Attachment F: Noise and Electro-Magnetic Field

A. INTRODUCTION

This attachment considers the potential impacts of the Proposed Action regarding noise and Electro-Magnetic Fields (EMFs).

A Noise Study was completed to evaluate the potential sound-level impact of future operational noise levels associated with the Substation expansion. The Noise Study evaluated sound levels associated with the proposed 138/13kV transformer at nearby receptor locations. Existing conditions at the nearby receptor locations were established by sound level monitoring conducted at one representative location. Future sound levels from the proposed 138/13 kV transformer were compared to the measured ambient sound levels to determine potential noise impacts. The Noise Study was conducted using New York State Department of Environmental Conservation (NYSDEC) thresholds for significant noise impact, which are used to assess potential effects according to SEQRA requirements.

The distribution components of the Proposed Action do not include the installation of any operational-phase noise-generating equipment and are therefore excluded from the analysis below. Potential impacts from construction related noise are addressed in **Attachment G**.

An Electric and Magnetic Field Assessment prepared by Exponent for the Kings Highway Substation, dated April 14, 2017 was evaluated for reference purposes in order to assess potential EMF impacts associated with the Proposed Action. The Electric and Magnetic Field Assessments for the Kings Highway Substation are provided in Appendix C.

B. PROJECT BACKGROUND

The existing Substation currently consists of two 138/13kV transformers. Noise from the two existing transformers was captured in the ambient sound level measurements and has been included in the evaluation of both existing and future noise conditions.

C. NOISE STUDY

The Noise Study evaluated potential noise impacts of the Proposed Action by comparing the existing daytime and nighttime[1] ambient noise conditions at and in the vicinity of the expansion area to the anticipated future sound levels of the expansion area, as a result of the installation of the proposed transformer. The increase in noise due to the Proposed Action has been assessed in accordance with the NYSDEC thresholds for significant noise impact, which are used to assess noise impacts under the SEQRA regulations.[2]

Background noise measurements were collected on July 11 and 12, 2017 in order to establish the existing ambient conditions. Measurements were collected over a continuous 24-hour period. Noise measurements were collected at one location located along the southern property boundary of the proposed expansion area, immediately adjacent to the residential properties located south of the

[1] Daytime is defined as the period of time between 7:00 AM and 10:00 PM and Nighttime is defined as the time between 10:00 PM and 7:00 AM.
[2] "Assessing and Mitigating Noise Impacts". New York Department of Environmental Conservation. DEP-00-1. February 2, 2001.

expansion area. The residential properties located south of the proposed expansion area will be the closest residential receptors to the expanded area, located at a minimum distance of approximately 135 feet from the proposed transformer. The selected monitoring location is representative of the existing ambient noise conditions at all the receptor locations included in the Noise Study, as the location captures noise from all the primary sound sources in the area (the Long Island Rail Road, Interstate 495, and the Substation). The monitor was placed approximately 150 feet from the Long Island Rail Road right of way, one of the dominant noise sources in the study area. Figure F-1 depicts the noise monitoring location and the locations of the closest residential receptors. The measured ambient daytime sound levels ranged from 54.4 to 62.7 dBA and the measured ambient nighttime sound levels ranged from 47.7 to 62.6 dBA. The lowest ambient sound level (47.7 dBA) was measured during the 3:00 a.m. hour.

Potential future noise level impacts associated with the proposed transformer were modeled at 12 receptor locations based on a baseline equal to the monitored sound level results, all of which include residential properties. Sound from the proposed transformer was modeled as a worst-case scenario, where the transformer would be operating at full load with cooling system fully active. Resulting noise levels (excluding ambient levels) at the receptor locations ranged from 28.0 to 41.8 dBA.

