



Electric Magnetic Field (EMF) Study Report

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Rev. 5

Mill Point Solar I Project

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1.0 Introduction

On behalf of ConnectGen Montgomery County LLC (ConnectGen), a subsidiary of ConnectGen LLC, TRC Companies has performed an engineering assessment of the Electric and Magnetic Fields (EMF) associated with Mill Point Solar I Project (the Facility) transmission lines. The proposed configuration will consist of the facility collection substation with a short transmission line, referred to as the generator interconnection, to a proposed substation to be owned by National Grid. This National Grid Station will have a loop-in and loop-out connection to the existing National Grid Marcy-New Scotland #18 345kV transmission line. The EDIC-New Scotland #14 345kV line runs parallel to the proposed 3-pole structures and loop-in loop-out structures on the #18 line therefore the EMF impacts of the #14 line are included in the EMF study.

This study was performed for the generator interconnection line between the proposed National Grid Station and the proposed Mill Point Solar I Project collection station, and the proposed loop-in and loop-out connections between the proposed National Grid substation and the existing National Grid Marcy-New Scotland #18 345kV transmission line. In addition, the existing and proposed #14 and #18 line Right of Way (ROW) was evaluated for EMF. No EMF calculations were performed on the collection system as this will be operated below 69kV.

The proposed transmission interconnection consists of a loop-in loop-out of four conductors bundled 1351.5 thousand circular mils (kcmil) 45/7 Aluminum Conductor Steel Reinforced (ACSR) "Dipper" conductor that will run approximately 305 feet (ft) from the takeoff structures from the proposed National Grid substation to the proposed vertical deadend structures in the existing ROW: see Figure 1.



Figure 1: Transmission Connection Aerial

The proposed generator connection consists of double conductor bundled 1351.5 kcmil 45/7 Aluminum Conductor Steel Reinforced (ACSR) “Dipper” conductor. This line will require two (2) intermediate structures, and three (3) spans, to connect the proposed Mill Point collection station to the proposed National Grid substation.

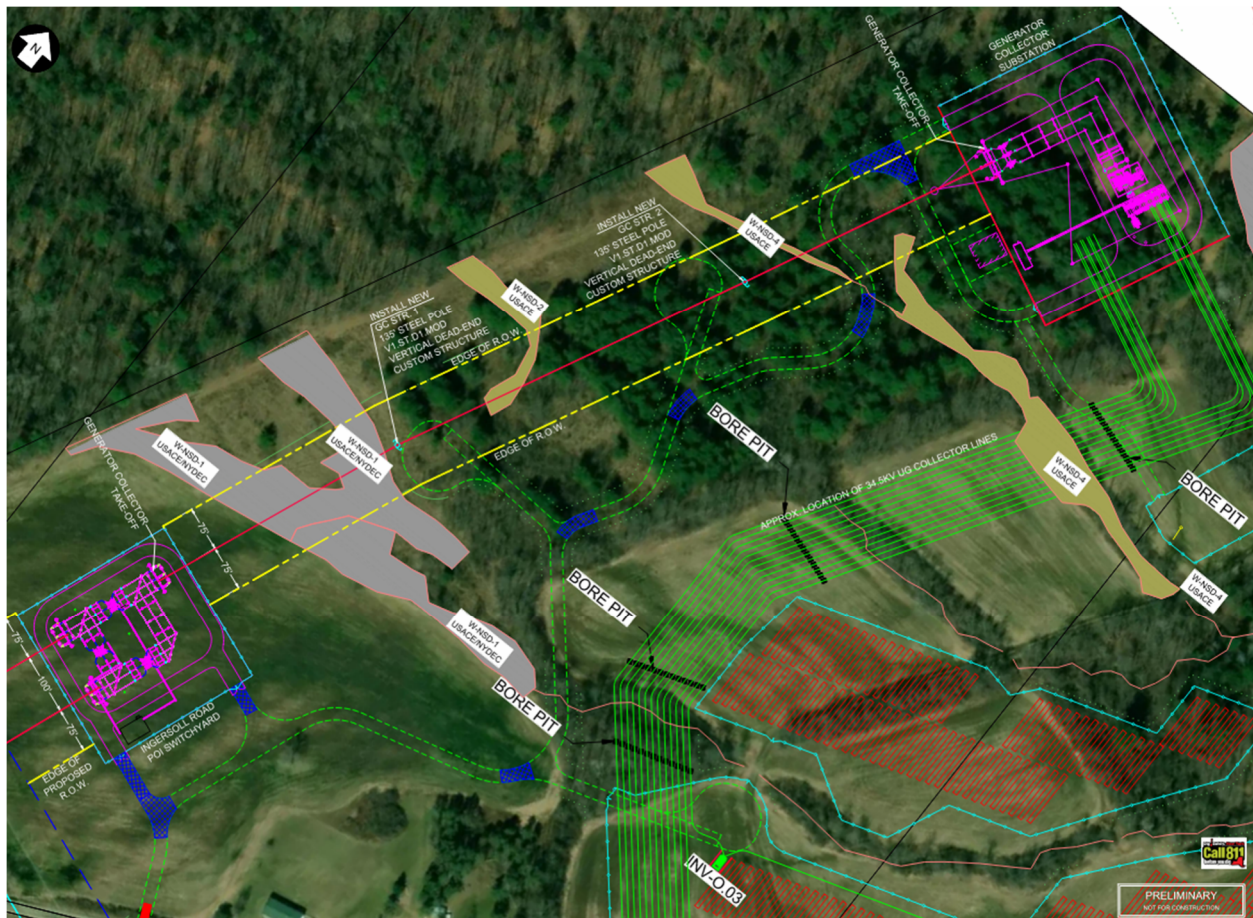


Figure 2: Generator Connection Aerial Imagery

The effects of the existing National Grid Marcy-New Scotland #18 345kV transmission line combined with the new interconnection were not modeled as the orientation of the two lines are approximately 90° apart and the typical EMF modeling programs require the lines to be parallel to model the shared impacts.

2.0 Technical Approach

EMF levels were calculated using Bonneville Power Corona & Field Effects Ver. 3.1 Software. A computer simulation was developed to calculate the existing and proposed EMF levels at the cross-sections as shown in Figure 3 through 7 below.

EMF studies were conducted for these cross sections using the conductor max sag midspan heights to represent peak EMF levels that could be seen one meter above the ground level. Please see plan and profile drawings located in the appendix.

This study evaluated the EMF levels of the existing EDIC-New Scotland #14 345kV, operating at the Summer Normal (rating of 2228 amps), Summer Short Term (rating of 2886 amps), Winter Normal (rating of 2718 amps), and Winter Short Term (rating of 3258 amps) for the “Drake” conductor, the proposed National Grid Marcy-New Scotland #18 345kV transmission 3-pole structure, and the proposed loop-in and loop-out of this line at 3124, 4204, 3824, 4716 amps, respectively. This rating is the limiting rating for the #18 line based on the Marcy end of the line which is limited by a two-conductor bundled 1431 kcmil 45/7 “Bobolink”. This two-conductor rating is still the controlling factor for the four-bundled “Dipper” conductor. The existing average load of the line was not provided by National Grid.

This study also evaluated the peak power capability supplied by ConnectGen of 430 amps. This study summarizes the proposed calculated EMF generated from these locations.

Table 1: Existing and Proposed Line Ratings

	Peak Facility Rating	Summer Normal	Summer Short Term	Winter Normal	Winter Short Term
Existing # 18 Line & Loop In / Loop Out Current Rating (Amps)	NA	3124	4204	3824	4716
Existing #14 EDIC-Scotland Current Rating (Amps)	NA	2228	2886	2718	3258
Interconnection Current Rating (Amps)	430	N/A	NA	N/A	NA

The EMF calculations did not consider any energized sources other than the 3-phase transmission lines. In performing the EMF calculations, the following typical parameters were used:

- 1351.5 kcmil 45/7 ACSR “Dipper” conductor diameter is used on the existing #18 Line, the proposed Loop in/Loop out, and the proposed generator connection.
- 795 kcmil 26/7 ACSR “Drake” conductor diameter is used on the existing EDIC-Scotland #14 345kV transmission line.
- Existing and proposed 7/16” – 7 standard EHS steel shield wire diameter.
- Existing 360’ ROW for the existing National Grid parallel lines (Marcy-New Scotland #18 and EDIC – New Scotland #14), Proposed 250’ ROW for the Transmission loop-in loop-out connection (100’ between centerline of structures and 75’ from centerline of structure to Edge of ROW), and 150’ ROW for the Generator Collector Transmission Line (75’ from centerline of structure to Edge of ROW).

- Phase spacing of the conductors is as shown in Figure 3 through Figure 7 below and the conductor height above finished grade is based on the minimum height of the span at maximum operating temperature.
- Current Levels as shown in Table 1: Existing and Proposed Line Ratings.

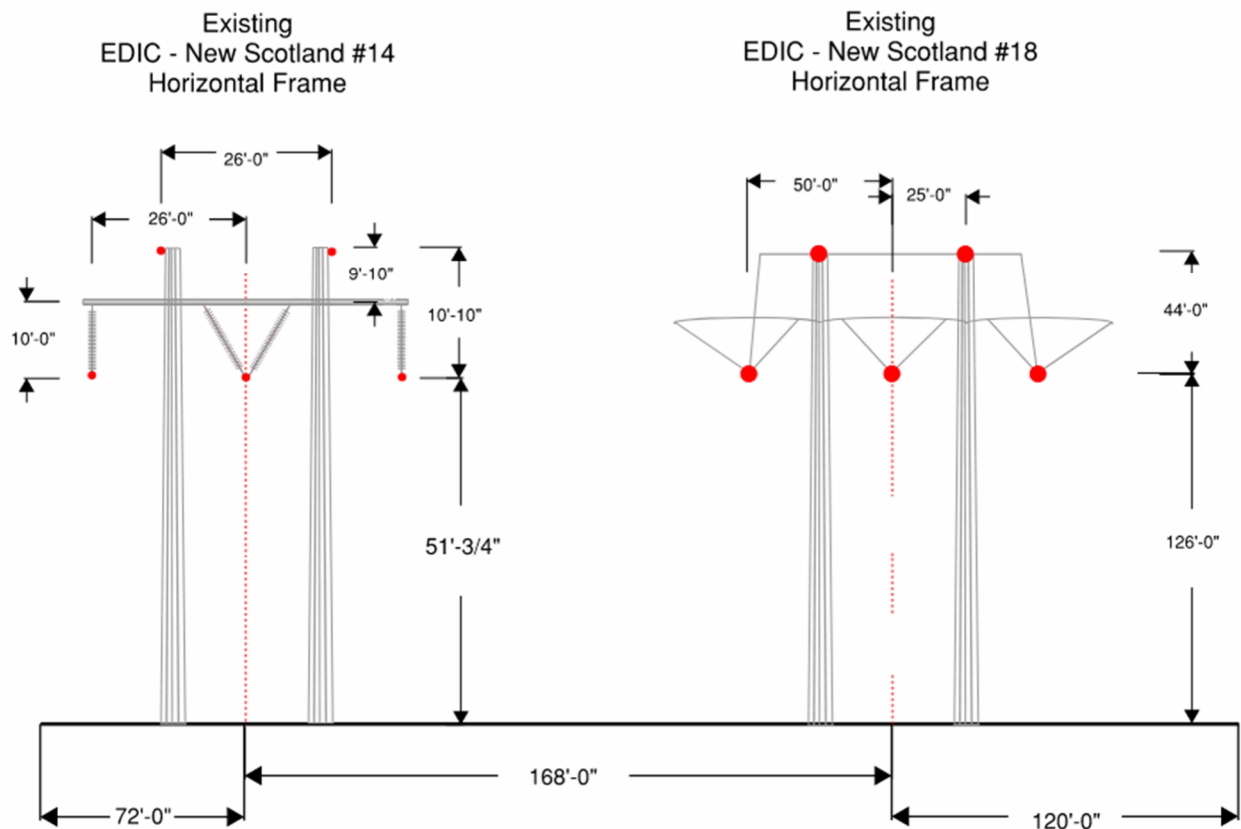


Figure 3: Existing Line #14 and Existing Line #18

Note: The height from 'Figure 3: Existing Line #18' was found using a PLS-CADD model.

Note: Both existing Horizontal frames used the structure geometry to determine the final height of the SW.

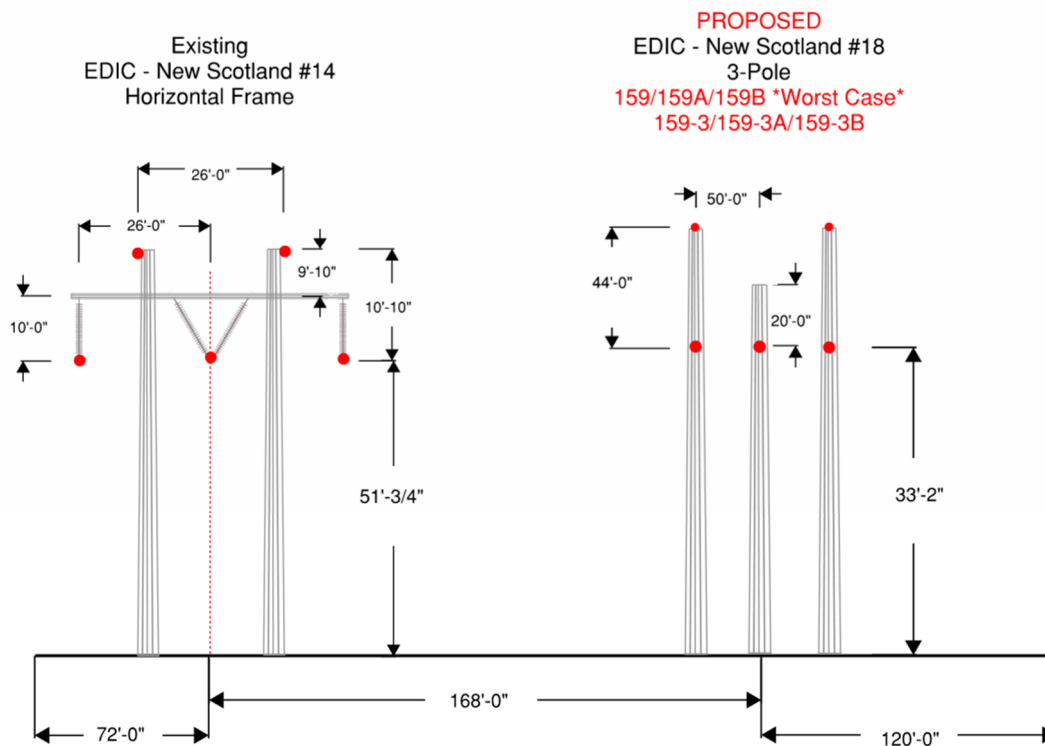


Figure 4: Existing Line #14 and Proposed Line #18 3-Pole Cross Section

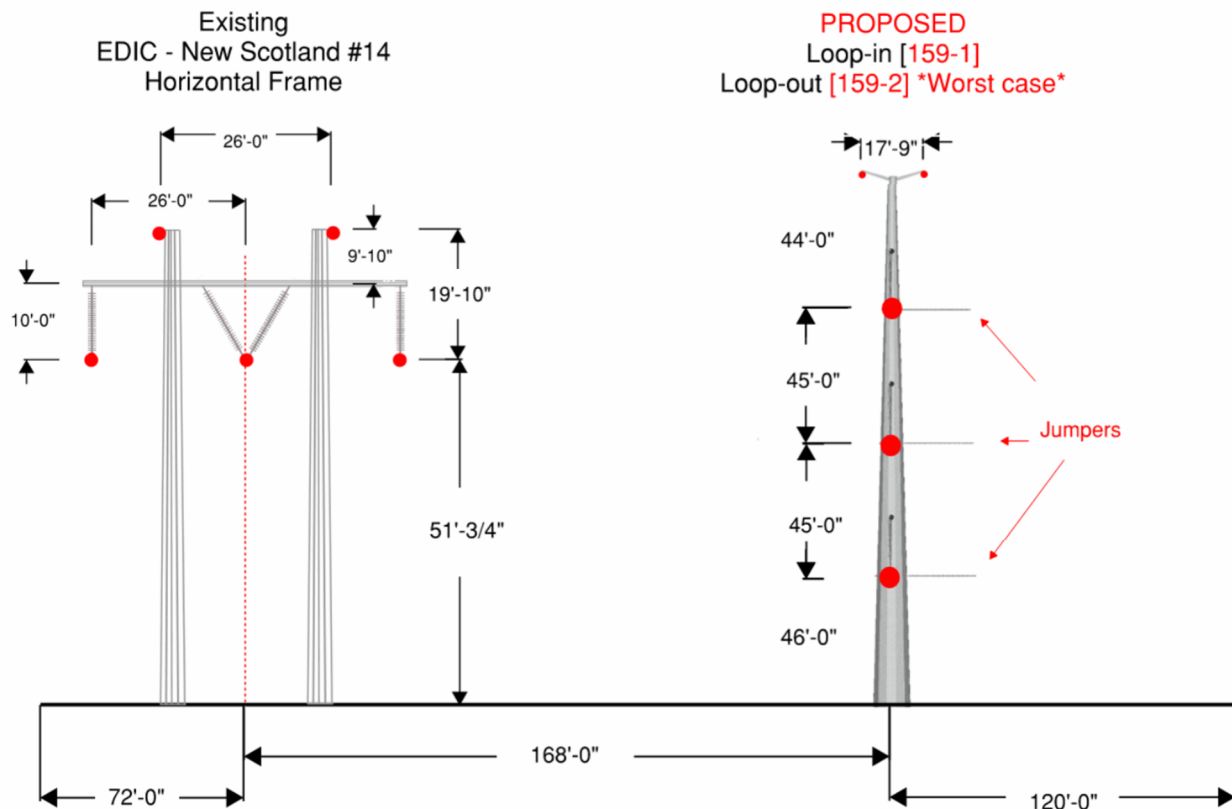


Figure 5: Existing Line #14 and Proposed #18 Loop-in/Loop-out (Worst Case) Cross Section

