A. INTRODUCTION

This attachment provides an assessment of the Baldwin Installation potential visual impacts.

NYSDEC GUIDANCE

NYSDEC's policy for assessing the significance of potential visual impacts is set forth in NYSDEC Program Policy DEP-00-2, Assessing and Mitigating Visual Impacts (July 31, 2000). While this policy was developed for NYSDEC's review of actions, the methodology and impact assessment criteria established by the policy are applied herein to assess potential visual impacts of the proposed Baldwin Installation.

According to DEP-00-2, a "visual impact" occurs when "the mitigating[1] effects of perspective" do not reduce the visibility of an object to insignificant levels. While beauty does not play a role in whether there is a "visual impact," it does play a role as to whether there is an "aesthetic impact":

> Aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Mere visibility, even startling visibility of a project proposal, should not be a threshold for decision making. Instead, a project, by virtue of its visibility, must clearly interfere with or reduce the public's enjoyment and/or appreciation of the appearance of an inventoried resource (DEP-00-2, p. 9).

The "mitigating effects of perspective" are important to the assessment of visual impact. While an object such as a monopole may be visible over a long distance, "atmospheric perspective," which DEP-00-2 describes as the "reduction in intensity of colors and the contrast between light and dark as the distance of the objects from the observer increases," and which is a product of the natural particles within the atmosphere that scatter light, serves to minimize the significance of the object in the overall viewshed. A second factor that reduces the potential for impact is the overall character of the surrounding landscape, including existing vegetation, buildings, and topography.

Thus, while a monopole may be visible within a viewshed, mere visibility is not a threshold of significance. The significance of the visibility is dependent on several factors: the perceived beauty, presence of any designated historic or scenic resources within the viewshed of the project; distance; general characteristics of the surrounding landscape; and the extent to which the visibility of the project interferes with the public's enjoyment or appreciation of the resource. A significant adverse visual impact occurs only when the effects of design, distance, and intervening topography and vegetation do not minimize the visibility of an object and the visibility significantly detracts from the public's enjoyment of a resource.

VIEWSHED ANALYSIS

A viewshed analysis was conducted for the Baldwin Project Site out to five miles (8.0 km) from the new monopole location, a distance consistent with Program Policy DEP-00-2.

Light Detection and Ranging ("LiDAR") data provided by United States Geological Survey ("USGS") was used for the analysis. The LiDAR dataset is composed of raw LiDAR point cloud data surveyed in 2010

[1] DEP-00-2 uses the term "mitigating" or "mitigation" to refer to design parameters that avoid or reduce potential visibility of a project. This should not be confused with the use of the term "mitigation" with respect to mitigation of significant adverse environmental impacts as required by the State Environmental Quality Review Act (SEQRA).

and 2014. The extracted information was built into raster (grid) surface models for first-return and bare-earth surfaces. The first-return represents the uppermost features to respond to the LiDAR sensor such as the tree canopy, building rooftops, ground vegetation, etc. The bare-earth surface represents the ground or topographic surface. These surfaces were used for the analysis area with consistent cell sizes and locations with two (2) meter resolution. Forested, vegetated areas, and structures were extracted from the first-return subset of the LiDAR data and, as these features represent visual obstructions on the earth's surface, they were separated from the bare-earth surface information to create the grid first-return terrain model.

The viewshed model was developed from Environmental Systems Research Institute, Inc. ("ESRI") Spatial Analyst Geographic Information System ("GIS") software. A point location representing the monopole's proposed position and height was incorporated into the model and compared to the raster first-return terrain model. For this analysis an observer height (i.e. eye-level of a person on the ground) was modeled with a height of 5.5 ft. (1.7 m.), and a modeled structure height of 120 ft. (36.6 m.) above ground level. This height includes the antenna mounted to the top of the structure that is much narrower than the monopole itself. Thus, the antenna has less likelihood of being visible at distance, but its inclusion provides a more conservative visibility analysis.

The viewshed analysis is a GIS technique that allows for the visualization of locations in which Project features, in this case the proposed monopole and antenna, will be likely to be visible in the surrounding area of the site. However, certain factors must also be considered in the interpretation of the viewshed results, including:

1. The analysis is a clear line of sight technique. The model does not account for the limitations of human vision at greater distances or atmospheric conditions that may cause reduced visibility. Additionally, at increasing distances away from project features, features will appear smaller and less detailed, and will have a reduced visual impact even if shown as visible in the model.

2. Because an area may show visibility, it does not mean the entirety of a component will be seen. In many cases for this project, the existing tree stands, buildings, and other surface features in the area provide visual impediments for most of the lower portions of the monopole and ground-based equipment.

