certain contingency events. In addition, the need for the Sidney-Rising 345 kV line, along with a new 345/138 kV substation supplied from the Sidney-Rising 345 kV line has been previously identified. As Rick Foster previously testified in the Bondville to Southwest Campus 138 kV Line approval proceeding, ICC Docket 12-0080: "The 2011 Midwest ISO expansion plan includes a new Sidney to Rising 345 kV line as a multi-value project. This transmission line along with a new 345/138 kV transformer on the west side of Champaign will be needed to maintain the integrity of the transmission system supply under credible multiple contingency conditions. It is expected that the new transformer will connect to the new Southwest Campus to Bondville 138 kV line thus providing additional support to both the Bondville Route 10 and Southwest Campus substations."

ATXI witnesses, Mr. Jeffrey V. Hackman and Mr. Ronald Dyslin provide further detail about the site selection and acquisition process for the substations.

Q. What is the timeframe for completion of the Project?

A. The Project will be placed in service over several years, with the earliest in-service dates expected in 2016 and the final portion of the Project to be placed in service by the end of 2019. ATXI Exhibit 2.4 provides the expected project construction sequence.

Q. How will the Project's Transmission Lines interrelate with Ameren Illinois' system and other components of the integrated transmission system?

A. As indicated above, due to the integrated nature of the transmission system, additional lines, substations and facilities will need to be constructed, upgraded or relocated by other entities (i.e. MidAmerican Energy, Duke Energy, Ameren Illinois, etc.). With respect to Ameren

Illinois, the Project will interconnect to the existing Ameren Illinois system at multiple locations: two Quincy area 138 kV lines (South Quincy to North Marblehead, and South Quincy to Meppen), the Meredosia East 138 kV switchyard, Ipava South 345 kV substation, Pawnee West 345 kV and 138 kV substation, Pana North 345 kV and 138 kV substation, Kansas West 345 kV and 138 kV substation, Mt. Zion area 138 kV lines, Sidney 345 kV substation, and the Rising 345 kV substation. In addition, the Project will create new connections from Ameren Illinois' system to the 345 kV systems in Missouri and Indiana. As also discussed by Mr. Hackman, Ameren Illinois will construct, upgrade or relocate some transmission lines and equipment to connect to the Illinois River Project. The final design of these connections will be established after the final route is determined and approved by the Commission.

Q. Will any existing facilities be removed and not utilized after the installation of the proposed line?

A. For ATXI, no. However, in order to insure the benefits from the Illinois Rivers Project can be provided reliably, some existing transmission equipment owned by Ameren Illinois will need to be upgraded, relocated or replaced concurrent with the implementation of the Project. The decision on whether any existing facilities will need to be retired or removed will be made once the final decision is reached regarding line routing and substation location.

VII. RELIABILITY BENEFITS OF THE PROJECT

Q. How did ATXI identify the reliability concerns to be addressed by the Project?

A. As indicated above, the reliability benefits of the Project must be viewed in the context of the Project as a whole, not as discrete, severable benefits for limited, defined geographic areas. In other words, the reliability benefits of the Project flow from the construction of the entire

Project, not any individual component by itself. Thus, in the planning process, Ameren Services identified known reliability concerns that could potentially be addressed by the Project when it is fully implemented and integrated into the Ameren Illinois system as well as connected to the 345 kV transmission systems in Missouri and Indiana. In working with the MISO to develop the Project, Ameren Services sought to design the Project to address known reliability concerns where feasible. Ameren Services utilized its knowledge of load and generation locations as well as the transmission system topology in attempting to maximize the reliability benefits provided by the Project.

