

5/8-406.1(a)(1) Engineering Data Appendix

8-406.1(a)(1)(A) Detailed Project Description: A Description of the Project can be found in ATXI Exhibits 1.0, 2.0 and 4.2

8-406.1(a)(1)(B)(i) Engineering Data:

- (I) **Name and Destination:** Illinois Rivers. See ATXI Exhibit 2.0 for destination description.
- (II) **Design Voltage Rating:** 345 kV
- (III) **Operating Voltage Rating:** 345 kV
- (IV) **Normal Peak Operating Current Rating:** the line will be designed for 3000 amps summer emergency capability

8-406.1(a)(1)(B)(ii) Description of conductors, structures, substations

- (I) **Conductor size and type:** Bundled 954 54/7 ACSS (Cardinal)
- (II) **Type of structure:** Steel Monopole, Single Circuit, Vertical Configuration
- (III) **Height of typical structure:** range of 80 feet to 140 feet
- (IV) **Explanation of why these structures were selected:** Minimize footprint of the structure.
- (V) **Dimensional drawing of typical structures:** The shield wires are at the top of the pole on steel arms; the top phase is 17 feet from the top; the vertical phase spacing is 10 feet and the horizontal phase spacing is 30 feet; See ATXI Exhibit 7.1.
- (VI) **Names of all substations (new and existing) associated with new line:** Quincy Substation, Meredosia Substation, Ipava Substation, Pawnee Substation, Pana Substation, Mt. Zion Substation, Kansas Substation, Rising Substation and Sidney Substation.

8-406.1(a)(1)(B) (iii) Location of the right-of-way: The location of the right-of-way is depicted in ATXI Exhibit 4.2, which shows all routes.

- (I) **Miles of right-of-way:** Approximately 375 miles.
- (II) **Miles of circuit:** The Primary Route is approximately 375 miles and the Alternative Route is approximately 403 miles.
- (III) **Width of right-of-way:** 150 feet typical

(IV) *Description of area traversed, including land use and terrain:* See ATXI Exhibit 4.2

8-406.1(a)(1)(B) (iv) A technical description providing the following information:

- (I) *Number of circuits:* Overhead, one circuit
- (II) *Operating voltage and frequency:* 345 kV, 60 Hz
- (III) *Conductor size and type and number of conductors per phase:* Bundled 954 54/7 ACSS (Cardinal)

8-406.1(a)(1)(B) (v) The following overhead line data:

- (I) *Wind and ice loading design parameters:*
National Electric Safety Code (NESC):
Rule 250B: Heavy Condition: 4 psf wind, ½ inch ice, 0°F Initial
Rule 250C: Extreme Wind Condition: 21 psf wind, no ice, 60°F Initial
Rule 250D: Extreme Ice Condition: 4 psf wind, 1 inch ice, 15°F Initial
- (II) *Full description and drawing of typical structure, including strength specifications:* Single circuit tangent vertical configuration. Structure design will meet or exceed stated loadings in the National Electric Safety Code (NESC). See ATXI Exhibits 7.1 and 7.2.
- (III) *Structure spacing with typical ruling and maximum spans:* The typical ruling span will be approximately 800 feet; maximum ruling span will not exceed 1000 feet.
- (IV) *Conductor spacing:* Typical vertical phase spacing is 10 feet and the typical horizontal phase spacing is 30 feet.
- (V) *Designed line-to-ground and conductor-side clearances:*
Line to Ground: NESC criteria with 8% voltage adder plus 3 feet
Conductor-side: NESC criteria of 6 psf, 60°F Final with 8% voltage adder plus 2 feet.

8-406.1(a)(1)(B) (vi) Underground/underwater data: Not Applicable.

8-406.1(a)(1)(B) (vii) Technical diagrams that provide clarification of any item: Not applicable.

8-406.1(a)(1)(B) (vii) Identification of primary and alternate rights-of-way: See ATXI Exhibit 4.2.