



**Western Massachusetts
Electric**

The Northeast Utilities System

NEW ENGLAND
EAST  **WEST
SOLUTION**

EX. 5.4: Electric and Magnetic Fields: Level Summary Tables



Massachusetts Energy Facilities Siting Board Petition for
The Greater Springfield Reliability Project

Table 5-1. Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at the edge of the ROW of the Preferred Northern Route in MA at annual average loading (AAL)

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-3 CT/MA Border to Existing Deadend Str. 2249	pre-NEEWS	8.7	40.8	0.1
	post-NEEWS	23.5	269.5	13.3
XS-4 Existing Deadend Str. 2249 to Existing Angle Str. 2252	pre-NEEWS	8.7	40.8	0.1
	post-NEEWS	48.3	144.2	5.3
XS-5 Existing Angle Str. 2252 to Existing Angle Str. 2267	pre-NEEWS	8.7	40.8	6.0
	post-NEEWS	48.3	144.2	62.7
XS-6 Existing Angle Str. 2267 to South Agawam S/S	pre-NEEWS	6.0	40.8	8.7
	post-NEEWS	48.3	144.2	62.7
XS-7 South Agawam S/S to Silver S/S	pre-NEEWS	4.8	20.5	0.1
	post-NEEWS	8.8	144.4	5.6
XS-8 Silver S/S to Existing Str. 2286	pre-NEEWS	4.0	18.5	3.6
	post-NEEWS	24.5	146.0	52.8
XS-9 Existing Str. 2286 to Agawam S/S	pre-NEEWS	6.6	18.3	0.8
	post-NEEWS	18.2	145.2	53.1
XS-10 Agawam S/S to Piper S/S	pre-NEEWS	24.2	47.5	7.3
	post-NEEWS	45.2	149.9	66.7
XS-11 Piper S/S to Chicopee S/S	pre-NEEWS	7.6	35.5	4.2
	post-NEEWS	30.2	148.1	66.7
XS-12 Chicopee S/S to East Springfield Jct.	pre-NEEWS	26.1	65.3	11.1
	post-NEEWS	26.0	141.2	62.3
XS-13 East Springfield Jct. to Existing Str. 49091	pre-NEEWS	90.2	140.2	20.9
	post-NEEWS	36.3	170.3	60.3
XS-14 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	90.2	140.2	13.7
	post-NEEWS	21.1	172.3	62.4
XS-15 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	73.8	114.0	7.7
	post-NEEWS	61.1	164.4	43.1
XS-16 Shawinigan S/S to Orchard Jct.	pre-NEEWS	6.8	96.4	47.4
	post-NEEWS	56.7	147.9	4.6

Continued on next page...

Table 5-1. Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at the edge of the ROW of the Preferred Northern Route in MA at annual average loading (AAL)

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-3 CT/MA Border to Existing Deadend Str. 2249	pre-NEEWS	8.7	40.8	0.1
	post-NEEWS	23.5	269.5	13.3
XS-4 Existing Deadend Str. 2249 to Existing Angle Str. 2252	pre-NEEWS	8.7	40.8	0.1
	post-NEEWS	48.3	144.2	5.3
XS-5 Existing Angle Str. 2252 to Existing Angle Str. 2267	pre-NEEWS	8.7	40.8	6.0
	post-NEEWS	48.3	144.2	62.7
XS-6 Existing Angle Str. 2267 to South Agawam S/S	pre-NEEWS	6.0	40.8	8.7
	post-NEEWS	48.3	144.2	62.7
XS-7 South Agawam S/S to Silver S/S	pre-NEEWS	4.8	20.5	0.1
	post-NEEWS	8.8	144.4	5.6
XS-8 Silver S/S to Existing Str. 2286	pre-NEEWS	4.0	18.5	3.6
	post-NEEWS	24.5	146.0	52.8
XS-9 Existing Str. 2286 to Agawam S/S	pre-NEEWS	6.6	18.3	0.8
	post-NEEWS	18.2	145.2	53.1
XS-10 Agawam S/S to Piper S/S	pre-NEEWS	24.2	47.5	7.3
	post-NEEWS	45.2	149.9	66.7
XS-11 Piper S/S to Chicopee S/S	pre-NEEWS	7.6	35.5	4.2
	post-NEEWS	30.2	148.1	66.7
XS-12 Chicopee S/S to East Springfield Jct.	pre-NEEWS	26.1	65.3	11.1
	post-NEEWS	26.0	141.2	62.3
XS-13 East Springfield Jct. to Existing Str. 49091	pre-NEEWS	90.2	140.2	20.9
	post-NEEWS	36.3	170.3	60.3
XS-14 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	90.2	140.2	13.7
	post-NEEWS	21.1	172.3	62.4
XS-15 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	73.8	114.0	7.7
	post-NEEWS	61.1	164.4	43.1
XS-16 Shawinigan S/S to Orchard Jct.	pre-NEEWS	6.8	96.4	47.4
	post-NEEWS	56.7	147.9	4.6

