BEFORE THE
NEW YORK STATE
PUBLIC SERVICE COMMISSION

In the Matter of the Application of Central Hudson Gas & Electric Corporation For a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law for the A and C Line Rebuild Project, Approximately 10.85 miles of 115 Kilovolt Transmission Lines in the Towns of Pleasant Valley, LaGrange, Wappinger, and East Fishkill, in Dutchess County	Case No.: 13-T-_____

CENTRAL HUDSON GAS & ELECTRIC CORPORATION
A AND C LINE REBUILD PROJECT

EXHIBIT E-1

DESCRIPTION OF PROPOSED TRANSMISSION FACILITIES

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This section addresses the requirements of 16 NYCRR §88.1.

E-1.1 General

The proposed Project includes the rebuild of 10.85 miles of existing transmission line along existing rights-of-way; minor substation modifications also are included. The existing A and C transmission lines (A and C Lines) lines connect the Pleasant Valley Substation in the Town of Pleasant Valley to the Todd Hill Substation in the Town of Lagrange, and the Todd Hill Substation to the Fishkill Plains Substation in the Town of East Fishkill. In addition to being the sole transmission supply for the 23.5 MWs of peak distribution load currently served from the Todd Hill Substation, the A and C Lines provide the major transmission path between the Pleasant Valley and East Fishkill Substations. The 345/115 kV transformers located at Pleasant Valley and East Fishkill provide the bulk power system inputs to Central Hudson Gas and Electric Company's (CHG&E) Dutchess County transmission system. Both the A and C Lines currently operate at 115,000 volts (115 kV), and the rebuild design voltage remains 115 kV. The length of the new line is equal to the length of the existing line. The total distance of the A and C Lines is approximately 11 miles (10.85 miles). The individual lengths of the A and C Lines are 5.25 and 5.60 miles, respectively.

The clearances for the proposed Project will be governed by the latest edition of the National Electrical Safety Code (NESC). Some of the typical requirements of the NESC include clearances to ground, adjacent transmission lines, railroads, buildings, and a host of other facilities.

Generally, the proposed new 115 kV lines will be single-circuit facilities on single-pole structures. The type of material will be predominantly self-weathering Corten steel. The steel pole design will be in accordance with industry standards. There are several published standards, depending on the type of structure and material used. Common standards that apply to the Project include:

- Tubular Steel Poles – American Society of Civil Engineers Manual 72, "Design of Steel Transmission Pole Structures"
- Rural Utilities Service Bulletin 1724E-200, "Design Manual for High Voltage Transmission Lines"

Design of structures will be in accordance with applicable national and state codes and regulations. The most significant regulation is the NESC. This code specifies both the minimum structural loads to determine the required structural capacity, and the clearances required to energize parts and wires. There will be a variety of different structure types used for the Project, due to different constraints and problems encountered at different locations. The predominant structure type that will be used for this Project is the single-pole structure.

Structures will typically be 60 to 75 feet above the ground, with a direct embedded foundation. The direct embedded structure is economical, and involves burying a part of the pole directly into the ground then backfilling with suitable material (e.g., crushed stone). Table 1 summarizes the design standards for each type of tower, comparing the existing conditions to the proposed rebuild.

Table 1. Design Standards for Each Type of Tower

Tower Type	Existing	Proposed New
Typical Pole	Wood[1] Direct Burial Average Height: 51 feet [2]	Corten Steel Direct Burial Average Height: 64 feet [2]
Tangent Structures	Double Wood H- frame	Single Pole with Davit Arms
Angle Structures	Swing Angle Suspension 3-pole Structures	Swing Angle Suspension 2-pole Structures
Dead End Structures	Strain Insulator 3-pole Structures	Strain Insulator 2-pole Structures

[1] The majority of existing structures are wood. However, as part of the normal inspection and maintenance program, twenty-two (22) of the original wooden structures have been previously replaced due to poor condition. Replacements were made with steel.
[2] "Average Height" refers to height above ground.

The NESC specifies both the maximum structural loads to determine the required structural capacity, and the minimum clearances from energized parts and wires to the ground, adjacent transmission lines, railroad lines, buildings, and a host of other facilities. The NESC, as well as other, more stringent criteria that may be imposed by CHGE, will govern the structural loading.

E-1.2 Circuit Information

E-1.2.1 Proposed Rebuild of A and C Lines

The existing 115 kV A and C Lines were installed in 1948 using 397.5 ACSR "Ibis" conductor. During 2003, several conductor samples were taken from these lines, and subsequently tested by the National Electric Energy Testing, Research and Applications Center (NEETRAC). Although this testing showed that the conductor had acceptable breaking strength, the conductor showed evidence of aluminum annealing. Such annealing can cause the conductor to lose strength and sag lower than expected, potentially resulting in NESC clearance violations. Table 2 summarizes the type, size, number, and materials of conductors and static wires, comparing the existing conditions to the proposed rebuild.

Table 2. Characteristics of Conductors and Static Wires

Conductors	Existing	Proposed New
Quantity	3	3
Type/Material	397.5 MCM ACSR (Ibis)	1033.5 MCM ACSR (Ortolan)
Size (diameter)	0.783 inches	1.212 inches
Static Wires	**Existing**	**Proposed New**
Quantity	2	1
Type/Material	101.8 MCM ACSR (Petrel)	Optical Ground Wire (OPGW)
Size (diameter)	0.461 inches	approximately 0.7 inches

The existing A and C Lines have ceramic bell suspension insulators for most structures. However, due to recent replacements, some of the tangent structures have polymer suspension insulators, which are to be used on all tangent structures along the rebuild. The new deadend structures will use ceramic bell suspension insulators.

E-1.2.2 Aerial Ground Wires

As summarized above in Table 2, the A and C 115 kV single-pole structures will support one aerial ground wire. This optical ground wire (OPGW) will be approximately 0.7-inch in diameter, and contain 24 to 48 optical fibers.