3. The viewshed model assumes that any vegetation is opaque and therefore represents a leaf-on condition. During leaf-off conditions or where ground level vegetation is sparse, visibility may be possible where the model did not indicate.

4. The model was developed with the assumption that a viewer would not see the Project if standing amongst tree groups or inside of surface obstructions.

The new monopole may not necessarily be visible from all locations identified from the viewshed analysis. It is important to note that the model cannot account for mass density, the height, diameter and branching variability of the trees or the degradation of views that occur with distance. In addition, each point - or pixel - represents about one square meter in area, and thus is not predicting visibility from all viewpoints through all possible obstacles. Although large portions of the predicted viewshed may theoretically offer visibility of the monopole, because of these limitations, the quality of those views may not be sufficient for the human eye to recognize the monopole or discriminate it from other surrounding objects. Visibility also varies seasonally with increased though obstructed, views during the leaf-off conditions. Beyond the density of

vegetation and woodlands found in the study area, each individual tree has a structure (trunk, branches, etc.) that provide varying degrees of screening in leaf-off conditions that cannot be modeled precisely.

The results of the viewshed analysis are combined with other location information such as sensitive land uses (e.g. historic places, national forests, state parks, and local parks/recreation areas), and are displayed over a topographic map or aerial photo. The GIS combination of sensitive resource locations and the viewshed analysis information assists in understanding the potential for Project Installation visibility and provides a better understanding of its potential visual impacts. The types of land use and sites (representative of the 15 categories of aesthetic and natural resources of statewide significance) that were identified in the five- mile viewshed include:

- Recreation Sites – NYSDEC;
- State Parks and Historic Parks - New York State Department of State ("NYSDOS");
- NYS Historic Resources – NYSDEC;
- Scenic Area of Statewide Significance District – NYSDOS;
- National Register of Historic Places – National Park Service ("NPS");
- National Wild and Scenic Rivers – NPS;
- National Wildlife Refuges – USFWS;
- National Natural Landmarks – NPS;
- Urban Cultural Parks - NYS Office of Parks, Recreation & Historic Preservation ("OPRHP").

VISUAL SIMULATIONS (PHOTOSIMULATIONS)

In addition to the viewshed analysis to identify sensitive land uses from which the monopole could be seen at distance, a set of visual simulations were prepared to provide ground-level views of the new monopole and adjacent existing substation. Autodesk's AutoCAD software was used to correctly dimension a model of the monopole, communications shelter, generator and propane tank. The simulation model was further developed to position the viewer at the selected vantage point.

The locations for the simulations were selected at places proximate to the Project Site such that the monopole and the ground-based equipment could potentially be seen. Photographs of existing conditions and simulations of the proposed conditions from the same location (with the new monopole and ground-based equipment in place) were prepared.

The proposed monopole and DA antenna and their associated dimensions are shown in Figure D-1. The 100-ft. tall monopole has the following approximate diameters as it tapers from bottom to top: 30 in. at the base, 22 in. at the mid-point, and 16 in. at the top. The antenna is 2.75 in. wide. Due to the narrow overall width of the proposed monopole, and particularly the narrower widths of the tallest sections of the monopole that would otherwise have a greater potential to be visible above vegetation, buildings and topography, it is unlikely that the monopole and antenna will be visible at locations greater than approximately two miles

from the Project Site given the factors listed above related to the viewshed analysis. Therefore, the visual simulations were conducted within a two-mile study area. Even if the monopole was potentially visible at a location greater than two miles away, the impact would not be significant because of the mitigating effects of perspective as described above. The visual simulations, as provided in Figures 2A through 5B, show that the monopole and antenna either are not visible at these distances, or that the visual impact is not significant. The significance of any potential view of the monopole is further diminished given that the monopole will neither be lit (day or night), nor will there be any horizontal attachments (e.g., cross bars, cellular equipment, etc.) making the structure more prominent at its top.

The visual simulations do not account for all potential visible locations but are typical of the range of possible views of the existing landscape. The analysis does not depict the only areas, or all locations, where visibility may occur; the simulations are intended to provide a representation of those areas from where the monopole is likely to be seen.

As described in the following section, visual simulations from distances within two miles or nearer show that no significant adverse visual impacts result from the DA Project equipment adjacent to the Baldwin Substation.

