

To: Nathaniel Drucker
Jupiter Power

From: Michael T. Conaway, P.E.
Jacob Poling, INCE Bd. Cert.
Stantec, Plymouth MN

Project/File: 190300335

Date: October 5, 2026

Reference: Liberty II BESS - Sound Assessment Study

Executive Summary

Jupiter Power (Jupiter) is proposing to construct the Liberty II Battery Energy Storage System (BESS) Project (Project) in Adams Township, Madison County, Indiana. Jupiter retained Stantec Consulting Services Inc. (Stantec) to conduct a pre-construction sound study for the Project. This report focuses on evaluating sound levels from the BESS facility at nearby residential receptors in Adams Township, Indiana.

The sound study was completed to understand sound produced by the Project and assess Project operational compliance with applicable noise regulations. However, no applicable noise regulations were identified. Operational sound modeling was completed to estimate sound levels generated by Project equipment. Sound levels were estimated using the Datakustik CadnaA noise prediction software, configured to implement ISO 9613-2 environmental sound propagation algorithms. The modeling accounted for sound from the proposed BESS equipment, auxiliary transformers, substation transformers, and control house HVAC equipment. The sound modeling results demonstrate that the Project is expected to produce sound levels in the 42 to 50 dBA range, the 48 to 57 dBC range, and the 49 to 58 dBZ range. Sound received at nearby residences are also not expected to include a prominent tone.

Project Description

Jupiter is proposing to construct a 300 megawatt (MW) BESS facility on land southwest of the intersection of South 400 East and East 800 South in Adams Township, Madison County, Indiana. The Project is a nominally rectangular agricultural property that fronts on East 800 South. The area around the Project is either residential or agricultural in nature. Bordering the site to the northeast, across South 400 East, is a residence located at the southeastern corner of the intersection of South 400 East and East 800 South. Residential properties and agricultural land border the Project site to the south and east. Agricultural land borders the Project site to the west. **Figure 1** displays the Project, the surrounding vicinity, and the closest noise-sensitive receptors. The approximate Project boundary is outlined in blue, while the approximate area that will be developed is outlined in white.