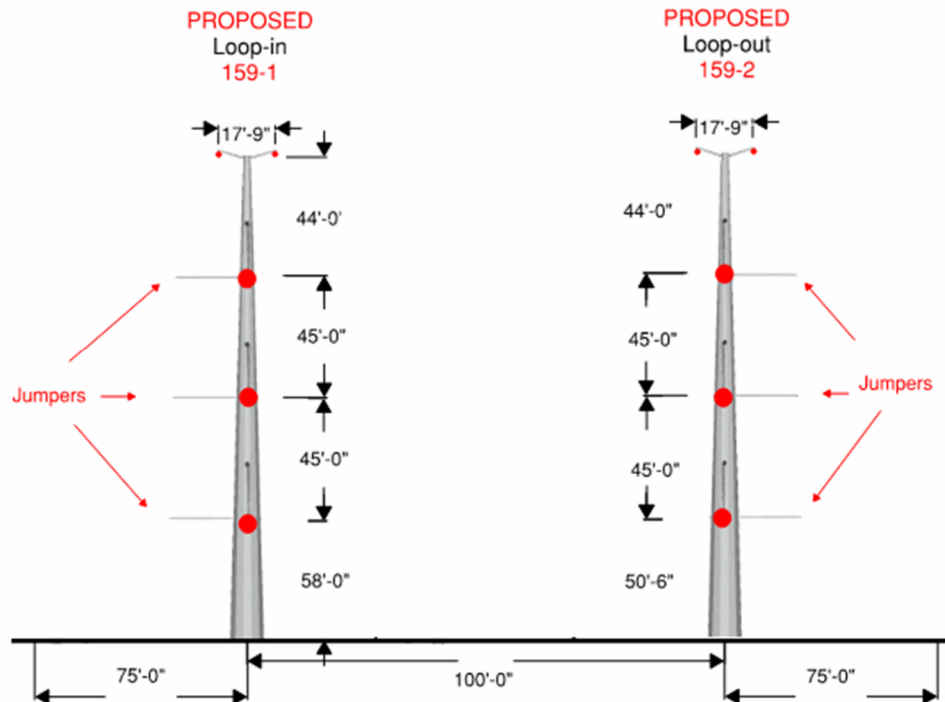


Figure 6: Proposed Transmission Loop-in Loop-out Cross Section

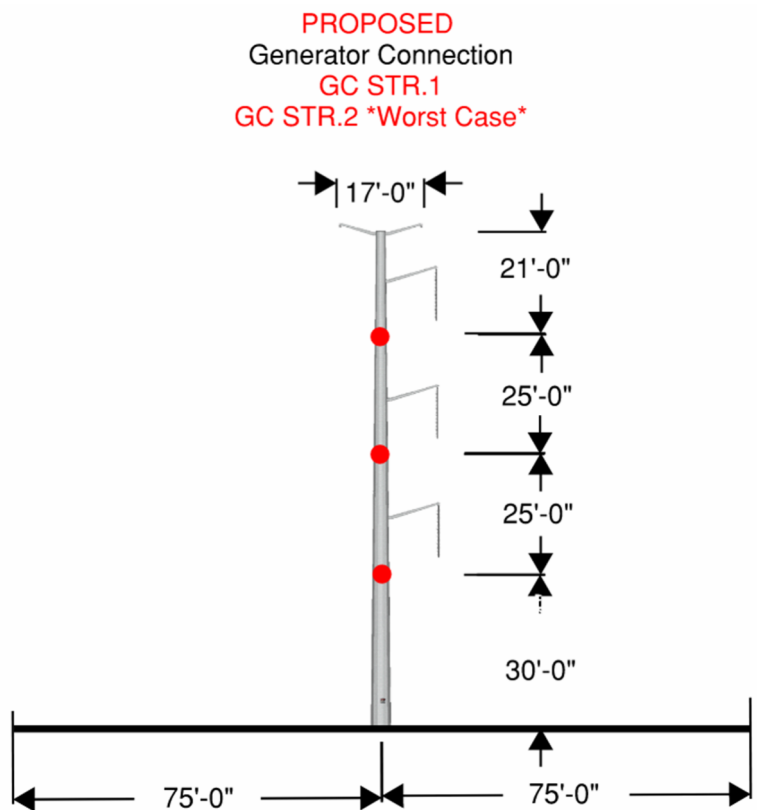


Figure 7: Proposed structure GC STR.1 and GC STR.2 Cross Section

3.0 Analytical Results

The following tables and figures provide the results of the calculated EMF. For a breakdown of inputs please see section 7.0 Appendix.

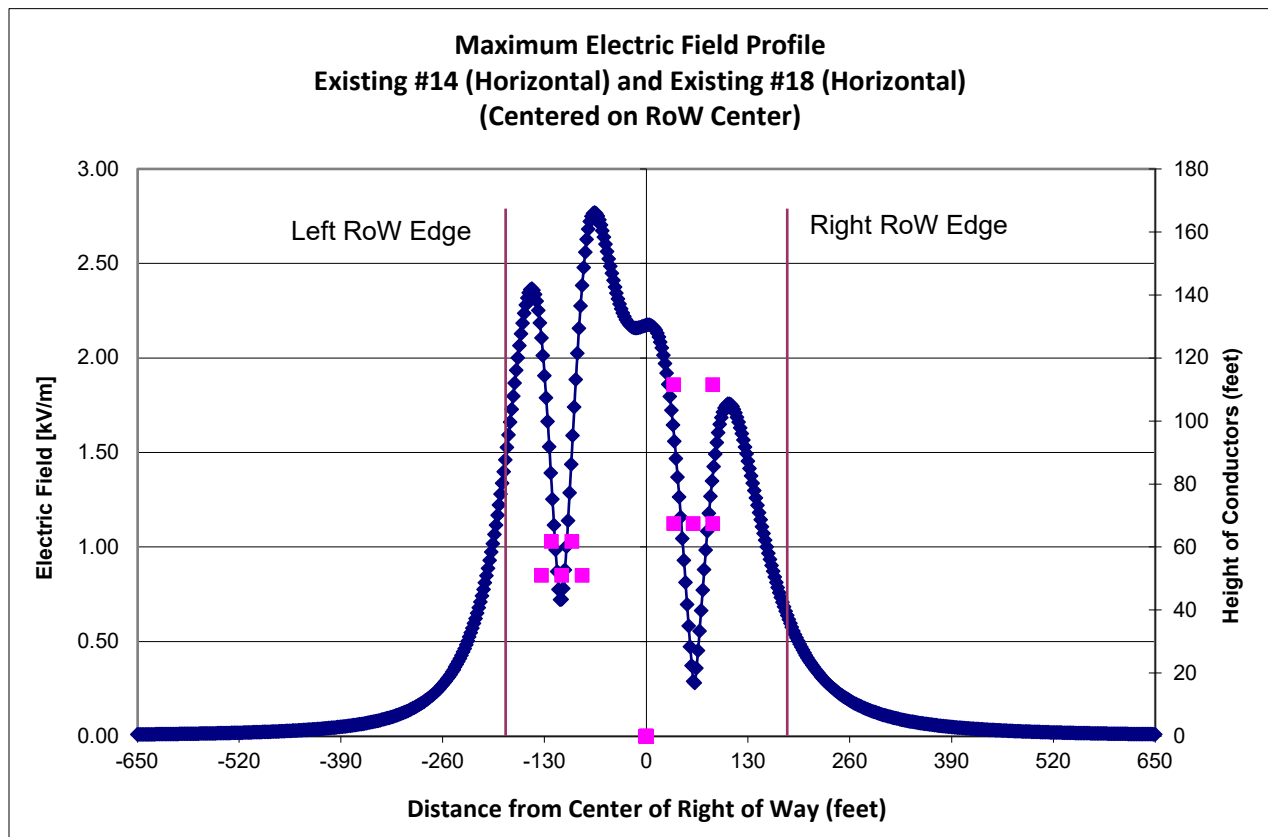
3.1 Electric Field Graphs

Electric fields values are dependent on structure geometry, height to ground, conductor diameter and voltage. The tables and figures provided below depict the following electric field graphs:

- Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18
- Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole
- Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out
- Proposed Loop-in Loop-out
- Proposed Generator Interconnection - GC STR.2

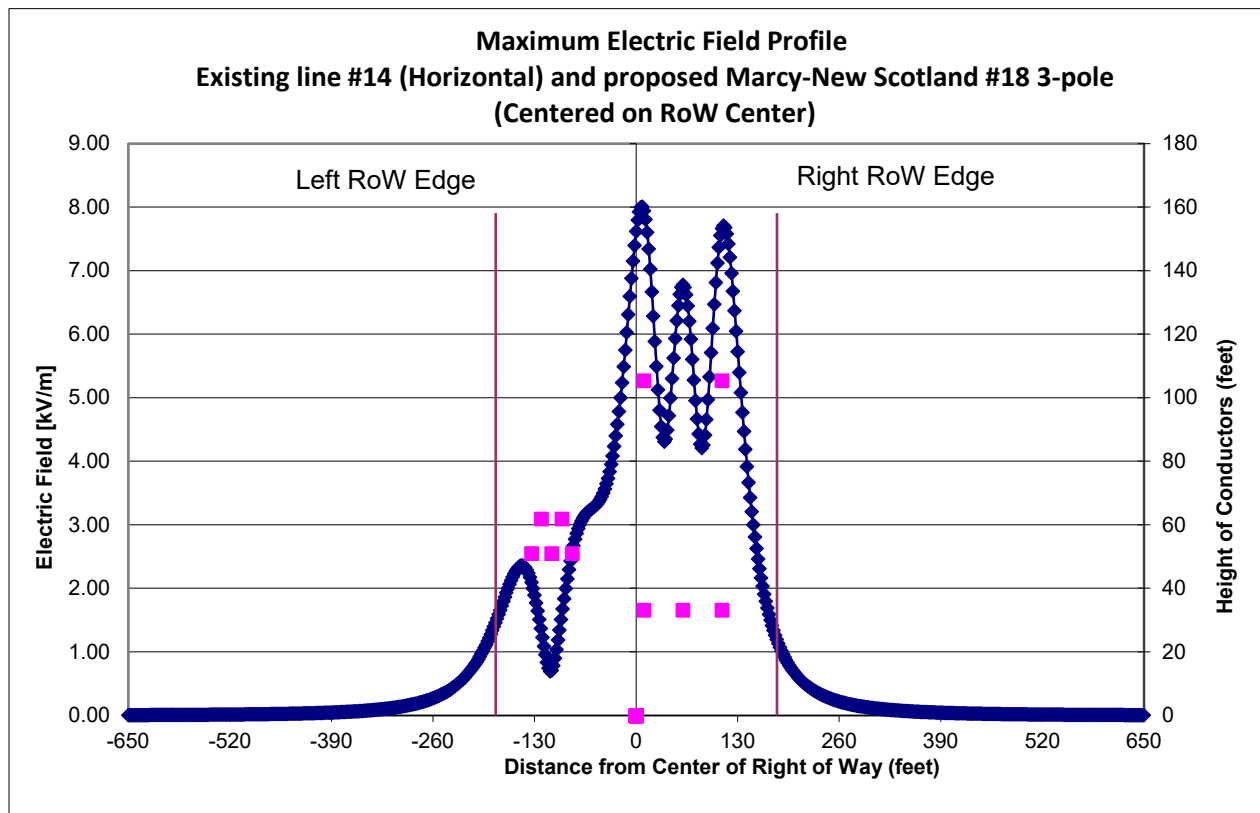
Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18

Configuration	Electric Field (kV/m)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18	1.461 (South)	2.8



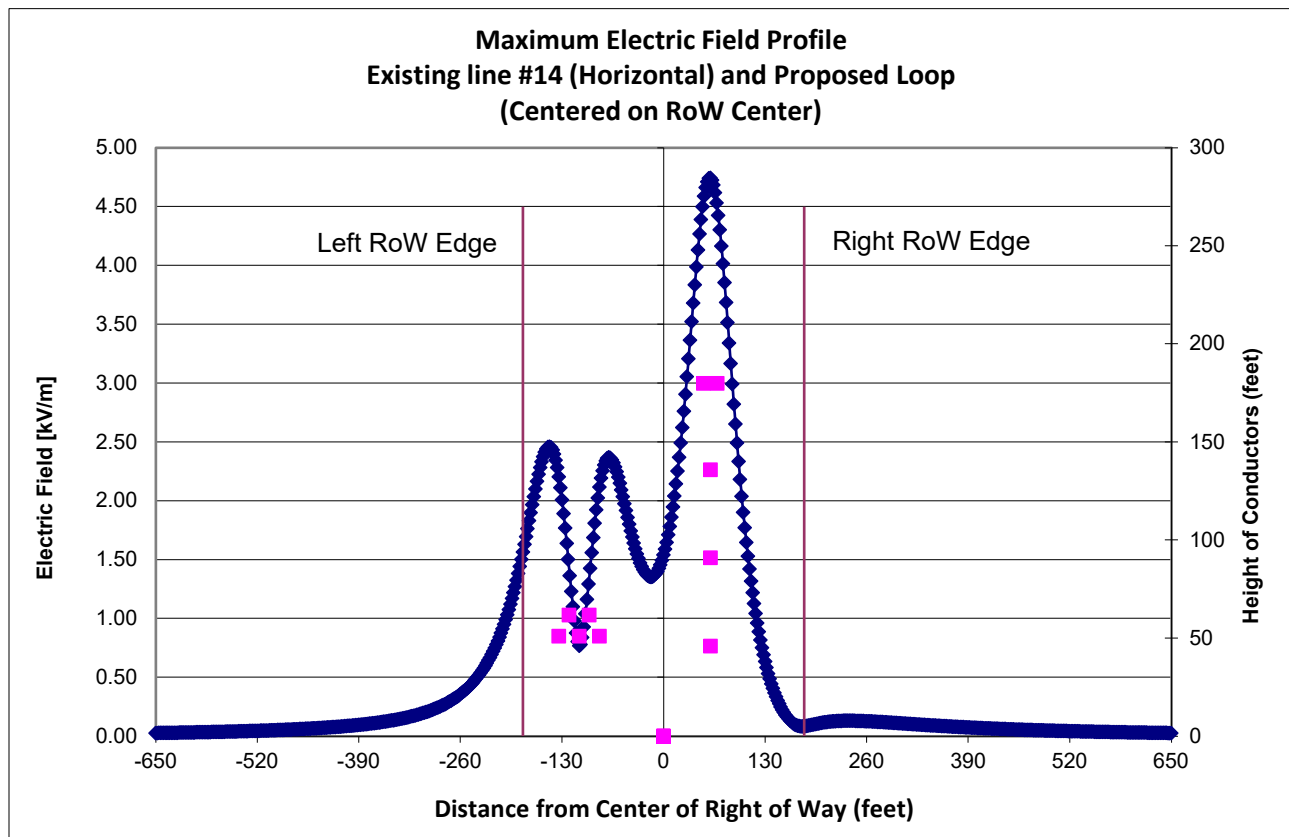
Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole

