



Electric Magnetic Field (EMF) Study

September 2019

East Point Energy Center

Prepared For:

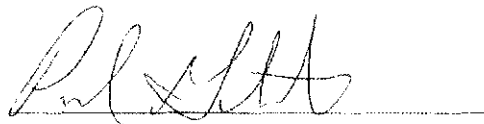
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9/23/19

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APPENDICES

Appendix A: Software Output

1.0 Introduction

On behalf of East Point Energy Center, LLC (East Point Energy Center or the Applicant), TRC has performed an engineering assessment of the Electric and Magnetic Fields (EMF) associated with the East Point Energy Center (the Project). This study was performed on the rigid bus interconnection between the Project's proposed collection substation and the adjacent point of interconnection (POI) switchyard, both located on land within the Project Area. An EMF Study was also performed on the portion of overhead line to be installed from the POI switchyard to the existing Sharon – Marshville #16 69 kV transmission line. No EMF calculations were performed on the 34.5kV collection system.

The proposed interconnection consists of a rigid bus that will connect the proposed East Point collector station to the new POI Switchyard that will be owned by National Grid in the Town of Sharon, NY. Due to the proximity of the collector station to the proposed utility substation, rigid bus is proposed for the interconnection between the two facilities.

From the utility substation two overhead lines will run approximately 150 ft South to connect to the existing National Grid Marshville – Sharon #16 69kV overhead transmission line. These lines will consist of 795 kcmil 36/1 “Coot” Aluminum Conductor Steel Reinforced (ACSR) conductor.

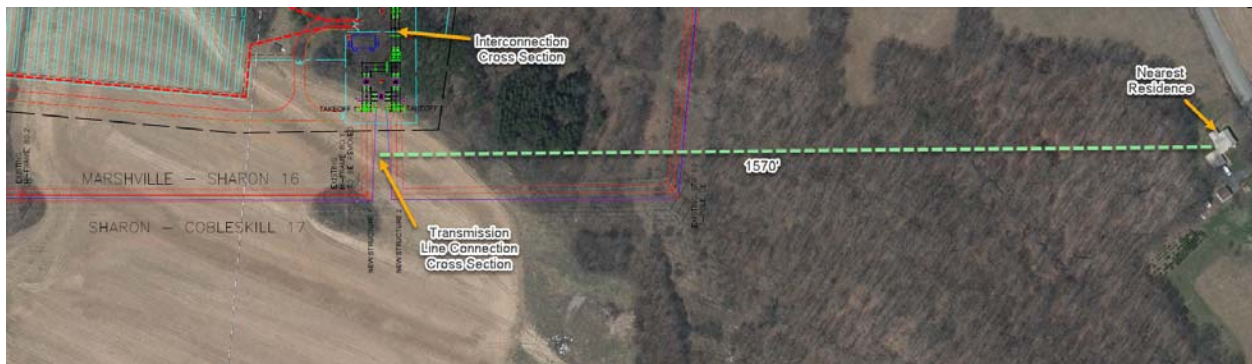


Figure 1: Interconnection Aerial Imagery

This study evaluated the future EMF levels at 60 Hertz power line frequency produced by the proposed rigid bus interconnection circuit and the overhead transmission line connections. This study summarizes the future, or post-construction, calculated EMF generated from these two locations.

The pre-construction EMF field generated in these locations is zero, as no electrical equipment currently exists at the location. The post-construction EMF levels for the rigid bus interconnection were calculated using the geometry of the interconnection and the electrical parameters which will exist when the Project is operating at peak power generation levels and the maximum average annual load estimated to occur on the interconnection. The post-construction EMF levels for the transmission connection were calculated using the geometry of the span between the POI substation and the locations of New Structure 1 and 2 as shown in Figure 1 above. National grid did not provide existing load data on the Marshville - Sharon #16 line. The line was modeled using the peak non-emergency loading based on the winter thermal rating of the 795 kcmil ACSR “Coot” wire utilized on the existing Marshville – Sharon #16 line.

The solar panels associated with the Project will generate direct current (DC) power. Multiple solar panels are interconnected and are connected via underground cables to inverters which convert the DC to alternating current (AC) power. As shown on the Preliminary Design Drawings in Appendix 11-1 of the Application, there will be inverters centrally located throughout the Project Area. Transformers associated with the inverters will step up the voltage to 34.5kV. The output of the inverters and associated transformers will be collected via two 34.5kV underground collection feeders which will connect to the proposed collector substation. The proposed collector substation facility will step up the solar facility voltage from 34.5kV to 69kV.

A review of ratings and the layout of the Project components demonstrate that there will be no significant EMF effects at the Project Area boundaries.

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 post-construction EMF levels at the typical cross-sections.

2.1 Interconnection Bus

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

- Bus outside diameter;
- Bus spacing and height above finished grade (see Figure 2 and Figure 3 below);
- Power generation levels of the facility; and,
- Voltage of the facility.



