# **VISIBILITY ASSESSMENT**

# CENTRAL HUDSON GAS & ELECTRIC CORPORATION 69 kV KM ELECTRIC TRANSMISSION LINE REPLACEMENT PROJECT

Towns of Wappinger and Poughkeepsie, Dutchess County, New York

Prepared For:



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## December 2021

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### **1.0 INTRODUCTION**

On behalf of Central Hudson Gas & Electric Corporation (Central Hudson or Applicant), Environmental Design & Research, D.P.C. (EDR) conducted a Visibility Assessment (VA) for the proposed KM Electric Transmission Line Replacement Project (the Project), located in the Towns of Wappinger and Poughkeepsie, Dutchess County, New York. The Project includes the replacement of 2.8 miles of 69 kilovolt (kV) electrical transmission line within an existing, cleared public utility right-of-way (ROW) which is owned and operated by Central Hudson (the Project Site).

The KM Line was originally constructed almost one hundred years ago and the entire ROW is appropriated to the public utility use. The existing line conductors and poles have reached the end of their useful life and the Project is intended to address long term degradation of the strength of the conductors along the line, as well as many of the existing deteriorated wood poles. All replacement electrical equipment has been designed to meet current standards and industry best practices. Completing the KM Line replacement project is necessary for Central Hudson to continue to provide electric service safely and adequately to the area.

This VA has been prepared by EDR to support Towns of Wappinger and Poughkeepsie Planning Board applications, and Part 1 of an Environmental Assessment Form (EAF) under the State Environmental Quality Review Act (SEQRA)<sup>1</sup>. The purpose of this visibility analysis is to:

- Establish a visual study area (VSA) encompassing a 1-mile radius from the Project Site.
- Inventory and evaluate existing visual resources within 1 mile of the Project.
- Evaluate potential Project visibility.
- Evaluate the potential visual effect resulting from the Project.

<sup>&</sup>lt;sup>1</sup> This VA is included as Attachment I of an expanded EAF dated December 2021 and filed with the Towns of Wappinger and Poughkeepsie Planning Boards.

### 2.0 PROJECT DESCRIPTION

The existing KM Line ROW traverses in a northwest direction from the border of the Myers Corners Substation on Myers Corners Road, Town of Wappinger, into the Town of Poughkeepsie, southwest of Victor Lane. The total length of the proposed replacement project is approximately 2.8 miles, with nearly 1.7 miles within the Town of Wappinger and nearly 1.1 miles within the Town of Poughkeepsie (see Figure 1).

The Project will take place within the existing ROW, which generally varies from 60 feet to 125 feet. There are currently 49 pole locations within the Project. All existing poles will be removed and replaced one-for-one in the same general location within this existing, cleared and developed utility corridor. The proposed replacement poles will be self-weathering steel poles, brown-colored, and have a uniform appearance. Replacement conductors and ground wire will span the poles, replacing aged copper conductor that spans much of the KM Line.

All electric facilities must be designed and operated in conformance with applicable industry, federal and state codes including standards of the American National Standards Institute (ANSI), National Electrical Safety Code (NESC), Institute of Electrical and Electronics Engineers (IEEE), and stricter standards adopted by the utility. The new KM Line meets these overriding criteria. The replacement pole heights meet current NESC standards for conductor ground clearance and applicable design requirements. The overall profile of the replacement poles is comparable to the existing poles in the ROW. The average height of all existing poles is approximately 54.5 feet, whereas the average height of all (49) replacement poles would be approximately 59.5 feet. The KM Line replacement poles visibility will continue to be limited to areas along the ROW that currently view poles under existing conditions, but with the benefit of improved functionality, design, and storm-hardening.

