

NEW YORK STATE PUBLIC SERVICE COMMISSION

PART 102 REPORT

for the

SC & KB Line Separation Project

Town of Poughkeepsie, Dutchess County, New York

Prepared for



CENTRAL HUDSON GAS & ELECTRIC CORPORATION

284 South Avenue

Poughkeepsie, New York

April 2013

Prepared by



TETRA TECH EC, INC.

TABLE OF CONTENTS

I. PROJECT INFORMATION..... iii

 A. PROJECT DESCRIPTION..... 1

 B. SCOPE OF WORK..... 1

 C. PROJECT NEED 1

 D. FEDERAL, STATE, AND LOCAL PERMITS AND SEQRA COMPLIANCE .. 1

 E. PUBLIC PROCESS 3

 F. ENGINEERING AND DESIGN CRITERIA..... 3

 G. PROPOSED CONSTRUCTION SCHEDULE 4

II. PROJECT ASSESSMENT 5

 A. PART 102, SECTION 102.3 5

 B. SUPPLEMENTAL INFORMATION 7

III. ADVANTAGE-DISADVANTAGE ANALYSIS..... 9

 A. RIGHT OF WAY..... 9

 B. PROJECT COSTS 10

 C. TECHNOLOGICAL CONSIDERATIONS 10

 D. ENVIRONMENTAL RESOURCES..... 11

TABLES

Table 1 Federal, State, and Local Permits and Approvals

Table 2 Proposed Construction Phases and Schedule

Table 3 Previously Recorded Archaeological Sites within 1 Mile of the Project

FIGURES

Figure 1 Project Location Map

Figure 2 Facility Locations within 1 Mile of the Project

Figure 3 Zoning Districts

EXHIBITS

- Exhibit A Environmental Management and Construction Plan
 - Appendix A Construction Details
 - Appendix B Plan and Profile Drawings
 - Appendix C NYNHP Response Letter
- Exhibit B Cultural Resources Phase 1 Report
 - Exhibit B-1 Cultural Resources Phase 1A Report
 - Exhibit B-2 Cultural Resources Phase 1B Report
- Exhibit C Full Environmental Assessment Form
 - Appendix A Wetlands Delineation Report
- Exhibit D Indiana Bat Habitat Assessment Report
 - Appendix A IPaC Official Species List
 - Appendix B NYNHP Response Report
 - Appendix C USFWS Species Conclusion Table
 - Appendix D Wetlands Delineation Report
 - Appendix E Indiana Bat Habitat Suitability Assessment

ACRONYMS

CHG&E	Central Hudson Gas and Electric
DCRRA	Dutchess County Resource Recovery Agency
EAF	Environmental Assessment Form
EC&MP	Environmental Construction and Notification Plan
GPS	Geographic Positioning System
I-H	Heavy Industry
kV	kilovolt
List	NYSDEC <i>Interim List of Invasive Plant Species in New York State</i>
NESC	National Electrical Safety Commission
NHP	National Heritage Program
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
NYSM	New York State Museum
NWP	Nationwide Permits
OPRHP	Office of Parks Recreation and Historic Preservation
Project	SC & KB Line Separation Project
PSC	Public Service Commission
Q	Quarry
SEQR	State Environmental Quality Review
SHPO	State Historic Preservation Office
SHRP	State Register of Historic Places
SPDES	State Pollution Discharge Elimination System
T&E	Threatened and Endangered
Tilcon	Tilcon Minerals Inc.
USFWS	United States Fish and Wildlife Service
WD2	Waterfront Development District
WQC	Water Quality Certificate

I. PROJECT INFORMATION

A. PROJECT DESCRIPTION

LINE NAME: SC & KB Line Separation Project

LOCATION: Town of Poughkeepsie, Dutchess County, New York

B. SCOPE OF WORK

Central Hudson Gas & Electric Corporation (CHG&E) is proposing to construct the SC & KB Line Separation Project (Project) in the Town of Poughkeepsie, Dutchess County, New York. A double circuit segment of the SC & KB 115 kilovolt (kV) transmission lines currently operate on the same pole structures for approximately 1.8 miles (mi) before dividing and connecting to separate substations. Line separation will necessitate alternating line outages along the SC & KB transmission lines for maintenance purposes and increased reliability; therefore, the Project will be performed in three phases (see Section I.F) to ensure an uninterrupted supply of energy to local customers. The proposed line separation will require expanding one side or another of the existing right-of-way an additional 50 feet depending on configuration, which will include clearing approximately 9.3 acres of new right-of-way. The phases involve installation of new single-pole steel structures adjacent to the existing structures, stringing of new conductors, and tying of the new line to the existing SC and KB circuits. Following installation, the old davit arms and several phases of conductor will be removed from the existing structures, and the modified SC & KB lines will be restructured in a modified delta configuration on the existing single wood pole structures. The Project location, existing and proposed rights-of-way, and structure locations are presented on Figure 1.

C. PROJECT NEED

The purpose of this Project is to reinforce a segment of the SC & KB electric transmission system and its interface in response to the need to meet growing demand for uninterrupted service to local customers. The SC & KB transmission lines service IBM’s main plant and Green Data Center located in Poughkeepsie. These facilities have experienced enormous growth over the years, which have added to the need for a reliable energy source. The Project has been designed to reduce potential outages to both lines simultaneously during storm events and engineered to facilitate a continuous supply of energy to customers during the conversion process and maintenance activities. Overall, the proposed Project will effectively increase the reliability of the SC & KB Transmission System.

FEDERAL, STATE, AND LOCAL PERMITS AND SEQRA COMPLIANCE

The consultations, permits, and approvals to be obtained for the Project are identified and described in Table 1 below.