AS-BUILT POSITION
OF THIS AREA
AT 10/22/10

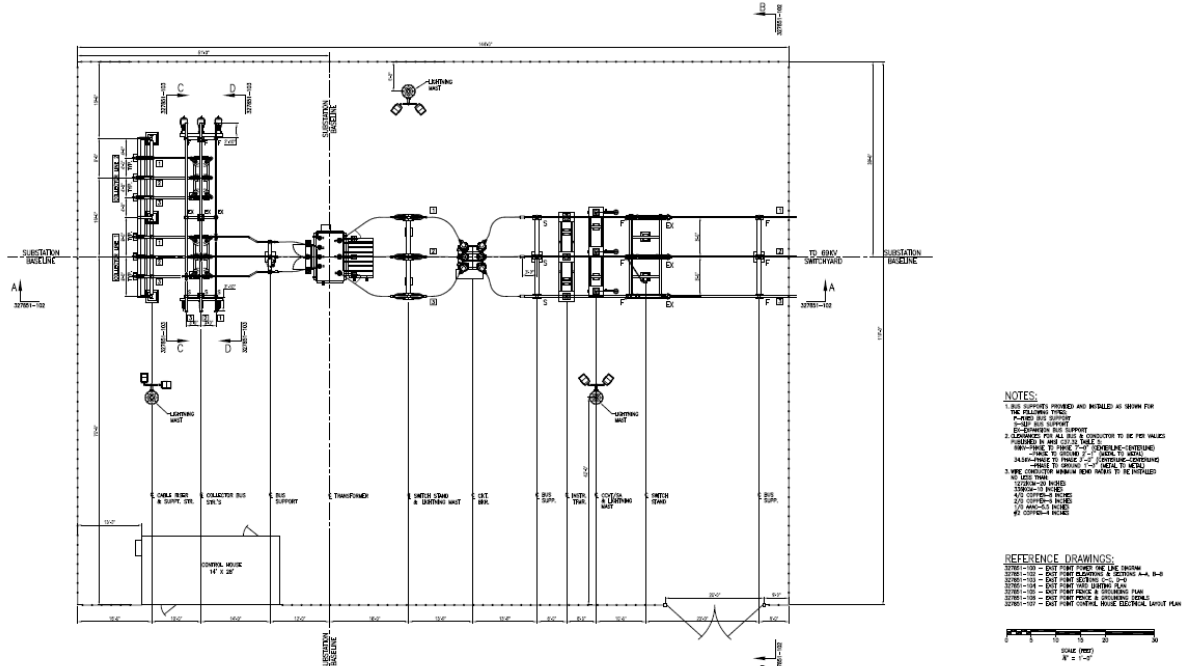


Figure 2: Interconnection Bus: Plan View

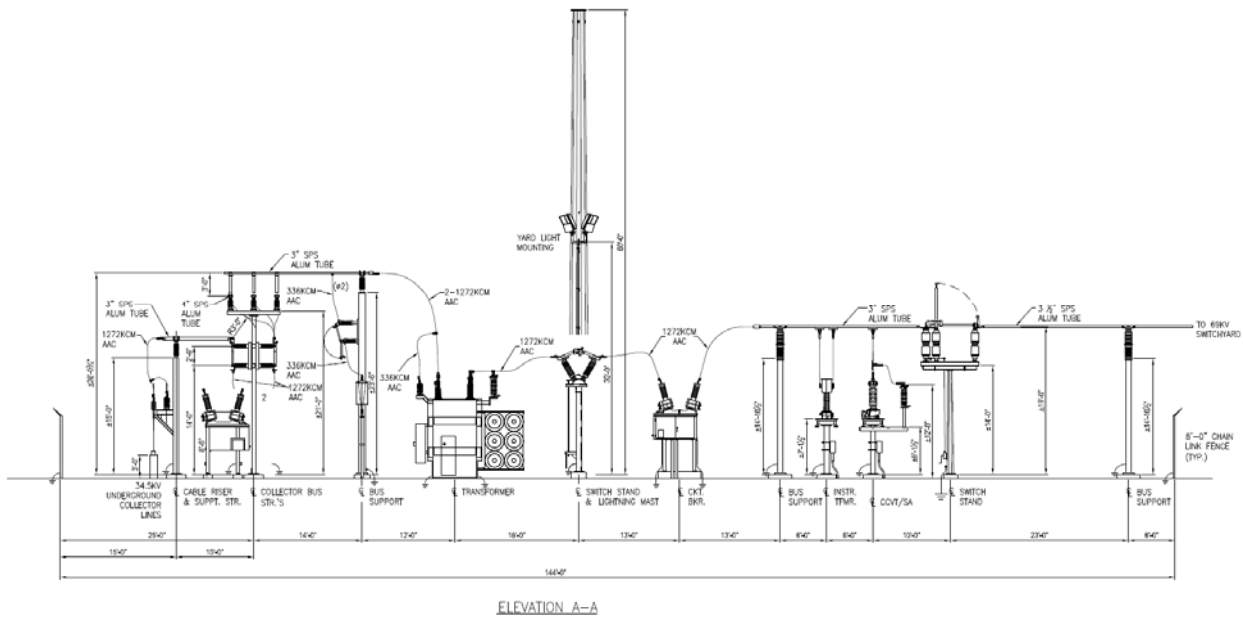


Figure 3: Interconnection Bus: Profile View

PVsyst software was utilized to model the amount of power generated from the Project. The following table shows the power level generated and the associated current that will be transferred on the rigid bus interconnection.

Table 1: Interconnection Currents:

	Energy Generated (MWh)	Average Power (MW)	Current @69kV (Amps)
Annual	112933	12.8918	107.999
Peak Level	N/A	50	418.867

2.2 Transmission Line Connections

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

- Proposed Conductor diameter
- Proposed 150' Right-of-Way for the Transmission Interconnection (75' from Centerline to Edge of ROW).
- Phase spacing of the conductors on the proposed New Structures 1 & 2 and height above finished grade at POI Substation takeoff (lowest point) See figure 3.
- Voltage of the lines.
- Winter normal ratings of 1347 Amps for the Marshville – Sharon #16 line based on the existing Coot conductor.

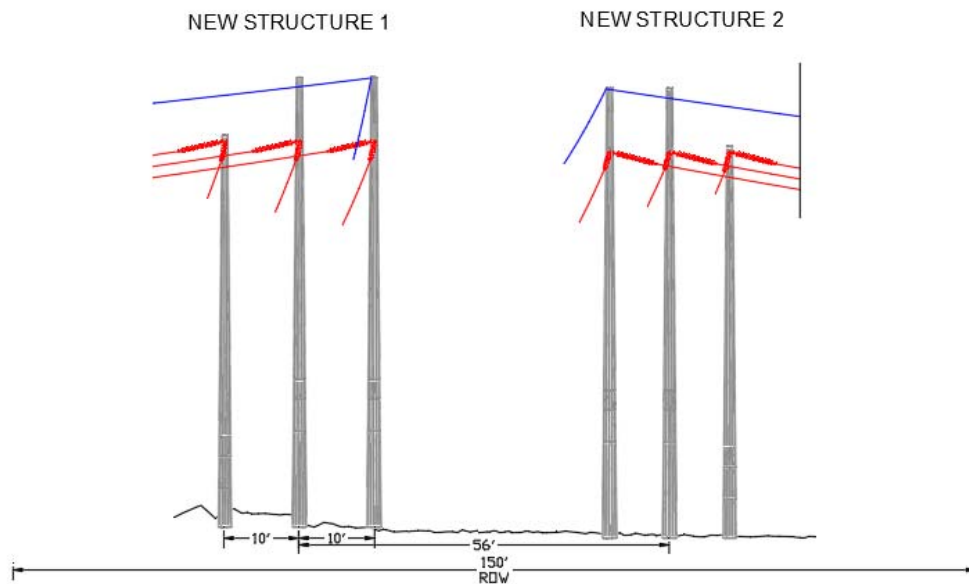


Figure 4: Transmission Connection Cross Section

3.0 Analytical Results

The following tables and figures provide the results of the calculated EMF. The software output file for utilized to generate these tables and figures are provided in Appendix A.