### 3.0 VISUALLY SENSITIVE RESOURCES

Potential Visually Sensitive Resources (VSRs) within the VSA were identified in accordance with guidance provided by New York State Department of Environmental Conservation (NYSDEC) Program Policy DEP-00-2 *Assessing and Mitigating Visual Impacts* (NYSDEC, 2019). The categories of VSRs typically required for consideration in VIAs for projects in New York include the following:

- Properties of Historic Significance (National Historic Landmarks, Sites Listed on the State or National Registers of Historic Places [S/NRHP]; Properties Eligible for Listing on the S/NRHP; National or State Historic Sites).
- Designated Scenic Resources (Rivers Designated as National or State Wild, Scenic, or Recreational; Adirondack Park Scenic Vistas; Sites, Areas, Lakes, Highways or Overlooks Designated or Eligible for Designation as Scenic; Scenic Areas of Statewide Significance; Other Designated Scenic Resources).
- Public Lands and Recreational Resources (National Parks, Recreation Areas, Seashores, and/or Forests; Heritage Areas; State Parks; State Nature and Historic Preserve Areas; State Forest Preserve Lands; Wildlife Management Areas/Wildlife Refuges s; State Forests; Other State Lands; State Boat Launches/Waterway Access Sites; Designated Trails; Palisades Park Lands; Local Parks and Recreation Areas; Publicly Accessible Conservation Lands/Easements; Rivers and Streams with public fishing rights easements; Named Lakes, Ponds, and Reservoirs).
- **High Use Public Areas and Local Resources** (State, U.S., and Interstate Highways, Cities, Villages and Hamlets; Schools).

To identify VSRs within the VSA, EDR consulted a variety of publicly available data sources, including geospatial resources. This resulted in the identification of more than 20 VSRs. These are summarized below and presented on Figure 1.

- Town of Wappinger Hamlets of New Hackensack, Myers Corners, and Wappinger; two schools (Myers Corners School, and Roy C. Ketcham Senior School), a local park (Quiet Acres Park), one-NRHP listed site (Horton Joseph House), two potential archeological sites (Riccobono Historic site and Cranberry Hills Prehistoric Site) and six-NYPAD listed protected areas.
- Town of Poughkeepsie- Hamlets of Hillis and Cottam Hill, Route 9 Bike Path; one school (Oak Grove Elementary School), and two parks (Sunnyside Park, and Stanley Still Park), one Historic Architectural Resources (the Johannes Abraham Fort House), and three-NYPAD listed Protected areas.

EDR visited the visual study area in October 2017, May 2018, and September 2021 to document the views from the identified visually sensitive resources and areas of potential visibility as identified by the viewshed analysis and shown in viewpoint locations on Photolog Figure 3. As documented in the Photo Log and described below, field assessments verified that the proposed Project will not be visible from any visually sensitive resources.

### 4.0 VIEWSHED ANALYSIS

A viewshed analysis of the Project was generated in ArcMap<sup>©</sup> in December 2021. Potential transmission pole visibility is based on the screening effects of topography, vegetation, and manmade structures as represented in the latest USGS Dutchess County lidar dataset (2019) and was used to define areas where both the existing poles and proposed Project features would potentially be visible within the 1-mile radius VSA. The analysis was based on proposed replacement poles ranging in height from  $\pm 36 - 81$  feet<sup>2</sup>. The resulting viewshed maps (see Figure 2) define the areas from which the top of the replacement poles could potentially be seen from ground level vantage points within the study area.

The viewshed map for the existing conditions suggests that, based on the screening provided by topography, vegetation and man-made structures, some portion of one or more of the existing poles are potentially visible within 5.9% of the 1-mile radius study area. The viewshed mapping for the proposed replacement poles suggests that, based on the screening effect of topography and vegetation, some portion of the proposed Project would potentially be visible within 6.2% of the 1-mile radius study area. This, however, is conservative and does not account for the minimal visibility of the Project from most viewpoints (i.e., this does not account for locations where poles may only be visible through the backdrop of screening or vegetation). Ultimately, this conservative percentage represents only a 0.3% increase in the total area of potential visibility within the 1-mile radius surrounding the proposed Project (see Figure 2). Viewshed mapping indicates that views of the proposed poles will generally remain the same, from the same locations and landscape settings where the existing ROW is currently visible (i.e., at road crossings of the ROW). Indeed, the proposed use and visibility of the Project Site will remain consistent with current conditions.