Reference: Liberty II BESS - Sound Assessment Study

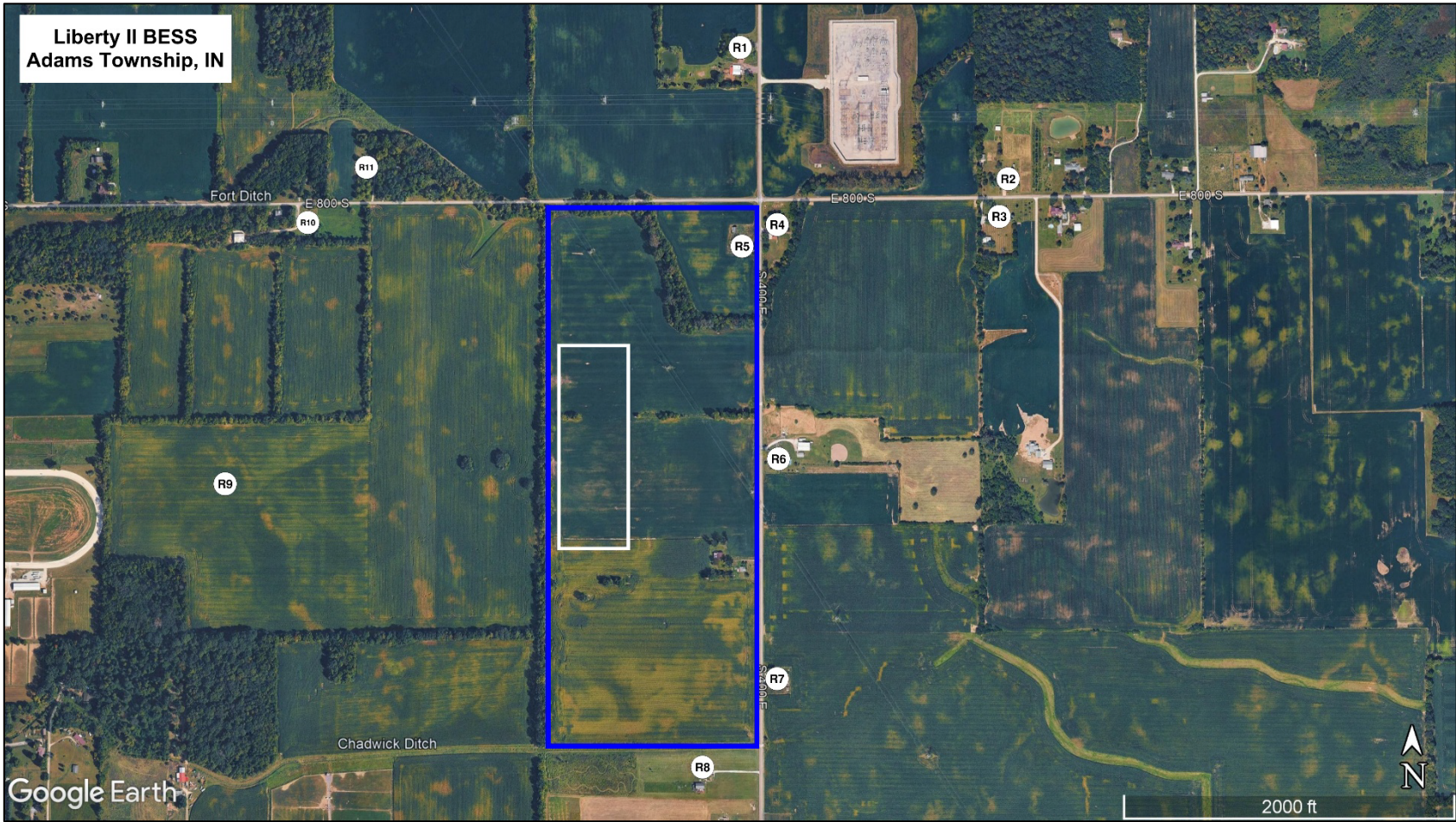


Figure 1: Project boundary and surrounding vicinity.

Reference: Liberty II BESS - Sound Assessment Study

Common sound sources that can contribute to the ambient sound environment in this rural area include roadway traffic, aircraft overpasses, agricultural equipment, wind-induced sound, birds, and insects. Ambient sound levels at rural residences often depend on the proximity of the residence to a roadway, the amount of roadway traffic, and other seasonal factors. For reference, sound levels during normal human conversation are approximately 65 decibels regardless of frequency weighting (A-weighting, C-weighting, or no weighting). Typical outdoor sound levels (L_{eq}) from roadways at a distance of 50 feet are 60 dBA for a 2-lane suburban road and 75 dBA for a 6-lane highway¹. Typical ambient sound levels (L_{eq}) in rural areas are 46 dBA during daytime and 42 dBA during nighttime².

Low frequency sound from industrial facilities is also a concern at nearby residences. Note that an outdoor sound level of 60 dBC at residences in a rural area is a commonly recommended criterion in the noise control industry to mitigate the potential impact of low frequency noise.³

The proposed Project plans call for the development of the existing farmland to accommodate a BESS facility, which includes an electrical substation. The BESS facility will include inverters, medium voltage transformers (MVTs), and battery containers that store and distribute power when needed to the electrical grid. The BESS facility will be tied into the Project substation, which includes a power transformer and several operational buildings. The power transformer will step up the voltage of the electricity received from the BESS facility for transfer to the electrical grid.

The noise-producing equipment for the BESS facility and substation include inverters, battery containers, MVTs, auxiliary transformers, substation transformers, and substation control house HVAC units. The BESS facility is anticipated to include 368 battery containers, 92 inverters with an associated MVT, and 16 auxiliary transformers. The main noise sources of the substation are the two power transformers. The control house on the substation will have two wall-mounted HVAC units, with one located on both the north and the south façade. **Figure 2** displays the Project layout. Equipment is not expected to operate at full capacity continuously during daytime or nighttime periods. The BESS facility operations will vary depending on the needs for electrical grid balancing. However, all equipment has been assumed to be operating at full capacity in this analysis for a conservative assessment of potential sound levels.

Regulatory Environment

Project noise is potentially regulated by State, County, and local laws and ordinances. These regulations were reviewed for their applicability to Project noise.

No State of Indiana or Adams Township noise regulations were able to be found.

Madison County discusses noise briefly in the Madison County, Indiana Land Use & Development Code, Part “A” – Zoning Ordinance. However, the language regarding noise is primarily qualitative. No quantitative limits that are applicable to the Project were able to be found. Madison County also recently approved Ordinance

¹ Federal Transit Administration. Transit Noise and Vibration Impact Assessment Manual. 2018.

² Kaliski, Rost, and Schomer. Background Sound Levels in Rural Areas of the U.S. Proceedings of Noise-Con 2023.

³ Hessler. Proposed criteria in residential communities for low-frequency noise emission from industrial sources. Noise Control Engineering Journal. 2004.