3.1 Interconnection Bus

Table 2: Interconnection Bus Electric Field Strength

Electric Field Levels Calculated using <i>BP Corona Ver. 3.1</i>		
Horizontal Coordinate in Feet	Description	Electric Field Level in (kV/m) One Meter (or 3.28 feet) Above Grade
(1) 69kV Rigid Bus Interconnection, 3-Phases per Circuit Max allowable operating voltage of 72.45 kV (41.9 kV L-G) 3.5" OD Aluminum Bus, Flat Configuration, 8' Phase spacing, 23 ft above grade		
0	Directly Above Centerline	0.362
5	Distance from Centerline	0.618
10	Distance from Centerline	0.901
15	Distance from Centerline	0.984
20	Distance from Centerline	0.901
50	Distance from Centerline	0.222
100 (97.5)	Distance from Centerline (East side Property line)	0.037
200	Distance from Centerline	0.006
300	Distance from Centerline	0.002
400	Distance from Centerline	0.001
500	Distance from Centerline	0.001

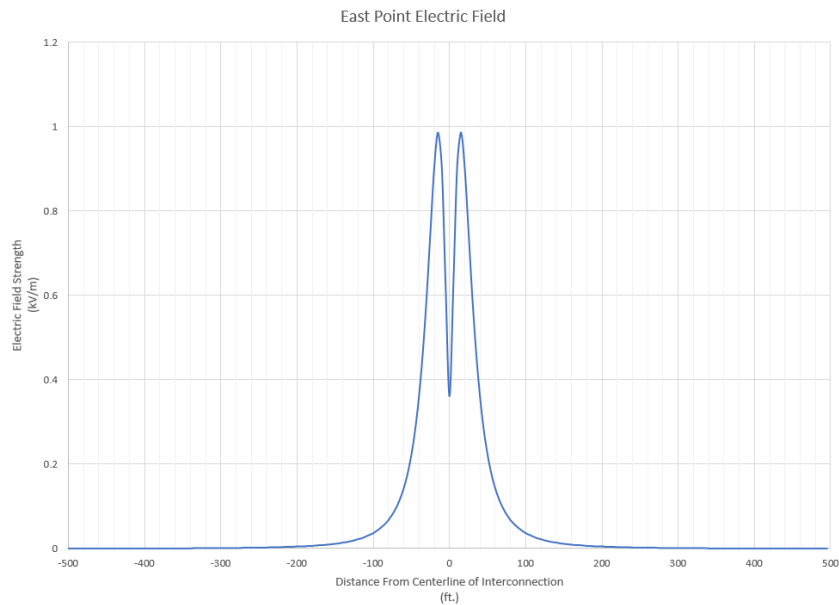


Figure 5: Interconnection Bus Electric Field Strength

Table 3: Interconnection Bus Magnetic Field Strength

Magnetic Field Levels Calculated using <i>BP Corona Ver. 3.1</i>			
Horizontal Coordinate in Feet	Description	Magnetic Field Level in Milligauss One Meter (or 3.28 feet) Above Grade	
(1) 69kV Rigid Bus Interconnection, 3-Phases per Circuit 3.5" OD Aluminum Bus, Flat Configuration, 8' Phase spacing, 23 ft above grade			
		Average Facility output rating 108 amps	Max Facility Output Rating 419 amps
0	Directly Above Centerline	21.68	84.00
5	Distance from Centerline	20.88	80.93
10	Distance from Centerline	18.64	72.3
15	Distance from Centerline	15.59	60.51
20	Distance from Centerline	12.51	48.58
50	Distance from Centerline	3.47	13.51
100	Distance from Centerline (East side Property line)	0.95	3.73
200	Distance from Centerline	0.24	0.97
300	Distance from Centerline	0.11	0.44
400	Distance from Centerline	0.06	0.25
500	Distance from Centerline	0.04	0.16

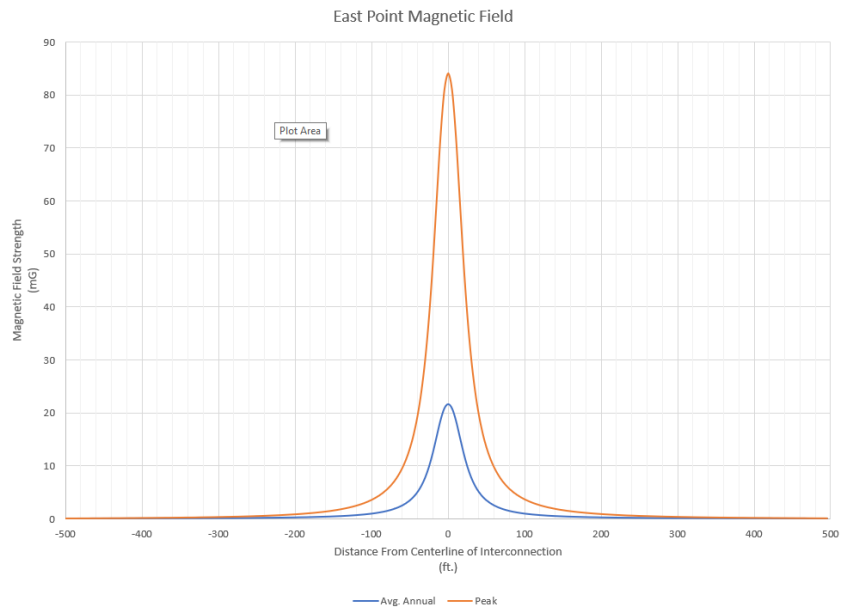


Figure 6: Interconnection Bus Magnetic Field Strength

3.2 Transmission Line Connections

Table 4: Transmission line Connection Electric Field Strength

Electric Field Levels Calculated using <i>BP Corona Ver. 3.1</i>		
Horizontal Coordinate in Feet	Description	Electric Field Level in (kV/m) One Meter (or 3.28 feet) Above Grade
(2) 69kV Transmission Line connections, 3-Phases per Circuit Max allowable operating voltage of 72.45 kV (41.9 kV L-G) Coot Conductor, Horizontal Configuration, 10' Phase spacing, 23 ft above grade		
0	Directly Above Centerline	0.929
5	Distance from Centerline	0.925
10	Distance from Centerline	0.894
15	Distance from Centerline	0.794
25	Distance from Centerline	0.343
50	Distance from Centerline	0.683
75	Distance from Centerline (Edge of ROW)	0.260
100	Distance from Centerline	0.101
200	Distance from Centerline	0.012
300	Distance from Centerline	0.004
400	Distance from Centerline	0.002
500	Distance from Centerline	0.001

