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To Emmons-Logan Wind, LLC

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Emmons-Logan Wind Energy Center  
Emmons and Logan Counties, North Dakota

Subject Receptor Summary Table: Turbine Setbacks and Modeled Sound and Shadow Flicker Levels

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From AECOM

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Date November 5, 2018

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Emmons-Logan Wind, LLC (Emmons-Logan Wind), a wholly owned, indirect subsidiary of NextEra Energy Resources, LLC, submitted an application for a Certificate of Site Compatibility (Certificate) to construct the Emmons-Logan Wind Energy Center (Project) in July 2018. The North Dakota Public Service Commission (Commission) has deemed the application complete and scheduled a public hearing for December 7, 2018.

The Project will have a nameplate capacity of approximately 298.1 megawatts (MW), consisting of up to 123 wind turbines using both GE 2.5 MW and GE 1.715 MW utility-grade wind turbines. In addition to the 123 primary turbines, up to seven alternative turbine locations have also been considered. The alternate turbine locations are proposed to provide siting flexibility based on on-going studies, landowner preferences, and issues identified during construction. Only 123 turbines will be constructed. AECOM has conducted acoustic and shadow flicker analyses for the Project to support Emmons-Logan Wind's application for a Certificate.

AECOM submits the attached table as a comprehensive summary of turbine setbacks and sound and shadow flicker levels at Project receptors (i.e., occupied residence or community building). The data is the same as that presented to the Commission in other supporting documents: *Acoustic Assessment for the Emmons-Logan Wind Energy Center, Emmons and Logan Counties, North Dakota, November 2018* and the *Shadow Flicker Assessment for the Emmons-Logan Wind Energy Center, Emmons and Logan Counties, North Dakota, November 2018*. The table provides results based on an October 9, 2018, turbine array.



Receptor ID	Participating Landowner?	Nearest Turbine ID	Distance to Nearest Turbine (feet)	Receptor Coordinates (UTM Zone 14, NAD 83)		Predicted Operation Sound Levels (Leq, dBA) Per Scenario				Predicted Shadow Flicker Results (Hours/Year)	
				Easting (m)	Northing (m)	No Alternates		With Alternates		No Alternates	With Alternates
						Cut-In	Maximum Rotational	Cut-In	Maximum Rotational		
ARCH1a	No	5	9659	411748	5142273	22.3	31.6	22.3	31.6	0	0
ARCH1b	No	5	9829	411681	5142284	22	31.3	22	31.3	0	0
ARCH3	No	8	7766	414922	5142811	24.7	33.1	24.7	33.1	0	0
ARCH4a	No	43	5430	418970	5142363	25.3	37	25.3	37	0	0
ARCH4b	No	43	5522	418976	5142395	25.2	36.9	25.2	36.9	0	0
ARCH7	No	73	2287	426874	5142180	31.9	44.2	32.1	44.3	0	0
ARCH9a	Yes	74	2274	427858	5142012	32.8	45.1	33.6	45.4	20	20
ARCH9b	Yes	74	1900	427845	5141887	33.8	46.1	34.5	46.3	21	21
ARCH10	Yes	77	3602	429319	5142869	26.8	39	29.8	40.1	0	0
ARCH11	No	Alt6	3449	429934	5142318	26.8	38.9	31.6	41.1	0	0
ARCH12	No	114	5482	432773	5141382	23	35	24.6	35.6	0	0
ARCH14	Yes	4	8917	410443	5140839	21.9	32.4	21.9	32.4	0	0
ARCH15	Yes	75	1860	428022	5140842	34.5	46.7	35.6	47.1	22	22
ARCH16a	Yes	80	1683	428633	5140382	35.8	48.2	38.6	49.2	0	14
ARCH16b	Yes	80	1581	428774	5140389	35.8	48.1	39.4	49.5	0	24
ARCH17	Yes	49	5584	422884	5139836	27.1	38.1	27.1	38.1	0	0
ARCH18	Yes	1	5925	410039	5139386	23.6	35.4	23.6	35.4	0	0
ARCH19	No	4	2152	411861	5139343	32.5	44.3	32.5	44.4	17	17
ARCH20a	Yes	109	2064	429635	5138886	35.3	47.5	36.3	47.8	48	48
ARCH20b	Yes	110	2142	429592	5139083	34.5	46.8	36.2	47.3	30	30
ARCH21	No	113	5318	432803	5138909	25.9	37.8	27.2	38.3	0	0
ARCH22	No	114	11289	434822	5138912	17	28.8	19.5	29.8	0	0
ARCH24	Yes	113	4373	432380	5138841	27.8	39.7	28.9	40.1	0	0
ARCH25	Yes	110	1634	430597	5138756	37.1	49.4	37.5	49.5	29	29
ARCH28	Yes	13	2011	413756	5138574	34.7	46.4	34.8	46.4	18	18
ARCH29	Yes	1	1545	410988	5138194	34.8	47	34.8	47	27	27
ARCH30a	No	1	3225	410075	5138403	27.7	39.5	27.7	39.5	12	12
ARCH30b	No	1	3291	410068	5138425	27.6	39.3	27.6	39.3	11	11
ARCH31	Yes	10	2372	412313	5137566	33.6	45.3	33.7	45.3	18	18
ARCH33	Yes	68	2533	424685	5137154	33	45.2	33	45.2	4	4
ARCH34	Yes	Alt1	2385	431973	5136509	29.2	41	36.4	44.8	0	5
ARCH35	Yes	61	1722	420653	5136674	36.3	48.6	36.3	48.6	30	30

