Exhibit No.	ATXI Exhibit 4.0
Issue(s)	Substation Design
Witness	Curtiss Frazier
Sponsoring Party	ATXI
Type of Exhibit	Direct Testimony
Case No.	EA-2022-0099
Date Testimony Prepared	December 21, 2021

MISSOURI PUBLIC SERVICE COMMISSION

FILE NO.

EA-2022-0099

DIRECT TESTIMONY

OF

CURTISS FRAZIER

ON

BEHALF OF

AMEREN TRANSMISSION COMPANY OF ILLINOIS

St. Louis, Missouri
December 21, 2021

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FILE NO. EA-2022-0099

Submitted on Behalf of

AMEREN TRANSMISSION COMPANY OF ILLINOIS

I. INTRODUCTION

Q. Please state your name, business address, and professional title.

A. My name is Curtiss Frazier. I work for Ameren Services Company (Ameren Services), 1901 Chouteau Avenue, St. Louis, Missouri 63103, as a Principal Engineer in the Transmission Substation Department.

Q. Please summarize your professional experience and educational background.

A. I graduated from the University of Missouri – Rolla, now Missouri University of Science and Technology, in 2005 with a Bachelor of Science degree in Electrical Engineering. I am a licensed Professional Engineer in Missouri (2016001249).

In 2007, I began my career at Ameren Services as a Substation Design Engineer, a position I have held for thirteen years. In this position, I design and manage large-scale transmission and distribution substation projects. I also provide technical guidance on substation equipment, including power circuit breakers and power transformers, as required on behalf of Ameren's transmission-owning entities, including ATXI. With respect to the broader industry, I sit on the Institute of Electrical and Electronics Engineers (IEEE) Switchgear and IEEE Transformers committees under the IEEE Power and Energy Society.

Q. Have you previously testified before the Commission?

A. Yes, in Case No. EA-2021-0087 (ATXI's Limestone Ridge Project).

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your direct testimony?

A. I support ATXI's requests for a Certificate of Convenience and Necessity (CCN) and related Commission approvals authorizing ATXI to construct, acquire, and operate certain transmission assets as part of the "Project" described in the direct testimony of ATXI witness Sean Black (ATXI Exhibit 1.0). Specifically, I explain the Comstock substation that ATXI will construct as part of the Project.

Q. Are you sponsoring any schedules with your direct testimony?

A. Yes. I am sponsoring the following schedules:

- Schedule CF-D1 **(Confidential)** – An aerial image depicting the proposed physical layout of the Comstock substation; and
- Schedule CF-D2 **(Confidential)** – A diagram depicting the proposed equipment layout of the Comstock substation.

Schedule CF-D1 and CF-D2 have been marked "Confidential" because they contain detailed information about critical energy infrastructure.

III. THE COMSTOCK SUBSTATION

Q. Please provide an overview of the Comstock substation.

A. As Mr. Black explains, the Comstock substation will be an eight-position, 161 kV breaker station owned by ATXI, the Sikeston Board of Municipal Utilities (SBMU), and the Missouri Joint Municipal Electric Utility Commission (MJMEUC).

Specifically, and as described in further detail by Mr. Black, upon completion of construction and the closing of the associated transaction, ATXI and MJMEUC will jointly own certain discrete assets within the substation and SBMU will own other discrete assets within the substation. The specific asset ownership and the associated operations and maintenance (O&M) responsibilities are discussed in further detail below and by Mr. Black.

Q. Where will the Comstock substation be located?

A. ATXI will construct the substation on a parcel owned by the City of Sikeston in Scott County, Missouri that is adjacent to the SBMU Generation Plant and the Southwestern Power Administration (SWPA) Sikeston substation. **Schedule CF-D1 (Confidential)** is an aerial image that depicts the proposed site and physical layout of the Comstock substation.

Q. Does ATXI already own that real estate?

A. No. But ATXI expects to acquire a substation easement from Sikeston as part of the Project parties' joint development effort. ATXI and Sikeston are in active discussions with respect to the easement and expect to execute a written document reflecting their agreement in the near future. To be clear, the substation will be located exclusively on land under Sikeston's control and will not affect any parcels owned by other entities.

Q. Does the site touch any existing electric, gas, or telephone conduit, wires, cables, or lines of any regulated or nonregulated utilities, railroad tracks, or underground facilities?