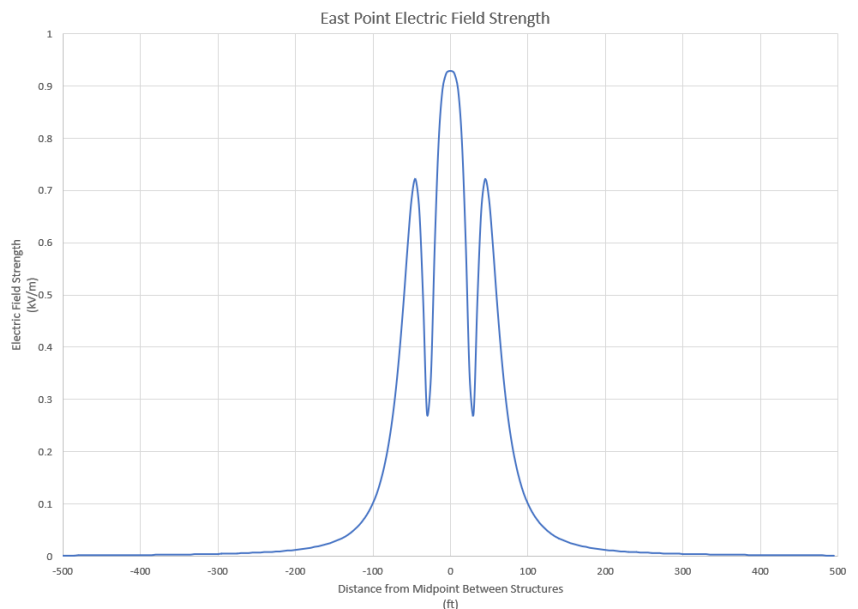


Figure 7: Transmission Line Connection Electric Field Strength

Table 5: Transmission Line Connection Magnetic Field Strength

Magnetic Field Levels Calculated using <i>BP Corona Ver. 3.1</i>		
Horizontal Coordinate in Feet	Description	Magnetic Field Level in Milligauss One Meter (or 3.28 feet) Above Grade
(2) 69kV Transmission Line connections, 3-Phases per Circuit Max allowable operating voltage of 72.45 kV (41.9 kV L-G) Coot Conductor, Horizontal Configuration, 10' Phase spacing, 23 ft above grade		
		Max Winter Normal Rating 1347 amps
0	Directly Above Centerline	238.76
5	Distance from Centerline	244.09
10	Distance from Centerline	257.91
15	Distance from Centerline	274.22
25	Distance from Centerline	285.81
50	Distance from Centerline	145.15
75	Distance from Centerline (Edge of ROW)	46.2
100	Distance from Centerline	18.78
150	Distance from Centerline	5.33
175	Distance from Centerline	3.32
200	Distance from Centerline	2.21
300	Distance from Centerline	0.65
400	Distance from Centerline	0.27
500	Distance from Centerline	0.14

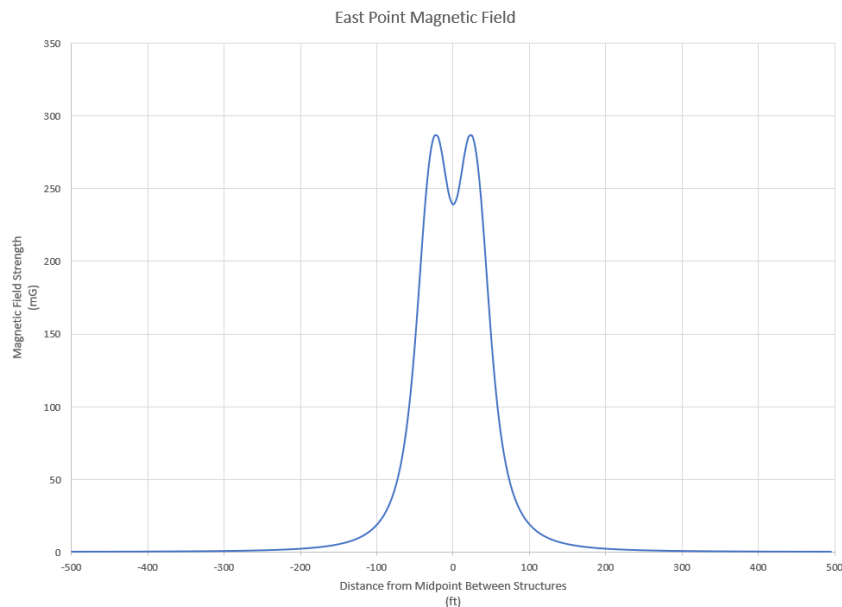


Figure 8: Transmission line Connection Magnetic Field Strength

4.0 Conclusions

The maximum calculated electric field level along the Project's collection substation and the POI switchyard is 0.984 kV/m located 15 ft from the centerline. The maximum calculated electric field level at the edge of the Project Area is 0.037 kV/m, located 100 feet east of the centerline (see Table 2 and Figure 5). The maximum calculated electric field level on the transmission connection is 0.929 kV/m at the centerline between the structures (see Table 4 and Figure 7). The study reveals that the calculated electric field levels at the edge of the proposed right-of-way located 75 feet from the centerline, is 0.26 kV/m and are well below 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 (NYSPSC) Interim Guideline.

The maximum calculated magnetic field level along the Project's collection substation and the POI switchyard is 84 mG located at the centerline. The maximum calculated magnetic field level at the edge of the Project Area is 3.73 mG, located 100 feet east of the centerline (see Table 3 and Figure 6). The maximum calculated magnetic field level on the transmission connection is 285.81 mG located 25' away from the centerline between the structures (see Table 5 and Figure 8). The study reveals that the calculated magnetic field levels at the edge of the nearest proposed right-of-way, located 75 feet from the centerline, are 46.2 mG. well 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 Guideline. It should also be noted that the magnetic field levels in the transmission corridor are calculated based on the maximum normal line rating for the conductor. The actual average loading of this line will be lower than the maximum line rating.

This report demonstrates that the EMF levels associated with the interconnections between the Project's collection substation and the POI switchyard and the POI switchyard and the existing Marshville – Sharon #16 line are within established guidelines. Additionally, the solar panels installed as part of the Project will be a minimum of 100 feet from the Project Area boundaries. EMF from Individual panels represent outputs consistent with household EMF levels. The setback associated with the Project design and the Town of Sharon's Town Code contribute to minimize static EMF from these DC sources at the Project Area boundaries.

Appendix A: Software Output Files

-315	0.002	0.1	0.37
-310	0.002	0.1	0.38
-305	0.002	0.11	0.39
-300	0.002	0.11	0.41
-295	0.002	0.11	0.42
-290	0.002	0.12	0.44
-285	0.002	0.12	0.45
-280	0.002	0.12	0.47
-275	0.002	0.13	0.48
-270	0.003	0.13	0.5
-265	0.003	0.14	0.52
-260	0.003	0.14	0.54
-255	0.003	0.15	0.56
-250	0.003	0.16	0.59
-245	0.003	0.16	0.61
-240	0.003	0.17	0.64
-235	0.004	0.18	0.67
-230	0.004	0.18	0.7
-225	0.004	0.19	0.73
-220	0.004	0.2	0.76
-215	0.005	0.21	0.8
-210	0.005	0.22	0.84
-205	0.005	0.23	0.88
-200	0.006	0.24	0.92
-195	0.006	0.26	0.97
-190	0.006	0.27	1.02
-185	0.007	0.28	1.08
-180	0.007	0.3	1.14
-175	0.008	0.32	1.2
-170	0.009	0.34	1.28
-165	0.009	0.36	1.35
-160	0.01	0.38	1.44
-155	0.011	0.4	1.53
-150	0.012	0.43	1.64
-145	0.013	0.46	1.75
-140	0.015	0.49	1.88
-135	0.016	0.53	2.02
-130	0.018	0.57	2.18
-125	0.02	0.62	2.35
-120	0.023	0.67	2.55
-115	0.025	0.73	2.77
-110	0.029	0.79	3.02
-105	0.033	0.87	3.31
-100	0.037	0.95	3.64
-95	0.043	1.05	4.03
-90	0.05	1.17	4.47
-85	0.058	1.3	4.99
-80	0.068	1.46	5.61
-75	0.081	1.65	6.34
-70	0.097	1.88	7.22
-65	0.117	2.16	8.3
-60	0.143	2.5	9.62
-55	0.177	2.93	11.27
-50	0.222	3.47	13.35
-45	0.281	4.16	16.02
-40	0.36	5.06	19.5
-35	0.463	6.24	24.08
-30	0.594	7.81	30.15
-25	0.749	9.87	38.15
-20	0.901	12.51	48.34
-15	0.984	15.59	60.29