Table 1 Federal, State, and Local Permits and Approvals

Regulatory Agency	Consultation/Permit/Approval	Status
U.S. Army Corps of Engineers	Nationwide Permit (NWP) No. 12	Blanket Water Quality Conditions are granted for NWP No. 12 provided the Project meets both specific conditions and the required General Conditions.
U.S. Fish and Wildlife Service	Review the list of Threatened, Endangered, Candidate, and Extirpated species in Dutchess County and determine whether these species are	A review of the Threatened, Endangered, Candidate, and Extirpated species list for Dutchess County was performed on July 9,

	likely to occur within the Project footprint. Based on available federal and state information, determine whether additional federal coordination is required.	2012. Based on habitat requirements, these species, with the exception of the Indiana Bat, are not likely to occur within the Project footprint. An Indiana Bat habitat assessment was conducted on March 26, 2013. The USFWS will provide guidance on appropriate methods to avoid potential impacts during Project development.
New York State Department of Environmental Conservation	Joint Permit for impacts to freshwater wetlands	A Joint Application filed with the NYSDEC is not applicable. Wetlands identified within the Project are less than 12.4 acres. While waters of the U.S./NYSDEC stream provide a hydrological connection to state mapped wetlands outside the Project, these resources are not considered contiguous.
New York State Department of Environmental Conservation	Section 401 Water Quality Certificate (WQC) for U.S. Army Corps NWP.	Blanket Water Quality Conditions are granted for NWP No. 12 provided the Project meets both specific conditions and the required General Conditions.
New York State Department of Environmental Conservation, Division of Fish, Wildlife, and Marine Resources	Coordinate, in writing, with the New York Natural Heritage Program (NYNHP) to obtain information regarding the presence of state Threatened and Endangered (T&E) species, and sensitive ecological communities.	A response from the NYNHP dated August 2012 did not identify rare or state listed animals or plants, significant natural communities or other significant habitats, on or in the vicinity of the project.
New York State Department of Environmental Conservation	State Pollution Discharge Elimination System (SPDES) permit for construction stormwater discharges	A SWPPP is required because project activities result in greater than 1-acre of soil disturbance.
New York State Office of Parks Recreation and Historic Preservation	Archeological and historic consultation	Phase 1A Cultural Resources Investigation was conducted on June 28 through July 6, 2012 and Phase 1B Cultural Resources Investigation was conducted April 8 through 10, 2013. These reports will be filed with the New York State Historic Preservation Office (SHPO).
Town of Poughkeepsie	Floodplain Development Permit (§113-11)	Required at the start of construction within an area of special flood hazard. According to FEMA Flood Maps 36027C0364E and 36027C0368E, the area around Casper Creek is an area of special flood hazard (FEMA 2012).
Town of Poughkeepsie	Aquatic Resource Permit (§116-5(C))	“Aquatic” is defined by the Town of Poughkeepsie any “wetland, watercourse, or waterbody”. A permit is required because the project disturbs an area of 1/10 of an acre or greater due to placement or construction of any structure or vegetation clearing.
Town of Poughkeepsie	Waterfront Consistency Review (§205)	The Project is located in a Coastal Zone Boundary (WD2). Actions within the Town of Poughkeepsie’s coastal area shall be evaluated for consistency in accordance with the Local Waterfront Revitalization

		Program.
Town of Poughkeepsie	Site Plan Review (§210-40, 41)	Public utility structures are permitted uses in the Heavy Industry (I-H) and Quarry (Q) districts and the Waterfront Development (WD2) overlay district. Site plan approval by the Planning Board is required.
Town of Poughkeepsie	State Environmental Quality Review (SEQR)	Full Environmental Assessment Form (EAF) has been filed with Town of Poughkeepsie.

D. PUBLIC PROCESS

The existing transmission line easement and proposed expansion are located entirely on lands owned by Tilcon Minerals Inc. (Tilcon) and Dutchess County Resource Recovery Agency (DCRRA). Existing zoning districts along the right-of-way are Heavy Industry (I-H) and Quarry (Q) overlaid by a Waterfront Development (WD2) district. CHG&E’s easement was initially acquired from Tilcon’s Clinton Point Quarry (Parcel Numbers 134689-6059-02-775610 and -04-800100) (ParcelAccess, 2012). The Clinton Point Quarry has produced dolomite and asphalt since 1880. The land adjacent to the northern portion of the right-of-way has since been purchased by DCRRA and is used for waste disposal (Parcel Number 134689-6060-04-731023). CHG&E approached Tilcon and DCRRA regarding the need for additional easements required for the expansion of the right-of-way and placement of additional structures. CHG&E will accommodate requests and comments initiated by Tilcon and DCRRA concerning pole placement and vegetation clearing to the extent practicable.

E. ENGINEERING AND DESIGN CRITERIA

Length: 1.8 mi

Voltage: 115 kV

Conductors: 795 MCM ACSR 45/7 “Tern” Conductors
1272 MCM AA 61 “Narcissus” Conductors

Shield Wires: 134.6 MCM ACSR 12/7 “Leghorn”

Structures: The Project includes 24 new and 4 replacement tubular steel poles varying in height above ground from 61 to 88 feet. The poles will be embedded in the ground between 9 and 14 feet based on soil conditions. The new structures will consist of 8 single pole angled dead ends, 18 single pole davits, and 2 single pole tangent angles. Plan and Profiles drawings for the Project are included in Exhibit A. CHG&E prefers steel poles in order to increase the strength, durability, and life span of the structures and to reduce maintenance and repair issues associated with weathering and wildlife damage.