Reference: Liberty II BESS - Sound Assessment Study

2025-BC-O-1 titled *An Ordinance to Regulate Excessive Noise in Madison County, Indiana*. This ordinance provides qualitative noise language but does not establish any applicable quantitative thresholds for the Project.



Figure 2: Proposed Project Layout

Sensitive Receptor Locations

Publicly available aerial imagery was utilized to identify noise-sensitive receptors (also referred to as sensitive receptors), which include nearby residences. Sound was analyzed at the closest residences in each direction around the site. Eleven noise-sensitive receptors were identified and labeled as R1 through R11; these receptors are shown in **Figure 1**. Because there are no residences directly west of the Project, Receptor R9

Reference: Liberty II BESS - Sound Assessment Study

was included to represent sound levels at approximately 2,000 feet directly west of the Project equipment in adjacent farmland.

Sound Modeling Methodology

The Project, as currently proposed, includes 368 battery containers, 92 inverters (each with an associated MVT), 16 auxiliary transformers, 2 substation transformers, and 2 control house HVAC units, as shown in **Figure 2**. These are the primary operational sound sources associated with the BESS facility. The BESS and substation transformer equipment types, quantities, and locations used for this assessment are based on equipment selection details provided by Jupiter as well as the Project layout; information regarding the control house HVAC unit is based on professional experience for similar projects.

Sound attenuates between a source and receptor location due to a variety of factors, including but not limited to, distance between the source and receptor, atmospheric absorption, ground type, topography, shielding from solid structures, vegetation, and meteorological conditions. Operational sound levels from the proposed Project equipment were estimated using the DataKustik CadnaA noise prediction software (the “model”), which utilizes the ISO 9613-2 standard⁴ algorithms for outdoor sound propagation. CadnaA is a widely used modeling tool to estimate outdoor sound propagation.

The model was developed by importing the proposed Project layout, topographic data from the U.S. Geological Survey National Elevation Dataset, and aerial imagery. Neighboring buildings and structures as well as Project equipment (i.e., battery containers, inverters, medium voltage transformers, auxiliary transformers, substation transformers, control house, and control house HVAC units) were modeled as structures in the noise model according to their approximate heights. The Project noise sources were modeled as vertical areas along the sides of the Project equipment structures with their respective height. Battery containers were modeled at a height of 2.9 m (9.5 ft) above grade, while inverters with the associated MVT were modeled at a height of 2.3 m (7.6 ft) above grade. The auxiliary transformers were modeled at a height of 2.0 m (6.4 ft) above grade. The substation transformer was modeled at 3.9 m (12.9 ft) above grade. The control house was modeled at 3.1 m (10 ft) above grade, while the control house HVAC unit was modeled at a height of 2.4 m (8 ft) above grade. The O&M buildings were modeled at a height of 2.9 m (9.5 ft) above grade.

The Project is expected to include Samsung SDI SBB2.0 battery containers. The battery containers have an expected sound power level (PWL) of 87 dBA, which is based on manufacturer sound level data. The Project is expected to include SMA SC-4600 inverters that have a PWL of 91 dBA based on manufacturer noise testing data. The inverter-associated MVTs are expected to have a capacity of 4.6 megavolt amperes (MVA). Based on this rating, these MVTs are estimated to have an audible sound level (i.e., NEMA noise rating) of 63 dB. The auxiliary transformers are expected to have a capacity of 1.5 MVA; from this information, a NEMA noise rating of 60 dB was estimated. The Project substation transformers are expected to be 345 / 34.5 kV power transformers with a capacity of 150 MVA. Based on this information, the transformer is estimated to

⁴ ISO 9613-2: 1996. Acoustics – Attenuation of sound during propagation outdoors. Part 2: General method of calculation.

Reference: Liberty II BESS - Sound Assessment Study

have a NEMA noise rating of 83 dB. The NEMA TP 80050-2013 (R2024)⁵ standard and the Edison Electric Institute Electric Power Plant Environmental Noise Guide⁶ methods were used to estimate the overall and octave band sound power levels of the transformers. The control house HVAC unit was assumed to be 3 tons in cooling capacity, and the PWL of the HVAC unit is 81 dBA.

The equipment sound power levels and associated heights used in the model are presented in **Table 1**.