<sup>&</sup>lt;sup>2</sup> The replacement pole heights meet current NESC standards for conductor ground clearance and applicable design requirements. The overall profile of the 49 replacement poles is comparable to the existing poles in the public utility ROW. The average height of all (49) existing poles is approximately 54 feet, whereas the average height of all (49) replacement poles would be approximately 59 feet.

### 5.0 SIMULATIONS

An analysis of existing and anticipated future views of the Project from within the 1-mile radius VSA was conducted to further identify and evaluate potential visual impacts. A total of three visual simulations of the Project were developed (Figures 4, 5 and 6) These simulations represent general landscape settings present at the 2.8-mile Project Site (i.e., utility, residential, recreational, and open space).

#### Simulation Methodology

To show anticipated visual changes associated with the Project, to the extent they may exist, highresolution computer-enhanced image processing was used to create the photographic simulations of the completed reconstructed transmission line from each of the selected viewpoints. The photographic simulations were developed by using Autodesk 3ds Max® to create a simulated perspective (camera view) to match the location, bearing, and focal length of the viewpoint (existing conditions) photograph. Existing elements in the view (e.g., buildings, transmission and distribution infrastructure, roads) were modeled based on aerial photographs and DEM data in AutoCAD Civil 3D<sup>®</sup>. A three dimensional ("3-D") topographic mesh of the landform (based on 1 meter, lidar derived DSM) was then brought into the 3-D model space. At this point minor adjustments were made to camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (i.e., the replacement poles and lines) will be shown in proportion, perspective, and proper relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions, and locations of the proposed infrastructure will be accurate and true in their relationship to other landscape elements in the photograph.

EDR prepared a 3-D computer model of the Project components based on specifications of equipment proposed by Central Hudson. Using the camera view as guidance, the visible project components were then imported to the landscape model space and set at the proper coordinates.

Once the components were accurately aligned within the camera view, a lighting system was created based on the actual time, date, and location of the photograph. Using the Mental Ray Rendering System<sup>®</sup> with Final Gather and Mental Ray Daylight System<sup>®</sup> within the Autodesk 3ds MAX<sup>®</sup> software, light reflection, highlights, color casting, and shadows were accurately rendered on the modeled Replacement Facility based on actual environmental conditions represented in the photograph.

The rendered Project was then superimposed over the photograph in Adobe Photoshop® and portions of the project that fall behind vegetation, structures or topography were masked out. Any shadows cast on the ground by the proposed poles were also included by rendering a separate "shadow pass" over the DEM model in Autodesk 3ds Max® and then overlaying the shadows on the simulated view with the proper fall-off and transparency using Adobe Photoshop®. To illustrate anticipated visual changes associated with the Project, photographic simulations of the completed Project from nearby viewpoints were used to evaluate visibility and appearance. A description of each simulation is provided below:

### Viewpoint 6 (Figure 4)

#### **Existing View**

This view is from Morgan Court, west of St. Nicholas Road, looking south toward the existing ROW. The foreground of this view includes residential landscape plantings, and a broad residential lawn. The midground contains additional lawn area, an existing house, wooded landscape areas, and a portion of the existing, maintained ROW. The backdrop, provided by a mixed woodland, is located along the southern edge of the ROW, and indicates the relatively minor scale of topographic change in this area. The existing public utility ROW and existing utility equipment, including roughly four existing wood transmission poles and equipment are visible within the cleared ROW.

### **Proposed Project**

With the proposed Project in place, the replacement transmission line will be in the same central location within the ROW. Therefore, the perceived land use and scale of the ROW remain unchanged (i.e., no additional clearing). The new utility installation is consistent with the existing electrical infrastructure on Site, and the poles are in the same general location. The proposed conditions present the same quantity of poles in this view. In a direct "before and after" comparison of photographs, the new poles appear slightly taller than the existing poles in this limited view. Notably the existing poles do not comply with current industry standards. The Project results in a relatively minimal impact on the skyline. The replacement poles are dark brown and consistent with the surrounding wooded areas. The new poles, with modern insulator configuration and wire, in the foreground present only a minor visual change when compared to the existing view of the existing public utility ROW. Thus, views of the ROW will remain consistent with existing conditions.