The existing structures consist of 25 wood pole structures between 65.5 feet and 83.5 feet above ground. Twenty of these existing structures will remain in place for use by the reconfigured SC & KB transmission lines. Five of the existing structures located along the transmission line, will have poles removed and cut at or near ground level or completely removed. Disposal of poles will conform to New York State solid waste regulations.

Foundations: Steel pole structures will be directly buried to minimize excavation disturbances. Concrete spread footers or caisson foundations will be installed when necessary but are not anticipated for

this Project. The caisson holes will be constructed using either a rock drill or an auger to minimize excavation disturbances.

Right-of-Way: The existing right-of-way is 150 feet wide. The line separation will require expanding the right-of-way by an additional 50 feet on one side or another for clearing. Upon completion, the total right-of way will be 200 feet wide.

All project construction will be conducted in accordance with Environmental Management and Construction Plan (EM&CP) Procedures included as Exhibit A. Low ground pressure tracked equipment, temporary timber matting, or another commercially available or improvised matting material will be used when necessary to minimize impacts to environmentally sensitive area.

F. PROPOSED CONSTRUCTION SCHEDULE

The SC & KB Line Separation Project is proposed to occur in three phases to address required outages during construction as outlined in Table 2.

Table 2: Proposed Construction Phases and Schedule

Phase	Activities	Schedule
Phase I	<p><i>(No Outage Planned for Completion)</i></p> <ol style="list-style-type: none"> 1) Installation of Structures #1 - #23 alongside existing SC / KB Joint Structures <ol style="list-style-type: none"> a. #1 - #5 (Two Single Pole Angled Dead Ends / Three Single Pole Davits) b. #6 - #19 (Eleven Single Pole Davits / Two Single Pole Tangent Angles / One Single Pole Angled Dead End) c. #20 - # 23 (Three Single Pole Davits / One Single Pole Angled Dead End) 2) Installation of new (TERN) conductor & (LEGHORN) static between structures #1 and #5 (0.3 mi) 3) Installation of new (TERN) conductor & (LEGHORN) static between structures #19 and #23 (0.32 mi) 4) Install new single side guy to double davit structure 117247 5) Install new single side guy to double davit structure 117233 	June, 2013
Phase II	<p><i>(KB Line Outage)</i></p> <ol style="list-style-type: none"> 1) Swing over 3 phases of existing Tern Conductor from Tap Structure 117253-254 to New Structure #1. 2) Swing over existing Tern Conductor from Pole 117249 to new structure #5 (Tension Span) 3) Swing over existing Tern Conductor from Pole 117232 to new structure #19 (Tension Span) 4) Remove existing and install new conductor between new structure #23 and the Barnegat Substation. (400 feet) 	July/August, 2013
Phase III	<p><i>(SC Line Outage)</i></p> <ol style="list-style-type: none"> 1) Swing over and tension existing Narcissus conductor from pole 117248 to 117249 on existing two pole structure 117248-49. 2) Swing over and tension existing Narcissus conductor from pole 117231 to 117232 on existing two pole structure 117231-32. 3) Install new Narcissus conductor and Petrel static wire between existing two pole structures 117248-49 & 117231-32 (Approx. 1.1 Miles) attaching to open insulator attachment points created by steps #1 & #2. <p><i>Lines now effectively separated and can be worked individually to remove / convert existing line sections.</i></p>	July/August, 2013
Conversions	<p><i>(SC Line Outage Required)</i></p> <ol style="list-style-type: none"> 1) Remove Lower Phase of Narcissus conductor as well as lower and middle phase of Tern conductor in this section. Use remaining upper Tern Conductor to pull in new Narcissus conductor. 	July/August, 2013

	<p><i>(SC Line Outage Required)</i></p> <p>2) Remove Lower Phase of Narcissus conductor as well as lower and middle phase of Tern conductor in this section. Use remaining upper Tern Conductor to pull in new Narcissus conductor.</p> <p><i>(KB Line Outage Required)</i></p> <p>3) Remove Lower Phase of Narcissus conductor as well as lower and middle phase of Tern conductor in this section. Use remaining upper Tern Conductor to pull in new Narcissus conductor.</p> <p>4) Remove existing wood Poles 117232 and 117249 once removal of conductor is complete.</p>	
--	---	--

II. PROJECT ASSESSMENT

The purpose of this Part 102 Report is to meet New York State Public Service Commission (PSC) requirements for utility projects that convey 65 kV or greater for distances greater than 1 mile and are not subject to the PSC’s jurisdiction under Article VII of the Public Service Law. A Part 102 Report must be prepared for this Project because it requires additional right-of-way and an increased number of pole structures proposed along the right-of-way. The following sections address the requirements stated in the Part 102 regulations.

A. PRIORITY AREAS: PART 102, SECTION 102.3(a)

A review of the Project was conducted in accordance with the criteria specified in Part 102, Section 102.3(a). An advantage-disadvantage analysis is required under Section 102.4 when a priority area is affected. This project will affect priority areas specified in Section 102.3(a), as follows:

(1) National and State parks, preserves, reservations, landmarks, and monuments formally so designated and acquired for their natural, scenic or cultural value by appropriate State and Federal agencies. (Included would be historic landmarks, national landmarks, national monuments and trails, and wild and scenic rivers.)

The existing easement and the proposed right-of-way expansion does not cross any National or State parks, preserves, reservations, landmarks or monuments. At its closest point, the Project is approximately 0.2 mi from the Hudson River. Although several sections of the Hudson River are designated as a wild, scenic, or recreational river, the section of the river closest to the Project is not designated as such. No advantage-disadvantage analysis is required.

(2) Historic sites formally so designated by National or State agencies but without acquisition of rights or ownership sufficient for the purpose of preservation.