Continued on next page...

Continued from previous page

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-17 Orchard Jct. to Ludlow S/S	pre-NEEWS	15.6	98.3	86.3
	post-NEEWS	50.3	150.5	25.0
XS-18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	12.3	120.5	24.3
	post-NEEWS	9.4	106.4	53.6
XS-19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	51.0	101.3	29.4
	post-NEEWS	20.3	46.4	5.2
XS-20 Orchard S/S to Orchard Jct.	pre-NEEWS	31.3	94.4	37.9
	post-NEEWS	10.8	43.4	36.2

Table 5-2. Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at the edge of the ROW of the Preferred Northern Route in MA at annual peak loading (APL)

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-3 CT/MA Border to Existing Deadend Str. 2249	pre-NEEWS	8.7	40.9	0.1
	post-NEEWS	24.4	287.6	14.3
XS-4 Existing Deadend Str. 2249 to Existing Angle Str. 2252	pre-NEEWS	8.7	40.9	0.1
	post-NEEWS	49.4	152.1	5.6
XS-5 Existing Angle Str. 2252 to Existing Angle Str. 2267	pre-NEEWS	8.7	40.9	6.0
	post-NEEWS	49.4	152.1	65.7
XS-6 Existing Angle Str. 2267 to South Agawam S/S	pre-NEEWS	6.0	40.9	8.7
	post-NEEWS	49.4	152.1	65.7
XS-7 South Agawam S/S to Silver S/S	pre-NEEWS	2.3	9.9	0.0
	post-NEEWS	8.3	153.9	6.9
XS-8 Silver S/S to Existing Str. 2286	pre-NEEWS	3.3	6.9	1.7
	post-NEEWS	24.5	156.7	61.8
XS-9 Existing Str. 2286 to Agawam S/S	pre-NEEWS	6.9	6.9	0.7
	post-NEEWS	19.6	156.3	62.0
XS-10 Agawam S/S to Piper S/S	pre-NEEWS	23.4	56.8	8.5
	post-NEEWS	53.2	177.6	79.8
XS-11 Piper S/S to Chicopee S/S	pre-NEEWS	10.8	51.1	5.1
	post-NEEWS	37.2	175.7	79.7
XS-12 Chicopee S/S to East Springfield Jct.	pre-NEEWS	39.3	98.1	16.7
	post-NEEWS	29.9	164.1	72.2
XS-13 East Springfield Jct. to Existing Str. 49091	pre-NEEWS	112.4	173.9	25.0
	post-NEEWS	46.2	197.5	71.8
XS-14 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	112.4	173.9	16.4
	post-NEEWS	26.9	199.8	74.0
XS-15 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	95.4	147.4	9.9
	post-NEEWS	72.8	192.2	49.7
XS-16 Shawinigan S/S to Orchard Jct.	pre-NEEWS	7.3	111.6	54.7
	post-NEEWS	70.2	182.6	5.6

Continued on next page...