A. Yes. There are existing underground power and control cables owned by SBMU that will be modified as part of the project. There is one 161 kV transmission line owned by Ameren Missouri that will be modified as part of the Project. Please see the direct testimony of ATXI witness Jessica Timmerman (ATXI Exhibit 3.0) for more detail. A list of all electric, gas, and telephone conduit, wires, cables, and lines of regulated and nonregulated utilities, railroad tracks, and each underground facility that the proposed construction will cross is provided as Appendix C to ATXI's Application in this proceeding.

Q. Will the Comstock substation site be secured as required by applicable protocol?

A. Yes. The substation yard will be fully enclosed by chain-link fencing and will only be accessible by authorized personnel. It will be physically protected by security equipment as required by NERC and defined by internal policies.

Q. Please describe the Comstock substation's technical specifications.

A. ATXI will construct the proposed Comstock substation as an initial seven position (ultimate eight position), 161 kV breaker-and-a-half (BAAH) station. Eleven 161 kV breakers will be installed initially. ATXI will own four 161 kV breakers, with room for one more. SBMU will own seven 161 kV breakers. Twenty-four breaker disconnect switches will be installed on high seismic steel switch stands for breaker isolation. ATXI will own nine breaker disconnect switches, with room for one future switch. SMBU will own fourteen breaker disconnect switches. Seven motor-operated line disconnect switches will be installed to allow isolation of BAAH line terminals from

the incoming transmission lines with local and remote operation. ATXI will own three motor-operated line disconnect switches. SBMU will own four motor-operated disconnect switches. Instrument transformers will be installed on all BAAH line terminals for voltage indication and sensing for relay metering and protection. Four 161 kV power potential transformers will be installed to provide station power from the transmission system. ATXI will own two 161 kV power potential transformers. SBMU will own two 161 kV power potential transformers. All substation structures will be ATXI's standard tubular steel design. The substation will contain two relay control enclosures that will house all substation protective relaying and control, Supervisory Remote Terminal (SCADA RTU), relay communications, 125V DC battery system and station service panels. ATXI will own one 24' x 50' control enclosure and SBMU will own one 24' x 60' control enclosure.

Q. To be clear, which discrete assets will SBMU own?

A. Following completion of construction and closing of the associated transaction, SBMU will own: one 24' x 60' control house, seven 161 kV breakers, fourteen breaker disconnect switches, four motor-operated disconnect switches, twelve potential transformers, and two power potential transformers.

Q. Please describe the proposed equipment layout for the Comstock substation.

A. **Schedule CF-D2 (Confidential)** is a scaled diagram depicting the

proposed equipment layout of the Comstock substation.

Q. What are the operational benefits of the proposed Comstock substation?

A. The Comstock substation will improve energy reliability for communities in the area and local electric distribution companies. The BAAH design is a robust, and therefore reliable, substation layout design. The Comstock substation will also provide a second transmission source for transport and delivery of electricity. The substation will connect adjacent lines via circuit breakers. This additional segmentation increases reliability to the transmission system by promoting operational flexibility by allowing lines and breakers to be switched for maintenance activities or forced outages while reducing the impact to other transmission and distribution facilities. The substation will also allow access to additional power markets providing more competitive power pricing for customers, potentially reducing consumer rates.

Q. Are all known costs associated with the proposed Comstock substation reflected in the overall Project costs contained in ATXI witness Stephanie Thomson's direct testimony (ATXI Exhibit 2.0)?

A. Yes. The numbers contained in Ms. Thompson's direct testimony reflect the currently estimated cost of the substation – both from a total and an AMMO Pricing Zone allocated cost perspective.

Q. Will ATXI be responsible for the operation and maintenance of the proposed Comstock substation?

A. Yes. ATXI will be responsible for normal operation and maintenance, as

described in the direct testimony of Mr. Black.

IV. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Ameren Transmission Company of Illinois for a Certificate of Public Convenience and Necessity under Section 393.170, RSMo. relating to Transmission Investments in Southeast Missouri.	))))))	File No. EA-2022-0099

AFFIDAVIT OF CURTISS FRAZIER

STATE OF MISSOURI)
) ss
CITY OF ST. LOUIS)

Curtiss Frazier, being first duly sworn on his oath, states:

My name is Curtiss Frazier and on my oath declare that I am of sound mind and lawful age; that I have prepared the foregoing *Direct Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.

Curtiss Frazier

Dated: December 17, 2021