Configuration	Electric Field (kV/m)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole	1.464 (South)	8.0



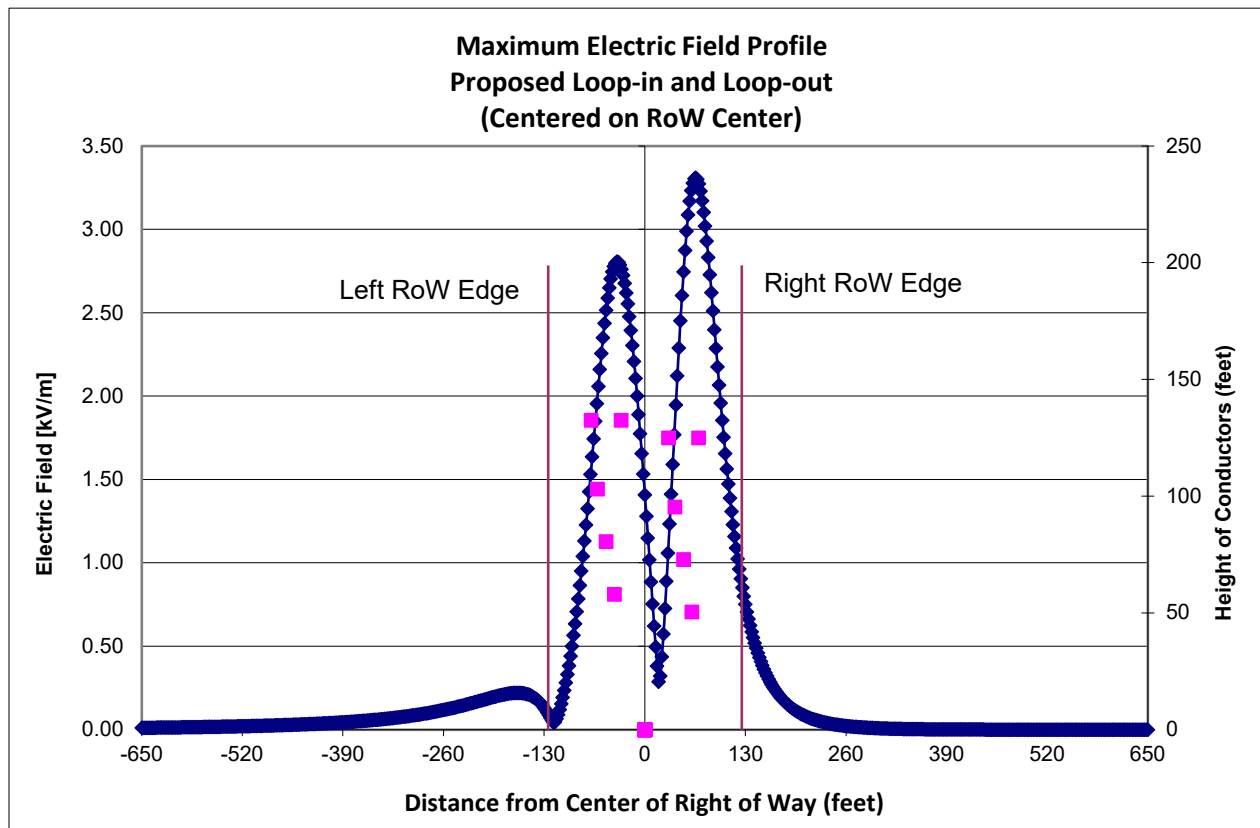
*Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New
Scotland #18 Loop-in Loop-out*

Configuration	Electric Field (kV/m)	
	Max. ROW Edge	Max. Value in ROW
Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out	1.567 (South)	4.7



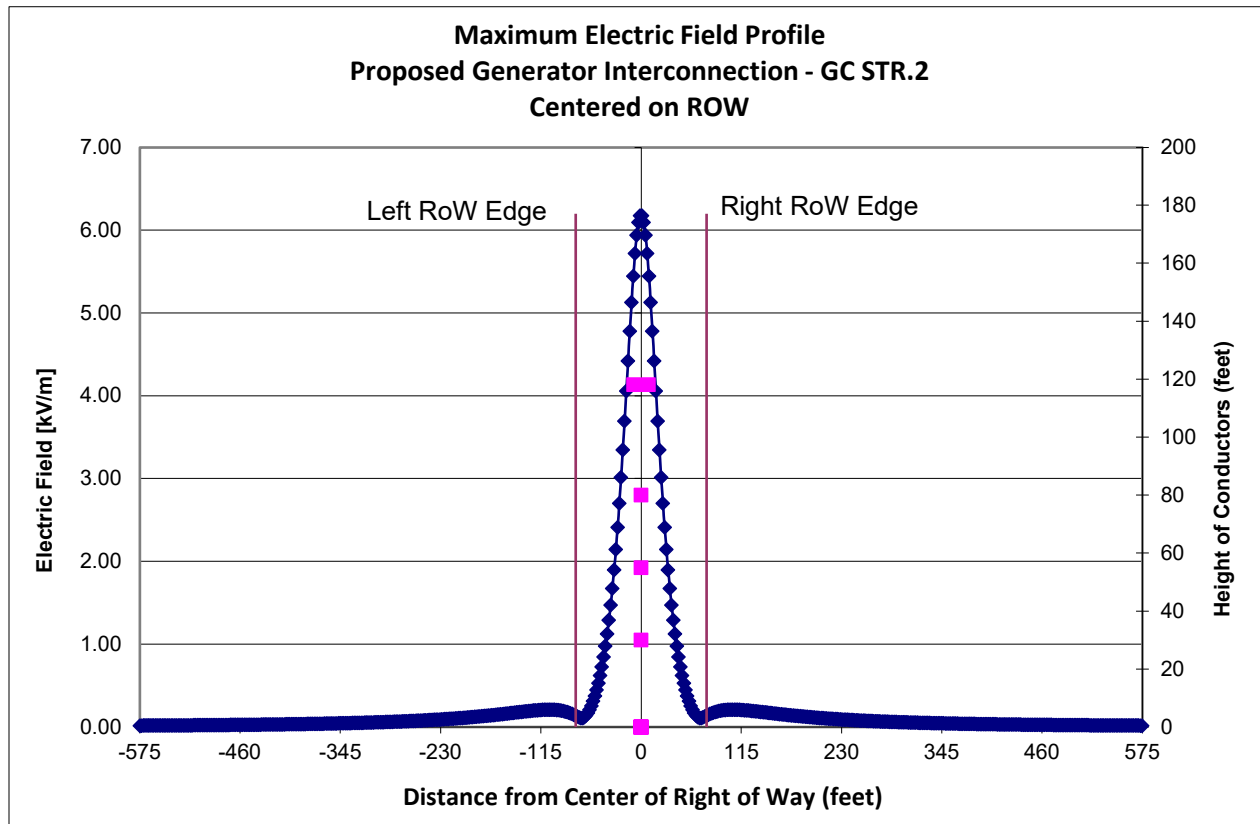
Proposed Loop-in Loop-out

Configuration	Electric Field (kV/m)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Proposed Loop-in Loop-out	0.878 (East)	3.3



Proposed Generator Interconnection - GC STR.2

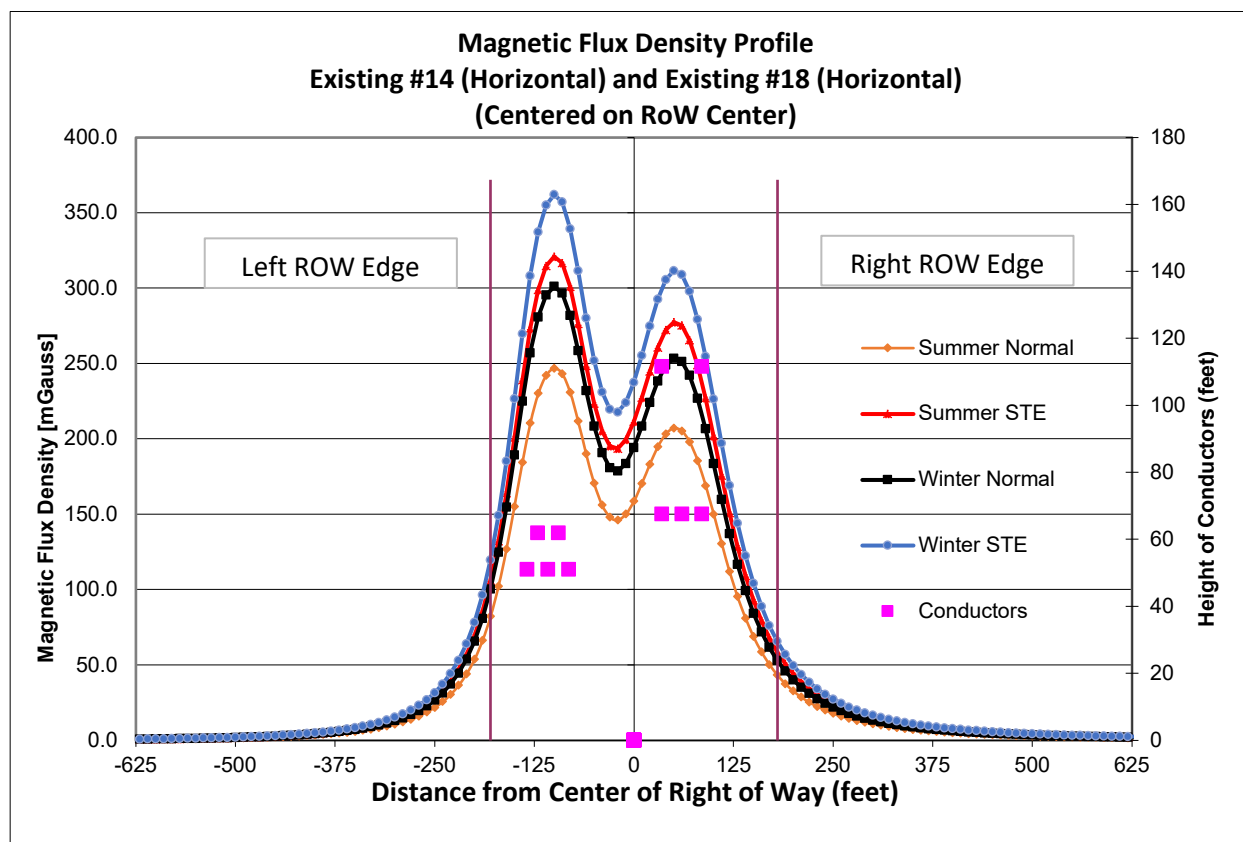
Configuration	Electric Field (kV/m)	
	Max. ROW Edge	Max. Value in ROW
Proposed Generator Interconnection - GC STR.2	0.136 (equal on both sides)	6.2



3.2 Magnetic Flux Density Profile Results

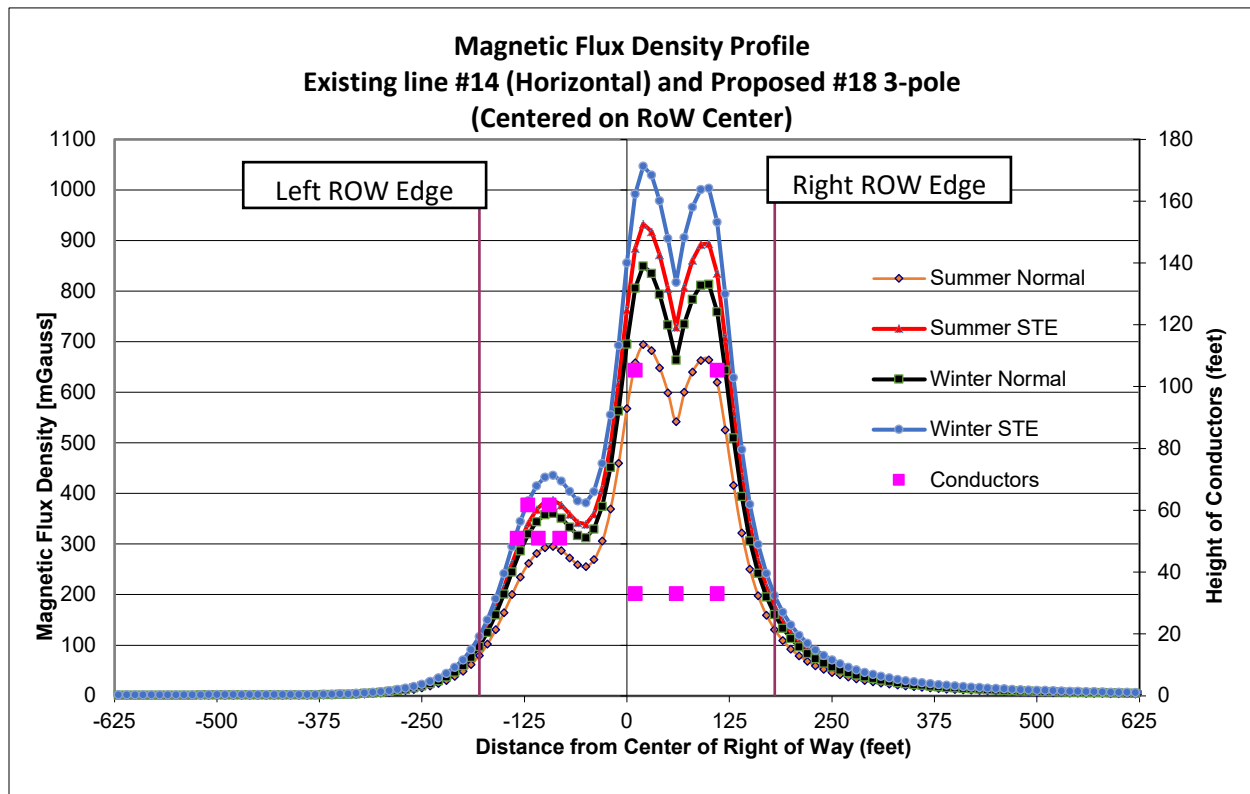
Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)

Loading Cases	Magnetic Field (mG)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Summer Normal	82.144 (South)	246.7
Summer Short Term Emergency	105.944 (South)	320.9
Winter Normal	100.171 (South)	301.1
Winter Short Term Emergency	119.687 (South)	362.1