A review of files maintained by the SHPO and the New York State Museum (NYSM) indicates the presence of nine previously recorded archaeological sites within 1 mile of the Project. The sites are not located within the Project footprint, nor are any of the sites listed on the National Register of Historic Places (NRHP) or State Register of Historic Places (SRHP). Table 3 provides information on the nine previously recorded archaeological sites. Further information is provided in the Phase 1A Cultural Resources Report included as Exhibit B-1. All or portions of eight previous archaeological surveys have been conducted within 1 mile of the Project footprint. No previous archaeological surveys have been undertaken within the proposed project footprint.

Table 3 Previously Recorded Archaeological Sites within 1 mi of the Project

SHPO/NYSM Site #	Site Name	Cultural Context	NRHP eligibility
02714.000327	-	Pre-contact	Undetermined
02714.000365	Casperkill Historic	Historic, 19 th century	Eligible
02714.000366	Casperkill 2	Historic, 18 th century	Eligible
02714.000397	Fort Cemetery	Historic, 19 th century	Undetermined
02714.000398	Spring House	Historic, 19 th century	Undetermined
NYSM 526	Stoneco Camp	Pre-contact camp	Undetermined
NYSM 3150	-	Pre-contact village	Undetermined
NYSM 6873	Buckner Camp	Pre-contact camp	Undetermined
NYSM 6874	-	Pre-contact camp	Undetermined

Archeological sensitivity is defined as a landscape’s relative capacity to contain archeological sites based upon relevant characteristics of topography, hydrology, and soils, while also taking account of previously recorded sites in the vicinity. A pedestrian reconnaissance of the right-of-way during the Phase 1A Cultural Resources Investigation identified two areas of high sensitivity for prehistoric archeological sites. Area 1 is a well-drained rise located west of the unnamed tributary and southwest of Pole #117228. Area 1 measures approximately 1,500 square feet and exhibits brown fine sandy loam soils. Area 2 is a well-drained rise located east of the unnamed stream and northeast of Pole #117229. Area 2 measures approximately 9,000 square feet, and exhibits brown silty loam soils. No areas of high sensitivity for historic archeological sites were identified within the Project right-of-way.

A Phase 1B Archaeological Survey was recommended due to the eligible archaeological sites and archaeologically sensitive areas near the right-of-way and is included as Exhibit B-2. The survey recovered no archeological artifacts and identified no archeological features within the two survey areas.

A review of files maintained by SHPO and NYSM indicates no previously recorded historic architecture (buildings or structures) located within 1 mile of the project. A review of historic U.S. Geological Survey (USGS) topographic maps found no structures depicted within the Project footprint.

(3) Central business districts in cities and villages.

The Town of Poughkeepsie participates in the Greenway Compact Program, which is a voluntary community planning approach for the 13 counties in the Hudson Valley region. The planning approach supports the development of successful, walkable, and mixed-use communities with nearby greenspace areas. The Master Plan identifies Crown Heights and South Hills as emerging centers that should incorporate these ideals in future development. These emerging centers are located approximately 0.6 mi east of the right-of-way (Figure 2). Crown Heights and South Hills were formerly zoned for commercial use and prohibited residential use, but have been rezoned for mixed residential and commercial use. An advantage-disadvantage analysis is required.

(4) Developed and partly developed residential areas with an existing density of one or more dwelling units per acre, as shown on approved subdivision maps, occupying a minimum contiguous area of 20 acres, all or a portion of which would be traversed by the proposed transmission facility right-of-way.

As shown of Figure 3, a low-density residential subdivision is located to the east of the SC&KB transmission lines. Several properties in this subdivision are adjacent to the existing CHG&E easement and there is evidence of encroachment into the right-of-way. In this area, the proposed right-of-way expansion is to the west of the existing right-of-way to the opposite side as the residential properties. This subdivision could be characterized as developed and partly developed residential areas with one or more

dwelling units per acre occupying a contiguous area of 20 acres. An advantage-disadvantage analysis is required.

B. SUPPLEMENTAL INFORMATION: PART 102, SECTION 102.3(b)

This section provides brief reports on the areas listed in Section 102.3(b). The analysis required by Section 102.4 is not required for reports identified in this section.

(1) Areas of outstanding natural or scenic value which are preserved by non-profit private agencies but which have not been formally so designated by national or State agencies.

Current available data indicate that there are no areas of outstanding natural or scenic value that are preserved by non-profit private agencies within 1 mile the Project.

(2) Areas of outstanding cultural value (e.g., attractive pastoral scenes, locations of noteworthy architectural and/or social import both within and outside specific sites) that have been formally designated by the appropriate governmental authority.

CHG&E is currently engaged in a consultation process with the New York Office of Parks Recreation and Historic Preservation (OPRHP). The Phase 1A Cultural Resources Investigation identified two archaeologically sensitive sites and the Phase 1B Archaeological Survey recovered no archeological artifacts and identified no archeological features within the two survey areas (see Section II.A.2). The Phase 1A Cultural Resources Investigation and the Phase 1B Archaeological Survey Report have been filed with the OPRHP. When CHG&E receives the formal determination of impact from the OPRHP, it will be provided it to the PSC.

The existing easement and proposed right-of-way expansion are located in Coastal Zone Overlay District (WD2). The Town of Poughkeepsie Waterfront Revitalization Plan states that the WD2 District includes all land and features whose area may have a “direct and significant impact” on coastal waters (Town of Poughkeepsie 1999). The Quarry is a water-dependent use that is expected to continue operations for another 30 to 100 years. The Waterfront Revitalization Plan recommends that the Town of Poughkeepsie and Tilcon Minerals Inc. develop a plan for the reuse of Clinton Point Quarry after thorough legislative and environmental review and before the cessation of activities.

