NextEra Energy Transmission New York, Inc.

Marcy to Pleasant Valley Project

Exhibit E-1

Description of Proposed Transmission Facilities

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EXHIBIT E-1 – DESCRIPTION OF PROPOSED TRANSMISSION FACILITIES

This Exhibit addresses the requirements of 16 New York Codes, Rules and Regulations (NYCRR) Section 88.1 and the New York Public Service Commission's (Commission) orders in Case 12-T-0502 on April 22, 2013 and September 19, 2013.

E-1.1 General

NextEra Energy Transmission New York, Inc. (NEETNY) proposes to construct and operate an approximately 148-mile 345-kilovolt (kV) single circuit alternating current (AC) transmission line paralleling existing transmission lines between the Marcy Substation in Oneida County and the Pleasant Valley Substation in Dutchess County (Marcy to Pleasant Valley Project or the Project) with an expected in-service date of September 2017.

For a detailed description and the design drawings of the proposed pole structures see Exhibit 5.

E-1.2 Circuit Information

The Marcy to Pleasant Valley Project will consist of the following circuits:

- The Marcy to New Scotland 345-kV transmission line begins at a dead-end structure located at or adjacent to the Marcy Substation, heading generally southeast for approximately 85 miles aerially crossing Interstates I-90 and I-88, State Routes 8, 12, 154, 197, 165, 28, 169, 170, 167, 23, 108, 114, 10, 37, 5, 161, 154, 160, 20 and other local roads as well as aerially crossing the Erie Canal/Mohawk River, to a dead-end structure adjacent to the existing New Scotland Substation.
- The New Scotland to Leeds 345-kV transmission line begins at a dead-end structure located at or adjacent to the existing New Scotland Substation, running south approximately 26 miles to the existing Leeds Substation crossing Delaware Turnpike Cedar Grove Road, Bridge Street, and Interstate 87 to a dead-end structure located at or adjacent to the existing Leeds Substation.
- The Leeds to Pleasant Valley 345-kV transmission line will begin at a dead-end structure located at or adjacent to the existing Leeds Substation, running southeast approximately 2 miles to a crossing of the Hudson River, and continuing

generally south 40 miles to the Pleasant Valley Substation aerially crossing State Route 9, County Routes 10 and 199, Salisbury Turnpike, Salt Point Turnpike and other local roads, and terminating at a dead-end structure located at or adjacent to the existing Pleasant Valley Substation.

Right-of-Way Considerations

The Marcy to Pleasant Valley Project will utilize to the greatest extent possible the existing cleared right-of-way (ROW) to minimize additional ROW acquisitions and potential environmental impacts. Where construction in the existing cleared ROW is not possible, the Marcy to Pleasant Valley Project will be built on new ROW that will generally clear up to an additional 100 feet wide and be located adjacent to and parallel to the existing cleared corridor between the Marcy Substation and the Pleasant Valley Substation.

E-1.3 Design Standards

The following design standards meet or exceed all requirements for electrical clearances and mechanical strength for Grade B Construction as set forth in the American National Standard, *National Electrical Safety Code* (ANSI C2, 2012 edition). The lines will be designed in accordance with the latest edition of the *National Electrical Safety Code* in effect at the time of design. Conductor-to-ground electrical clearances at short-time emergency (STE) New York Power Pool ratings will also meet or exceed those recommended in the above-named document.

Length of 345-kV Transmission	Approximately 148 miles
Line to be Constructed	Marcy to Pleasant Valley 345-kV
Type of Construction	
Single-Pole, Single-Circuit:	Approximately 148 miles
Design Voltage	345-kV
Operating Voltage	345-kV
Conductor	
Type, Material:	Falcon, Aluminum conductor, steel reinforced (ACSR)
Size:	1590 thousand circular mills (kcmil)
Quantity:	two per phase, three phases
Overall Diameter:	1.545 inches

Cross Sectional Area of Al:	1.25 square inches
Rated Strength:	54,500 pounds
Static Wire #1	
Type, Material:	SFPOC 4388 optical ground wire (OPGW) 48 Fibers SFSJ-J-4388R2
Diameter:	0.53 inches
Quantity:	one per circuit
Rated Strength:	18,800 pounds
Static Wire #2	
Type, Material:	7#7 Alumoweld overhead ground wire (OHGW)
Diameter:	0.433 inches
Quantity:	one per circuit
Rated Strength:	19,060 pounds
Insulators	
Types:	Polymer suspension and polymer braced post
Color:	Gray
Structures – Concrete, Single-Pole, Single-Circuit	
Type:	Tangent braced post Angle horizontal V, bi-sector guyed Angle suspension, bi-sector guyed Dead-end suspension, head and back guying
Material:	Spun concrete
Typical Height Above Ground:	95 feet
Color:	Gray
Framing Material – Concrete, Single-Pole Structures:	
Components:	Davit arms
Material:	Steel
Preservative Treatment:	Galvanizing
Color:	Gray
Structures – Steel, Lattice Tower, Single-Circuit	
Type:	Tangent V-String Angle V-String Angle Suspension Dead-end Suspension

Material:	Steel
Typical Height Above Ground:	105 feet
Preservative Treatment:	Galvanized
Color:	Gray

With respect to the planned Hudson River crossing, NEETNY is evaluating both underground/submarine and aerial crossings. Engineering design details will be provided in the NEETNY Marcy to Pleasant Valley Project Article VII Part B Application.

Design References

The design of the transmission line will be in accordance with any applicable federal, state, and local codes and industry standards in effect at the issue of this design standard. The industry codes and standards shall include but shall not be limited to the following:

- ANSI C2, The National Electric Safety Code 2012 (NESC)
- ASCE/SEI 48-05, Design of Steel Transmission Pole Structures
- ASCE 74, Guidelines for Electrical Transmission Lines Structural Loads

E-1.4 Foundation and Anchoring Details

The proposed design standards for anchor, ground wire and pole installation are shown in Figures E1-1 through E1-4.