B. EXISTING CONDITIONS

COMMUNITY CHARACTER

The substation is somewhat screened from residences to the south (and southeast) with shrubs and trees of approximately 20 – 25 ft. in height along its western and southern fence line. Six to eight existing trees (15 – 25 ft. in height) along the northern fence line of the substation will be removed due to existing underground oil-o-static pipe type electric cables near the DA Project equipment. New seven ft. in height fencing with attached privacy screening will be constructed around the Baldwin Installation and proposed area of tree removals. A walk-in access gate will be constructed on the south side of this fencing. This new fence and attached privacy screening will help to conceal the DA Project equipment from public view.

Approximately 300 ft. north of the substation is Sunrise Highway where there are three lanes of traffic on either side of the median.

Commercial and office service uses are present to the west of Harrison Avenue and northwest of the Project Site along Grand Avenue. The commercial complex includes chain restaurants, banks, a funeral home and an electronic sales store. South of these uses, a mix of multifamily and single-family residences exist. Similar residential uses are located to the east of the Project Site along Central Avenue and Millburn Avenue. To the north and northeast of the substation land uses are again a mixture of commercial (i.e. along Sunrise Highway) and residential uses – both multifamily and single-family. Directly to the north is a Dunkin Donuts establishment and the Baldwin Coach Diner.

The nearby surface road network includes Grand Avenue to the west, Sunrise Highway to the north, and Central Avenue to the east. Sunrise Highway is a major thoroughfare that runs through a majority of Long Island (three lanes running eastbound and westbound) with numerous commercial establishments on both sides of the highway. Grand Avenue runs north-south through the Hamlet of Baldwin with one lane in each direction. Central Avenue runs parallel to Grand Avenue with a predominance in residential properties on both sides.

Existing equipment at the Baldwin Substation includes several overhead steel/metal support structures of approximately 30 – 50 ft. in height, as well as several standard wooden utility poles (about 30 – 40 ft. in height). Within the substation, there is also an existing cell site monopole (about 100 ft. in height) on the LIPA-owned property. Sets of aboveground cables are also present.

STUDY AREA

The study area for visual resources viewshed assessment is within five-miles of the proposed Baldwin Installation. Potential views will vary throughout the study area as a function of topography, vegetation, and existing built structures.

LAND USE AND TOPOGRAPHY

Given the large area of the viewshed, which covers more than 78 square miles, the land uses encompass a variety of uses – residential, commercial, industrial, transportation, natural, etc.; a portion of the viewshed (about 30% +/-) is water (Middle Bay).

The existing topography at the Project Site is flat with the site elevation at approximately 23 ft. above mean sea level ("AMSL"). The surrounding topography is also relatively flat.

INVENTORY OF RESOURCES

An inventory of sensitive aesthetic and visual resources was prepared following the guidance in NYSDEC Program Policy. The NYSDEC Program Policy identifies 15 categories of aesthetic and natural resources of statewide significance which have been recognized through either national or state designations.

A total of 99 resources were identified in the five-mile viewshed, all of which are listed in Table D-1 below (regardless of potential monopole visibility). Figure D-2 shows those resources within the overall viewshed from which the monopole may be able to be seen based on the GIS viewshed analysis. However, as noted before, it is unlikely that locations shown as visible by the computer model greater than about two miles from the site are realistic. The monopole dimensions are approximately 30 in. wide at its base, 22 in. at its mid-point, and 16 in. at the top. The DA antenna will be 2.75 in. in diameter; it will be painted a silver-gray color and will have limited reflectivity as it will not be lit during the day or night.

Table D-1
Sensitive Resources Within Five Miles of Project Site

Resource Name	Resource Type
Cathedral of the Incarnation Complex	National Register of Historic Places
St. George's Church	National Register of Historic Places
Rectory of St. George's Episcopal Church	National Register of Historic Places
United States Post Office-Rockville Centre	National Register of Historic Places
United States Post Office-Hempstead	National Register of Historic Places
United States Post Office-Freeport	National Register of Historic Places
United States Post Office-Garden City	National Register of Historic Places
Rockaway Avenue, Building at 24	National Register of Historic Places