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				Existing (m)	Northing (m)	No Alternates		With Alternates		No Alternates	With Alternates
						Cut-in	Maximum Rotational	Cut-in	Maximum Rotational		
ARCH36a	No	23	3245	416487	5136666	32.6	43.6	32.9	43.8	4	4
ARCH36b	No	23	3251	416484	5136690	32.6	43.7	32.9	43.8	4	4
ARCH37	Yes	24	1883	415694	5137337	35.6	46.7	35.8	46.8	4	4
ARCH38	Yes	11	1742	413943	5137194	37.7	49.6	37.8	49.6	42	42
ARCH39	Yes	10	2389	413090	5136520	36	46.7	36.2	46.8	21	21
ARCH42	Yes	57	2812	421759	5135832	30.5	42.6	30.5	42.6	13	13
ARCH45	Yes	A12	2856	433280	5135553	25	36.8	33.2	41.4	0	13
ARCH46	Yes	A12	1667	432802	5135504	27.9	39.9	38.6	46.3	5	26
ARCH47	Yes	121	1496	430992	5134971	37	49.2	37.4	49.4	40	40
ARCH48	Yes	117	1804	429531	5135533	37.8	49.2	37.9	49.2	39	39
ARCH49a	Yes	87	4564	424296	5134528	29.7	41.8	29.7	41.8	0	0
ARCH49b	Yes	87	4757	424324	5134624	29.8	41.8	29.8	41.8	0	0
ARCH51	Yes	55	2349	419802	5134912	33.3	45.5	33.3	45.5	11	11
ARCH52	Yes	9	2913	411640	5135851	31.9	41.8	32	41.9	0	0
ARCH53	No	29	8432	410166	5134921	25.1	34.7	25.3	34.8	0	0
ARCH54	Yes	38	1663	414773	5134478	35.7	46.6	36.3	46.8	35	35
ARCH55	Yes	92	1663	427252	5134105	35.3	47.5	35.3	47.5	9	9
ARCH57	Yes	123	7369	432556	5133251	22.5	34	24.8	35	0	0
ARCH59	Yes	85	2490	423789	5133578	32.8	45.1	32.8	45.1	11	11
ARCH60	Yes	83	5413	422205	5133575	27.1	39.2	27.1	39.2	0	0
ARCH61a	Yes	56	3540	420718	5134080	28.8	40.9	28.8	40.9	0	0
ARCH62	No	34	3573	411735	5134229	31.9	41.4	32	41.4	5	5
ARCH64	Yes	86	1654	425154	5132657	34.6	46.9	34.6	46.9	10	10
ARCH66	No	122	9744	431631	5132346	21.7	33.1	23	33.6	0	0
ARCH68	No	34	9495	410162	5132295	19.3	29.4	19.3	29.4	0	0
ARCH69	No	34	10423	409972	5132060	19.1	28.7	19.1	28.7	0	0
ARCH70	Yes	115	11585	429825	5130862	13.9	25.7	13.9	25.7	0	0
ARCH72	Yes	34	10469	412251	5130545	13.8	24.1	13.8	24.1	0	0
ARCH73	Yes	37	13107	415645	5130338	13.5	25.2	13.5	25.2	0	0
ARCH74	Yes	115	13383	428480	5130176	17	28.7	17	28.7	0	0
ARCH75	Yes	115	14347	429070	5129877	10.8	22.4	10.8	22.4	0	0
ARCH76a	Yes	81	11791	425726	5129279	16.7	28.5	16.7	28.5	0	0