### Viewpoint 9 (Figure 5)

### Existing View

This view is from the parking lot at Stanley Still Park, south of Jackson Road, looking southwest the existing ROW. The viewpoint is located near Wappinger Creek. The foreground of this view is typical of a recreational setting. The foreground view is separated from the existing ROW in the background by a series of chain link fences and defined ball fields. In the background behind the ball fields is the existing ROW and a wooded backdrop. A total of four poles, including two H-frame poles with a double pole configuration and transmission line infrastructure are visible. There are numerous conductors, insulators, and guy wires visible in the background.

### **Proposed Project**

There are no changes to the foreground or mid-ground (hedgerow) after the replacement line is installed. The two replacement, self-weathering steel poles are visible in the background, within the existing ROW. The new installation is consistent with the existing electrical infrastructure on the Project Site. The pole color (brown) is consistent with the wooded areas located around the ROW. There is no discernable increase in the height of the poles in this area. Lines and conductors have also been consolidated into a more linear arrangement.

### *Viewpoint 15 (Figure 6)*

### Existing View

This view is from Victor Lane looking northwest onto the existing ROW. The viewpoint is located at the ROW crossing in a low-density residential area. The foreground of this view consists varied topography, a road edge, lawn area, and utility ROW. There are wooded areas along both sides of the cleared ROW, mixed with residential plantings. A total of three existing poles (including one distribution pole) and associated transmission infrastructure (insulators, conductors, poles) are visible. The background is comprised of moderately steep slope, residential structure, and wooded areas.

### Proposed Project

The Project will result in a single replacement pole located in a similar location as the existing dual-pole transmission infrastructure. The character of the foreground will not be changed. The two existing transmission poles will be consolidated into one new self-weathering steel pole., representing a reduction in visible transmission infrastructure from this viewpoint. Although the new pole presents a change in height, that change is minimally perceptible due to existing area conditions (e.g., tall trees in the background) and utility infrastructure. The pole will also remain centrally located within the ROW. The line, color, form, and shape of the new poles are consistent with the existing vegetation

and land use that characterizes this existing ROW. These vertical elements will have minimal impact on the skyline. The proposed poles do not exceed the heights of the adjacent tree lines. The proposed Project will reduce the amount of infrastructure within the existing ROW.

### 6.0 CONCLUSION

As indicated in the viewshed analysis maps, the proposed Project will not result in a meaningful increase in the area where the transmission line is visible (i.e., the net increase in area from which the lines are visible will increase by only 0.3%) (note: for purposes of determining this percentage, the Project is considered to be visible from any location where any portion of infrastructure may be visible, even if such view is minimal, partial or viewed through obstructions). In addition, open or partially screened views are generally confined to an area immediately adjacent to the Project Site, and consistent with existing conditions. Views of the Project will predominately be limited to the areas at which the existing infrastructure is already visible.

The entire ROW is appropriated to the public utility use, which has existed for almost onehundred-years. Replacement KM Line infrastructure will be reconstructed in generally the same locations within this cleared and developed utility corridor. Because of these factors and given that the Project is located within an existing transmission line ROW, and will not require additional expansion of ROW, the type and intensity of perceived land use will remain unchanged.

The presence of existing forest vegetation in the vicinity of the Project Site will continue to screen the Project from public vantage points (see viewshed mapping, Figure 2) and neighboring properties, and the proposed natural dark brown color of the replacement poles will generally blend well with the surrounding landscape. The KM Line replacement poles visibility will continue to be primarily within areas along the transmission line that currently have visibility of these poles under existing conditions (e.g., road crossings); but the proposed Project will benefit from improved design, functionality, and storm-hardening, among other things, such as reduced infrastructure within this existing public utility ROW.

The magnitude of any perceived impact is also small in context and has been limited by the design measures referred to above. The replacement poles are being installed in generally the same locations as existing poles, within the existing cleared ROW. The net increase in visibility for this 2.8-mile portion of ROW is conservatively only 0.3%. The creation of the uniform appearance of

brown-colored poles (replacing situations of poles of various types, appearance and degradation, see figure below) will be a notable consolidation of the infrastructure. Proposed changes in height as indicated on the Plan and Profile drawings, are required to meet applicable public utility design standards, such as NESC separation and clearance requirements.