Increases in noise levels were determined by comparing future sound levels of the proposed transformer to the daytime and nighttime existing ambient sound levels ranges in order to determine the potential for noise impact. As shown on Table F1, Existing noise levels do not noticeably increase despite the addition of new noise sources, unless the new noise levels exceed the existing noise levels. Due to the proposed transformer, future sound levels during daytime will range from 54.4 dBA to 62.7 dBA, with a maximum increase in noise levels of 0.2 dBA as compared to the ambient daytime levels. Future sound levels during nighttime will range from 47.7 dBA to 62.6 dBA, with a maximum increase in noise levels of 1 dBA as compared to the ambient nighttime levels. As such, the maximum sound level increase at the monitoring locations will be an increase of 1 dBA.

According to the NYSDEC noise policy, noise level increases of less than three decibels are generally considered to be imperceptible and therefore are not considered to be a significant noise impact. As a result, noise mitigation is not warranted. The continuous noise limit specified in the Town of North Hempstead's Noise Ordinance is 90 dBA for 24 hours, which is significantly higher than the future sound levels will be.

Therefore, the Proposed Action, including the operation of the new transformer will not result in any significant adverse noise impacts.

Table F1 - Substation Expansion Noise Analysis Results

ID	Address	Existing Daytime (dBA)[1, 2]	Existing Nighttime (dBA)[1,2]	Project Levels (dBA)[32]	Future Daytime (dBA)[43]	Future Nighttime (dBA)[43]	Maximum Daytime Increase (dBA)[54]	Maximum Nighttime Increase (dBA)[54]
R1	105 North Ct.	54.4 - 62.7	47.7 - 62.6	37.1	54.5 – 62.7	48.0 – 62.6	+0.1	+0.4
R2	113 North Ct.	54.4 - 62.7	47.7 - 62.6	39.8	54.6 – 62.7	48.3 – 62.6	+0.1	+0.7

ID	Address	Existing Daytime (dBA)[1, 2]	Existing Nighttime (dBA) [1,2]	Project Levels (dBA)[32]	Future Daytime (dBA)[43]	Future Nighttime (dBA) [43]	Maximum Daytime Increase (dBA) [54]	Maximum Nighttime Increase (dBA) [54]
R3	121 North Ct.	54.4 - 62.7	47.7 - 62.6	41.8	54.6 – 62.7	48.7 – 62.6	+0.2	+1
R4	129 North Ct.	54.4 - 62.7	47.7 - 62.6	41.8	54.6 – 62. 7	48.7 – 62.6	+0.2	+1
R5	137 North Ct.	54.4 - 62.7	47.7 - 62.6	39.9	54.6 – 62. 7	48.3 – 62.6	+0.2	+0.7
R6	145 North Ct.	54.4 - 62.7	47.7 - 62.6	37.3	54.5 – 62. 7	48.1 – 62.6	+0.1	+0.4
R7	168 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	29.0	54.4 – 62. 7	47.7 – 62.6	+0	+0.1
R8	160 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	28.0	54.4 – 62. 7	47.7 – 62.6	+0	+0
R9	146 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	28.9	54.4 – 62. 7	47.7 – 62.6	+0	+0.1
R10	140 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	30.3	54.4 – 62. 7	47.8 – 62.6	+0	+0.1
R11	132 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	30.5	54.4 – 62. 7	47.8 – 62.6	+0	+0.1
R12	124 Parkside Dr.	54.4 - 62.7	47.7 - 62.6	28.1	54.4 – 62. 7	47.7 – 62.6	+0	+0

1. The quietest hourly daytime and nighttime sound levels measured at the monitoring location, occurring at 1:00 – 2:00 pm and 3:00- 4:00 am, respectively.
2. The existing daytime and nighttime noise levels were based off a monitoring location located adjacent to the residential properties located along North Court. The existing levels on Parkside Drive are presumed to be within a similar range because of their similar proximity to the Long Island Expressway and Substation Property.
3. The modeled sound levels from the proposed transformer under the worst-case operating scenario.
4. The combination of existing daytime and nighttime conditions with the project levels.
5. The increase in future sound levels above existing ambient sound levels during the respective time periods.

