

## **Appendix A - EMF Calculations**

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Table A-1. Magnetic field levels (mG) on rights-of-way at annual average loading

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-1A Segment 10 - Section 67, Pole # 232 (ROW X-section N5-10-1)	existing	8.5	38.9	2.3
	proposed	10.8	121.0	22.5
XS-1B Segment 10 - Section 67, Pole # 259 (ROW X-section N5-10-1)	existing	8.8	39.5	2.3
	proposed	10.8	121.0	22.5
XS-1C Segment 10 - Section 67, Pole # 224(ROW X-section N5-10-1)	existing	12.1	57.1	1.7
	proposed	10.8	121.0	22.5
XS-2A Segment 10 - Section 67, Pole # 294(ROW X-section N5-10-2)	existing	3.0	39.5	4.9
	proposed	10.8	121.0	18.2
XS-2B Segment 10 - Section 67, Pole # 290(ROW X-section N5-10-2)	existing	2.7	40.4	4.4
	proposed	7.9	125.6	19.1
XS-3A Segment 10 - Section 67, Pole # 335 (ROW X-section N5-10-3)	existing	8.8	39.5	2.3
	proposed	10.8	121.0	22.5
XS-3B Segment 10 - Section 67, Pole #'s (377,378,397)(ROW X-section N5-10-3)	existing	7.7	42.8	1.5
	proposed	10.8	121.0	22.5
XS-4 Segment 19 - Section 102, Pole #'s (49, 50, 58 ,61,62)(ROW X-section S1-E-19-1)	existing	3.5	26.5	0.3
	proposed	8.6	104.9	18.7
XS-5 Segment 19 - Section 102, Pole #'s (4,5,6,7,8,9,10,11,12,13,14,15)(ROW X-section S1-E-19-1)	existing	4.9	32.7	0.6
	proposed	6.7	105.2	18.6
XS-6 Segment 27 - Section 250, Pole #'s (408,407,406,394) (Row X-section S1-E-27-9)	existing	9.4	122.6	17.0
	proposed	12.5	71.7	22.2
XS-7 Segment 27 - Section 250, Pole #'s (339,338,309) (Row X-section S1-E-27-4)	existing	13.3	122.3	16.8
	proposed	12.5	71.7	22.2
XS-8 Segment 27 - Section 250, Pole # 199 (Row X-section S1-E-27-2)	existing	2.3	132.5	20.8
	proposed	14.4	129.6	21.2
XS-9 Segment 27 - Section 250, Pole #160 (Row X-section S1-E-27-1B)	existing	2.7	83.0	2.4
	proposed	13.6	76.5	3.7
XS-13A Segment 15 - Section 212, Pole #'s(116,121,124) (Row X-section N5-15-8)	existing	1.5	11.3	1.1
	proposed	22.9	127.2	11.0

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Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-13B Segment 15 - Section 212, Pole # 110 (Row X-section N5-15-8)	existing	1.3	12.2	0.8
	proposed	24.9	130.5	12.0
XS-13C Segment 15 - Section 212, Pole #'s (146,151) (Row X-section N5-15-8)	existing	0.9	11.3	2.1
	proposed	22.9	127.2	11.0
XS-14 Segment 15 - Section 212, Pole #'s (187,190)(Row X-section N5-15-10)	existing	1.0	25.1	1.2
	proposed	22.9	127.2	11.0
XS-15 Segment 15 - Section 212, Pole #'s(229) (Row X-section N5-15-11)	existing	1.2	24.2	3.0
	proposed	22.9	127.2	5.5
XS-16 Segment 15 - Section 212, Pole #'s(250) (Row X-section N5-15-14)	existing	1.0	25.1	1.2
	proposed	22.9	127.2	11.0
XS-17 Segment 18 - Section 167, Pole # 66 (Row X-Section S1-E-18-2)	existing	8.8	63.3	0.7
	proposed	4.8	105.0	18.5
XS-18A Segment 9 - Section 67, Pole # 8(Row-X-Section N5-9-1)	existing	5.8	71.9	0.8
	proposed	12.5	118.7	21.4
XS-18B Segment 9 - Section 67, Pole # 16(Row-X-Section N5-9-1)	existing	5.8	71.9	0.8
	proposed	12.5	118.7	21.4
XS-19 Segment 9 - Section 67, Pole #'s (17,28,102,105)(Row-X-Section N5-9-2)	existing	7.1	66.8	1.4
	proposed	7.0	120.9	20.8
XS-20 Segment 9 - Section 67, Pole #'s (117,122,135,140,145,146) (Row-X-Section N5-9-4)	existing	7.1	66.8	1.4
	proposed	7.0	120.9	20.8
XS-21 Segment 1 - Section 388, Pole #S (363,374) (Row-X-Section N5-1-1)	existing	12.3	316.9	12.3
	proposed	22.4	147.7	28.6
XS-22 Segment 1 - Section 388, Pole # 422 (Row-X-Section N5-1-2)	existing	27.1	185.4	2.6
	proposed	8.7	147.6	5.8
XS-23A Segment 1 - Section 388, Pole # 472 (Row-X-Section N5-1-3)	existing	13.3	323.8	13.3
	proposed	24.3	149.8	31.1