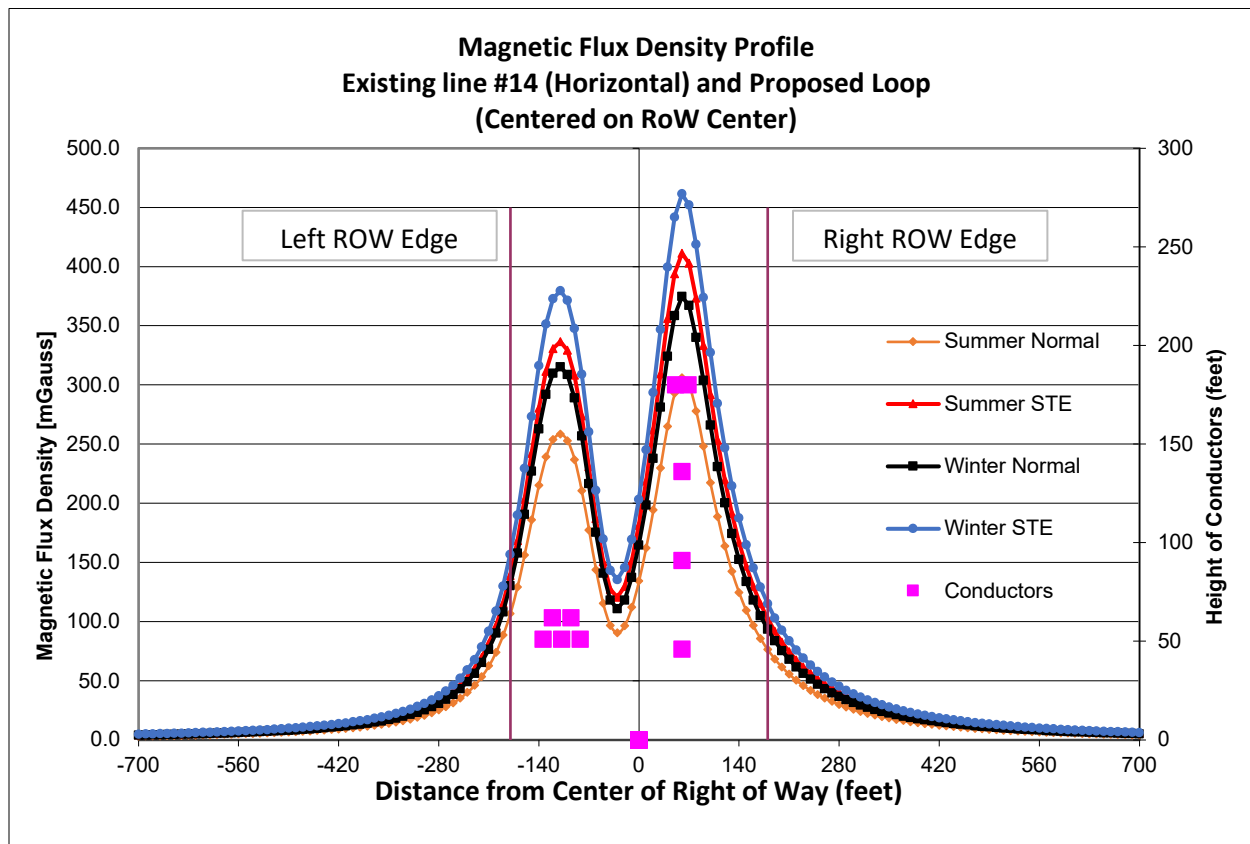
*Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New
Scotland #18 3-pole*

Loading Cases	Magnetic Field (mG)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Summer Normal	131.305 (North)	694.59
Summer Short Term Emergency	177.06 (North)	932.99
Winter Normal	160.756 (North)	850.08
Winter Short Term Emergency	198.558 (North)	1046.93



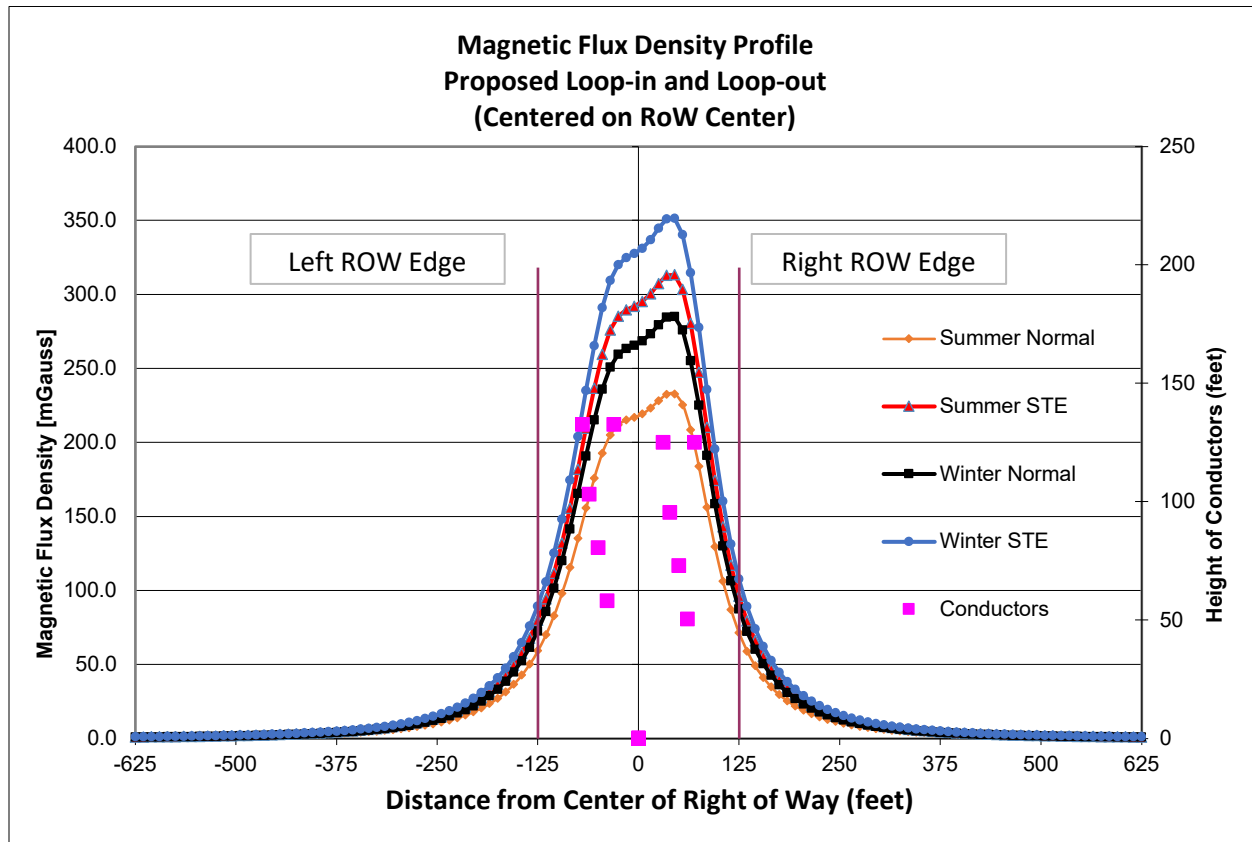
*Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New
Scotland #18 Loop-in Loop-out*

Loading Cases	Magnetic Field (mG)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Summer Normal	106.679 (South)	306.1
Summer Short Term Emergency	139.011 (South)	411.2
Winter Normal	130.209 (South)	374.6
Winter Short Term Emergency	156.772 (South)	461.4



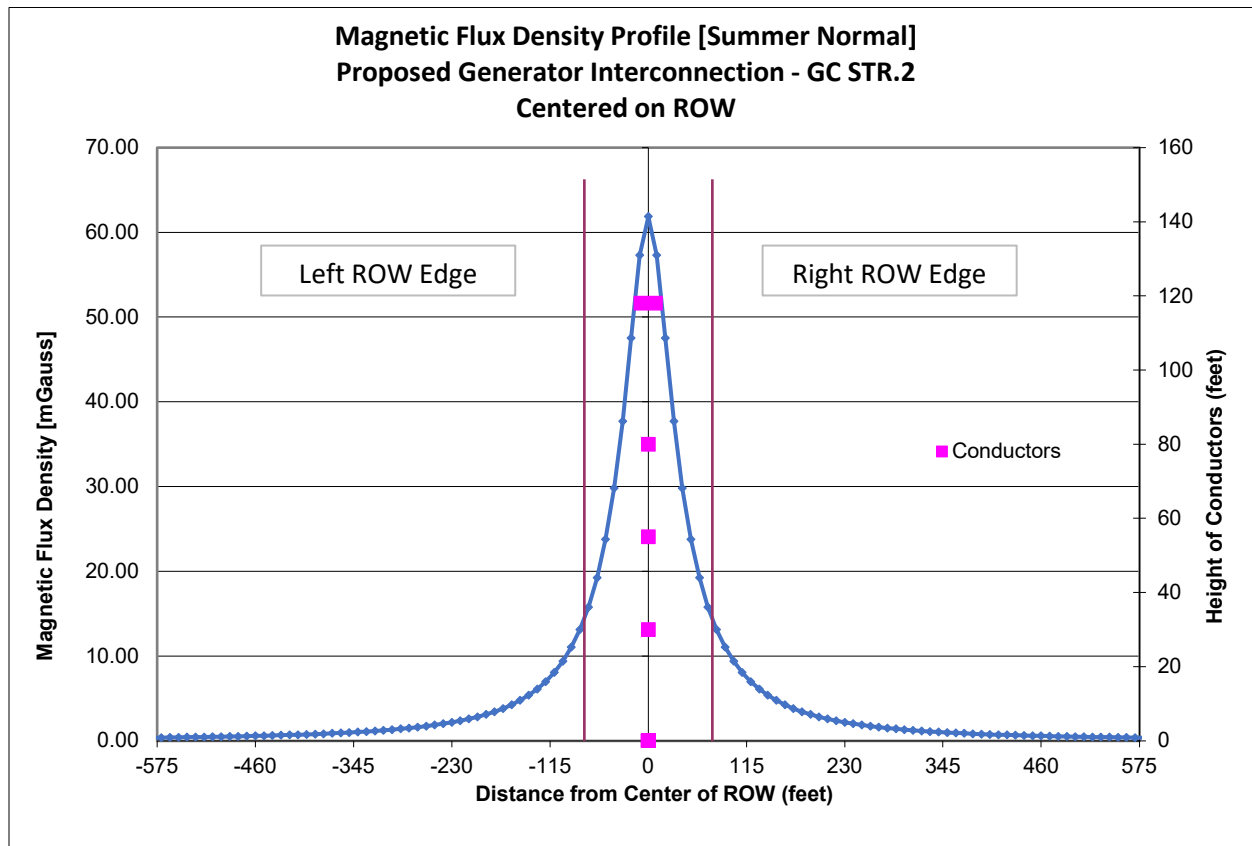
Proposed Loop-in Loop-out

Loading Cases	Magnetic Field (mG)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Summer Normal	71.411 (East)	232.8
Summer Short Term Emergency	96.098 (East)	313.3
Winter Normal	87.412 (East)	285.0
Winter Short Term Emergency	107.802 (East)	351.4



Proposed Generator Interconnection - GC STR.2

Loading Cases	Magnetic Field (mG)	
	<i>Max. ROW Edge</i>	<i>Max. Value in ROW</i>
Peak Facility Rating	14.358 (Equal on both sides)	61.9



4.0 Nearest Residence

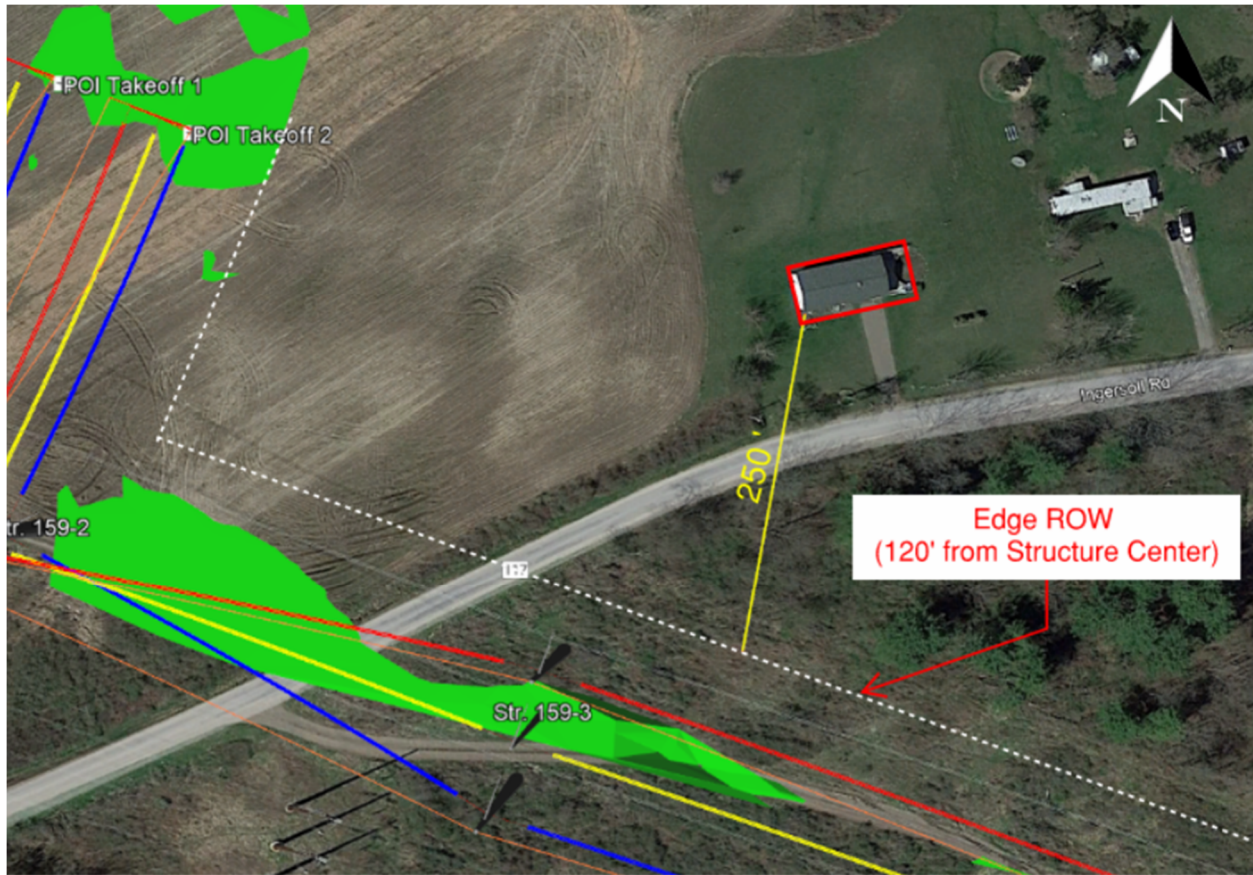


Figure 8: Nearest Residence 'A'

A review of the Facility Site has shown that there are two (2) residential properties in proximity to the proposed transmission line upgrades for this Project.

Residence 'A' is located 250 feet away from the edge of the ROW (equal to 370 feet from structure center). At 250 feet outside of the ROW the governing case for the nearest residence is Winter Short Term with a magnetic flux value of 16.58 Milligauss (mG) and an electric field value of 0.33463 kV/m; these values are 1.58% and 0.42% of the peak existing EDIC-Scotland #14 and the proposed Marcy-New Scotland #18 3-pole values, respectively.

