New York State Electric & Gas Corporation

Columbia County Transmission Project

Exhibit E-2

Other Facilities

TABLE OF CONTENTS

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LIST OF DRAWINGS

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EXHIBIT E-2: OTHER FACILITIES

The Columbia County Transmission Project includes one (1) new 115-kV transmission line (Circuit #726) and the construction of a new substation (Proposed Ghent Switching Station) in the Town of Ghent. The project also includes the installation of additional equipment in the Klinekill substation. The project system single-line diagram, SK-001, depicts the new facility and how it interconnects to NYSEG's existing facilities. The proposed facility will reinforce the overall NYSEG electric transmission system and its interface with the New York State bulk transmission system.

The construction of the Proposed Ghent Switching Station and the improvements to Klinekill Substation are described on the following pages.

E-2.1 Proposed Ghent Switching Station, Town of Ghent

The following is a description of the proposed Ghent Switching Station.

E-2.1.1 Objective of Proposed Improvements

The Proposed Ghent Switching Station will interconnect the 115-kV National Grid Trunk #15 to enhance system reliability. In order to upgrade the existing system, the Proposed Ghent Switching Station and a new 115-kV line connecting the Proposed Ghent Switching Station to the Klinekill Substation will be installed (Circuit #726).

E-2.1.2 Existing Location

The Proposed Ghent Switching Station site is located 400 feet west of State Route 9H and approximately 6,500 feet east of the existing National Grid Trunk #15 right-of-way. The site is entirely active agriculture land and is outside of any mapped wetland or floodplain areas.

E-2.1.3 Description of Proposed Additions

The 115-kV breaker and a half bus arrangement will consist of two bays that contain a total of three 115-kV, 2000 A gas-insulated breakers and associated 2000 A motor-operated disconnect switches for isolating each breaker and line terminals. Voltage instrument transformers for relaying purposes will be installed on each main bus section and line terminals.

The overall fenced area will be approximately 350 feet by 250 feet. The Proposed Ghent Switching Station is located in an agricultural field with minimal trees, and the average site elevation is approximately 200 feet above mean sea level. The substation will require the addition of a 600-foot access road from State Route 9H.

The protection and communication systems will be designed to meet the NERC and NPCC requirements for bulk power stations.

Primary and Secondary protection systems will be installed to provide bus differential protection, line protection and pilot distance protection for the 115-kV line to Klinekill substation. The protection system will also include direct transfer trip for each line and breaker back-up protection for all breakers.

The primary communication channel between the Proposed Ghent Switching Station and Klinekill Substation will be accomplished by installing new optical ground wire (OPGW) between the two substations as part of the new transmission line installation.

A control house sized approximately 20 feet by 30 feet will be installed to house the protection, communication, and AC and DC system equipment. The control house will be designed to allow physical separation of the primary and secondary protection and communication systems and two battery systems. Security equipment required for Bulk Power System substations will also be installed.

Station service power for the substation will be provided from station service power transformers on each phase of the bus and step down station service transformers.

The conduit and control cable system will be designed to provide physical separation between the primary and secondary protection and communication systems.

E-2.1.4 Description of Drawings

One Line Diagram. The One Line Diagram drawing is a simplified diagram which symbolically depicts the electrical arrangement of the 115-kV circuit breakers in the Proposed Ghent Switching Station. Refer to Drawing SK-002 at the end of this exhibit.

Plot Plan. The Plot Plan drawing is a plan view of the equipment and structure arrangement for the Proposed Ghent Switching Station. All of the equipment in the yard is typical outdoor type equipment supported on galvanized steel structures. Refer to Drawing SK-005 at the end of this exhibit.

E-2.2 Klinekill Substation, Town of Chatham

The following is a description of the existing Klinekill substation and descriptions of the additions and modifications.

E-2.2.1 Objective of Proposed Improvements

To enhance reliability, a new 115-kV line from the Proposed Ghent Switching Station will terminate at the existing Klinekill Substation. The new 115-kV line (Circuit #726) is to be rated for 620 MVA Summer Normal.

E-2.2.2 Existing Facility

The Klinekill Substation consists of an open air 115-kV straight bus arrangement with both a line breaker and transformer high side breaker. A 115-kV line (To Craryville) is connected to the existing buswork. There is also a 115-kV/34.5-kV transformer totaling 50 MVA of capacity that serves the towns of Ghent and Chatham as well as a local underground distribution line. The station is located approximately 400 feet above mean sea level.

The existing control house layout allows for additional panel installation to accommodate the proposed changes. Drawing D-825801 shows the existing control house layout and can be found at the end of this exhibit.

E-2.2.3 Description of Proposed Additions and Modifications

The new 115-kV line from the Proposed Ghent Switching Station (Circuit #726) will be connected into Klinekill Substation via overhead transmission lines.

In order to connect Circuit #726 to Klinekill Substation, new dead end and bus support structures and their associated foundations will be installed at Klinekill to tie into the existing 115-kV bus section. The line terminal will consist of two new 115-kV, 2000 A breakers, 115-kV, 2000 A

motor-operated isolating switches, surge arresters, cable terminations and associated structures, foundations, grounding, conduit, control cable, and buswork.

Primary and secondary line protection systems will be installed in the new section of the control house that will be installed as part of the Circuit #726 project described above. The protection system will include pilot distance and line protection, direct transfer trip, and breaker back-up protections.

The primary communication between the Proposed Ghent Switching Station and Klinekill Substation will be accomplished by installing new optical ground wire (OPGW) between the two stations as part of the new transmission line installation.

E-2.2.4 Description of Drawings

Three Line Diagram. The Three Line Diagram provides electrical depiction of the existing and new equipment. Additions or modifications as part of the Columbia County Transmission project are clouded and labeled as Revision 01 for Drawing D-8242 Sheet 1. Refer to Drawing D-8242, Sheets 1 and 2, at the end of this exhibit.

Plot Plan. The Plot Plan drawing is a plan view of the equipment arrangement and surrounding area features. Additions or modifications as part of the Columbia County Transmission Project are clouded and labeled as Revision 04. Refer to Drawing D-821801 at the end of this exhibit.

General Arrangement. The General Arrangement drawing is a plan view of the equipment arrangement for Klinekill Substation. All of the equipment in the yard is typical outdoor type equipment supported on galvanized steel structures or concrete foundations. Additions or modifications as part of the Columbia County Transmission Project are clouded and labeled as Revision 02. Refer to Drawing D-8223, Sheets 1 and 2 of 6, at the end of this exhibit.

Elevation View. The Elevations Views on Drawing D-8223, Sheets 3 through 6 of 6, show the structure and equipment heights for the proposed 115-kV line terminal addition. Additions or modifications as part of the Columbia County Transmission Project are clouded and Labeled as Revision 02.

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