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Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-23B Segment 1 - Section 388, Pole # 481 (Row-X-Section N5-1-3)	existing	12.3	316.9	12.3
	proposed	23.7	146.9	28.7
XS-24 Segment 3 - Section 203, Pole #'s (281,314) (Row-X-Section N5-3-2)	existing	1.1	35.8	3.8
	proposed	9.0	117.0	21.1
XS-25 Segment 39 - Section 229, Pole #91 (Row-X-Section N5-39-4)	existing	8.8	83.4	8.8
	proposed	15.8	43.4	13.7
XS-26 Segment 14 - Section 200, Pole # 6 (Row-X-Section N5-14-3)	existing	3.6	130.6	1.3
	proposed	18.4	81.7	1.1
XS-27A Segment 24 - Section 219, Pole # 25 (Row-X-Section S1-E-24-3)	existing	15.2	143.3	18.6
	proposed	14.2	102.8	18.0
XS-27B Segment 24 - Section 219, Pole # 64 (Row-X-Section S1-E-24-3)	existing	16.1	142.8	20.4
	proposed	13.3	99.0	18.9

Table A-2. Magnetic field levels (mG) on rights-of-way at annual peak loading

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-1A Segment 10 - Section 67, Pole # 232 (ROW X-section N5-10-1)	existing	13.3	78.9	4.3
	proposed	14.4	153.0	28.5
XS-1B Segment 10 - Section 67, Pole # 259 (ROW X-section N5-10-1)	existing	14.0	79.2	4.4
	proposed	14.4	153.0	28.5
XS-1C Segment 10 - Section 67, Pole # 224(ROW X-section N5-10-1)	existing	18.9	88.7	3.5
	proposed	14.4	153.0	28.5
XS-2A Segment 10 - Section 67, Pole # 294(ROW X-section N5-10-2)	existing	4.9	79.2	9.6
	proposed	14.4	153.0	23.1
XS-2B Segment 10 - Section 67, Pole # 290(ROW X-section N5-10-2)	existing	4.3	80.9	8.8
	proposed	10.9	159.2	24.2
XS-3A Segment 10 - Section 67, Pole # 335 (ROW X-section N5-10-3)	existing	14.0	79.2	4.4
	proposed	14.4	153.0	28.5
XS-3B Segment 10 - Section 67, Pole #'s (377,378,397)(ROW X-section N5-10-3)	existing	12.1	84.9	3.3
	proposed	14.4	153.0	28.5
XS-4 Segment 19 - Section 102, Pole #'s (49, 50, 58 ,61,62)(ROW X-section S1-E-19-1)	existing	4.7	35.1	0.5
	proposed	16.5	234.6	42.1
XS-5 Segment 19 - Section 102, Pole #'s (4,5,6,7,8,9,10,11,12,13,14,15)(ROW X-section S1-E-19-1)	existing	6.0	44.0	0.8
	proposed	11.9	234.5	42.1
XS-6 Segment 27 - Section 250, Pole #'s (408,407,406,394) (Row X-section S1-E-27-9)	existing	11.3	146.3	18.5
	proposed	42.8	255.4	27.0
XS-7 Segment 27 - Section 250, Pole #'s (339,338,309) (Row X-section S1-E-27-4)	existing	16.0	146.1	18.2
	proposed	42.8	255.4	27.3
XS-8 Segment 27 - Section 250, Pole # 199 (Row X-section S1-E-27-2)	existing	2.8	160.4	26.6
	proposed	47.2	289.5	29.8
XS-9 Segment 27 - Section 250, Pole #160 (Row X-section S1-E-27-1B)	existing	3.4	106.2	3.2
	proposed	48.9	279.4	7.9
XS-13A Segment 15 - Section 212, Pole #'s(116,121,124) (Row X-section N5-15-8)	existing	14.4	132.6	5.1
	proposed	29.8	165.8	18.5