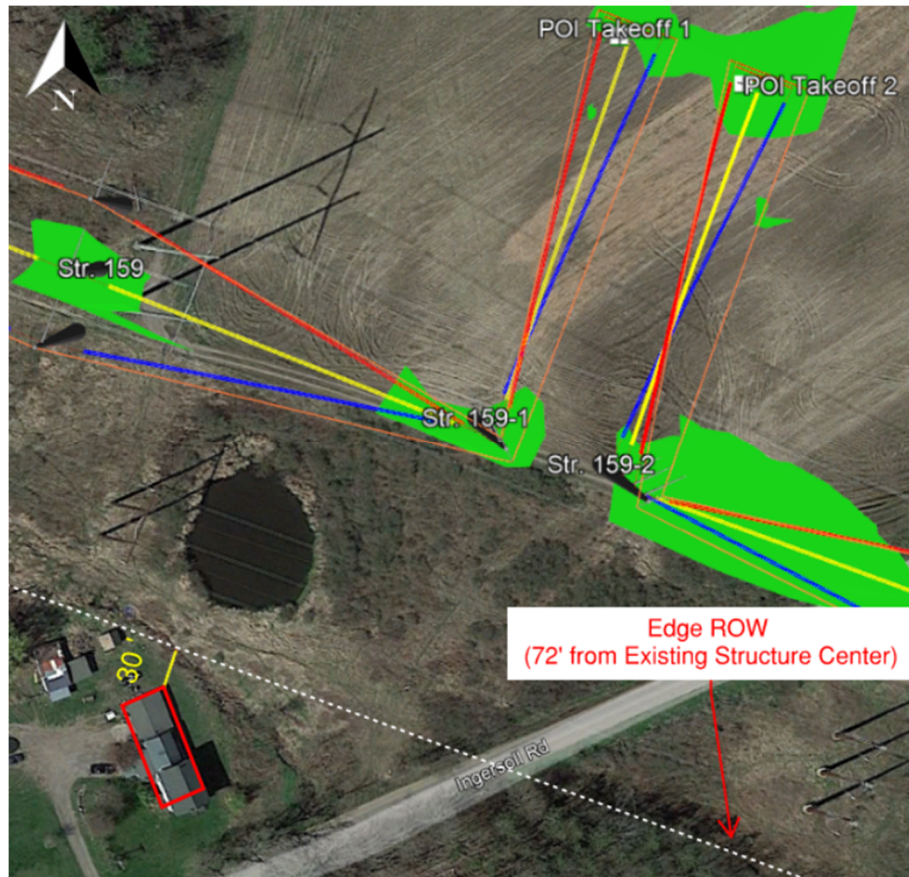


Figure 9: Nearest Residence 'B'

Residence 'B' is located 30 feet away from the edge of the ROW (equal to 102 feet from structure center). At 30 feet outside of the ROW the governing case for the nearest residence is Winter Short Term with a magnetic flux value of 91.97 mG and an electric field value of 0.844617 kV/m; these values are 19.9% and 17.8% of the peak existing EDIC-Scotland #14 and the proposed Marcy-New Scotland #18 Loop-in Loop-out respectively. For a more expansive breakdown for the case results see **Section 5: Summary of results**.

5.0 Summary of Results

Table 2: Summary of EMF Results

Structure Orientation		at Left RoW Edge	Max Field Value	at Right RoW Edge
Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18	Electric Field [kV / m]	1.464	2.8	0.639
	Magnetic Flux Density [mGauss]			
	Winter Short Term *Worst Case*	119.687	362.1	65.624
Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole	Electric Field [kV / m]	1.464	8.0	1.199
	Magnetic Flux Density [mGauss]			
	Winter Short Term *Worst Case*	117.11	1046.9	198.558
Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out	Electric Field [kV / m]	1.567	4.7	0.087
	Magnetic Flux Density [mGauss]			
	Winter Short Term *Worst Case*	156.772	461.4	115.039
Proposed Loop-in Loop-out	Electric Field [kV / m]	0.097	3.3	0.878
	Magnetic Flux Density [mGauss]			
	Winter Short Term *Worst Case*	89.471	351.4	107.802
Proposed Generator Interconnection - GC STR.2	Electric Field [kV / m]	0.136	6.2	0.136
	Magnetic Flux Density [mGauss]			
	*All cases equal	14.358	61.9	14.358

Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)

Electric Field

The maximum calculated electric field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)** is 2.8 kV/m located 66 ft from the ROW centerline. The study reveals that the calculated electric field levels at the edge of the existing ROW, located 175 ft from the ROW centerline, is 1.461 kV/m and is less than the 1.6 kV/m maximum electric field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line per the NYS Opinion No. 78-13.

Summer Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)** transmission line is 246.7 mG located 50 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 82.144 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Summer Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)** transmission line is 320.9 mG located 50 ft from the ROW centerline. The study reveals that the calculated magnetic field

level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 105.944 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)** transmission line is 301.1 mG located 50 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 100.171 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Existing Marcy-New Scotland #18 (Horizontal Frame)** transmission line is 362.1 mG located 50 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 119.687 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole

Electric Field

The maximum calculated electric field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** is 8.0 kV/m located 8 ft from the ROW centerline. The study reveals that the calculated electric field levels at the edge of the existing ROW, located 175 ft from the ROW centerline, is 1.464 kV/m and is less than the 1.6 kV/m maximum electric field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line per the NYS Opinion No. 78-13.

Summer Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** transmission line is 694.59 mG located 20 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 131.305 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Summer Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** transmission line is 932.99 mG located 20 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the

edge of the existing ROW, located 175 ft from the ROW centerline, is 177.06 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** transmission line is 850.08 mG located 20 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 160.756 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** transmission line is 1046.93 mG located 20 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 198.558 mG, which does exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out

Electric Field

The maximum calculated electric field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out** is 4.7 kV/m located 60 ft from the ROW centerline. The study reveals that the calculated electric field levels at the edge of the existing ROW, located 175 ft from the ROW centerline, is 1.567 kV/m and is less than the 1.6 kV/m maximum electric field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line per the NYS Opinion No. 78-13.

Summer Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out** transmission line is 306.1 mG located 60 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 106.679 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Summer Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out** transmission line is 411.2 mG located 60 ft from the ROW centerline. The study reveals that the calculated magnetic field

level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 139.011 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out** transmission line is 374.6 mG located 60 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 130.209 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 Loop-in Loop-out** transmission line is 461.4 mG located 60 ft from the ROW centerline. The study reveals that the calculated magnetic field level at the edge of the existing ROW, located 175 ft from the ROW centerline, is 156.772 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Proposed Loop-in Loop-out

Electric Field

The maximum calculated electric field level on the **Proposed Loop-in and Loop-out** transmission connection is 3.3 kV/m located 54 ft from the ROW centerline. The study reveals that the calculated electric field levels at the edge of the proposed ROW, located 125 ft from the ROW centerline, is 0.878 kV/m and is less than the 1.6 kV/m maximum electric field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line per the NYS Opinion No. 78-13.

Summer Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Proposed Loop-in and Loop-out** transmission connection for the 345kV line is 232.8 mG located 45 ft from the centerline of the proposed ROW. The study reveals that the calculated magnetic field level at the edge of the proposed ROW, located 125 ft from the ROW centerline, is 71.411 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Summer Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Proposed Loop-in and Loop-out** transmission connection for the 345kV line is 313.3 mG located 45 ft from the centerline of the proposed ROW. The study reveals that the calculated magnetic field level at the edge of the

proposed ROW, located 125 ft from the ROW centerline, is 96.098 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Normal Results

Magnetic Field

The maximum calculated magnetic field level on the **Proposed Loop-in and Loop-out** transmission connection for the 345kV line is 285.0 mG located 45 ft from the centerline of the proposed ROW. The study reveals that the calculated magnetic field level at the edge of the proposed ROW, located 125 ft from the ROW centerline, is 87.412 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Winter Short Term Results

Magnetic Field

The maximum calculated magnetic field level on the **Proposed Loop-in and Loop-out** transmission connection for the 345kV line is 351.4 mG located 45 ft from the centerline of the proposed ROW. The study reveals that the calculated magnetic field level at the edge of the proposed ROW, located 125 ft from the ROW centerline, is 107.802 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

Proposed Generator Interconnection –GC STR.2

Electric Field

The maximum calculated electric field level on the **Proposed GC STR.2 Generator Interconnection** transmission connection is 6.2 kV/m located at the ROW centerline. The study reveals that the calculated electric field levels at the edge of the proposed ROW, located 75 ft from the centerline, is 0.136 kV/m and is less than the 1.6 kV/m maximum electric field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line per the NYS Opinion No. 78-13.

Peak Facility Rating Results

Magnetic Field

The maximum calculated magnetic field level on the **Proposed GC STR.2 Generator Interconnection** transmission connection is 61.9 mG located at the centerline of the proposed ROW. The study reveals that the calculated magnetic field level at the edge of the proposed ROW, located 75 ft from the ROW centerline, is 14.358 mG, which does not exceed the 200 mG maximum field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYS PSC Interim Guideline.

6.0 Conclusion

Electric Field

The maximum calculated electric field level for the proposed line configurations is 8.0 kV/m located 8 ft from the ROW centerline for the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** configuration. The maximum calculated electric field level at the edge of the ROW is 1.464kV/m for the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** configuration. The study reveals that the calculated electric field levels at the edge of the right-of-way, **are less than** the 1.6 kV/m maximum electric field level permitted at the edge of a transmission right-of-way in New York occupied by a major transmission line per the New York State Public Service Commission (NYS PSC Opinion No. 78-13 (issued June 19, 1978)).

Magnetic Field

The maximum calculated magnetic field level for the proposed line configurations is 1046.93 mG (winter short term results) located 20 ft from the ROW centerline for the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** configuration. The maximum calculated magnetic field level at the edge of the ROW is 198.558 mG of the **Existing EDIC-Scotland #14 (Horizontal Frame) and Proposed Marcy-New Scotland #18 3-pole** configuration. The study reveals that the calculated magnetic field level at the edge of the right-of-way **is below** the 200 mG maximum field level permitted at the edge of a transmission right-of-way in New York occupied by a major transmission line as per the NYS PSC Interim Policy Statement on Magnetic Fields, issued September 11, 1990.

7.0 Appendix

- Electric Magnetic Field Inputs
- Magnetic Flux Density Inputs
- EDIC – New Scotland #14 (Existing) - Plan and Profile
- Transmission Interconnection - Plan & Profile
- Generator Interconnection - Plan & Profile

EMF Inputs

Calculation Identifier:

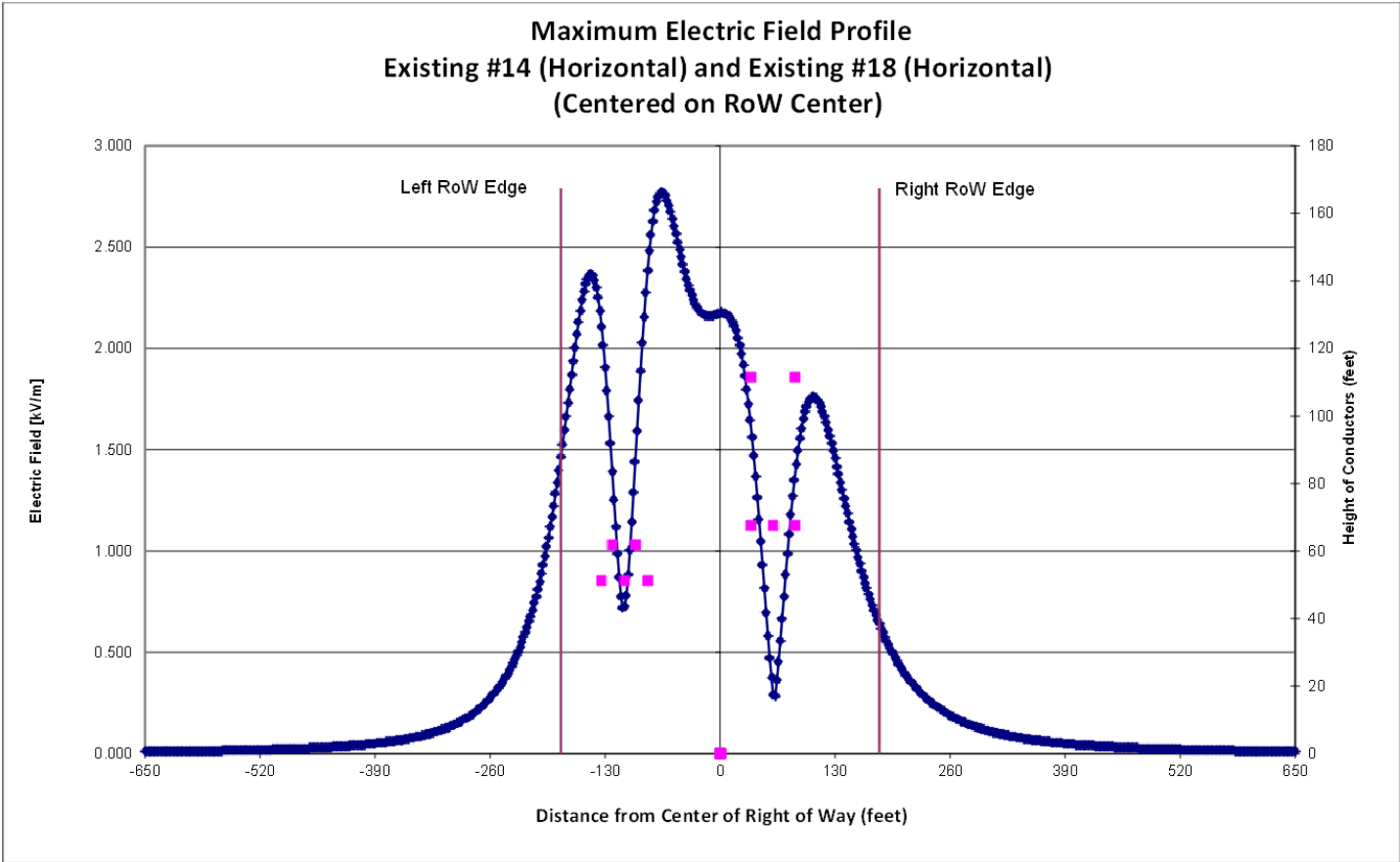
Existing #14 and Existing #18

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Name
1	35.00	67.60	4	1.3860	18.000	345	Existing #18 Line
2	60.00	67.60	4	1.3860	18.000	345	
3	85.00	67.60	4	1.3860	18.000	345	
4	35.00	111.60	1	0.4375	0.000	0	SW
5	85.00	111.60	1	0.4375	0.000	0	SW
6	-82.00	51.06	2	1.1070	18.000	345	Existing #14 Line
7	-108.00	51.06	2	1.1070	18.000	345	
8	-134.00	51.06	2	1.1070	18.000	345	
9	-121.00	61.90	1	0.4375	0.000	0	SW
10	-95.00	61.90	1	0.4375	0.000	0	SW

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
795 kcmil 26/7 ASCR	Drake	2 - 18 in	7/16" - 7 EHS Steel

Electric Field [kV/m]	
at Left RoW Edge	1.461
at Right RoW Edge	0.638
Max E Field Value	2.8

Right of Way Data	
Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00



EMF Inputs

Calculation Identifier:

Existing #14 and Proposed #18 (3-pole)