Several different scenarios were analyzed. One analysis used a 2021 shoulder load level and assumed the MVPs external to Illinois, except the MVPs in Indiana, are constructed and the Project is connected to the Missouri and Indiana transmission systems as indicated in MTEP11. Ameren Services then conducted an additional analysis with the same assumptions, except the Indiana MVPs were included in the analysis. Ameren Services determined that several reliability issues are resolved by the Project regardless of whether or not the Indiana MVP projects are constructed. The list of resolved issues is described on ATXI Exhibits 2.5 thru 2.9. In order to determine the reliability benefits from the Project at summer peak conditions, an analysis was performed using a 2021 summer peak load level and assuming MVPs in Missouri (MVPs 7 & 8 in the MTEP11 Report) and MVP 16 in Illinois are constructed. This analysis identified several reliability issues in Illinois. An additional analysis was then performed using the same assumptions, except the Illinois River project was assumed to be constructed. Ameren Services determined that several reliability issues are resolved by the Project under this scenario. The list of resolved issues is described on ATXI Exhibits 2.10 thru 2.18. The analysis indicates that the

Project will provide reliability benefits under several different system conditions and configurations. It should be noted, however, that the MVP portfolio of projects was approved for construction by the MISO Board of Directors as part of Appendix A of MTEP11; therefore it is appropriate to assume the MVPs external to Illinois will be constructed on the schedule listed in Appendix A of MTEP11.

Q. Please describe the reliability concerns that the Project addresses.

A. When fully integrated into the transmission system, the Project will address a number of NERC Category B and Category C violations (defined in ATXI Exhibits 2.1 and 2.2) while delivering renewable energy necessary to meet State RPS. For example, Ameren Services performed a power flow analysis of 2021 shoulder load (which is approximately 80% of summer peak load) conditions when delivering renewable energy to meet state RPS requirements, and identified the following transmission system elements that were operating at more than 95% of their applicable rating and would be relieved by implementing the Project. Exhibit 2.5 is a table of several Category B violations that were found to be mitigated or improved by the project during 2021 shoulder load levels. Exhibit 2.9 is a table of several Category C violations that were found to be mitigated or improved by the project during 2021 shoulder load levels. The below exhibits (2.6 through 2.8) are diagrams that illustrate a few of the more major reliability issues resolved for 2021 shoulder load levels.

- Hannibal-Palmyra 161 kV line (ATXI Exhibit 2.6)
- Palmyra 345/161 kV transformer (ATXI Exhibit 2.6)
- Rising 345/138 560 MVA transformer (ATXI Exhibit 2.8)
- Weedman-Mahomet 138 kV line (ATXI Exhibit 2.7)

- Weedman-Leroy Tap 138 kV line (ATXI Exhibit 2.7)
- Champaign Jct-Mahomet 138 kV line (ATXI Exhibit 2.7)

Ameren Services also performed a power flow analysis of 2021 summer peak load conditions. ATXI Exhibit 2.10 is a table of several Category C violations that were found to be mitigated or improved by the project during 2021 summer peak load levels. The below exhibits (ATXI Exhibits 2.11 thru 2.18) are diagrams that illustrate a few of the more major reliability issues resolved for 2021 summer peak load levels.

- Oreana transformer #1 (ATXI Exhibit 2.11)
- Oreana transformer #2 (ATXI Exhibit 2.11)
- Oreana-ADM North 138 kV line (ATXI Exhibit 2.11)
- ADM North-Caterpillar 138 kV line (ATXI Exhibit 2.11)
- Caterpillar-N 27th Street 138 kV line (ATXI Exhibit 2.11)
- Rising 345/138 kV transformer (ATXI Exhibit 2.11)
- Weedman-Mahomet 138 kV line (ATXI Exhibit 2.12)

Q. Will the Project also address voltage concerns?

A. Yes. As discussed above, a low voltage limit of 95% of nominal has been established by Ameren Services on the transmission system, with due consideration of the voltage requirements for the sub-transmission and distribution systems. The Project will provide local voltage support to Quincy, Meredosia, Pawnee, Pana, Decatur and Champaign area loads and will reduce the exposure to dropping significant amounts of load for certain outage conditions during periods of high load demand. The following Category C events were identified as causing voltage problems in the 2021 summer peak model that would be resolved by the Project:

- Outage of Oreana 345/138 kV transformer #1 and Oreana 345/138 kV transformer #2; (ATXI Exhibit 2.13)
- Outage of Oreana-ADM N 138 kV line #1610 and Oreana-ADM N 138 kV line #1606; (ATXI Exhibit 2.14)
- Outage of Rising 345/138 kV transformer and Sidney-SW Campus 138 kV line; (ATXI Exhibit 2.15)
- Outage of Palmyra 345/161 kV transformer and Peno Creek Generation; (ATXI Exhibit 2.16)
- Outage of Palmyra-North Marblehead-1 161 kV line and Meppen-S Quincy-4 138 kV line; (ATXI Exhibit 2.17)
- Outage of Palmyra 345/161 kV transformer and East Quincy-Meredosia-1 138 kV line. (ATXI Exhibit 2.18)

Q. How would these issues be addressed if the Project was not constructed?

A. If the Project was not constructed, the reliability issues identified above would ultimately have to be addressed by the development and construction of other new transmission projects. In other words, construction of the Project will allow ATXI and Ameren Services to avoid the need to construct some reliability projects in the future.

VIII. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes, it does.

APPENDIX

STATEMENT OF QUALIFICATIONS
DENNIS D. KRAMER

I graduated from Purdue University in 1978 with a Bachelor of Science degree in Electrical Technology with concentrations in power systems and digital electronics. I graduated from Tulane University in 1990 with a Master of Business Administration degree with concentrations in strategic planning and marketing.

I have over 35 years of experience in the electric energy industry. In 1974 I was employed by Public Service Indiana as a regional area operator in the Power Supply organization, with responsibility for directing power transmission and distribution activities. In 1978 I moved into an engineering position where I was responsible for performing system load flow studies to assess the impact of system design modifications on transmission capacity margins and system operations procedures. I also supported the Supervisory Control and Data Acquisition ("SCADA") Systems in the regional control center. In 1979 I transferred to the Power Generation organization as an engineer at Gibson fossil power plant where I was responsible for supporting the instrumentation and control systems and computer monitoring systems necessary for the safe and efficient operation of the plant. In 1980 I transferred to the Marble Hill Plant, a 2,200 Megawatt ("MW") electric nuclear project, where I led the plant control instrumentation and control engineering and plant computer engineering activities during construction and system testing. In 1984 I accepted a management position with Entergy Corporation at the Waterford III 1,100 MW electric nuclear power plant. I managed engineers, programmers and technicians performing the installation, testing and operational support of plant control and monitoring systems. In 1988 I accepted the position of Manager, Marketing Services

in the retail and wholesale marketing organization of Entergy Corporation. I managed analysts and researchers in creating and implementing customer research plans and the development of preferred product/service portfolios. In 1994 I accepted the position of Director, Technical Services with Unimar Consulting Group Ltd. I directed engineers, analysts and researchers in conducting research and developing portfolios of regulated and non-regulated products and services for client companies including the majority of the top 100 electric utilities in North America. In 1997 I accepted the position of Experienced Manager with the National Energy Consulting Practice of Arthur Andersen. I managed numerous projects which assisted clients in meeting electric deregulation requirements with an emphasis in Texas and California. I worked with clients and regulatory agencies in developing transmission rules, resource scheduling and dispatch processes and wholesale market operation procedures. In 2002 I accepted the position of Senior Manager in the Energy Practice of Bearingpoint Corporation. I performed numerous projects with energy clients in North America to improve business processes, increase profitability and reduce operating costs in the areas of power generation, transmission and distribution.

In 2005 I accepted the position of Transmission Policy Specialist with Ameren Services. I assisted in transmission policy development and communication of Ameren's corporate positions to Regional Transmission Organization ("RTO") stakeholders and the Midwest Independent System Operator. In 2007 I was promoted to the position of Supervisor, Transmission Policy and in 2009; I was promoted to my current position of Manager of Transmission Policy and Planning.