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Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-13B Segment 15 - Section 212, Pole # 110 (Row X-section N5-15-8)	existing	14.1	133.1	4.1
	proposed	32.3	167.8	12.4
XS-13C Segment 15 - Section 212, Pole #'s (146,151) (Row X-section N5-15-8)	existing	8.3	132.6	8.1
	proposed	29.8	165.8	18.5
XS-14 Segment 15 - Section 212, Pole #'s (187,190)(Row X-section N5-15-10)	existing	14.2	133.6	4.5
	proposed	29.8	165.8	18.5
XS-15 Segment 15 - Section 212, Pole #'s(229) (Row X-section N5-15-11)	existing	14.2	133.5	4.7
	proposed	29.8	165.8	8.4
XS-16 Segment 15 - Section 212, Pole #'s(250) (Row X-section N5-15-14)	existing	14.2	133.6	4.5
	proposed	29.8	165.8	18.5
XS-17 Segment 18 - Section 167, Pole # 66 (Row X-Section S1-E-18-2)	existing	24.0	163.4	2.7
	proposed	10.1	235.7	41.9
XS-18A Segment 9 - Section 67, Pole # 8(Row-X-Section N5-9-1)	existing	4.3	128.0	3.6
	proposed	12.2	180.6	30.9
XS-18B Segment 9 - Section 67, Pole # 16(Row-X-Section N5-9-1)	existing	4.2	128.5	3.8
	proposed	12.2	180.6	30.9
XS-19 Segment 9 - Section 67, Pole #'s (17,28,102,105)(Row-X-Section N5-9-2)	existing	7.6	71.7	1.5
	proposed	6.8	180.6	30.9
XS-20 Segment 9 - Section 67, Pole #'s (117,122,135,140,145,146) (Row-X-Section N5-9-4)	existing	7.6	71.7	1.5
	proposed	6.8	180.6	30.9
XS-21 Segment 1 - Section 388, Pole #S (363,374) (Row-X-Section N5-1-1)	existing	15.4	396.0	15.4
	proposed	30.6	212.9	42.2
XS-22 Segment 1 - Section 388, Pole # 422 (Row-X-Section N5-1-2)	existing	33.9	231.7	3.2
	proposed	12.7	213.5	8.5
XS-23A Segment 1 - Section 388, Pole # 472 (Row-X-Section N5-1-3)	existing	16.6	404.6	16.6
	proposed	33.2	216.1	45.9

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Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-23B Segment 1 - Section 388, Pole # 481 (Row-X-Section N5-1-3)	existing	15.4	396.0	15.4
	proposed	32.3	211.8	42.3
XS-24 Segment 3 - Section 203, Pole #'s (281,314) (Row-X-Section N5-3-2)	existing	3.6	117.4	12.5
	proposed	14.5	174.0	31.7
XS-25 Segment 39 - Section 229, Pole #91 (Row-X-Section N5-39-4)	existing	16.4	155.0	16.4
	proposed	20.8	57.2	18.0
XS-26 Segment 14 - Section 200, Pole # 6 (Row-X-Section N5-14-3)	existing	3.6	130.6	1.3
	proposed	18.1	100.8	0.9
XS-27A Segment 24 - Section 219, Pole # 25 (Row-X-Section S1-E-24-3)	existing	22.5	214.7	27.3
	proposed	21.2	180.1	29.1
XS-27B Segment 24 - Section 219, Pole # 64 (Row-X-Section S1-E-24-3)	existing	24.2	212.8	30.1
	proposed	22.1	171.1	30.7

Table A-3. Electric field levels (kV/m) on rights-of-way (average and peak loading)

Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-1A Segment 10 - Section 67, Pole # 232 (ROW X-section N5-10-1)	existing	0.33	1.48	0.05
	proposed	0.39	5.86	1.20
XS-1B Segment 10 - Section 67, Pole # 259 (ROW X-section N5-10-1)	existing	0.33	1.50	0.07
	proposed	0.39	5.86	1.20
XS-1C Segment 10 - Section 67, Pole # 224(ROW X-section N5-10-1)	existing	0.45	1.58	0.05
	proposed	0.39	5.86	1.20
XS-2A Segment 10 - Section 67, Pole # 294(ROW X-section N5-10-2)	existing	0.08	1.50	0.19
	proposed	0.39	5.86	0.88
XS-2B Segment 10 - Section 67, Pole # 290(ROW X-section N5-10-2)	existing	0.05	1.54	0.19
	proposed	0.06	5.98	0.94
XS-3A Segment 10 - Section 67, Pole # 335 (ROW X-section N5-10-3)	existing	0.33	1.50	0.07
	proposed	0.39	5.86	1.20
XS-3B Segment 10 - Section 67, Pole #'s (377,378,397)(ROW X-section N5-10-3)	existing	0.31	1.50	0.05
	proposed	0.39	5.86	1.20
XS-4 Segment 19 - Section 102, Pole #'s (49, 50, 58 ,61,62)(ROW X-section S1-E-19-1)	existing	0.05	0.27	0.00
	proposed	0.28	5.85	1.19
XS-5 Segment 19 - Section 102, Pole #'s (4,5,6,7,8,9,10,11,12,13,14,15)(ROW X-section S1-E-19-1)	existing	0.01	0.30	0.00
	proposed	0.10	5.85	1.20
XS-6 Segment 27 - Section 250, Pole #'s (408,407,406,394) (Row X-section S1-E-27-9)	existing	0.12	1.55	0.32
	proposed	1.15	5.39	0.35
XS-7 Segment 27 - Section 250, Pole #'s (339,338,309) (Row X-section S1-E-27-4)	existing	0.19	1.55	0.32
	proposed	1.15	5.39	0.35
XS-8 Segment 27 - Section 250, Pole # 199 (Row X-section S1-E-27-2)	existing	0.02	1.86	0.28
	proposed	1.21	5.87	0.26
XS-9 Segment 27 - Section 250, Pole #160 (Row X-section S1-E-27-1B)	existing	0.03	1.30	0.10
	proposed	1.23	5.88	0.10
XS-13A Segment 15 - Section 212, Pole #'s(116,121,124) (Row X-section N5-15-8)	existing	0.18	1.54	0.04
	proposed	1.22	5.88	0.29