(3) Existing local (city, town, village and county) parks and open space areas that have been formally established by governmental or private authorities.

The SC & KB Line Separation Project is adjacent to the South Road Civic Center and Crown Heights Park (Figure 2). The South Road Civic Center is a building run by the South Road Civic Association and is used for small community events. The Crown Heights Park has active recreation including a basketball court, playground, exercise equipment, and baseball field (Town of Poughkeepsie Recreation 2012). These community and recreational facilities are separated from the transmission line easement by a vegetated buffer of at least 250 feet. The next closest parks and community centers to the transmission line right-of-way are the Nassau Elementary School and playground, which is at least 0.3 mile east, and the Casperkill Golf Club, which is over 0.6 mile east.

The Poughkeepsie Town Plan identifies all the lands adjacent to the entirety of the 1.8 mi Project right-of-way as Major Greenspace Parcels, which are to be protected as one of the long-term goals of the Town. Additionally, the Poughkeepsie Town Plan cites a proposed Greenway Trail that would follow much of the Project right-of-way (Figure 2). This Greenway Trail would be part of the Hudson River Greenway Trail and would connect to Greenway Trails in the towns of Hyde Park and Wappinger for active and passive recreational use.

(4) Public and semipublic facilities such as cemeteries, educational, correctional and medical facilities and military installations.

The SC & KB transmission lines are approximately 0.6 mile from the Nassau Elementary School of the Spackenkill Union Free School District and approximately 0.7 mile from the Oakwood Friends School, a Quaker boarding and day school (Figure 2). No cemeteries, correctional or medical facilities, or military installations were identified within 1 mile the Project.

(5) Existing light industrial and commercial areas (e.g., industrial parks, shopping centers, office building complexes).

The SC & KB transmission lines do not pass through light industrial or commercial areas. However, commercial uses line US Route 9/South Road, which is approximately 0.5 mile east at its closest point and runs roughly parallel to the Project right-of-way. Also, the Crown Heights and South Hills emerging centers are within 1 mile of the Project as described in Section II.A.3.

(6) Partially developed residential areas where the subdivision will have an eventual population density of one or more dwelling units per acre, as shown on approved subdivision maps, comprising a minimum contiguous area of 20 acres or a portion of which is traversed by the proposed transmission facility right-of-way.

The Crown Heights and South Hills emerging centers may experience high-density residential development in response to the Greenway Compact Program (see Section II.A.3 and Figure 2).

(7) Areas of outstanding cultural value (e.g., attractive pastoral scenes, locations of noteworthy architectural and/or social import both within and outside specific sites that lend attractiveness to a neighborhood or community) that have not been formally designated by governmental or private authority.

The Poughkeepsie Town Plan identified a local historic landmark called the Abraham Fort House at 2228 South Road, approximately 0.8 mile from the Project right-of-way. Built in 1760 or possibly earlier, the Abraham Fort House is historically significant as a rare surviving example of Colonial period architecture in Dutchess County.

(8) Residential areas with less population density than those specified in preceding categories.

The SC & KB transmission lines are not adjacent to residential areas with less population density than those specified in preceding categories (see Section II.A.4).

(9) Planned and zoned undeveloped light industrial, commercial and residential areas.

The SC & KB transmission lines do not traverse undeveloped light industrial, commercial, or residential areas. However, as shown on Figure 3, light industrial, commercial, and residential areas exist within 1 mile of the Project.

(10) Managed woodlands (e.g., commercial and other productive forests).

Current available data indicate that there are no managed woodlands along or within 1 mile of the right-of-way.

(11) Agricultural districts established in accordance with article 25-AA of the Agriculture and Markets Law, and other farmlands.

Current available data indicate that there are no agricultural districts along or within 1 mile of the right-of-way.

(12) Existing and planned heavy industrial areas.

As shown on Figure 3, the SC & KB transmission lines traverse Heavy Industry (I-H) and Quarry (Q) districts. The land owned by DCRRA is zoned as I-H and the land owned by Tilcon is zoned as Q.

(13) Woods and open lands other than those included within areas specified in any priority area above.

Tetra Tech EC, Inc. (Tetra Tech) conducted wetland and surface water surveys, and invasive species surveys from July 2 to July 6, 2012. During the field surveys, Tetra Tech recorded information on vegetative community and plant species occurring within and adjacent to the Project footprint. Vegetative communities identified within the survey area include riverine, palustrine, and terrestrial systems (Edinger et al.). While most of the survey area is centralized along terrestrial cultural subsystems associated with the maintained utility right-of-way, adjacent areas are characterized by palustrine open mineral soil wetlands and forested uplands. Plant species common along the right-of-way consist of state-listed invasive species of concern, non-native woody and herbaceous plants, and weed species. A Wetlands Delineation Report, which provides a summary of the natural resources and ecological communities identified within the Project footprint is included in Exhibit C.

III. ADVANTAGE-DISADVANTAGE ANALYSIS: PART 102, SECTION 102.4

The advantage-disadvantage analysis required under Section 102.4 is designed to provide a framework by which the features or facts that support one or another mode of construction can be identified. The following sections discuss the benefits and drawbacks, including costs, of underground construction and provide the basis for CHG&E's decision to use an overhead configuration for the new structures that will be installed as part of the SC & KB Line Separation Project.

The advantage-disadvantage analysis includes at a minimum the items listed in Section 102.4 of the regulations, with an emphasis on underground and overhead alternatives.

A. RIGHT-OF-WAY

(1) Availability of existing corridors suitable for additional transmission facilities. (The availability of suitable existing corridors through a priority area, for example, may reduce the relative benefits of underground construction.)