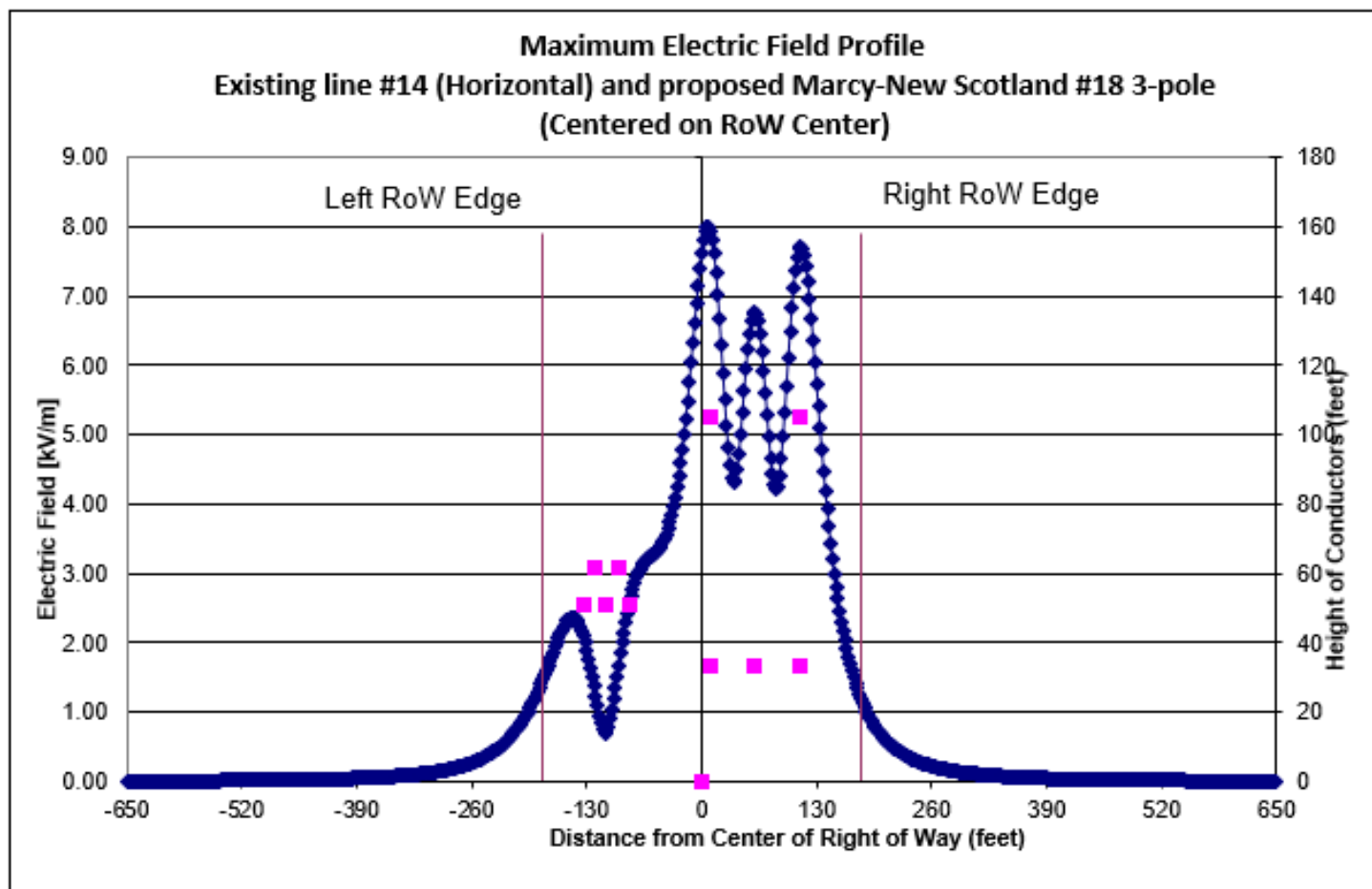
Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Phase [degrees]	Line Name
1	10.00	33.17	4	1.3860	18.000	345	120	Proposed #18 [3-pole] (Conductor)
2	60.00	33.17	4	1.3860	18.000	345	240	
3	110.00	33.17	4	1.3860	18.000	345	0	
4	10.00	105.42	1	0.4375	0.000	0	0	Proposed #18 [3-pole] (Shield)
5	110.00	105.42	1	0.4375	0.000	0	0	
6	-82.00	51.06	2	1.1070	18.000	345	120	Existing #14 (Conductor)
7	-108.00	51.06	2	1.1070	18.000	345	240	
8	-134.00	51.06	2	1.1070	18.000	345	0	
9	-121.00	61.90	1	0.4375	0.000	0	0	Existing #14(Shield)
10	-95.00	61.90	1	0.4375	0.000	0	0	

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5 kcmil 45/7 ACSR	Dipper	4 - 18in	3/8" - 7 EHS Steel
795 kcmil 26/7 ACSS	Drake	2 - 18 in	7/16" - 7 EHS Steel

Electric Field [kV / m]	
at Left RoW Edge	1.464
at Right RoW Edge	1.199
Max E Field Value	8.0

Right of Way Data

Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00



EMF Inputs

Calculation Identifier:

Existing #14 and Proposed Loop

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Name
1	60.00	46.00	4	1.3860	18.000	345	Proposed #18 (Loop)
2	60.00	91.00	4	1.3860	18.000	345	
3	60.00	136.00	4	1.3860	18.000	345	
4	51.13	180.00	1	0.4375	0.000	0	SW
5	68.88	180.00	1	0.4375	0.000	0	SW
6	-82.00	51.06	2	1.1070	18.000	345	Existing #14 Line
7	-108.00	51.06	2	1.1070	18.000	345	
8	-134.00	51.06	2	1.1070	18.000	345	
9	-95.00	61.90	1	0.4375	0.000	0	SW
10	-121.00	61.90	1	0.4375	0.000	0	SW

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
795 kcmil 26/7 ACSR	Drake	2 - 18 in	7/16" - 7 EHS Steel

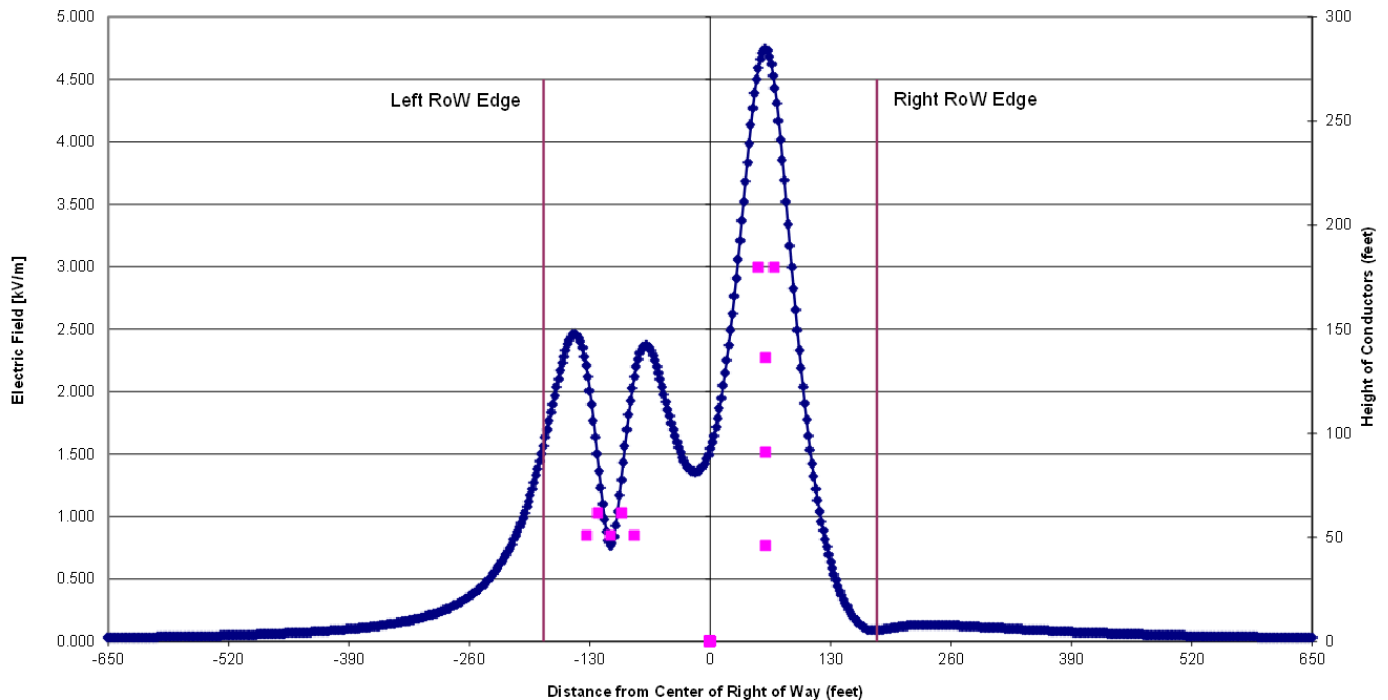
Electric Field [kV/m]

at Left RoW Edge	1.567
at Right RoW Edge	0.087
Max E Field Value	4.7

Right of Way Data

Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00

Maximum Electric Field Profile
Existing line #14 (Horizontal) and Proposed Loop
(Centered on RoW Center)



EMF Inputs

Calculation Identifier:

Proposed Loop-in and Loop-out

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Name
1	-39.00	58.09	4	1.3860	18.000	345	Proposed Loop-in
2	-50.00	80.59	4	1.3860	18.000	345	
3	-61.00	103.09	4	1.3860	18.000	345	
4	-69.44	132.59	1	0.4375	0.000	0	SW
5	-30.56	132.59	1	0.4375	0.000	0	SW
6	61.00	105.00	4	1.3860	18.000	345	Proposed Loop-out
7	50.00	73.00	4	1.3860	18.000	345	
8	39.00	95.50	4	1.3860	18.000	345	
9	69.44	125.00	1	0.4375	0.000	0	SW
10	30.56	125.00	1	0.4375	0.000	0	SW

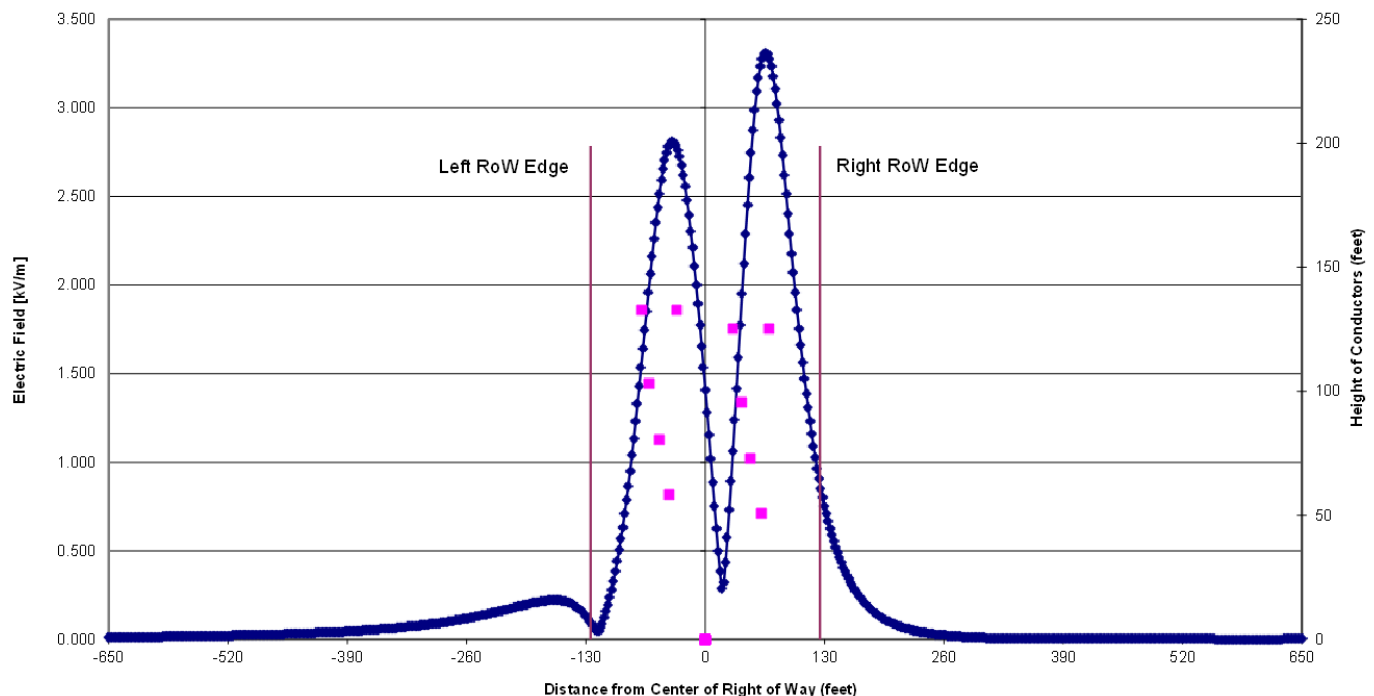
Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel

Electric Field [kV/m]	
at Left RoW Edge	0.097
at Right RoW Edge	0.878
Max E Field Value	3.3

Right of Way Data

Offset from X=0 to Left RoW edge	-125.00
Offset from X=0 to RoW center	0.00

Maximum Electric Field Profile Proposed Loop-in and Loop-out



EMF Inputs

Calculation Identifier: Proposed Generator Interconnection - GC STR.2

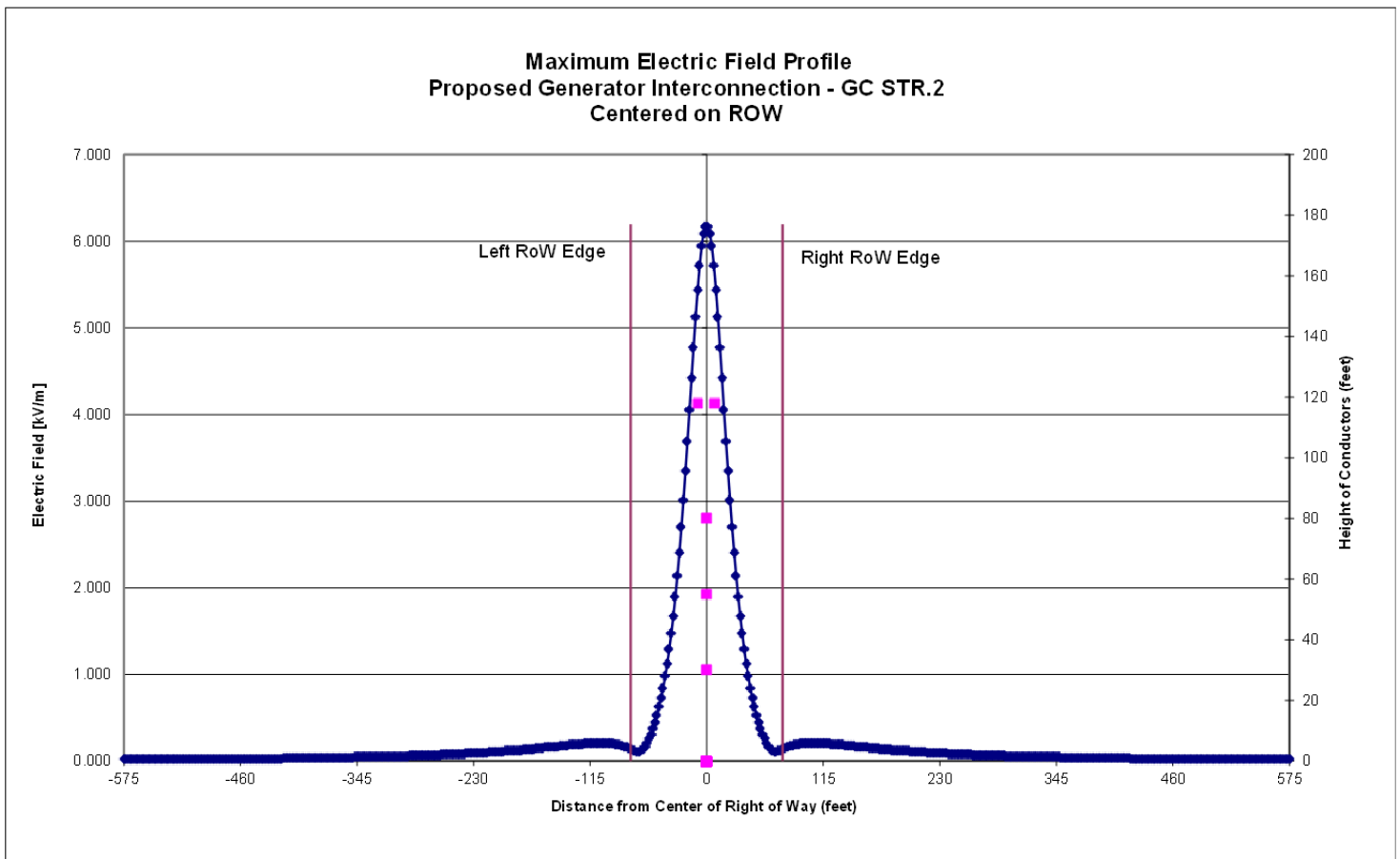
Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Name
1	0.00	30.00	2	1.3860	18.000	345	GC STR
2	0.00	55.00	2	1.3860	18.000	345	
3	0.00	80.00	2	1.3860	18.000	345	
4	-8.50	118.05	1	0.4375	0.000	0	SW
5	8.50	118.05	1	0.4375	0.000	0	SW