The long-standing use and nature of this utility ROW, surrounding area and vegetation, and the layout and design of the replacement line demonstrate that the Project is consistent with the community character. The replacement line will not have an adverse effect and will provide a critical public benefit (i.e., delivering reliable electric service to nearby residences, schools, businesses, etc.).

Based on all of the factors discussed in this Report and the visibility evaluation, the overall importance of the impact is relatively small in relation to the number of persons affected, and the impact has been limited due to all the measures stated herein. The benefits provided by the Project are important. Overall, the Project is not anticipated to result in any adverse impacts on any aesthetic or historic resources, scenic views, residential properties or natural or man-made resources, nor will it screen any designated scenic views. In conclusion, the visual assessment confirms that visibility of the Project will remain limited and consistent with existing conditions, and further, that the Project is not anticipated to result in substantive adverse visual effects on the environment

### 7.0 EDR QUALIFICATIONS

EDR is an industry leader in the field of visualization and has performed visual impact assessment services on more than one hundred energy generation and/or transmission projects over 25 years.

Gordon Perkins served as the visual lead for the Project. Gordon is EDR's Visualization Division Manager with 20 years of professional experience. Gordon is one of the leading expert consultants in Visualization and Visual Impact Assessment in the Northeast and is well known in the energy industry. Gordon has extensive expertise in the technical methodologies associated with visual impact assessment, visual resource assessment, and scenic landscape assessment. As a Division Manager with EDR, Gordon's responsibilities include the ongoing evaluation and development of our technical methodologies used in visual impact assessment, including new techniques in data collection, processing and analysis, and 3-D modeling. Gordon is also responsible for assigning, scheduling and coordinating assistance from the in-house multi-disciplined team of professionals. He remains hands-on throughout the project, overseeing and advising the EDR Team as needed, as well as providing quality assurance. He has a Bachelor of Landscape Architecture from the State University of New York, College of Environmental Science and Forestry.

## Figure 1. Viewpoint Location Map



EDR

### Figure 2. Viewshed Map



# 69kV KM Electric Transmission Line Replacement Project Towns of Poughkeepsie and Wappinger, Dutchess

County, New York

Area of Potential New Visibility Existing Transmission Pole Visibility KM Line Right-of-Way

1-Mile Visual Study Area



Visibility Assessment EDR \_



Town of Wappinger, Myers Corner Elementary School





Viewpoint 2

Town of Wappinger, Substation from Myers Corner Road - North

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### Viewpoint 3

Town of Wappinger, Myers Corner Road - South

Viewpoint 4

Town of Wappinger, Myers Corner Road at address 167



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Viewpoint 5

Town of Wappinger, Widmer Road

**Viewpoint 6** Town of Wappinger, Morgan Court



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Viewpoint 7

Town of Wappinger, Saint Nicholas Road

Viewpoint 8

Town of Wappinger, New Hackensack Road at Jackson Road



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Viewpoint 9

Town of Poughkeepsie, Stanley Still Sr. Town Sport Park





Viewpoint 10 Town of Poughkeepsie, Sterling Place - South

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### Viewpoint 11

Town of Poughkeepsie, Vassar Road at Malmros





## 69 kV KM Electric Transmission Line Replacement Project

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#### Visibility Assessment



Viewpoint 12

Town of Poughkeepsie, Victor Lane at Malmros Terrace



Viewpoint 13

Town of Poughkeepsie, Rowley Road

Viewpoint 14 Town of Poughkeepsie, Victor Lane - East



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Town of Poughkeepsie, Victor Lane - West





Viewpoint 16

Town of Poughkeepsie, Jackson Road at Stanley Still Sr. Town Sport Park

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Viewpoint 17

Town of Poughkeepsie, Pewter Court

Viewpoint 18 Town of Poughkeepsie, Sterling Place - North



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### Viewpoint 19

Town of Poughkeepsie, Argent Drive - Northeast Cul-de-sac

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