-10	0.901	18.64	72.13
-5	0.618	20.88	80.83
0	0.362	21.68	84
5	0.618	20.88	80.93
10	0.901	18.64	72.3
15	0.984	15.59	60.51
20	0.901	12.51	48.58
25	0.749	9.87	38.38
30	0.594	7.81	30.36
35	0.463	6.24	24.28
40	0.36	5.06	19.69
45	0.281	4.16	16.2
50	0.222	3.47	13.51
55	0.177	2.93	11.42
60	0.143	2.5	9.76
65	0.117	2.16	8.43
70	0.097	1.88	7.34
75	0.081	1.65	6.45
80	0.068	1.46	5.71
85	0.058	1.3	5.09
90	0.05	1.17	4.57
95	0.043	1.05	4.12
100	0.037	0.95	3.73
105	0.033	0.87	3.4
110	0.029	0.79	3.1
115	0.025	0.73	2.85
120	0.023	0.67	2.62
125	0.02	0.62	2.42
130	0.018	0.57	2.24
135	0.016	0.53	2.09
140	0.015	0.49	1.94
145	0.013	0.46	1.81
150	0.012	0.43	1.7
155	0.011	0.4	1.59
160	0.01	0.38	1.5
165	0.009	0.36	1.41
170	0.009	0.34	1.33
175	0.008	0.32	1.26
180	0.007	0.3	1.19
185	0.007	0.28	1.13
190	0.006	0.27	1.07
195	0.006	0.26	1.02
200	0.006	0.24	0.97
205	0.005	0.23	0.92
210	0.005	0.22	0.88
215	0.005	0.21	0.84
220	0.004	0.2	0.8
225	0.004	0.19	0.77
230	0.004	0.18	0.73
235	0.004	0.18	0.7
240	0.003	0.17	0.68
245	0.003	0.16	0.65
250	0.003	0.16	0.62
255	0.003	0.15	0.6
260	0.003	0.14	0.58
265	0.003	0.14	0.56
270	0.003	0.13	0.54
275	0.002	0.13	0.52
280	0.002	0.12	0.5
285	0.002	0.12	0.48
290	0.002	0.12	0.47

295	0.002	0.11	0.45
300	0.002	0.11	0.44
305	0.002	0.11	0.42
310	0.002	0.1	0.41
315	0.002	0.1	0.4
320	0.002	0.1	0.38
325	0.002	0.09	0.37
330	0.002	0.09	0.36
335	0.002	0.09	0.35
340	0.001	0.08	0.34
345	0.001	0.08	0.33
350	0.001	0.08	0.32
355	0.001	0.08	0.31
360	0.001	0.08	0.31
365	0.001	0.07	0.3
370	0.001	0.07	0.29
375	0.001	0.07	0.28
380	0.001	0.07	0.27
385	0.001	0.07	0.27
390	0.001	0.06	0.26
395	0.001	0.06	0.25
400	0.001	0.06	0.25
405	0.001	0.06	0.24
410	0.001	0.06	0.24
415	0.001	0.06	0.23
420	0.001	0.06	0.23
425	0.001	0.05	0.22
430	0.001	0.05	0.22
435	0.001	0.05	0.21
440	0.001	0.05	0.21
445	0.001	0.05	0.2
450	0.001	0.05	0.2
455	0.001	0.05	0.19
460	0.001	0.05	0.19
465	0.001	0.05	0.19
470	0.001	0.04	0.18
475	0.001	0.04	0.18
480	0.001	0.04	0.17
485	0.001	0.04	0.17
490	0.001	0.04	0.17
495	0.001	0.04	0.16