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	2 - 18in	7/16" - 7 EHS Steel

Electric Field [kV/m]	
at Left RoW Edge	0.136
at Right RoW Edge	0.136
Max E Field Value	6.2

Right of Way Data

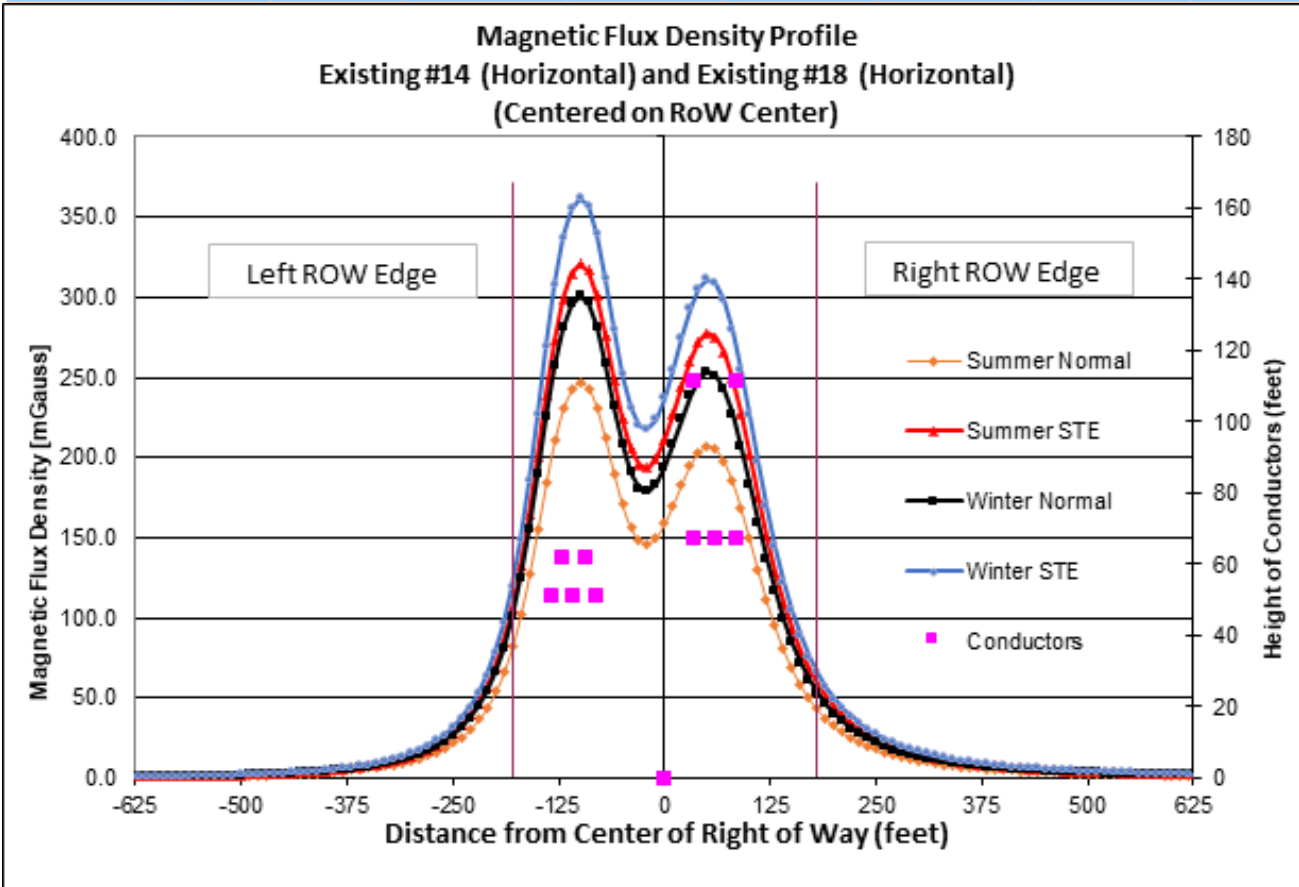
Offset from X=0 to Left RoW edge	-75.00
Offset from X=0 to RoW center	0.00



Magnetic Flux Density

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
795 kcmil 26/7 ACSR	Drake	2 - 18 in	7/16" - 7 EHS Steel

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Ratings (Amps)				Line Name
							Summer Normal	Summer Short Term Emergency	Winter Normal	Winter Short Term Emergency	
1	35.00	67.60	4	1.3860	18.000	345	3124	4204	3824	4716	Existing #18 Line
2	60.00	67.60	4	1.3860	18.000	345					
3	85.00	67.60	4	1.3860	18.000	345					
4	35.00	111.60	1	0.4375	0.000	0	0	0	0	0	SW
5	85.00	111.60	1	0.4375	0.000	0					SW
6	-82.00	51.06	2	1.1070	18.000	345	2228	2886	2718	3258	Existing #14 Line
7	-108.00	51.06	2	1.1070	18.000	345					
8	-134.00	51.06	2	1.1070	18.000	345					
9	-121.00	61.90	1	0.4375	0.000	0	0	0	0	0	SW
10	-95.00	61.90	1	0.4375	0.000	0					SW



Existing #14 and Existing #18

Right of Way Data

Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00

Loading Cases	Magnetic Field (mG)	
	Max ROW Edge	Max.
Summer Normal	82.144 (South)	246.7
Summer Short Term Emergency	105.944 (South)	320.9
Winter Normal	100.171 (South)	301.1
Winter Short Term Emergency	119.687 (South)	362.1

Magnetic Flux Density

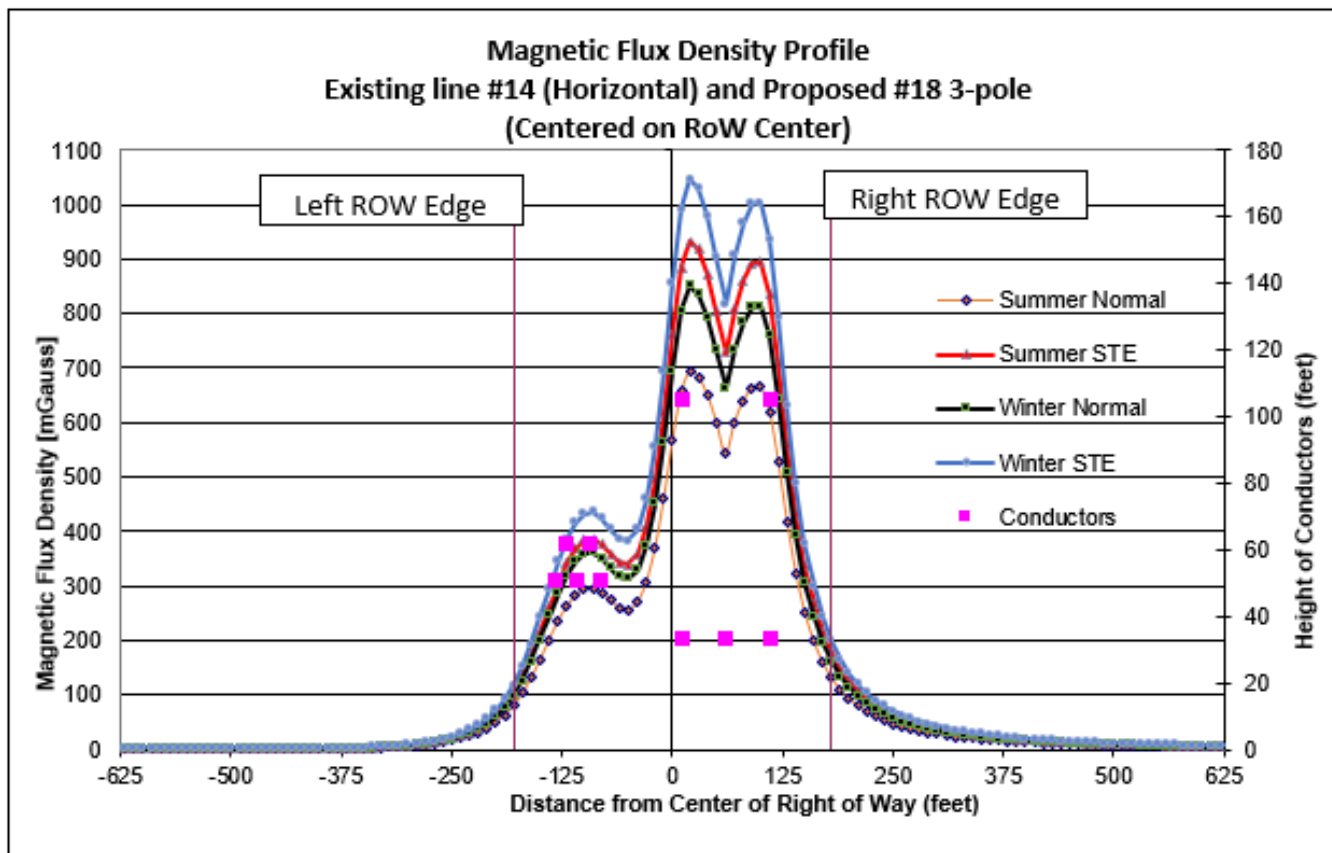
Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
795 kcmil 26/7 ACSR	Drake	2 - 18 in	7/16" - 7 EHS Steel

Existing #14 and Proposed #18 (3-pole)

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Ratings (Amps)				Line Name
							Summer Normal	Summer Short Term Emergency	Winter Normal	Winter Short Term Emergency	
1	10.00	33.17	4	1.3860	18.000	345	3124	4204	3824	4716	Proposed #18 [3-pole] (Conductor)
2	60.00	33.17	4	1.3860	18.000	345					
3	110.00	33.17	4	1.3860	18.000	345					
4	10.00	105.42	1	0.4375	0.000	0	0	0	0	0	Proposed #18 [3-pole] (Shield)
5	110.00	105.42	1	0.4375	0.000	0					
6	-82.00	51.06	2	1.1070	18.000	345					
7	-108.00	51.06	2	1.1070	18.000	345	2228	2886	2718	3258	Existing #14 (Conductor)
8	-134.00	51.06	2	1.1070	18.000	345					
9	-121.00	61.90	1	0.4375	0.000	0					
10	-95.00	61.90	1	0.4375	0.000	0	0	0	0	0	Existing #14(Shield)

Right of Way Data

Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00



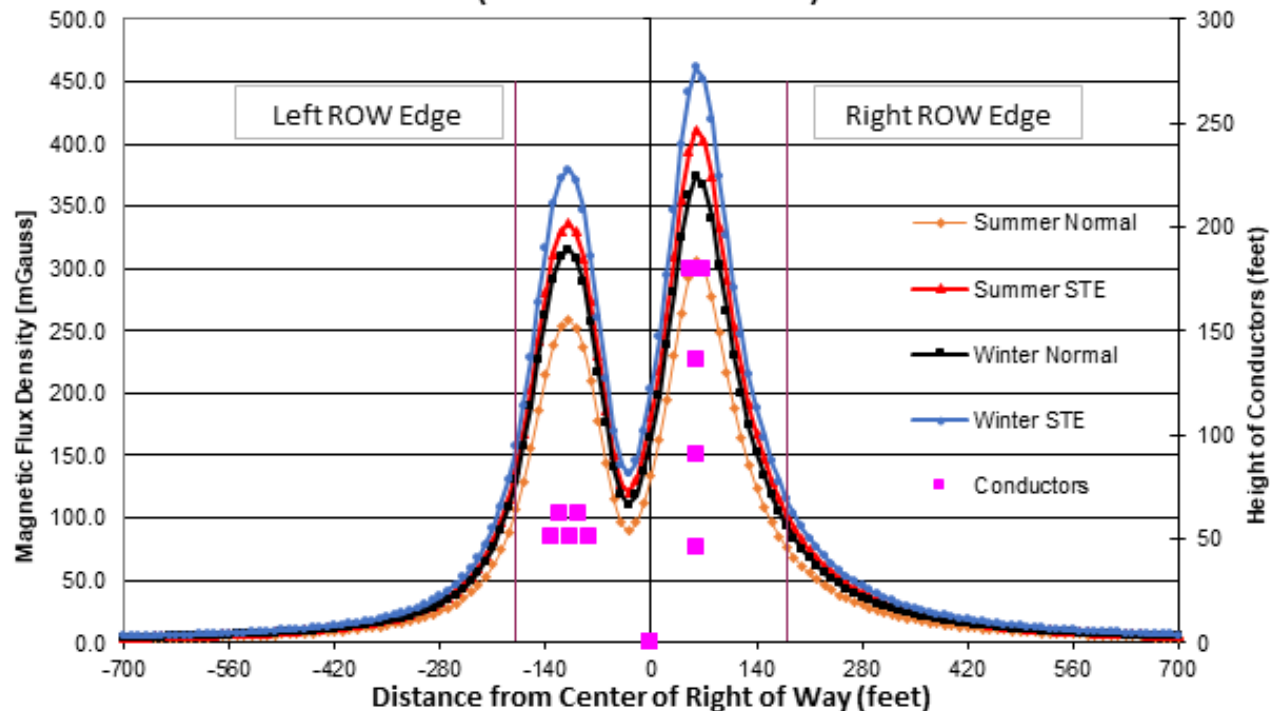
Loading Cases	Magnetic Field (mG)	
	Max ROW Edge	Max.
Summer Normal	131.305 (North)	694.59
Summer Short Term Emergency	177.06 (North)	932.99
Winter Normal	160.756 (North)	850.08
Winter Short Term Emergency	198.558 (North)	1046.93

Magnetic Flux Density

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
795 kcmil 26/7 ACSR	Drake	2 - 18 in	7/16" - 7 EHS Steel

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Ratings (Amps)				Line Name
							Summer Normal	Summer Short Term Emergency	Winter Normal	Winter Short Term Emergency	
1	60.00	46.00	4	1.3860	18.000	345	3124	4204	3824	4716	Proposed #18 (Loop)
2	60.00	91.00	4	1.3860	18.000	345					
3	60.00	136.00	4	1.3860	18.000	345					
4	51.13	180.00	1	0.4375	0.000	0	0	0	0	0	SW
5	68.88	180.00	1	0.4375	0.000	0					SW
6	-82.00	51.06	2	1.1070	18.000	345	2228	2886	2718	3258	Existing #14 Line
7	-108.00	51.06	2	1.1070	18.000	345					
8	-134.00	51.06	2	1.1070	18.000	345					
9	-95.00	61.90	1	0.4375	0.000	0	0	0	0	0	SW
10	-121.00	61.90	1	0.4375	0.000	0					SW

Magnetic Flux Density Profile
Existing line #14 (Horizontal) and Proposed Loop
(Centered on RoW Center)