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Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-13B Segment 15 - Section 212, Pole # 110 (Row X-section N5-15-8)	existing	0.17	1.54	0.03
	proposed	1.31	6.02	0.13
XS-13C Segment 15 - Section 212, Pole #'s (146,151) (Row X-section N5-15-8)	existing	0.08	1.54	0.09
	proposed	1.22	5.88	0.29
XS-14 Segment 15 - Section 212, Pole #'s (187,190)(Row X-section N5-15-10)	existing	0.18	1.55	0.01
	proposed	1.22	5.88	0.29
XS-15 Segment 15 - Section 212, Pole #'s(229) (Row X-section N5-15-11)	existing	0.15	1.44	0.04
	proposed	1.22	5.88	0.05
XS-16 Segment 15 - Section 212, Pole #'s(250) (Row X-section N5-15-14)	existing	0.18	1.55	0.01
	proposed	1.22	5.88	0.29
XS-17 Segment 18 - Section 167, Pole # 66 (Row X-Section S1-E-18-2)	existing	0.25	1.55	0.01
	proposed	0.24	5.89	1.19
XS-18A Segment 9 - Section 67, Pole # 8(Row-X-Section N5-9-1)	existing	0.20	1.59	0.03
	proposed	0.40	5.88	1.22
XS-18B Segment 9 - Section 67, Pole # 16(Row-X-Section N5-9-1)	existing	0.18	1.57	0.05
	proposed	0.40	5.88	1.22
XS-19 Segment 9 - Section 67, Pole #'s (17,28,102,105)(Row-X-Section N5-9-2)	existing	0.18	1.55	0.02
	proposed	0.16	5.97	1.20
XS-20 Segment 9 - Section 67, Pole #'s (117,122,135,140,145,146) (Row-X-Section N5-9-4)	existing	0.18	1.55	0.02
	proposed	0.16	5.97	1.20
XS-21 Segment 1 - Section 388, Pole #S (363,374) (Row-X-Section N5-1-1)	existing	0.13	5.65	0.13
	proposed	0.46	5.93	1.25
XS-22 Segment 1 - Section 388, Pole # 422 (Row-X-Section N5-1-2)	existing	0.16	5.72	0.04
	proposed	0.09	5.93	0.10
XS-23A Segment 1 - Section 388, Pole # 472 (Row-X-Section N5-1-3)	existing	0.14	5.85	0.13
	proposed	0.51	6.06	1.33

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Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-23B Segment 1 - Section 388, Pole # 481 (Row-X-Section N5-1-3)	existing	0.12	5.60	0.12
	proposed	0.48	5.93	1.25
XS-24 Segment 3 - Section 203, Pole #'s (281,314) (Row-X-Section N5-3-2)	existing	0.03	1.54	0.18
	proposed	0.33	5.85	1.19
XS-25 Segment 39 - Section 229, Pole #91 (Row-X-Section N5-39-4)	existing	0.18	1.54	0.18
	proposed	0.30	1.53	0.36
XS-26 Segment 14 - Section 200, Pole # 6 (Row-X-Section N5-14-3)	existing	0.03	1.54	0.01
	proposed	0.32	1.57	0.00
XS-27A Segment 24 - Section 219, Pole # 25 (Rox-X-Section S1-E-24-3)	existing	0.18	1.56	0.28
	proposed	0.29	5.67	0.42
XS-27B Segment 24 - Section 219, Pole # 64 (Rox-X-Section S1-E-24-3)	existing	0.19	1.56	0.29
	proposed	0.20	5.63	0.43