DANSKAMMER
ENERGY, LLC

DANSKAMMER ENERGY CENTER

Case No. 18-F-0325

1001.34 Exhibit 34

Electric Interconnection

Contents

Exhibit 34: Electric Interconnection

Danskammer, is proposing to repower its existing generating facility, the (Danskammer Generating Station), located in the Town of Newburgh, Orange County, New York with a state-of-the-art natural gas fired combined cycle power generation facility, the (Danskammer Energy Center). The new Danskammer Energy Center facility will connect to the existing Central Hudson substation via two new 115 kV circuits that will include overhead and underground conductors.

34(a) Voltage

The plant is designed to connect to the Central Hudson transmission system by way of two generator step up transformers (GSUT), one connected to the STG (steam turbine generator) and one connected to the GTG (gas turbine generator). The GSUTs increase the voltage from the 15.5 kV produced at each generator lead to the Central Hudson 115 kV grid voltage. Central Hudson indicates that bus voltage at this site is anticipated to run at 115 kV. So, the generator step-up transformers will be specified to use that as their initial voltage (i.e., the center tap will produce 115 kV at the high side of the transformer). The repowered Project facility will interconnect with Central Hudson's 115 kV transmission system through the existing substation that is currently present on the existing Danskammer Generating Station property.

34(b) Conductors

The conductors utilized to connect from the new generator step-up transformers to the existing switchyard will be both flexible overhead aluminum conductors, coated-steel reinforced (ACSR) conductor, flexible underground insulated cable and rigid bus connections that will meet or exceed the required ampacity.

See drawings E4-1 and E4-2 in Exhibit 11 for arrangement of the lines on the site and for numbering of the lines' support structures.

The new overhead ACSR conductors will be 795 kcmil 26/7 ACSR Drake, 2 per phase. Given three (3) phases and two (2) circuits, there will be a total of twelve (12) phase conductors. The overhead design will also include one 3/8-inch EHS wire per circuit (reduced to one EHS wire for both circuits from structure 1.3 to structures 1.4A and 1.4B). The underground conductors will be 115 kV solid dielectric, cross-linked polyethylene (XLPE) 3500 kcmil cables. There will be two underground conductors per phase for the CTG circuit and one conductor per phase for the STG circuit. Any rigid bus connections will be at a minimum 3000A, 5" IPS aluminum bus.

34(c) Insulator Design

Typical utility-grade ceramic/porcelain or composite/polymer insulators designed and constructed in accordance with ANSI C29, will be utilized on the systems. The suspension insulator material is expected to be HTV Silicon/ECR Fiberglass Core, in conformance with ANSI Standard, or equivalent.

34(d) Length of Transmission Line

The transmission line length from the new step-up transformers to the existing 115 kV AIS switchyard will be approximately 600 feet.

34(e) Pole Dimensions and Construction Materials

The new poles are as follows:

- Structure numbers STR 1.1, STR 1.2, STR 1.3, STR 1.4A, and STR 1.4B will be above grade galvanized steel utility dead end mono-poles.
- Pole numbers STR1.1, STR 1.2, STR 1.3 and the GSU dead ends are depicted on drawing E4-1 and E4-2.
- The generator step-up transformer dead-end structures will be steel H-frames and 66 feet above grade.

34(f) Pole Design Standards

The Engineering documents shall be designed to the requirements of applicable New York State and industry Standards, Codes, Rules, and Regulations (latest edition) and Specifications including, but not limited to, those listed below:

- National Electrical Safety Code (NESC), ANSI C2, Latest Edition, 2017
- ASCE-74, Guidelines for Electrical Transmission Line Structural Loading
- ASCE-48, Design of Steel Transmission Pole Structures, 2011
- ASCE-91, Design of Guyed Electrical Transmission Structures
- ACI-318, Building Code Requirements for Structural Concrete
- REA Bulletin 1724E-200, Design Manual for High Voltage Transmission Lines
- ASTM B 232, Standard Specification for Concentric-Lay-Stranded ACSR

Specific standards for structural design are referenced below:

- IEEE Std. 524-2003, IEEE Guide to the Installation of Overhead Transmission Line Conductors
- IEEE Std. 524a-1993, IEEE Guide to Grounding During the Installation of Overhead Transmission Line Conductor: Supplement to IEEE Std. 524-1992
- IEEE Std. 691-2001, IEEE Guide for Transmission Structure Foundation and Testing
- IEEE Std. 951-1996, IEEE Guide to the Assembly and Erection of Metal Transmission Structures
- IEEE Std. 977-1991, IEEE Guide to Installation of Foundations for Transmission Line Structures

34(g) Underground Cable System and Design Standards

The underground conductor will be a 3500kcmil copper 115-kV XLPE cable with a HDPE jacket and semiconducting insulation shield. The cable and terminations will comply with the latest IEEE and industry standards including, but not limited to the following.

- AEIC CS-9 Specification for Extruded Insulation Power Cables and Their Accessories Rated Above 46kV Through 345kVAC
- ASTM B3 Standard Specification for Soft or Annealed Copper Wire
- ICEA S-108-720 Extruded Insulation Power Cables Rated Above 46 Through 345 kV
- IEC 60228 Conductors of Insulated cables
- IEC 60287 Electric Cables – Calculation of the Current Rating
- IEC 60840 Power Cables with Extruded Insulation and their Accessories for Rated Voltages Above 30 kV (Um=36 kV) up to 150 kV (Um=170kV) – Test Methods and Requirements
- IEC 60853 Calculation of the cyclic and emergency rating of cables
- IEEE 48 IEEE Standard Test Procedures and Requirements for High-Voltage Alternating-Current Cable Terminations.
- NEMA WC26 Binational Wire and Cable Packaging Standard

34(h) Underground Lines Profile and Oil Pumping Stations/Manhole Locations

There will be no manholes required for the 115kV underground cable. The underground cable will enter the existing Central Hudson substation via concrete trench with thermal sand. The cables

will not be oil-filled type and no oil pumping stations will be required. No profiles are provided because a trench configuration is being used.

34(i) Equipment to be Installed

No additional equipment is necessary to connect the Project to the existing Central Hudson substation.

34(j) Any Terminal Facility

The terminal facilities utilized on this Project are the existing substation and POI, which is at the existing Central Hudson Substation, both as described above.

34(k) Cathodic Protection Measures

Cathodic protection measures are not expected to be required on the steel poles utilized on this Project because the environment, soil, and existing underground facilities are not anticipated to cause corrosion to the steel structures. All structures will be grounded; at least one 10-foot ground rod installed per structure.