Continued from previous page

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-17 Orchard Jct. to Ludlow S/S	pre-NEEWS	14.2	121.8	105.3
	post-NEEWS	61.8	186.7	32.4
XS-18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	14.8	131.7	29.1
	post-NEEWS	12.1	121.7	62.9
XS-19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	52.1	103.0	35.2
	post-NEEWS	24.4	65.5	6.8
XS-20 Orchard S/S to Orchard Jct.	pre-NEEWS	36.9	121.3	45.0
	post-NEEWS	14.5	66.4	38.1

Table 5-3. Summary of pre-NEEWS (2012) and post-NEEWS (2017) electric field levels at the edge of the ROW of the Preferred Northern Route in MA

Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-3 CT/MA Border to Existing Deadend Str. 2249	pre-NEEWS	0.09	0.68	0.00
	post-NEEWS	0.11	5.06	0.16
XS-4 Existing Deadend Str. 2249 to Existing Angle Str. 2252	pre-NEEWS	0.09	0.68	0.00
	post-NEEWS	0.13	4.64	0.06
XS-5 Existing Angle Str. 2252 to Existing Angle Str. 2267	pre-NEEWS	0.09	0.68	0.03
	post-NEEWS	0.13	4.64	0.57
XS-6 Existing Angle Str. 2267 to South Agawam S/S	pre-NEEWS	0.03	0.68	0.08
	post-NEEWS	0.13	4.64	0.57
XS-7 South Agawam S/S to Silver S/S	pre-NEEWS	0.08	0.69	0.00
	post-NEEWS	0.12	5.51	0.13
XS-8 Silver S/S to Existing Str. 2286	pre-NEEWS	0.02	0.68	0.10
	post-NEEWS	0.29	5.53	0.57
XS-9 Existing Str. 2286 to Agawam S/S	pre-NEEWS	0.08	0.68	0.01
	post-NEEWS	0.15	5.51	0.57
XS-10 Agawam S/S to Piper S/S	pre-NEEWS	0.14	0.84	0.01
	post-NEEWS	0.10	4.62	0.58
XS-11 Piper S/S to Chicopee S/S	pre-NEEWS	0.17	0.87	0.02
	post-NEEWS	0.13	4.71	0.56
XS-12 Chicopee S/S to East Springfield Jct.	pre-NEEWS	0.18	1.76	0.07
	post-NEEWS	0.05	4.70	0.56
XS-13 East Springfield Jct. to Existing Str. 49091	pre-NEEWS	0.47	2.03	0.09
	post-NEEWS	0.48	5.37	0.59
XS-14 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	0.47	2.03	0.08
	post-NEEWS	0.22	5.51	0.60
XS-15 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	0.38	1.22	0.03
	post-NEEWS	0.55	5.02	0.43
XS-16 Shawinigan S/S to Orchard Jct.	pre-NEEWS	0.08	2.21	0.35
	post-NEEWS	0.60	5.45	0.04

Continued on next page...

Continued from previous page

Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-17 Orchard Jct. to Ludlow S/S	pre-NEEWS	0.16	1.21	0.37
	post-NEEWS	0.13	5.36	0.22
XS-18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	0.26	1.78	0.39
	post-NEEWS	0.25	2.24	0.36
XS-19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	1.71	2.42	0.12
	post-NEEWS	0.36	2.35	0.05
XS-20 Orchard S/S to Orchard Jct.	pre-NEEWS	0.53	1.94	0.26
	post-NEEWS	0.54	1.98	0.27

Table 5-4. Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at the edge of the ROW of the Noticed-Alternative Southern Route in MA at annual average loading (AAL)