CHG&E is proposing the SC & KB Line Separation Project to increase the reliability of the transmission system to meet the growing demand for reliable service, particularly to the IBM Poughkeepsie main plant and Green Data Center. The separation of the SC & KB transmission lines into separate single circuit configurations will effectively reduce the need for outages of both lines during maintenance work and, due to the 50 foot proposed separation between the lines, will reduce the likelihood of an impact to one line to affect both lines.

The area proposed for the right-of-way expansion takes advantage of CHG&E's existing utility easement and is suitable for the additional transmission facilities. The right-of-way expansion will be 50 feet wide on one side or the other of the existing right-of-way to accommodate routing constraints and to avoid ecological, land use, cultural, visual, economic, and property impacts. As proposed, the right-of-way expansion will not negatively impact the existing industrial uses on the DCRRA or Tilcon properties. The

expanded right-of-way and additional structures are compatible with the existing transmission right-of-way and industrial uses on these properties.

By using the existing transmission corridor, no additional access roads will be required for maintenance activities. Access to the right-of-way can be achieved from the Barnegat and Sand Dock Substations, the access road along Barnegat Road, and along the existing KB right-of-way from the Poughkeepsie Galleria Mall (Figure 1). Any land temporarily disturbed during construction will be restored to approximate pre-construction contours and reseeded with appropriate seed mixtures. CHG&E has met with DCRRA and Tilcon and will acquire the additional 50-foot easement required for expansion of the right-of-way. Where possible, CHG&E will try to accommodate owner requests concerning pole placement and vegetation clearing.

B. PROJECT COSTS

(2 & 3) Capital construction costs (costs that may be capitalized under the uniform system of accounts) and construction expense costs (costs that may not be capitalized.)

Construction costs include material and labor for land clearing, construction of access roads, construction of pole foundations, erection of poles, installation of the transmission line, and removal of debris.

It is anticipated that the total project will cost approximately \$1.5 Million Dollars including capital, removal and expense expenditures. Capital costs are estimated at \$1.38 Million, Removal at \$82 Thousand and Expense at \$42 Thousand. This cost estimate includes, among similar costs, all anticipated permitting, right-of-way acquisition, construction work, removals, and right-of-way access.

(4) Right-of-way acquisition costs.

Property acquisition costs were also considered in the analysis of alternate routes for the SC & KB Line Separation Project. The land acquisition costs are lower for the 50-foot expansion of the right-of-way in comparison to siting the new structures in a location that does not utilize an existing right-of-way. The additional right-of-way is required for vegetation management and will not contain any structures. Easement negotiations are ongoing; however, costs for the additional right-of-way are estimated to be approximately \$100,000.

C. TECHNOLOGICAL CONSIDERATIONS

(6) Relevant technological considerations.

The design and configuration of the SC & KB Line Separation Project must comply with National Electrical Safety Commission (NESC) and PSC safety and clearance requirements.

Underground alternates were evaluated for sections of the Project. Due to a number of factors, including construction costs, undergrounding was rejected. While line outages are estimated to occur less often in an underground facility than in an overhead line, restoration would take much longer, resulting in longer outage durations. In addition, the right-of-way must be kept clear of all vegetation to allow permanent access by repair and maintenance crews and to prevent root systems from interfering with the line. This would not be compatible with vegetation along the existing right-of-way. Undergrounding is considered preferable in visually sensitive areas, which does not apply to this Project as views are not available from any roadways or public lands with the exception of potential views from roadways in the residential subdivision through residential properties and from South Road Civic Center and Crown Heights Park through the 250-foot vegetated buffer.

Advantages of overhead lines are ease of access for maintenance and repair and minimizing impacts to wetlands and streams by spanning these resource areas. Construction of underground lines does not conform well to uneven terrains or areas where excavation is difficult and often has a greater impact on environmental resources.

D. ENVIRONMENTAL RESOURCES

(7) The relative effect on vegetation, wildlife, soils, erosion, streams, and other such natural features (as noted in biological surveys, water quality ratings, and land management policies and practices) of the construction methods proposed.

Tetra Tech conducted field surveys along the entire Project footprint from July 2 through July 6, 2012 to delineate wetlands and surface waters, identify high-priority invasive species, and characterize overall vegetation structure and ecological communities. Anticipated impacts to environmental resources are described in the sections below and in the Full Environmental Assessment Form provided as Exhibit C. Federal and state-level protection for T&E species and their habitat requires certain procedures be followed during project planning. A letter request was submitted on July 17, 2012 to the NYNHP for information regarding the presence of T&E species and unique or significant natural communities in the vicinity of the Project footprint. A response from the NYNHP dated August 7, 2012 included in Exhibit A did not identify rare or state listed animals or plants, significant natural communities or other significant habitats, on or in the vicinity of the project. Information derived from surveys and information requests are used to ascertain the relative effect on vegetation, wildlife, soils, streams, and other natural features.

Vegetation

CHG&E implements a right-of-way vegetation maintenance plan to manage undesirable vegetation, specifically in regard to structure and density that may cause disruption to safe and reliable transmission of electricity. The vegetation maintenance plan calls for the selective removal of tall-growing plant species capable of affecting transmission line reliability and employs an adaptive approach in response to ecological changes that occur over time. The existing right-of-way is cleared and maintained on a regular basis as part of CHG&E's vegetation management program and the expanded right-of-way will be similarly maintained.