Right of Way Data

Offset from X=0 to Left RoW edge	-180.00
Offset from X=0 to RoW center	0.00

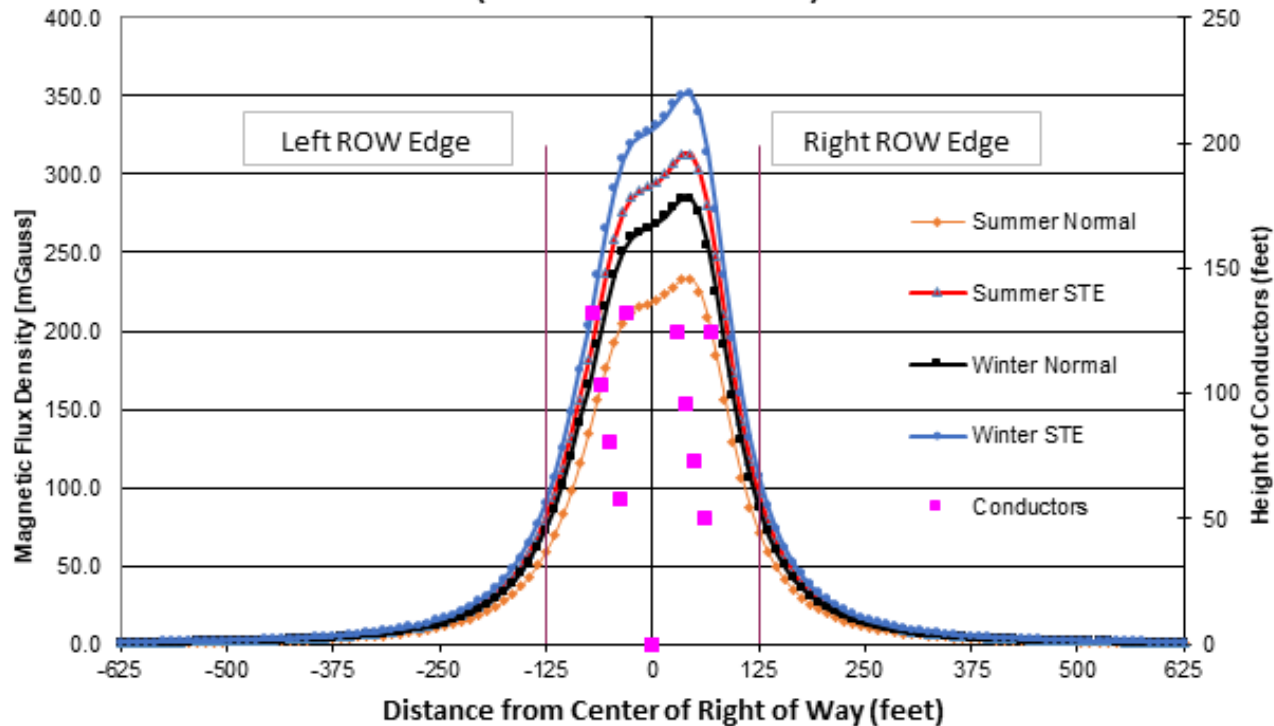
Loading Cases	Magnetic Field (mG)	
	Max ROW Edge	Max.
Summer Normal	106.679 (South)	306.1
Summer Short Term Emergency	139.011 (South)	411.2
Winter Normal	130.209 (South)	374.6
Winter Short Term Emergency	156.772 (South)	461.4

Magnetic Flux Density

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel
1351.5kcmil 45/7 ACSR	Dipper	4 - 18in	7/16" - 7 EHS Steel

Bundle	X-feet	Y-feet	Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Line Ratings (Amps)				Line Name
							Summer Normal	Summer Short Term Emergency	Winter Normal	Winter Short Term Emergency	
1	-39.00	58.09	4	1.3860	18.000	345	3124	4204	3824	4716	Proposed Loop-in
2	-50.00	80.59	4	1.3860	18.000	345					
3	-61.00	103.09	4	1.3860	18.000	345					
4	-69.44	132.59	1	0.4375	0.000	0	0	0	0	0	SW
5	-30.56	132.59	1	0.4375	0.000	0					SW
6	61.00	50.5	4	1.3860	18.000	345					Proposed Loop-out
7	50.00	73	4	1.3860	18.000	345	3124	4204	3824	4716	
8	39.00	95.5	4	1.3860	18.000	345					
9	69.44	125	1	0.4375	0.000	0					SW
10	30.56	125	1	0.4375	0.000	0	0	0	0	0	SW

**Magnetic Flux Density Profile
Proposed Loop-in and Loop-out
(Centered on RoW Center)**



Proposed Loop-in and Loop-out

Right of Way Data

Offset from X=0 to Left RoW edge	-125.00
Offset from X=0 to RoW center	0.00

Loading Cases	Magnetic Field (mG)	
	Max ROW Edge	Max.
Summer Normal	71.411 (East)	232.8
Summer Short Term Emergency	96.098 (East)	313.3
Winter Normal	87.412 (East)	285
Winter Short Term Emergency	107.802 (East)	351.4

Magnetic Flux Density

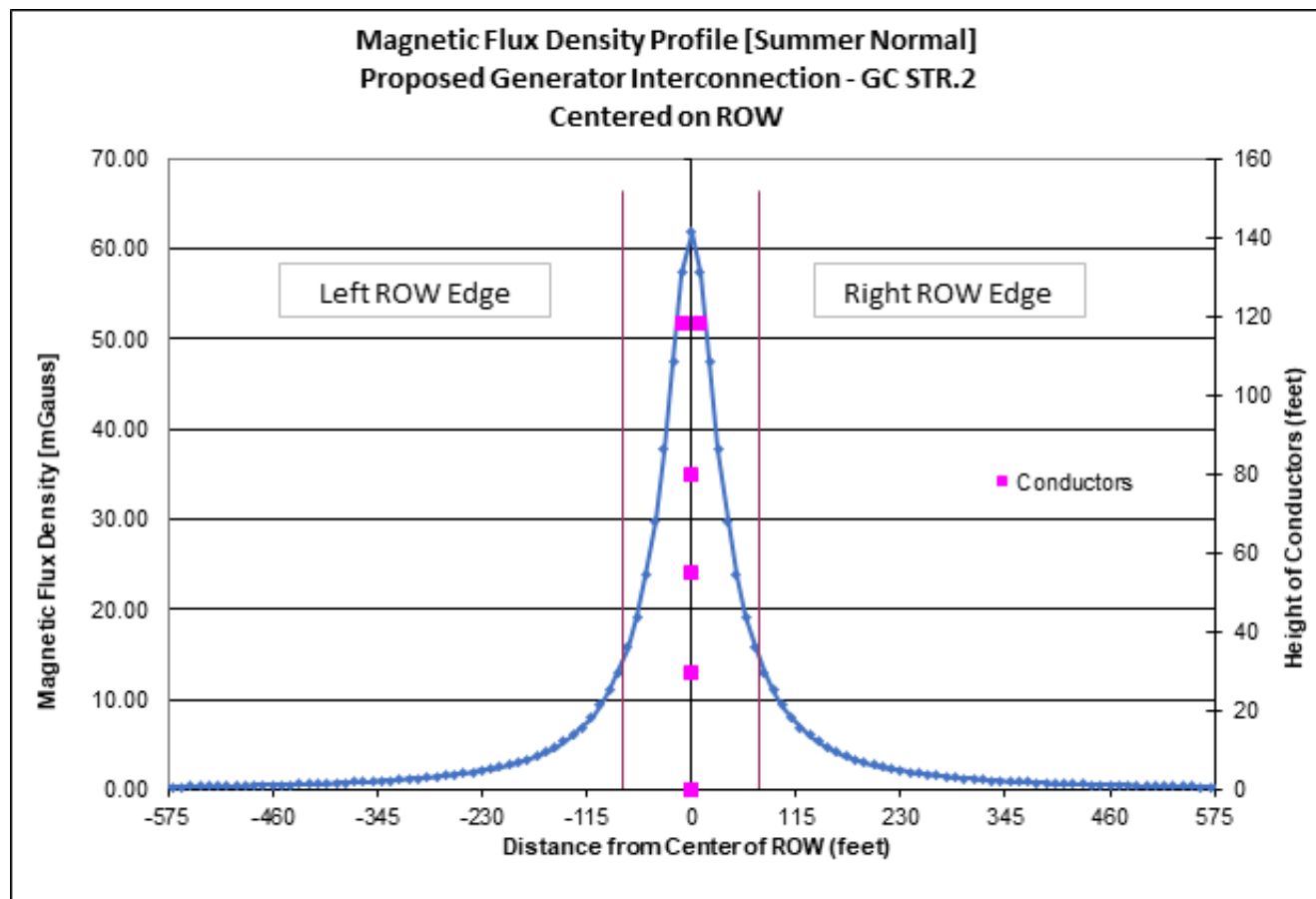
Proposed Generator Interconnection - GC STR.2

Conductor	Codename	QTY Subconductors - Spacing (in)	SW
1351.5kcmil 45/7 ACSR	Dipper	2 - 18in	7/16" - 7 EHS Steel

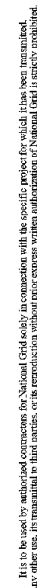
Bundle	X-feet	Y-feet	Conductor Number of Conductors	Conductor Diameter [inches]	Conductor Spacing [inches]	L-L Voltage (rated kV)	Peak Facility Rating (Amps)	Line Name
1	0.00	30.00	2	1.3860	18.000	345	430	GC STR
2	0.00	55.00	2	1.3860	18.000	345		
3	0.00	80.00	2	1.3860	18.000	345		
4	-8.50	118.05	1	0.4375	0.000	0	0	SW
5	8.50	118.05	1	0.4375	0.000	0		SW

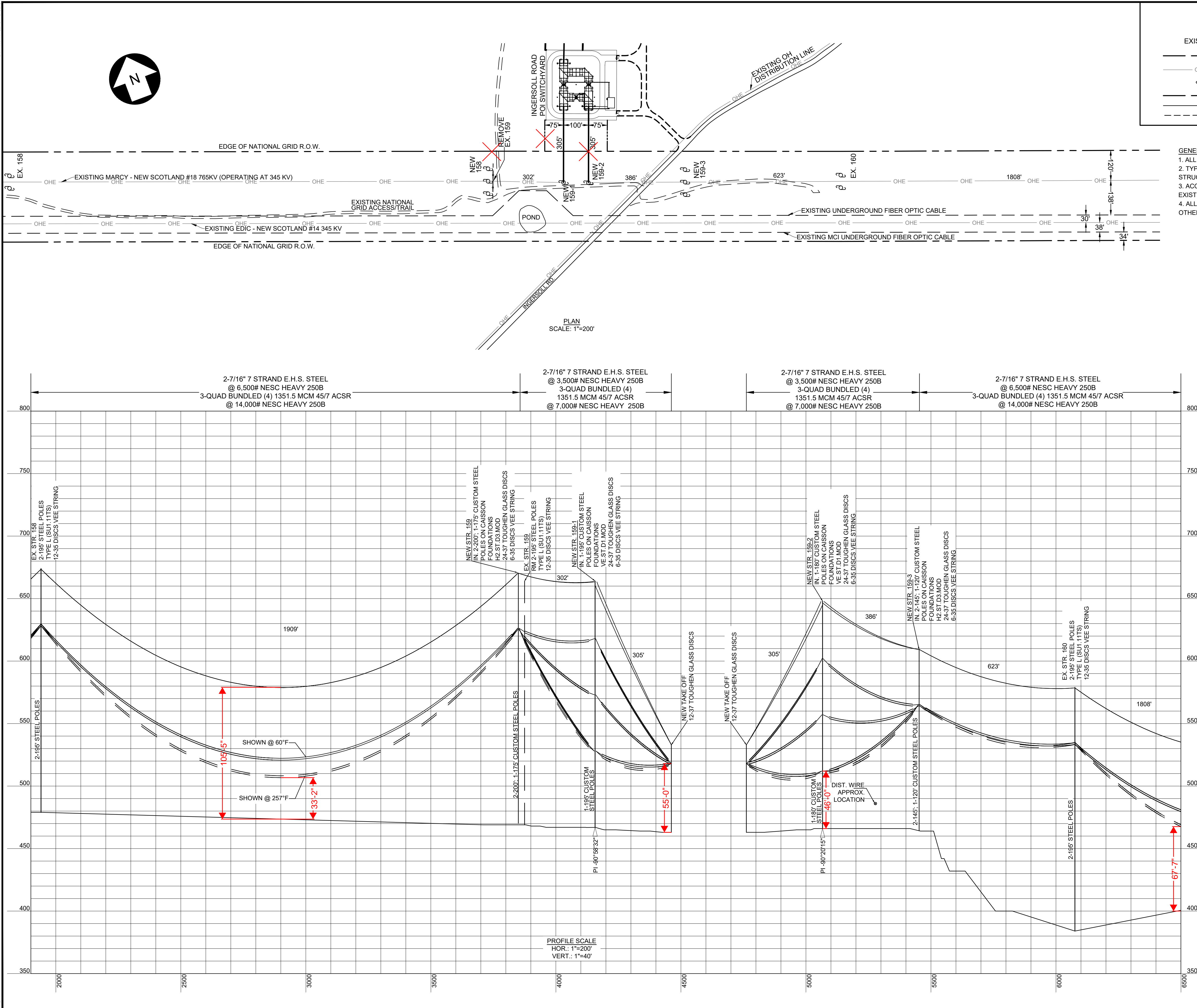
Right of Way Data

Offset from X=0 to Left RoW edge	-75.00
Offset from X=0 to RoW center	0.00



Loading Cases	Magnetic Field (mG)	
	Max ROW Edge	Max.
Peak Facility Rating	14.358 (Equal on both sides)	61.9





EXISTING **LEGEND** **PROPOSED**

— — — — — PROPERTY BOUNDARY

— OHE — OVERHEAD ELECTRIC

⊕ UTILITY POLE

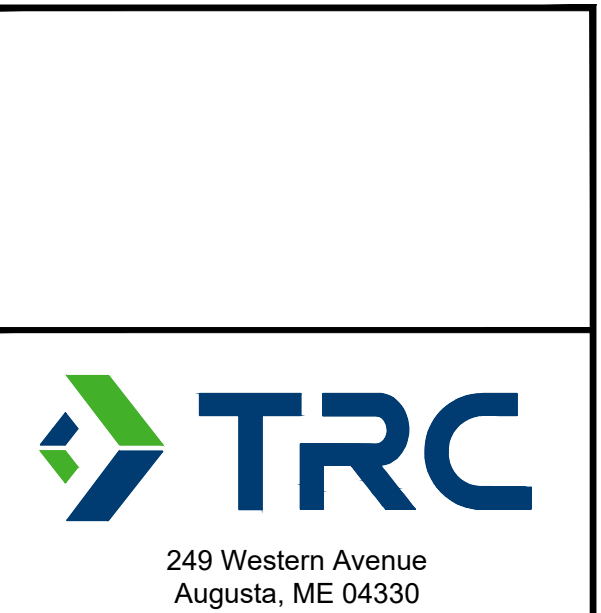
— — — — — RIGHT OF WAY

===== PAVED ROAD

- - - - - UNDERGROUND FIBER

GENERAL NOTES:

1. ALL CONDUCTORS AND SHIELDWIRES TO BE NON-SPECULAR.
2. TYPICAL LAYDOWN AREAS TO BE 70'X100' NEAR EACH STRUCTURE INSTALLATION LOCATIONS.
3. ACCESS IN NATIONAL GRID RIGHT-OF-WAY TO UTILIZE EXISTING ACCESS ROADS.
4. ALL NEW STEEL POLES TO BE GALVANIZED STEEL UNLESS OTHERWISE REQUESTED TO BE CORTEN WEATHERED STEEL.



PE STAMP:

KEY PLAN:

[illegible]

PROJECT TITLE:

MILL POINT SOLAR
PROJECT I

PROJECT LOCATION:

TOWN OF GLEN
MONTGOMERY CO., NY

SHEET TITLE & DESCRIPTION:

TRANSMISSION
INTERCONNECTION
PLAN & PROFILE

PROJ NUM:	XXXXXXX
DES:	B. HACKLEY
DWN:	B. HACKLEY
CHK:	K. DRZEWIEC
APV:	A. JAEGER
DATE:	5/23/2024
SCALE AT 22" x 34":	

AS SHOWN

SHEET NO:
MPS-T-102-01

REV:

2