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						Cut-In	Maximum Rotational	Cut-In	Maximum Rotational		
ARCH76b	Yes	81	11942	425766	5129255	16.9	28.7	16.9	28.7	0	0
ARCH76c	Yes	81	11719	425673	5129258	16.8	28.6	16.8	28.6	0	0
ARCH77a	No	81	11063	425349	5129233	15.9	27.8	15.9	27.8	0	0
ARCH77b	No	81	10984	425314	5129234	17.8	29.7	17.8	29.7	0	0
ARCH77c	No	81	11165	425393	5129229	16.3	28.2	16.3	28.2	0	0
ARCH77d	No	81	11296	425391	5129175	14.2	26.1	14.2	26.1	0	0
ARCH79a	Yes	81	8054	422894	5129362	18.7	30.6	18.7	30.6	0	0
ARCH79b	Yes	81	8209	422880	5129316	18.5	30.4	18.5	30.4	0	0
ARCH79c	Yes	81	7651	422886	5129487	19.4	31.3	19.4	31.3	0	0
ARCH80	No	50	13783	418813	5129471	10	21.7	10	21.7	0	0
ARCH81	No	38	15958	416269	5129655	6.3	17.9	6.3	17.9	0	0
ARCH83	Yes	81	10820	424451	5128764	13.4	25.2	13.4	25.2	0	0
ARCH84	No	34	7277	411554	5131800	22.5	32.7	22.6	32.7	0	0
ARCH107	No	1	11742	407590	5136204	13.3	25.1	13.3	25.1	0	0
ARCH108	No	5	12064	410981	5142552	19.3	28.3	19.3	28.3	0	0
ARCH111a	No	45	10656	422531	5143856	16.8	27.7	16.8	27.7	0	0
ARCH111b	No	45	10614	422512	5143854	15.1	26.4	15.1	26.4	0	0
ARCH111c	No	45	10640	422510	5143865	15.2	26.5	15.2	26.5	0	0
ARCH111d	No	45	10761	422528	5143898	17.4	28.4	17.4	28.4	0	0
ARCH112	No	72	11860	423893	5143839	14.6	26.4	14.6	26.4	0	0
ARCH115	Yes	72	10174	424647	5143854	16.1	28	16.1	28	0	0
ARCH117	Yes	72	9616	426457	5144375	18.4	30.3	19.4	30.7	0	0
ARCH119	No	77	9665	427937	5144695	18.5	30.4	20.8	31.3	0	0
ARCH120a	No	77	8668	429651	5144397	18.9	30.8	21.9	32	0	0
ARCH120b	No	77	9003	429656	5144503	18.3	30.2	21.4	31.5	0	0
ARCH120c	No	77	9167	429659	5144554	18.2	30	21.3	31.3	0	0
ARCH121a	No	77	8579	430675	5143737	20	31.9	23.1	33.2	0	0
ARCH121b	No	77	8652	430715	5143728	20	31.8	23.1	33.1	0	0
ARCH122	No	77	8461	430727	5143631	20.2	32.1	23.4	33.4	0	0
ARCH123	Yes	81	10056	424913	5129284	18.4	30.2	18.4	30.2	0	0
ARCH126	Yes	34	12142	412953	5130014	15.5	27	15.5	27	0	0