The most significant effect to vegetation is the long-term conversion of existing forested terrestrial communities to maintained small-diameter woody and herbaceous vegetation within newly cleared areas. While the quality of the existing habitat does play a large role in quantifying effects, the conversion of forest cover is considered more significant than the conversion of shrub or grassland because of the structural changes that occur. Permanent removal of approximately 11 acres of terrestrial forest cover is proposed in areas along the right-of-way that require widening. Selective clearing of undesirable shrub species or saplings will be required for improved road access or construction activities.

Construction and improvements will occur along the existing cleared portion of the right-of-way. Methods employed to widen the proposed right-of-way will involve mechanical clearing. Maintenance of the right-of-way will be comparable to current management practices as detailed in the Long Range Vegetation Management Plan (CHG&E 2007). CHG&E's right-of-way management plan is designed to employ mechanical and chemical strategies targeted in areas of taller growth over a five-year cycle. The cyclic approach is an industry best management practice that maximizes flexibility in the scheduling and budgeting process.

The NYSDEC *Interim List of Invasive Plant Species in New York State* (List) (NYSDEC 2012) was reviewed to determine which invasive plant species were present within the right-of-way. While Tetra Tech surveyed for the presence of all invasive species on the List, prioritization was given to species

based on known habitat suitability, amount of additional habitat at risk for invasion, and feasibility of managing the spread. These species include purple loosestrife (*Lythrum salicaria*), European common reed grass (*Phragmites australis*), swallow-wort species (*Cyanchum* spp.), giant hogweed (*Heracleum mantegazzianum*), and Japanese knotweed (*Polygonum cuspidatum*). All of these species were documented within the existing and proposed expanded right-of way; however, the most abundant invasive species identified include mugwort (*Artemisia vulgaris*), reed canary grass (*Phalaris arundinacea*), and European common reed (*Phragmites australis*).

Invasive species typically enter the landscape via roadways, utility rights-of-way, and construction. Construction activities may instigate introduction and spread of invasive species by transferring seeds to the site mixed in topsoil, gravel, and straw or by construction workers and equipment. The spread of invasive species will be minimized by implementing procedures described in the Environmental Management and Construction Plan (EM&CP) included as Exhibit A.

Wildlife

Generally, wildlife species and habitat occurring within the Project footprint are common ecotypes within managed rights-of-way. Species expected to occur within suburban and commercial areas are likely transient, utilizing the right-of way for a short duration for bedding, forage, and predation. These species will likely experience temporary displacement during construction and return once construction is complete.

Threatened and Endangered Wildlife Species

Tetra Tech performed a review of the Federally-listed T&E Species and Candidate Species County List for Dutchess County. The bog turtle (*Clemmys [=Glyptemys] muhlenbergii*), Indiana bat (*Myotis sodalists*), dwarf wedgemussle (*Alasmidonta heterodon*), and bald eagle (*Haliaeetus leucocephalus*) have been identified as occurring in Dutchess County. While the bald eagle has been de-listed, this species still receives protection under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act. Review of the listed T&E Species and Candidate Species Likely Extirpated from New York indicate swamp pink (*Helonias bullata*), American burying beetle (*Nicrophorus americanus*), Canada lynx (*Lynx canadensis*), Eastern cougar (*Puma [=Felis] concolor cougar*), gray wolf (*Canis lupus*), and Northeastern beach tiger beetle (*Cincindela dorsalis dorsalis*) once occurred in New York state.

The Project footprint is characterized by steep slopes in the north and south, with an area of relatively level high ground in the central portion of the Project footprint. Seven wetlands, an unnamed tributary of the Hudson River, and Casper Creek were delineated within the northern and southern portion of the right-of-way. Six wetlands were confined within the existing right-of-way and one extensive wetland associated with Casper Creek continued outside of the Project area. Vegetative cover of the wetlands are classified as Palustrine emergent, with dominant species consisting of European common reed (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), and reed canary grass (*Phalaris australis*). Vegetative communities adjacent to the western and southern edge of the right-of-way are characterized by a narrow band of terrestrial trees including tree of heaven (*Ailanthus altissima*) and honeylocust (*Gleditsia tricanthos*). The eastern and northern side of the right-of way was dominated by sugar maple (*Acer sachharum*) and American sycamore (*Platanus occidentalis*). The sparse understory included Japanese barberry (*Berberis thunbergii*), honeysuckle species (*Lonicera* spp.), garlic-mustard (*Alliaria petiolata*), and Japanese stiltgrass (*Microstegium vimineum*).

Based on the findings of the field surveys in conjunction with available information, it is Tetra Tech's opinion that suitable habitat to support bog turtle and dwarf wedgemussle are not present within the Project footprint. An Indiana Bat habitat assessment (included as Exhibit D) was conducted on March 26, 2013 and identified 2.4 acres of potential foraging habitat and 0.2 acres of potential roosting habitat. The

USFWS will provide guidance on appropriate methods to avoid potential impacts during Project development. All Project construction will be conducted in accordance with the EM&CP; therefore impacts to T&E and other wildlife species are unlikely.

Soils

Generally, soils identified within the Project footprint are well drained to moderately well-drained sandy loams or silty clays on uplands. Evaluation of soil characteristics indicates a minor presence of soils that may make them either particularly sensitive to disturbance or unsuitable for construction. These units include hydric soils; poorly drained soils and soils with shallow bedrock. A geotechnical program has not been undertaken for the Project and soil borings may be obtained at selected structure locations as necessary to support foundation design.

Ground disturbance associated with construction of the overhead transmission line is characterized by shallow grading for access roads and work areas. Excavations will be limited to structure installation and within the substations for foundations. Substantial alterations of slope and gradient is not anticipated along the right-of-way, however minor changes to topography will occur from grading of work areas and construction of temporary access roads. Although minor topographic changes are not expected to be significant, mitigation measures will be implemented to address soil erosion, compaction, and sedimentation during construction. Following construction, the disturbed area will be restored to pre-construction contours to reduce the effects of grading.