Table D-1
Sensitive Resources Within Five Miles of Project Site

Resource Name	Resource Type
Fifth Street, Building at 86	National Register of Historic Places
Fifth Street, Building at 89	National Register of Historic Places
Fifth Street, Building at 94	National Register of Historic Places
Fifth Street, Building at 107	National Register of Historic Places
Fifth Street, Building at 109	National Register of Historic Places
Fifth Street, Building at 111	National Register of Historic Places
Fifth Street, Building at 115	National Register of Historic Places
Sixth Street, Building at 82	National Register of Historic Places
Sixth Street, Building at 84	National Register of Historic Places
Sixth Street, Building at 86	National Register of Historic Places
Sixth Street, Building at 94	National Register of Historic Places
Sixth Street, Building at 104	National Register of Historic Places
Sixth Street, Building at 106	National Register of Historic Places
Sixth Street, Building at 110	National Register of Historic Places
Sixth Street, Building at 114	National Register of Historic Places
Cathedral Avenue, Building at 32	National Register of Historic Places
St. Mary's School	National Register of Historic Places
Hilton Avenue, Building at 40	National Register of Historic Places
Hilton Avenue, Building at 41	National Register of Historic Places
Hilton Avenue, Building at 42	National Register of Historic Places
Hilton Avenue, Building at 43	National Register of Historic Places
Hilton Avenue, Building at 44	National Register of Historic Places
Hilton Avenue, Building at 45	National Register of Historic Places
Hilton Avenue, Building at 47	National Register of Historic Places
Apostle House at 109 Eleventh Street	National Register of Historic Places
Hilton Avenue, Building at 49	National Register of Historic Places
Hilton Avenue, Building at 53-55	National Register of Historic Places
Pagan-Fletcher House	National Register of Historic Places
Hilton Avenue, Building at 48	National Register of Historic Places
Rockaway Avenue, Building at 15	National Register of Historic Places
Haviland-Davison Grist Mill	National Register of Historic Places
House at 251 Rocklyn Avenue (Brower House)	National Register of Historic Places
73 Grove Street, House at	National Register of Historic Places
House at 474 Ocean Avenue (Luning House)	National Register of Historic Places
Denton Homestead	National Register of Historic Places
Marks Family Farm	Bond Act Property

Table D-1
Sensitive Resources Within Five Miles of Project Site

Resource Name	Resource Type
Trout Lake	Bond Act Property
Grossman's Farm	Bond Act Property
Parkway Drive	Bond Act Property
Bay County Park	County Park
Cammanns Pond County Park	County Park
Centennial Avenue County Park	County Park
Cow Meadow County Park	County Park
Eisenhower County Park	County Park
Grant County Park	County Park
Halls Pond County Park	County Park
Lofts Pond County Park	County Park
Meadowbrook County Park	County Park
Milburn Pond County Park	County Park
Millpond County Park	County Park
Mitchel County Park	County Park
Nassau Beach County Park	County Park
Roosevelt County Park	County Park
Roosevelt Preserve County Park	County Park
Silver Lake County Park	County Park
Tanglewood County Preserve	County Park
Wantagh County Park	County Park
Merrick County Preserve	County Recreation Area
Arthur A Hendrickson Park and Recreation Center	Municipal Park
Baldwin Park	Municipal Park
Coes Neck Park	Municipal Park
Community Park	Municipal Park
Firemens Field	Municipal Park
Greis Park	Municipal Park
Harold A Walker Memorial Park	Municipal Park
Kennedy Park	Municipal Park
Lido Beach District Park	Municipal Park
Lido Beach Town Park	Municipal Park
Lido Beach West Town Park	Municipal Park
Malibu Town Park	Municipal Park
Marina West Town Boat Launch	Municipal Park
Merrick Road Town Park and Golf Course	Municipal Park

Table D-1
Sensitive Resources Within Five Miles of Project Site

Resource Name	Resource Type
Mill River Complex Park	Municipal Park
Morgan Days Park	Municipal Park
Newbridge Road Park	Municipal Park
Oceanside Park	Municipal Park
Point Lookout Town Park	Municipal Park
Rath Park	Municipal Park
Sands At Lido Beach Town Park	Municipal Park
Shell Creek Park	Municipal Park
Speno Memorial Park	Municipal Park
Veterans Memorial Park	Municipal Park
Lido Beach National Wildlife Refuge	National Wildlife Refuge (FWS)
Hempstead Lake State Park	State Park
Jones Beach	State Park
Valley Stream State Park	State Park
Long Beach City Lands	Local Park
Nassau County Lands	Local Park
Donald F Browne RVC Park	Municipal Park
Point Lookout Beach District Park	Municipal Park
Lido Beach State Tidal Wetlands	Recreation Area

Per Table D-2, there are four sensitive resources in a location from which the monopole and antenna may be seen (i.e. within approximately two miles).