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S01 Existing Str. 2286 to Agawam S/S	pre-NEEWS	6.3	18.3	0.8
	post-NEEWS	58.8	191.2	17.4
XS-S02 Silver S/S to Existing Str. 2286	pre-NEEWS	2.0	18.8	3.7
	post-NEEWS	58.8	191.2	17.4
XS-S03 South Agawam S/S to Silver S/S	pre-NEEWS	4.8	20.5	0.1
	post-NEEWS	50.2	192.6	3.2
XS-S04 South Agawam Jct. to CT/MA Border	pre-NEEWS	7.0	20.4	0.3
	post-NEEWS	17.3	278.1	12.0
XS-S06 CT River to MA Border	pre-NEEWS	4.7	13.0	0.7
	post-NEEWS	8.2	198.4	63.6
XS-S08 MA/CT Border / Franconia Jct. to Hampden Jct.	pre-NEEWS	2.8	8.3	0.2
	post-NEEWS	30.9	272.6	12.0
XS-S09 Hampden Jct. to Ludlow S/S	pre-NEEWS	46.6	305.4	22.7
	post-NEEWS	36.6	184.5	36.2
XS-S10 Orchard Jct to Ludlow S/S	pre-NEEWS	15.6	98.3	86.3
	post-NEEWS	13.7	35.8	29.3
XS-S11 Shawinigan S/S to Orchard Jct	pre-NEEWS	6.8	96.4	47.4
	post-NEEWS	14.0	37.0	7.5
XS-S12 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	73.8	114.0	7.7
	post-NEEWS	48.9	108.9	9.9
XS-S13 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	90.2	140.2	13.7
	post-NEEWS	59.5	111.5	13.7
XS-S14 East Springfield Jct to Existing Str. 49091	pre-NEEWS	90.2	140.2	34.7
	post-NEEWS	59.5	111.5	35.6
XS-S15 Chicopee S/S to E Springfield Jct	pre-NEEWS	26.1	65.3	11.1
	post-NEEWS	4.6	20.6	4.5
XS-S16 Piper S/S to Chicopee S/S	pre-NEEWS	7.6	35.5	4.2
	post-NEEWS	6.2	12.4	2.4

Continued on next page...

Continued from previous page

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S17 Agawam S/S to Piper S/S	pre-NEEWS	24.2	47.5	7.3
	post-NEEWS	3.8	10.3	1.0
XS-S18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	12.3	120.5	24.3
	post-NEEWS	7.7	108.2	50.6
XS-S19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	51.0	101.3	29.4
	post-NEEWS	6.2	44.4	2.9
XS-S20 Orchard S/S to Orchard Jct.	pre-NEEWS	31.3	94.4	37.9
	post-NEEWS	10.8	43.4	36.2

Table 5-5. Summary of pre-NEEWS (2012) and post-NEEWS (2017) magnetic field levels at the edge of the ROW of the Noticed-Alternative Southern Route in MA at annual peak loading (APL)

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S01 Existing Str. 2286 to Agawam S/S	pre-NEEWS	5.4	6.9	0.7
	post-NEEWS	55.0	210.3	24.0
XS-S02 Silver S/S to Existing Str. 2286	pre-NEEWS	1.7	6.9	1.7
	post-NEEWS	55.0	210.3	24.0
XS-S03 South Agawam S/S to Silver S/S	pre-NEEWS	2.3	10.0	0.0
	post-NEEWS	46.5	211.7	0.8
XS-S04 South Agawam Jct. to CT/MA Border	pre-NEEWS	16.6	48.5	0.7
	post-NEEWS	19.9	330.9	14.0
XS-S06 CT River to MA Border	pre-NEEWS	11.2	31.0	1.8
	post-NEEWS	12.4	235.8	74.7
XS-S08 MA/CT Border / Franconia Jct. to Hampden Jct.	pre-NEEWS	2.6	7.6	0.2
	post-NEEWS	37.6	323.3	14.2
XS-S09 Hampden Jct. to Ludlow S/S	pre-NEEWS	51.0	295.1	21.6
	post-NEEWS	43.6	202.6	43.6
XS-S10 Orchard Jct to Ludlow S/S	pre-NEEWS	14.2	121.8	105.3
	post-NEEWS	25.9	49.8	34.2
XS-S11 Shawinigan S/S to Orchard Jct	pre-NEEWS	7.3	111.6	54.7
	post-NEEWS	25.6	52.5	10.6
XS-S12 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	95.4	147.4	9.9
	post-NEEWS	55.7	124.0	11.3
XS-S13 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	112.4	173.9	16.4
	post-NEEWS	67.4	127.2	15.0
XS-S14 East Springfield Jct to Existing Str. 49091	pre-NEEWS	112.4	173.9	41.4
	post-NEEWS	67.4	127.2	38.2
XS-S15 Chicopee S/S to E Springfield Jct	pre-NEEWS	39.3	98.1	16.7
	post-NEEWS	6.4	31.2	6.8
XS-S16 Piper S/S to Chicopee S/S	pre-NEEWS	10.8	51.1	5.1
	post-NEEWS	9.2	17.5	4.1

Continued on next page...