51 GND2-1 18.00 36.00 1.48 0.36 1 0.00 0.00 0.00 0.00 0.000

52 AN MICROPHONE HT.= 4.9 FT, RI ANT. HT.= 6.6 FT, TV ANT. HT.= 9.8 FT, ALTITUDE= 0.0 FT

53 RI FREQ= 1.000 MHZ, TV FREQ= 75.000 MHZ, WIND VEL.(OZ)= 2.000 MPH, GROUND CONDUCTIVITY = 10.0 MMHOS/M

54 E-FIELD TRANSDUCER HT.= 3.3FT, B-FIELD TRANSDUCER HT.= 3.3FT

55

56	LATERAL DIST	AUDIBLE NOISE		RADIO INTERFERENCE		TVI	OZONE		ELECTRIC	
57	FROM	(RAIN)	(FAIR)	(RAIN)	(FAIR)	TOTAL	FOR RAIN RATE OF	OF		
58	REFERENCE	L50	L50	L50	L50	RAIN	1.00 IN/HR AT 0. FT LEVEL	FIELD	FIELD	
59	(FEET)	DBA	DBA	DBUV/M	DBUV/M	DBUV/M	PPB	KV/M	GAUSS	
60	-500.0	-18.4	-43.4	-25.7	-42.7	-58.3	0.000000	0.001	0.00014	
61	-495.0	-18.3	-43.3	-25.6	-42.6	-58.1	0.000000	0.001	0.00014	
62	-490.0	-18.3	-43.3	-25.5	-42.5	-57.9	0.000000	0.001	0.00015	
63	-485.0	-18.2	-43.2	-25.4	-42.4	-57.7	0.000000	0.001	0.00015	
64	-480.0	-18.2	-43.2	-25.3	-42.3	-57.5	0.000000	0.002	0.00016	
65	-475.0	-18.1	-43.1	-25.2	-42.2	-57.3	0.000000	0.002	0.00016	
66	-470.0	-18.1	-43.1	-25.0	-42.0	-57.1	0.000000	0.002	0.00017	
67	-465.0	-18.0	-43.0	-24.9	-41.9	-56.9	0.000000	0.002	0.00017	
68	-460.0	-18.0	-43.0	-24.8	-41.8	-56.7	0.000000	0.002	0.00018	
69	-455.0	-17.9	-42.9	-24.7	-41.7	-56.5	0.000000	0.002	0.00018	
70	-450.0	-17.9	-42.9	-24.6	-41.6	-56.3	0.000000	0.002	0.00019	
71	-445.0	-17.8	-42.8	-24.5	-41.5	-56.1	0.000000	0.002	0.00020	
72	-440.0	-17.8	-42.8	-24.4	-41.4	-55.9	0.000000	0.002	0.00020	
73	-435.0	-17.7	-42.7	-24.2	-41.2	-55.7	0.000000	0.002	0.00021	
74	-430.0	-17.6	-42.6	-24.1	-41.1	-55.5	0.000000	0.002	0.00022	
75	-425.0	-17.6	-42.6	-24.0	-41.0	-55.3	0.000000	0.002	0.00023	
76	-420.0	-17.5	-42.5	-23.9	-40.9	-55.1	0.000000	0.002	0.00023	
77	-415.0	-17.5	-42.5	-23.7	-40.7	-54.8	0.000000	0.002	0.00024	
78	-410.0	-17.4	-42.4	-23.6	-40.6	-54.6	0.000000	0.002	0.00025	
79	-405.0	-17.3	-42.3	-23.5	-40.5	-54.4	0.000000	0.002	0.00026	
80	-400.0	-17.3	-42.3	-23.4	-40.4	-54.2	0.000000	0.002	0.00027	
81	-395.0	-17.2	-42.2	-23.2	-40.2	-53.9	0.000000	0.002	0.00028	
82	-390.0	-17.2	-42.2	-23.1	-40.1	-53.7	0.000000	0.002	0.00029	
83	-385.0	-17.1	-42.1	-22.9	-39.9	-53.4	0.000000	0.002	0.00030	
84	-380.0	-17.0	-42.0	-22.8	-39.8	-53.2	0.000000	0.003	0.00032	
85	-375.0	-17.0	-42.0	-22.7	-39.7	-52.9	0.000000	0.003	0.00033	
86	-370.0	-16.9	-41.9	-22.5	-39.5	-52.7	0.000000	0.003	0.00034	
87	-365.0	-16.8	-41.8	-22.4	-39.4	-52.4	0.000000	0.003	0.00036	
88	-360.0	-16.8	-41.8	-22.2	-39.2	-52.2	0.000000	0.003	0.00037	
89	-355.0	-16.7	-41.7	-22.0	-39.0	-51.9	0.000000	0.003	0.00039	
90	-350.0	-16.6	-41.6	-21.9	-38.9	-51.7	0.000000	0.003	0.00041	
91	-345.0	-16.5	-41.5	-21.7	-38.7	-51.4	0.000000	0.003	0.00042	
92	-340.0	-16.5	-41.5	-21.6	-38.6	-51.1	0.000000	0.003	0.00044	
93	-335.0	-16.4	-41.4	-21.4	-38.4	-50.8	0.000000	0.003	0.00046	
94	-330.0	-16.3	-41.3	-21.2	-38.2	-50.5	0.000000	0.004	0.00048	
95	-325.0	-16.2	-41.2	-21.0	-38.0	-50.3	0.000000	0.004	0.00051	
96	-320.0	-16.2	-41.2	-20.9	-37.9	-50.0	0.000000	0.004	0.00053	
97	-315.0	-16.1	-41.1	-20.7	-37.7	-49.7	0.000000	0.004	0.00056	
98	-310.0	-16.0	-41.0	-20.5	-37.5	-49.4	0.000000	0.004	0.00058	
99	-305.0	-15.9	-40.9	-20.3	-37.3	-49.0	0.000000	0.004	0.00061	

100	-300.0	-15.8	-40.8	-20.1	-37.1	-48.7	0.000000	0.004	0.00065
101	-295.0	-15.8	-40.8	-19.9	-36.9	-48.4	0.000000	0.005	0.00068
102	-290.0	-15.7	-40.7	-19.7	-36.7	-48.1	0.000000	0.005	0.00072
103	-285.0	-15.6	-40.6	-19.5	-36.5	-47.7	0.000000	0.005	0.00075
104	-280.0	-15.5	-40.5	-19.3	-36.3	-47.4	0.000000	0.005	0.00080
105	-275.0	-15.4	-40.4	-19.1	-36.1	-47.1	0.000000	0.005	0.00084
106	-270.0	-15.3	-40.3	-18.8	-35.8	-46.7	0.000000	0.006	0.00089
107	-265.0	-15.2	-40.2	-18.6	-35.6	-46.3	0.000000	0.006	0.00094
108	-260.0	-15.1	-40.1	-18.3	-35.3	-46.0	0.000000	0.006	0.00100
109	-255.0	-15.0	-40.0	-18.1	-35.1	-45.8	0.000000	0.007	0.00106
110	-250.0	-14.9	-39.9	-17.8	-34.8	-45.7	0.000000	0.007	0.00112
111	-245.0	-14.8	-39.8	-17.6	-34.6	-45.5	0.000000	0.007	0.00119
112	-240.0	-14.7	-39.7	-17.3	-34.3	-45.3	0.000000	0.008	0.00127
113	-235.0	-14.6	-39.6	-17.0	-34.0	-45.0	0.000000	0.008	0.00135
114	-230.0	-14.5	-39.5	-16.7	-33.7	-44.8	0.000000	0.008	0.00144
115	-225.0	-14.4	-39.4	-16.4	-33.4	-44.6	0.000000	0.009	0.00154
116	-220.0	-14.3	-39.3	-16.1	-33.1	-44.4	0.000000	0.009	0.00165
117	-215.0	-14.2	-39.2	-15.8	-32.8	-44.2	0.000000	0.010	0.00177
118	-210.0	-14.0	-39.0	-15.5	-32.5	-43.9	0.000000	0.011	0.00190
119	-205.0	-13.9	-38.9	-15.1	-32.1	-43.7	0.000000	0.011	0.00205
120	-200.0	-13.8	-38.8	-14.8	-31.8	-43.5	0.000000	0.012	0.00221
121	-195.0	-13.7	-38.7	-14.4	-31.4	-43.2	0.000000	0.013	0.00239
122	-190.0	-13.5	-38.5	-14.0	-31.0	-42.9	0.000000	0.014	0.00258
123	-185.0	-13.4	-38.4	-13.6	-30.6	-42.7	0.000000	0.015	0.00280
124	-180.0	-13.3	-38.3	-13.2	-30.2	-42.4	0.000000	0.016	0.00305
125	-175.0	-13.1	-38.1	-12.8	-29.8	-42.1	0.000000	0.018	0.00332
126	-170.0	-13.0	-38.0	-12.3	-29.3	-41.8	0.000000	0.019	0.00363
127	-165.0	-12.8	-37.8	-11.9	-28.9	-41.5	0.000000	0.021	0.00398
128	-160.0	-12.6	-37.6	-11.4	-28.4	-41.2	0.000000	0.023	0.00437
129	-155.0	-12.5	-37.5	-10.8	-27.8	-40.8	0.000000	0.025	0.00482
130	-150.0	-12.3	-37.3	-10.3	-27.3	-40.5	0.000000	0.028	0.00533
131	-145.0	-12.1	-37.1	-9.7	-26.7	-40.1	0.000000	0.031	0.00592
132	-140.0	-11.9	-36.9	-9.1	-26.1	-39.8	0.000000	0.034	0.00659
133	-135.0	-11.8	-36.8	-8.5	-25.5	-39.4	0.000000	0.038	0.00738
134	-130.0	-11.6	-36.6	-7.8	-24.8	-39.0	0.000000	0.043	0.00829
135	-125.0	-11.3	-36.3	-7.1	-24.1	-38.6	0.000000	0.049	0.00936
136	-120.0	-11.1	-36.1	-6.3	-23.3	-38.1	0.000000	0.056	0.01063
137	-115.0	-10.9	-35.9	-5.5	-22.5	-37.6	0.000000	0.064	0.01213
138	-110.0	-10.7	-35.7	-4.6	-21.6	-37.1	0.000000	0.074	0.01394
139	-105.0	-10.4	-35.4	-3.7	-20.7	-36.6	0.000000	0.086	0.01612
140	-100.0	-10.1	-35.1	-2.7	-19.7	-36.1	0.000000	0.101	0.01878
141	-95.0	-9.9	-34.9	-1.7	-18.7	-35.5	0.000000	0.119	0.02206
142	-90.0	-9.6	-34.6	-0.5	-17.5	-34.8	0.000000	0.143	0.02613
143	-85.0	-9.2	-34.2	0.7	-16.3	-34.2	0.000000	0.173	0.03126
144	-80.0	-8.9	-33.9	2.0	-15.0	-33.4	0.000000	0.211	0.03779
145	-75.0	-8.5	-33.5	3.5	-13.5	-32.6	0.000000	0.260	0.04620
146	-70.0	-8.1	-33.1	5.0	-12.0	-31.8	0.000000	0.322	0.05714
147	-65.0	-7.7	-32.7	6.7	-10.3	-30.8	0.000000	0.400	0.07147
148	-60.0	-7.3	-32.3	8.6	-8.4	-29.8	0.000000	0.492	0.09026
149	-55.0	-6.8	-31.8	10.7	-6.3	-28.7	0.000000	0.594	0.11462