D. ELECTRO-MAGNECTIC FIELD STUDY

The potential EMF impact of the Proposed Action has been evaluated based on the EMF levels calculated for the Kings Highway Substation project. The Electric and Magnetic Field Assessment for the Kings Highway Substation project is provided in Appendix C. According to the NYSPSC's Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities (issued and effective September 11, 1990), the prudence avoidance health standard for magnetic field is 200 milligauss (mG) at the edges of major transmission facility rights-of-way (100 feet for circuits with voltage less than 230kV, with the transmission line centered). Major transmission facilities are defined as transmission line facilities that are subject to Article VII of the Public Service Law. With

the exception of a temporary transmission bypass, the Proposed Action does not consist of modifications to existing transmission lines. However, the NYSPSC standard will be used as guidance for EMF evaluation purposes.

For comparison purposes, the Kings Highway Substation project contains two overhead 138kV transmission circuits that loop into and out of the substation, three 138/13kV transformer banks, six 138kV gas circuit breakers and three switchgears. The existing Roslyn Substation currently contains two 138kV overhead transmission circuits that exit the north side of the Substation. At the completion of the Proposed Action, the Substation will contain three 138/13kV transformer banks, four 138kV gas circuit breakers and three switchgears. In addition, a temporary overhead 138kV bypass will be installed within the Substation Site. Thus, the Kings Highway Substation and Roslyn Substation will operate at comparable capacities and voltages and will result in comparable EMF levels.

The EMF study that was undertaken for the Kings Highway Substation included calculating average and peak-load magnetic fields for post-project conditions. Peak-load conditions represent the highest anticipated load conditions during summer months, when power demand is highest. The EMF Study calculated magnetic fields at four profile locations from the Kings Substation fence (located at approximate distances ranging from 15 feet to 50 from various pieces of substation equipment). The maximum magnetic field measured 50 feet from the fence was 77.9 (under peak-load conditions). All measurements from the four profile locations were below the NYSPSC's prudence avoidance health standard of 200 mG.

For the Roslyn Substation, the closest residential dwellings are located approximately 65 feet south of the Substation Site, and are located a minimum of 135 feet from the proposed substation equipment. Therefore, given the magnetic field levels calculated for the Kings Highway Substation fence, calculated magnetic field levels at the adjacent residences will be below the NYSPSC's prudence avoidance health standard of 200 mG.

Magnetic field levels were measured for the Kings Highway Substation project overhead 138kV transmission circuit under average-load and peak-load conditions. The maximum calculated magnetic field along the overhead circuit was 215 mG (under peak-load conditions). While magnetic field levels measured along the circuit exceeded 200 mG, calculated magnetic field levels rapidly decreased with distance from the circuit, to maximum levels of 150 mG at 40 feet from the circuit (under peak-loads conditions), and maximum levels of 27.1 mG at 140 feet from the circuit (peak-load conditions). All magnetic levels beyond the overhead circuit were below the NYSPSC's prudence avoidance health standard of 200 mG.

Given the plan to install a temporary overhead 138kV transmission bypass entirely within the limits of the Substation Site, and given that the transmission bypass will be located 140+ feet from the nearest residences, calculated magnetic field levels are expected to be well below the NYSPSC's prudence avoidance health standard of 200 mG.

The two underground distribution exit feeders to be installed as part of the Proposed Action will operate at voltages of 13kV (significantly lower voltage than 138kV). As magnetic field levels

associated with higher voltage equipment installations for the Kings Highway Substation project were below the NYSPSC standard of 200 mG, the magnetic field levels for the Proposed Action will be well below the NYSPSC standard at the edge of the distribution right-of-way.

The EMF Assessment for the Kings Highway Substation project concluded that overall, the calculated and measured magnetic field levels associated with the project fall within the range of typical levels encountered within homes and work places. The project-related increases relating to the Kings Highway Substation in the calculated magnetic field are minor and are on average less than 2.6 mG at workplaces in the vicinity of that Substation. Based on a comparative analysis of the Kings Highway Substation project, the predicted EMF levels from of the Proposed Action will be below the 200 mG prudence avoidance health standard established by the NYSPSC and will not to result in significant adverse impacts.