Continued from previous page

Line Section	Configuration	MAGNETIC FIELD (mG) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S17 Agawam S/S to Piper S/S	pre-NEEWS	23.4	56.8	8.5
	post-NEEWS	7.5	19.5	1.8
XS-S18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	14.8	131.7	29.1
	post-NEEWS	9.3	124.4	57.0
XS-S19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	52.1	103.0	35.2
	post-NEEWS	9.7	62.0	4.3
XS-S20 Orchard S/S to Orchard Jct.	pre-NEEWS	36.9	121.3	45.0
	post-NEEWS	14.5	66.4	38.1

Table 5-6. Summary of pre-NEEWS (2012) and post-NEEWS (2017) electric field levels at the edge of the ROW of the Noticed-Alternative Southern Route in MA

Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S01 Existing Str. 2286 to Agawam S/S	pre-NEEWS	0.05	0.68	0.01
	post-NEEWS	0.33	5.80	0.33
XS-S02 Silver S/S to Existing Str. 2286	pre-NEEWS	0.01	0.69	0.11
	post-NEEWS	0.33	5.80	0.33
XS-S03 South Agawam S/S to Silver S/S	pre-NEEWS	0.08	0.69	0.00
	post-NEEWS	0.17	5.80	0.09
XS-S04 South Agawam Jct. to CT/MA Border	pre-NEEWS	0.66	1.22	0.01
	post-NEEWS	0.81	5.10	0.16
XS-S06 CT River to MA Border	pre-NEEWS	0.41	0.76	0.03
	post-NEEWS	0.45	3.54	1.70
XS-S08 MA/CT Border / Franconia Jct. to Hampden Jct.	pre-NEEWS	0.04	1.23	0.01
	post-NEEWS	0.17	5.06	0.15
XS-S09 Hampden Jct. to Ludlow S/S	pre-NEEWS	0.20	3.95	0.27
	post-NEEWS	0.15	4.32	0.10
XS-S10 Orchard Jct to Ludlow S/S	pre-NEEWS	0.16	1.21	0.37
	post-NEEWS	0.11	2.67	0.09
XS-S11 Shawinigan S/S to Orchard Jct	pre-NEEWS	0.08	2.21	0.35
	post-NEEWS	0.36	2.73	0.29
XS-S12 Exit 6 Jct. to Shawinigan S/S	pre-NEEWS	0.38	1.22	0.03
	post-NEEWS	0.21	1.89	0.07
XS-S13 Existing Str. 49091 to Exit 6 Jct.	pre-NEEWS	0.47	2.03	0.08
	post-NEEWS	0.36	2.54	0.10
XS-S14 East Springfield Jct to Existing Str. 49091	pre-NEEWS	0.47	2.03	0.07
	post-NEEWS	0.36	2.54	0.36
XS-S15 Chicopee S/S to E Springfield Jct	pre-NEEWS	0.18	1.76	0.07
	post-NEEWS	0.18	1.21	0.02
XS-S16 Piper S/S to Chicopee S/S	pre-NEEWS	0.17	0.87	0.02
	post-NEEWS	0.17	1.21	0.02

Continued on next page...

Continued from previous page

Line Section	Configuration	ELECTRIC FIELD (kV/m) AT LOCATION		
		-ROW edge	Maximum on ROW	+ROW edge
XS-S17 Agawam S/S to Piper S/S	pre-NEEWS	0.14	0.84	0.01
	post-NEEWS	0.17	1.21	0.02
XS-S18 East Springfield Jct. to Fairmont S/S	pre-NEEWS	0.26	1.78	0.39
	post-NEEWS	0.26	1.60	0.36
XS-S19 Cadwell S/S to Shawinigan S/S	pre-NEEWS	1.71	2.42	0.12
	post-NEEWS	0.26	2.75	0.07
XS-S20 Orchard S/S to Orchard Jct.	pre-NEEWS	0.53	1.94	0.26
	post-NEEWS	0.54	1.98	0.27