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 3

ALTERNATIVES

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This section addresses the requirements of 16 NYCRR §86.4.

3.1 Introduction

Central Hudson Gas & Electric Corporation (CHG&E or the Applicant) is proposing to rebuild and reconductor the existing 115 kV A and C transmission lines located between Pleasant Valley and East Fishkill in Dutchess County, New York (the Project). CHG&E's preferred alternative is located within an existing 150 foot wide right-of-way (ROW), and spans approximately 11 miles through four towns; Pleasant Valley, LaGrange, Wappinger and East Fishkill. The existing ROW has been used for transmission purposes since 1948. The existing transmission corridor includes the existing A and C transmission lines (A and C Lines), which are carried primarily on H-frame wood pole structures with an average height of 51 feet above ground. The existing corridor is well-maintained in early successional vegetation (i.e., old field herbaceous and shrub species), and traverses a variety of landscapes from undeveloped forest land and agricultural fields, to areas of medium density residential development. With the exception of potential minor clearing for off-ROW access, no additional clearing beyond the existing ROW is anticipated.

The existing A and C Lines consist of 123 structures (262 total poles), of which five consist of a single-pole, 97 are two-pole wood H-frames, and 21 are three-pole deadend and angle wood structures. The average height of the existing structures is 51 feet above ground. The average heights of the swing angle and deadend structures are similar to the heights of the existing two pole H-frame structures. The line currently utilizes two static wires (0.461" dia.) and three conductor wires (0.783" dia.).

The preferred alternative is to replace most of the structures and all of the conductors within the existing ROW. The proposed rebuild will utilize single-pole, davit arm structures with some two-pole swing angle and strain dead end structures. The proposed new structures are typically 60 to 70 feet tall (above ground). This is a 9 to 19 foot average height increase from the existing A and C Line structures to accommodate the single-pole construction and the heavier conductor. CHG&E intends to reuse several recently replaced A and C Line structures from previous maintenance projects (i.e., within the last five years) where the newer existing structures will meet the loading criteria of the planned new conductor. The preferred design replaces the two static wires (0.461" dia.) with one static wire (0.7" dia.) and the three existing conductor wires (0.783" dia.) with three larger conductor wires (1.212" dia.).

The proposed Project route will utilize the existing CHG&E ROW. Potential alternatives that can meet Project goals include the use of different equipment and/or pole structures, and different construction techniques. Other

alternatives considered that do not meet these goals are alternative routes and leaving the A and C Lines in their current state (the no-action alternative). These alternatives are discussed below.

3.2 Alternative Equipment

The alternative equipment options that could be used to fulfill the goals of the proposed Project involve the use of different types of transmission structures. Alternative transmission structures considered are standard H-frame two-pole structures and compact structures. Additionally, the Applicant looked at the potential for burial of certain sections of the A and C Lines rather than the entire proposed overhead transmission line.

3.2.1 Alternative Transmission Structures

3.2.1.1 H – Frame Structures

The current structures utilized for the A and C Lines are wooden H–frame structures. CHG&E considered potentially replacing the existing lines with new H-frame structures. The H-frame replacement structures would range from approximately 60 to 65 feet tall and would be constructed out of Corten (self-weathering) steel, including the crossarm and x-bracing members. A total of approximately 123 replacement structures would be required for the proposed Project. These structures would be placed near the existing structures and would be installed via direct burial, resulting in no new foundations for the rebuilt A and C Lines. It is likely that visual impacts would be somewhat reduced with this alternative since the surrounding community is already familiar with the H-frame structures within their views of the current A and C Line configuration. However, the proposed H-frames would be taller than the existing structures by approximately 10 to 15 feet to accommodate the larger conductor wires planned for the rebuild. Additionally, due to each structure having multiple poles, this alternative would result in more soil disturbance and a higher risk of indirect environmental impacts (e.g., erosion and sedimentation). This design would also maintain the use of two static wires as opposed to the single static wire in the preferred alternative.

Additionally, CHG&E evaluated the cost for rebuilding the Project using new H-frame structures and determined that the Project would be higher in cost. The estimated cost for this alternative was approximately $14,117,000. This is an increase of approximately 20 percent above the preferred alternative.

3.2.1.2 Compact Transmission Structures

Other alternative structures considered were compact transmission structures. A more compact design would be to utilize single poles with post insulator attachments. The benefit of post insulators is that the conductor spacing can be slightly reduced, resulting in shorter structures. One significant drawback to using a post

insulator configuration is that the post insulators cannot sustain the same loading as the preferred or the H-frame alternatives. Use of post insulators would require shorter spans, resulting in more structures. The use of these types of structures would result in the need for approximately 206 poles which is equivalent to 20 percent more pole structures then the proposed alternative. This would result in additional earthwork as well as increased Project costs. This alternative could have both beneficial and adverse effects on the Projects' visual impact. These structures range in height from 60 to 65 and are made of Corten steel. It is likely that the shorter compact structures would have reduced visibility (i.e., a smaller viewshed); however, the increase in number of poles would likely have a larger impact on the viewer in those instances where structures are visible. The increased number of structures would also place new poles on properties where there are currently no existing structures.

