EIGHT POINT WIND, LLC

115 kV TRANSMISSION LINE

Case No. 18-T-____

Exhibit 5

Design Drawing

Contents

Tables

Appendices

Exhibit 5: DESIGN DRAWINGS

Project location maps are presented in Exhibit 2. Descriptive information and typical details relating to the 115 kV interconnection transmission system are provided in Exhibit E-1.

5.1 Design Standards

The structures to be installed as part of the Project will be designed in accordance with applicable national and state codes and regulations and the Applicant's own standards. Below is a detailed list of engineering codes, standards, guidelines, and practices that the Applicant intends to generally conform to during the planning, designing, construction, and operation of the Project transmission line:

- American National Standards Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- Insulated Cable Engineers Association (ICEA)
- American Society of Mechanical Engineers (ASME)
- National Electric Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- New York State Fire Prevention and Building Code
- New York State Energy Code
- Uniform Plumbing Code (UPC)
- United Laboratories (UL)
- American Iron and Steel Institute
- American Institute of Steel Construction
- International Building Code (IBC) 2006
- AASHTO Standard for Aggregates
- ASCE 7-05 Minimum Design Loads for Buildings and Other Structures
- Federal OSHA 1910.269 Training

The transmission line will be designed in accordance with the specific standards below:

- ANSI C2-2012 - National Electrical Safety Code (NESC)
- ANSI 05.1.2008 - Wood Poles – Specifications & Dimensions
- ASCE 48-2011 - Design of Steel Transmission Pole Structures
- ASCE MOP 74-2010 - Guidelines for Electrical Transmission Line Structural Loading
- ASCE MOP 91-1997 - Design of Guyed Electrical Transmission Structures
- IEEE 81-2012 - Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System
- IEEE 516-2009 - IEEE Guide for Maintenance Methods on Energized Power Lines
- IEEE 524-2003 - Guide to the Installation of Overhead Transmission Line Conductors
- IEEE 563-1978 - Guide on Conductor Self-Damping Measurements
- IEEE 644-1994 - Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines

- IEEE 656-1992 - Standard for the Measurement of Audible Noise from Overhead Transmission Lines
- IEEE 691-2001 - Guide for Transmission Structure Foundation Design and Testing
- IEEE 738-2006 - Standard for Calculating the Current-Temperature of Bare Overhead Conductors
- IEEE 977-1991 - Guide to Installation of Foundations for Transmission Line Structures
- IEEE 1243-1997 - Guide for Improving the Lightning Performance of Transmission Lines
- IEEE 1313.2-1999 - Guide for the Application of Insulation Coordination
- IEEE Std 1542-2007 - Guide for Installation, Maintenance, and Operation of Irrigation Equipment Located Near or Under Power Lines.

5.2 Facility Properties

The preliminary design of the transmission line incorporates the use of both steel and wood structures. Steel structures will range in height from 70-115 feet (21.3-35.1 meters) above ground utilizing a delta configuration (one phase on top, two phases on bottom). Wood structures will range in height from 55-60 feet (16.8-18.3 meters) above ground utilizing a two pole horizontal configuration. These structures will have an average span length of 500 feet (152.4 meters). For each structure type, Table 5-1 below presents the material, color, and finish; range of height; and associated structures.

Table 5-1. Structure Type

ITEM #	STRUCTURE TYPE	MATERIAL, COLOR & FINISH	RANGE OF HEIGHT (FT)	STRUCTURE NUMBERS *
1	115 KV - STEEL SC MONOPOLE TANGENT	STEEL, GALVANIZED	75 - 135	1A, 2, 3, 4, 5, 7, 8, 11, 13, 14, 15, 17, 18, 19, 20, 22, 23, 26, 28, 29, 31, 33, 35, 37, 39, 40, 42, 45, 47, 48, 51, 52, 55, 77, 78, 80, 81, 86, 88, 89, 91, 94, 95, 96, 97, 98, 99, 101, 102, 103, 104, 105, 107, 111, 114, 115, 116, 117, 118, 120, 122, 124, 126, 127, 128, 130A, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 145, 146, 147, 150, 151, 153, 155, 156, 157, 158, 159, 160, 162, 163
2	115 KV - STEEL SC MONOPOLE ANGLE (10°-30°)	STEEL, GALVANIZED	100 - 115	6, 16, 100, 110, 131
3	115 KV - STEEL SC MONOPOLE GUYED DEAD-END (30°-105°)	STEEL, GALVANIZED	80 - 95	1, 10, 12, 21, 25, 30, 32, 34, 93, 129, 130, 148, 154, 161, 164
4	115 KV - STEEL SC 3 POLE GUYED INLINE DEAD-END	STEEL, GALVANIZED	75 - 90	38, 50, 82, 83, 108, 109, 112, 149
5	115 KV - WOOD SC H-FRAME TANGENT	WOOD, BROWN	55 - 70	57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 71, 72, 73, 74, 75, 76
6	115 KV - WOOD SC 3 POLE GUYED ANGLE DEAD-END	WOOD, BROWN	60 - 70	56, 59
7	115 KV - WOOD SC 3 POLE GUYED INLINE DEAD-END	WOOD, BROWN	60 - 70	69, 70
8	115 KV - STEEL SC MONOPOLE SELF SUPPORT DEAD-END (0°-105°)	STEEL, GALVANIZED	90 - 105	113, 121, 123, 143

* Current structure numbers do not include 9, 27, 36, 41, 43, 44, 46, 49, 53, 54, 79, 84, 85, 87, 90, 92, 106, 119, 125, 142, 152

All tangent and guyed terminal structures foundations will be direct embedded. For direct embedded structures, the excavation hole shall be approximately 12 inches (0.3 meters) greater than the butt diameter of pole. Backfill shall be well compacted in lifts no greater than 12 inches (0.3 meters) or per the construction specifications. Backfill shall satisfy ASTM C33 size #57 material or approved equivalent. For all down guy wires, anchors will be either grouted rock or pile anchors. The transmission line will have several self-supporting steel poles on caisson drilled shaft concrete foundations.

Table 5-2, below, contains a list of drawings included in this Application:

Table 5-2. List of Drawings

Drawing Title	Drawing No.
115 kV Single Circuit Tangent Structure	13139-043-T1-0200
115 kV Single Circuit Angle Structure (10° - 30°)	13139-043-T1-0210
115 kV Single Circuit Guyed Deadend (30° - 45°)	13139-043-T1-0215
115 kV Single Circuit Guyed Deadend (45° - 75°)	13139-043-T1-0220
115 kV Single Circuit Guyed Deadend (75° - 105°)	13139-043-T1-0225
115 kV Single Circuit In-line Deadend Framing	13139-043-T1-0230
115 kV Single Circuit Wood Tangent H-Frame Structure Framing	13139-043-T1-0235
115 kV Single Circuit Wood Guyed Angle Deadend 3-Pole Structure Framing	13139-043-T1-0250
115 kV Single Circuit Wood Guyed In-line Deadend 3-Pole Structure Framing	13139-043-T1-0260
115 kV Single Circuit Self Support (45° - 75°) Framing	13139-043-T1-0275
115 kV Single Circuit Self Support (75° - 105°) Framing	13139-043-T1-0280
Cross Sections	13139-043-T1-0900 - 13139-043-T1-0915
3-D Structure Types	13139-043-T1-0920 - 13139-043-T1-0923
Vertical Profile of the Right-of-Way	13139-043-T1-0930 - 13139-043-T1-0937