150	-50.0	-6.3	-31.3	12.8	-4.2	-27.4	0.000000	0.683	0.14515
151	-45.0	-5.8	-30.8	14.9	-2.1	-26.1	0.000000	0.722	0.18084
152	-40.0	-5.4	-30.4	17.0	0.0	-24.8	0.000000	0.663	0.21797
153	-35.0	-5.0	-30.0	18.7	1.7	-23.6	0.000000	0.490	0.25069
154	-30.0	-4.8	-29.8	19.7	2.7	-22.9	0.000003	0.272	0.27406
155	-25.0	-4.7	-29.7	19.6	2.6	-23.0	0.000044	0.343	0.28581
156	-20.0	-4.7	-29.7	18.5	1.5	-23.8	0.000101	0.597	0.28534
157	-15.0	-4.9	-29.9	16.6	-0.4	-25.0	0.000214	0.794	0.27422
158	-10.0	-5.0	-30.0	14.5	-2.5	-26.4	0.000332	0.894	0.25791
159	-5.0	-5.1	-30.1	12.5	-4.5	-27.7	0.000437	0.925	0.24409
160	0.0	-5.2	-30.2	10.4	-6.6	-28.9	0.000512	0.929	0.23876
161	5.0	-5.1	-30.1	12.5	-4.5	-27.7	0.000545	0.925	0.24409
162	10.0	-5.0	-30.0	14.5	-2.5	-26.4	0.000548	0.894	0.25791
163	15.0	-4.9	-29.9	16.6	-0.4	-25.0	0.000537	0.794	0.27422
164	20.0	-4.7	-29.7	18.5	1.5	-23.8	0.000519	0.597	0.28534
165	25.0	-4.7	-29.7	19.6	2.6	-23.0	0.000498	0.343	0.28581
166	30.0	-4.8	-29.8	19.7	2.7	-22.9	0.000510	0.272	0.27406
167	35.0	-5.0	-30.0	18.7	1.7	-23.6	0.000545	0.490	0.25069
168	40.0	-5.4	-30.4	17.0	0.0	-24.8	0.000624	0.663	0.21797
169	45.0	-5.8	-30.8	14.9	-2.1	-26.1	0.000729	0.722	0.18084
170	50.0	-6.3	-31.3	12.8	-4.2	-27.4	0.000817	0.683	0.14515
171	55.0	-6.8	-31.8	10.7	-6.3	-28.7	0.000884	0.594	0.11462
172	60.0	-7.3	-32.3	8.6	-8.4	-29.8	0.000908	0.492	0.09026
173	65.0	-7.7	-32.7	6.7	-10.3	-30.8	0.000901	0.400	0.07147
174	70.0	-8.1	-33.1	5.0	-12.0	-31.8	0.000879	0.322	0.05714
175	75.0	-8.5	-33.5	3.5	-13.5	-32.6	0.000849	0.260	0.04620
176	80.0	-8.9	-33.9	2.0	-15.0	-33.4	0.000817	0.211	0.03779
177	85.0	-9.2	-34.2	0.7	-16.3	-34.2	0.000785	0.173	0.03126
178	90.0	-9.6	-34.6	-0.5	-17.5	-34.8	0.000754	0.143	0.02613
179	95.0	-9.9	-34.9	-1.7	-18.7	-35.5	0.000724	0.119	0.02206
180	100.0	-10.1	-35.1	-2.7	-19.7	-36.1	0.000697	0.101	0.01878
181	105.0	-10.4	-35.4	-3.7	-20.7	-36.6	0.000671	0.086	0.01612
182	110.0	-10.7	-35.7	-4.6	-21.6	-37.1	0.000646	0.074	0.01394
183	115.0	-10.9	-35.9	-5.5	-22.5	-37.6	0.000624	0.064	0.01213
184	120.0	-11.1	-36.1	-6.3	-23.3	-38.1	0.000602	0.056	0.01063
185	125.0	-11.3	-36.3	-7.1	-24.1	-38.6	0.000583	0.049	0.00936
186	130.0	-11.6	-36.6	-7.8	-24.8	-39.0	0.000564	0.043	0.00829
187	135.0	-11.8	-36.8	-8.5	-25.5	-39.4	0.000547	0.038	0.00738
188	140.0	-11.9	-36.9	-9.1	-26.1	-39.8	0.000530	0.034	0.00659
189	145.0	-12.1	-37.1	-9.7	-26.7	-40.1	0.000515	0.031	0.00592
190	150.0	-12.3	-37.3	-10.3	-27.3	-40.5	0.000501	0.028	0.00533
191	155.0	-12.5	-37.5	-10.8	-27.8	-40.8	0.000487	0.025	0.00482
192	160.0	-12.6	-37.6	-11.4	-28.4	-41.2	0.000474	0.023	0.00437
193	165.0	-12.8	-37.8	-11.9	-28.9	-41.5	0.000462	0.021	0.00398
194	170.0	-13.0	-38.0	-12.3	-29.3	-41.8	0.000451	0.019	0.00363
195	175.0	-13.1	-38.1	-12.8	-29.8	-42.1	0.000440	0.018	0.00332
196	180.0	-13.3	-38.3	-13.2	-30.2	-42.4	0.000429	0.016	0.00305
197	185.0	-13.4	-38.4	-13.6	-30.6	-42.7	0.000419	0.015	0.00280
198	190.0	-13.5	-38.5	-14.0	-31.0	-42.9	0.000410	0.014	0.00258
199	195.0	-13.7	-38.7	-14.4	-31.4	-43.2	0.000401	0.013	0.00239