Additionally, CHG&E conducted a cost estimate for rebuilding the Project using compact structures and determined that the Project would be higher in cost than the preferred alternative. The estimated cost for this proposed alternative was approximately $13,654,000. This is an increase of approximately 17 percent from the preferred alternative.

3.2.2 Underground Alternative

CHG&E also considered the potential for burial of portions of the electrical transmission lines. Areas considered for burial were sections along the ROW within the vicinity of high to medium density residential and commercial land uses. Areas adjacent to agricultural, forested, industrial, or other low density development would be constructed as overhead single-pole structures as proposed in the preferred alternative. While this alternative may reduce visual impacts in portions of the Project area, it would require a considerable amount of additional soil disturbance and have a larger potential for adverse impacts to water resources. For example this alternative would require the trenching of wetlands and or stream channels within the ROW that would be crossed by the buried line. Due to these direct impacts and the greater potential for indirect impacts from soil erosion, this was considered to be the least environmentally sensitive alternative. Also, the A and C Lines share ROW with other utility lines, both electric and gas, in many of the high to medium density residential and commercial areas. In these locations, installing the A and C Lines underground would not eliminate the visual impacts from the other transmission lines that are not planned for underground construction. Additionally, the cost of burial of even small portions of the electric transmission lines would be approximately 5 to 10 times the cost of the preferred alternative. This alternative could also result in a longer restoration times during power outages or line failure within the buried portions of the electric transmission lines.

3.3 Alternative Routes

Alternative routes are not a viable or sensible option for the proposed project. The current A and C Lines are within a CHG&E maintained or shared ROW and are collocated with one or more other transmission systems for approximately 7.11 miles of the 10.85 mile ROW corridor (66%). Additionally, the A and C Lines must both meet at the Todd Hill Substation. Any alternate routes would require the lines to return to the Todd Hill Substation. Alternative routes would result in the purchasing of land or obtaining easements for a new ROW which is not an economically viable option. Additionally, it is reasonable to assume a new ROW would require vegetation clearing as well as the construction of access roads along the ROW. It would also introduce transmission line structures into views where they are currently not present. Utilizing the existing ROW avoids the need for such environmental impacts. Therefore, alternative routes are not an economical or environmentally viable alternative. It is also important to consider that the existing transmission lines supply electricity to several distribution areas along the ROW. An alternative route, or even the collocated of the transmission lines within other CHG&E leased ROW's, have the potential to eliminate the supply of power to these distribution areas, unless there is substantial modification to the distribution areas and/or their point of connection with the transmission system. This would result in additional construction and disturbance to the communities served by the A and C Lines. Therefore, alternative routing is not considered a practicable alternative.

3.4 Alternate Methods to Fulfill Energy Requirements

3.4.1 No Action Alternative

The conductor on the A and C Lines is nearing the end of its useful in-service life and requires replacement. In order to ensure stability and reliability in the electric grid that services the communities and businesses in this area, the line must be rebuilt to carry the new conductor safely. The no build alternative could result in further degradation of the electrical service being provided to residents and business in the vicinity of the project and a higher risk of a system failure due to the aging infrastructure will remain. A no build alternative would result in the existing facilities continued deterioration that could result in either reduced reliability or a need to repair or replace individual structures and conductor sections; these new structures or spans may require subsequent replacement when the lines are rebuilt. Should the lines deteriorate to a state where they are unusable, Central Hudson would need to find an alternate source for the load currently supplied from the Todd Hill substation. In order to ensure a stable and reliable electric service to the surrounding communities, CHG&E must rebuild the A and C Lines, thus the no build alternative is not a viable option.

3.4.2 Energy Efficiency, Demand-Side Management and Distributed Generation

Energy efficiency measures, demand-side management, and distributed generation are all viable methods to reduce load and alleviate potential overload situations during peak load; however, they do not address reliability concerns. The project is needed not to replace poles and conductors that are in disrepair, and replace structures which have spar arms instead of traditional crossarms, which have the potential to fail catastrophically without warning. In addition, the existing A & 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 NEETRAC (National Electric Energy Testing, Research and Applications Center). 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. As a result, energy efficiency measures, demand-side management, and distributed generation were not considered viable alternatives to the proposed Project.