Table D-2
Sensitive Resources from Which the Monopole and Antenna May Be Visible (Within Two Miles)

Resource	Type of Resource	Distance from Baldwin Monopole (mile)
Milburn Pond County Park	County Park	0.35
Nassau County Lands	Local Park	0.50
Silver Lake County Park	County Park	0.64
Lofts Pond County Park	County Park	0.70

C. POTENTIAL IMPACTS OF THE BALDWIN INSTALLATION

IMPACT ANALYSIS

VIEWSHED

The sensitive resources listed in Table D-2 consist of park lands. The viewshed analysis indicated those resources as places from which the new monopole and antenna could be seen. However, as explained below, it is unlikely that the monopole and antenna will be visible from all locations because of the nature of these intervening lands and the distance to the monopole and existing vegetation.

As noted previously, the monopole may not necessarily be visible from all locations identified from the viewshed analysis. The model cannot account for mass density, the height, diameter and branching variability of the trees or the degradation of views that occur with distance. The viewshed analysis is also conservative in that the uppermost 20 ft. where the antenna will be placed and is that portion of the monopole most likely to be seen from distance, is only about 2.75 in. wide (compared to the 16 in. width of the monopole at its top). Finally, the visual simulations from locations proximate to the monopole show that the new monopole and antenna will not create a significant adverse visual impact; such an impact for the same structure at a greater distance is highly unlikely.

Those resources listed in Table D-1 (the inventory of all existing resources within a five-mile radius of the monopole, excluding those in Table D-2), from which the monopole and antenna may be visible are all beyond two miles, a point at which visibility will be limited.

PHOTOSIMULATIONS

Potential visibility of the ground-based equipment will be limited to locations within a few hundred feet. The Baldwin Substation is screened from residences to the south (and southeast) by existing on-site vegetation. Existing buildings shield views from the north and west. Figure D-3 presents a generic visual simulation of the ground-based equipment noted above.

The photosimulations are representative of the range of possible views of the proposed monopole.

Figure 1 provides an aerial view of the monopole and antenna within the Baldwin Substation and surrounding area (location and height noted). The locations of the simulations are identified by location, direction and number for reference in Figure 1. Visual simulations from several ground-based locations are included as Figures 2A through 5B.

Figures 2A and 2B show local street views from Central Avenue on the east side of the street looking northwest toward the substation. The trees shown in the existing photo remain after the Baldwin Installation is completed. Therefore, the monopole will be minimally visible, if at all, from this location.

Figures 3A and 3B show a view from Harrison Avenue on the west side of the street looking east toward the substation. The trees shown in Figure 3A along with the substation equipment will remain after the Baldwin Installation is completed. During spring, summer, and fall, foliage will shield the monopole from view, except for its bottom section, which will be concealed by the fence and attached privacy screening.

Figures 4A and 4B show a view from the north side of Sunrise Highway on the elevated LIRR platform looking directly south toward the substation. The existing cell tower is visible in Figure 4A and 4B. Figure 4B shows the trees that are going to be removed, as well as the trees that will remain after the Baldwin Installation if completed. The monopole will be visible from this viewpoint. However, the monopole would be visible from this location regardless of any tree removals or privacy fencing. As shown in the figures, existing substation equipment and the existing cell pole will also be visible, regardless of any tree removals.

Figures 5A and 5B is taken from the median on Sunrise Highway east of Central Avenue looking southwest toward the substation. The photos show is an existing electric transmission pole (approximately 70 ft. in height) on the corner of Central Avenue & Sunrise Highway along with trees that will remain.

The results of the viewshed assessment and the visual simulations show that the identified visual resources have intervening vegetation, topography and/or structures that partially and/ or may totally block views of the Baldwin monopole and antenna. Given the developed nature of the surroundings with buildings (residential and commercial), utility poles, etc., the visual impacts will not be significantly adverse.

D. CONCLUSION

Based on the guidance of DEP-00-2, visibility of the Baldwin Installation is not considered to be a significant adverse impact to identified designated sensitive resources.

The Project Site is currently adjacent to an existing, operating electrical substation. The components of the DA Project equipment are similar to the equipment already located on the adjacent site – buildings, utility poles, electrical equipment, cabling, etc. Therefore, the local physical, and visual environment will not be significantly affected.

Based on the results of the viewshed analysis, visual simulations and visual impact assessment, the Baldwin Installation will not have any significant adverse impacts on the visual character of the identified sensitive resources. It will not significantly impair the visual landscape as experienced from scenic or aesthetic resources of concern or interfere with or reduce the public's or area residents' enjoyment and/or appreciation of the appearance of any inventoried scenic, open space or other resource. No third-party equipment should be placed on the new monopole in the future. Thus, there will be no significant adverse visual impacts resulting from the proposed Baldwin Installation.