200	200.0	-13.8	-38.8	-14.8	-31.8	-43.5	0.000393	0.012	0.00221
201	205.0	-13.9	-38.9	-15.1	-32.1	-43.7	0.000385	0.011	0.00205
202	210.0	-14.0	-39.0	-15.5	-32.5	-43.9	0.000377	0.011	0.00190
203	215.0	-14.2	-39.2	-15.8	-32.8	-44.2	0.000369	0.010	0.00177
204	220.0	-14.3	-39.3	-16.1	-33.1	-44.4	0.000362	0.009	0.00165
205	225.0	-14.4	-39.4	-16.4	-33.4	-44.6	0.000355	0.009	0.00154
206	230.0	-14.5	-39.5	-16.7	-33.7	-44.8	0.000349	0.008	0.00144
207	235.0	-14.6	-39.6	-17.0	-34.0	-45.0	0.000342	0.008	0.00135
208	240.0	-14.7	-39.7	-17.3	-34.3	-45.3	0.000336	0.008	0.00127
209	245.0	-14.8	-39.8	-17.6	-34.6	-45.5	0.000330	0.007	0.00119
210	250.0	-14.9	-39.9	-17.8	-34.8	-45.7	0.000325	0.007	0.00112
211	255.0	-15.0	-40.0	-18.1	-35.1	-45.8	0.000319	0.007	0.00106
212	260.0	-15.1	-40.1	-18.3	-35.3	-46.0	0.000314	0.006	0.00100
213	265.0	-15.2	-40.2	-18.6	-35.6	-46.3	0.000309	0.006	0.00094
214	270.0	-15.3	-40.3	-18.8	-35.8	-46.7	0.000304	0.006	0.00089
215	275.0	-15.4	-40.4	-19.1	-36.1	-47.1	0.000299	0.005	0.00084
216	280.0	-15.5	-40.5	-19.3	-36.3	-47.4	0.000295	0.005	0.00080
217	285.0	-15.6	-40.6	-19.5	-36.5	-47.7	0.000290	0.005	0.00075
218	290.0	-15.7	-40.7	-19.7	-36.7	-48.1	0.000286	0.005	0.00072
219	295.0	-15.8	-40.8	-19.9	-36.9	-48.4	0.000282	0.005	0.00068
220	300.0	-15.8	-40.8	-20.1	-37.1	-48.7	0.000278	0.004	0.00065
221	305.0	-15.9	-40.9	-20.3	-37.3	-49.0	0.000274	0.004	0.00061
222	310.0	-16.0	-41.0	-20.5	-37.5	-49.4	0.000270	0.004	0.00058
223	315.0	-16.1	-41.1	-20.7	-37.7	-49.7	0.000267	0.004	0.00056
224	320.0	-16.2	-41.2	-20.9	-37.9	-50.0	0.000263	0.004	0.00053
225	325.0	-16.2	-41.2	-21.0	-38.0	-50.3	0.000260	0.004	0.00051
226	330.0	-16.3	-41.3	-21.2	-38.2	-50.5	0.000256	0.004	0.00048
227	335.0	-16.4	-41.4	-21.4	-38.4	-50.8	0.000253	0.003	0.00046
228	340.0	-16.5	-41.5	-21.6	-38.6	-51.1	0.000250	0.003	0.00044
229	345.0	-16.5	-41.5	-21.7	-38.7	-51.4	0.000247	0.003	0.00042
230	350.0	-16.6	-41.6	-21.9	-38.9	-51.7	0.000244	0.003	0.00041
231	355.0	-16.7	-41.7	-22.0	-39.0	-51.9	0.000241	0.003	0.00039
232	360.0	-16.8	-41.8	-22.2	-39.2	-52.2	0.000238	0.003	0.00037
233	365.0	-16.8	-41.8	-22.4	-39.4	-52.4	0.000235	0.003	0.00036
234	370.0	-16.9	-41.9	-22.5	-39.5	-52.7	0.000232	0.003	0.00034
235	375.0	-17.0	-42.0	-22.7	-39.7	-52.9	0.000230	0.003	0.00033
236	380.0	-17.0	-42.0	-22.8	-39.8	-53.2	0.000227	0.003	0.00032
237	385.0	-17.1	-42.1	-22.9	-39.9	-53.4	0.000225	0.002	0.00030
238	390.0	-17.2	-42.2	-23.1	-40.1	-53.7	0.000222	0.002	0.00029
239	395.0	-17.2	-42.2	-23.2	-40.2	-53.9	0.000220	0.002	0.00028
240	400.0	-17.3	-42.3	-23.4	-40.4	-54.2	0.000217	0.002	0.00027
241	405.0	-17.3	-42.3	-23.5	-40.5	-54.4	0.000215	0.002	0.00026
242	410.0	-17.4	-42.4	-23.6	-40.6	-54.6	0.000213	0.002	0.00025
243	415.0	-17.5	-42.5	-23.7	-40.7	-54.8	0.000211	0.002	0.00024
244	420.0	-17.5	-42.5	-23.9	-40.9	-55.1	0.000208	0.002	0.00023
245	425.0	-17.6	-42.6	-24.0	-41.0	-55.3	0.000206	0.002	0.00023
246	430.0	-17.6	-42.6	-24.1	-41.1	-55.5	0.000204	0.002	0.00022
247	435.0	-17.7	-42.7	-24.2	-41.2	-55.7	0.000202	0.002	0.00021
248	440.0	-17.8	-42.8	-24.4	-41.4	-55.9	0.000200	0.002	0.00020
249	445.0	-17.8	-42.8	-24.5	-41.5	-56.1	0.000198	0.002	0.00020