Wetlands and Streams

Eight (8) wetlands totaling 3.8 acres were field delineated within the Project footprint. Five (5) of the field-delineated wetlands are mapped NWI resources. NYSDEC mapped wetlands did not occur within the survey area. All delineated wetlands were classified as palustrine (i.e., freshwater) emergent (non-woody plants rooted in soils that are saturated at least part of the time with most of the plant emerged above the surface) (PEM). This wetland cover type is highly influenced by right-of-way management practices to maintain an open herbaceous landscape.

Casper Creek and one unnamed tributary of the Hudson River were delineated in the Project footprint. Based on field examination and review of aerial imagery, topographic maps, and hydrography data, five (5) of the delineated wetlands have a hydrologic connection to the unnamed tributary of the Hudson River, one (1) is contiguous to Casper Creek, and two (2) are isolated.

Potential effects to wetland areas may occur directly or indirectly during construction and operation. Every practical attempt will be made to avoid wetlands and minimize the area of disturbance. The long-term loss of small areas of wetlands associated with structure placement, temporary loss of wetlands and wetland functions during construction are anticipated. Mitigation strategies will be implemented to address short-term and temporary impacts during construction as well as long-term and permanent effects to wetlands including mitigation requirements included in permits. Erosion control methods may include silt fencing and planting or seeding of exposed soils to prevent soil from entering wetlands and surface waters due to runoff. Soil compaction will be minimized by scheduling construction during drier periods of the year, staging outside of wetlands, and utilizing construction mats, when possible. Access roads will be temporary and the area restored to pre-construction condition.

(8) The relative visual impact including incremental impact compared to existing surroundings.

The right-of-way expansion and additional structures are visually compatible with their surroundings as they are located on industrial properties adjacent to an existing right-of-way. Views are not available from any roadways or public lands with the exception of potential views from roadways in the residential subdivision through residential properties and from South Road Civic Center and Crown Heights Park

through the 250-foot vegetated buffer. The Project is not expected to have a significant visual impact on priority areas.

(9) Relative availability of right-of-way for other uses: e.g., parks, recreation, farming, transportation.

The 50-foot wide area proposed for the right-of-way expansion is not available for other uses such as parks, recreation, farming or transportation due to its location adjacent to the existing right-of-way and on DCRRA and Tilcon property. CHG&E will consult with these property owners to accommodate any planned future uses of this area.

IV. References

IBM. (2012) Poughkeepsie in 1948. Accessed June 29, 2012 at: http://www-03.ibm.com/ibm/history/exhibits/vintage/vintage_4506VV2042.html

Central Hudson Gas and Electric Corporation. (2007). Transmission Right-of-Way Program, Long-Range Vegetation management Plan.

Department of Environmental Conservation (DEC). (2012) Geodata Map Viewer. Accessed July 2, 2012 at:
<http://www.dec.ny.gov/arcexplorer/arcexplorer.jsp?origid=&isDefault=true?command=ViewMap&server=http://gisprode4&service=GeoBaseMap&image=true>

Dutchess County Resource Recovery Agency. (2012) Accessed June 29, 2012 at: www.dccra.org

Edinger, G. J, D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero. 2002. Ecological Communities of New York State, Second Edition: A revised and expanded edition of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, Albany, NY. 136 pp.

Environmental Energy Alliance of New York. (2012). Best Management Practice for Preventing the Transportation of Invasive Plant Species.

Federal Emergency Management Agency (FEMA). (2012) Current FEMA Issued Flood Maps. Accessed July 3, 2012 at <http://www.fema.gov/hazard/map/firm.shtm>

Town of Poughkeepsie Recreation. (2012) Crown Heights Park. Accessed July 2, 2012 at <http://www.poughkeepsietownrec.com/info/facilities/details.aspx?FacilityID=8479>

Town of Poughkeepsie. (1999) Local Waterfront Revitalization Program. Accessed July 2, 2012 at: http://townofpoughkeepsie.com/planning/Town_of_Poughkeepsie_Local_Waterfront_Revitalization_Program.pdf

EXHIBIT A

Environmental Management and Construction Plan

EXHIBIT A

Environmental Management and Construction Plan

APPENDIX A

Construction Details

EXHIBIT A

Environmental Management and Construction Plan

APPENDIX B

Plan and Profile Drawings

EXHIBIT A

Environmental Management and Construction Plan

APPENDIX C

NYNHP Response Letter

EXHIBIT B-1

Cultural Resources Phase 1A Report

EXHIBIT B-2

Cultural Resources Phase 1B Report

EXHIBIT C

Full Environmental Assessment Form

EXHIBIT C

Full Environmental Assessment Form

APPENDIX A

Wetlands Delineation Report

EXHIBIT D

Indiana Bat Habitat Assessment Report

EXHIBIT D

Indiana Bat Habitat Assessment Report

APPENDIX A

IPaC Official Species List

EXHIBIT D

Indiana Bat Habitat Assessment Report

APPENDIX B

NYNHP Response Letter

*See Exhibit A – Environmental Management and Construction Plan;
Appendix C – NYNHP Response Letter*

EXHIBIT D

Indiana Bat Habitat Assessment Report

APPENDIX C

USFWS Species Conclusion Table

EXHIBIT D

Indiana Bat Habitat Assessment Report

APPENDIX D

Wetlands Delineation Report

*See Exhibit C – Full Environmental Assessment Form;
Appendix A – Wetlands Delineation Report*

EXHIBIT D

Indiana Bat Habitat Assessment Report

APPENDIX E

Indiana Bat Habitat Suitability Assessment