Table 1: Equipment Sound Power Levels (Unmitigated)

Equipment	Octave Band Sound Power Level (dB)									Broadband Sound Power Level, dBA	Height above grade (m)
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		
Battery containers	68	72	83	84	83	82	79	75	69	87	2.9
Inverters	88	89	90	90	85	83	81	86	80	91	2.3
Medium Voltage Transformer	76	82	84	79	79	73	68	63	56	79	2.3
Auxiliary transformers	68	74	76	71	71	65	60	55	48	72	2.0
Substation transformer	100	106	108	103	103	97	92	87	80	103	3.9
Control House HVAC unit	80	80	84	84	78	74	68	64	60	81	2.4

Receptor points were included in the model at the façade of nearby residences at a height of 1.5 m (5 ft) above grade for single-story structures and 4.6 m (15 ft) above grade for two-story structures to understand estimated Project-generated sound levels at nearby noise-sensitive receptors; these receptors are labelled as R1 through R11.

A ground factor of 0.5 was used to represent the mix of farmland, pavement, and grass-covered land of the Project parcels and surrounding area. Additional assumptions that were used to conservatively estimate operational sound levels included the following:

- No sound attenuation from vegetation (foliage) to simulate a worst-case condition.
- Meteorological conditions that are conducive to sound propagation with all receptors located downwind of all noise sources.

The model produces estimated sound levels at the specified receptor locations as outputs. These outputs of the model are used to understand the sound produced by the Project, as discussed in the next section.

⁵ National Electrical Manufacturers Association (NEMA) Standards Publication TP 80050-2013 (R2024). Transformers, Step Voltage Regulators and Reactors.

⁶ Edison Electric Institute. Electric Power Plant Environmental Noise Guide. Volume 1 2nd Edition.

Reference: Liberty II BESS - Sound Assessment Study

This analysis was carried out in one-third octave frequency bands, and results are displayed as the A-weighted, C-weighted, and unweighted sound levels. The one-third octave band results are consistent with the sound level findings presented in this report.

Predicted Operational Sound Results

An operational sound analysis was completed for the Project noise sources. The modeled operational condition represents the Project equipment at full capacity operation, which may occur during some daytime and nighttime hours, depending on the electric grid requirements. The estimated sound levels represent the “worst-case” condition with facility equipment operating at full capacity, which is not expected to occur on a regular basis.

A-weighted sound level contours with all Project noise sources operating at full load are displayed in **Figure 3**. Estimated A-weighted sound levels at each receptor location are also shown in **Figure 3** and provided in tabular format in **Table 2**. The figure displays the overall project-generated sound levels from inverters, MVTs, battery containers, auxiliary transformers, the substation transformer, and the control house HVAC units in the vicinity of the Project and illustrates how sound is expected to propagate in the area. The sound level contours do not include the contribution of ambient sound levels. Of note is the gray contour line that corresponds to 50 dBA. Also provided in **Table 2** are the C-weighted (dBC) and unweighted (dBZ) sound levels at each receptor location.

As can be seen in **Figure 3** and **Table 2**, the noise modeling results show that the nearby identified receptors are expected to receive Project-generated sound levels in the 41 to 51 dBA range. C-weighted sound levels are anticipated to be in the 48 to 57 dBC range, while unweighted sound levels are anticipated to be in the 49 to 58 dBZ range. The highest estimated sound levels of 51 dBA, 57 dBC, and 58 dBZ are received at R6, the receptor closest to Project equipment. The other identified receptors receive predicted sound levels lower than the levels received at R6.

Sounds with prominent tones can also be annoying to residences. Therefore, a prominent tone analysis was carried out at each receptor location; this analysis is based on information in ANSI S12.9-2005 – Part 4, Annex C. The prominent tone analysis is shown in **Appendix A**. This appendix shows that no prominent tones are expected to be received at nearby identified residential receptors.

Reference: Liberty II BESS - Sound Assessment Study

Table 2: Estimated Project-Generated Operational Sound Levels

Receptor ID	Estimated Operational Sound Level			Coordinates (IN83-EF)			Height above ground*
				X	Y	Z (ground)	
	dBA L _{eq}	dB C L _{eq}	dBZ L _{eq}	m	m	m	m
R1	40	50	51	106,050	526,678	295	1.5
R2	39	48	49	106,535	526,439	298	1.5
R3	39	49	50	106,515	526,365	298	1.5
R4	44	53	54	106,119	526,344	296	1.5
R5	45	54	55	106,056	526,314	295	1.5
R6	51	57	58	106,102	525,923	298	4.6
R7	46	53	54	106,104	525,527	299	4.6
R8	43	52	53	105,967	525,360	294	1.5
R9	42	51	52	105,071	525,862	292	1.5
R10	41	51	52	105,240	526,353	293	1.5
R11	42	52	52	105,351	526,455	297	4.6

*Note: Receptor heights of 1.5 m and 4.6 m above grade represent 1- and 2-story residences, respectively

Reference: Liberty II BESS - Sound Assessment Study

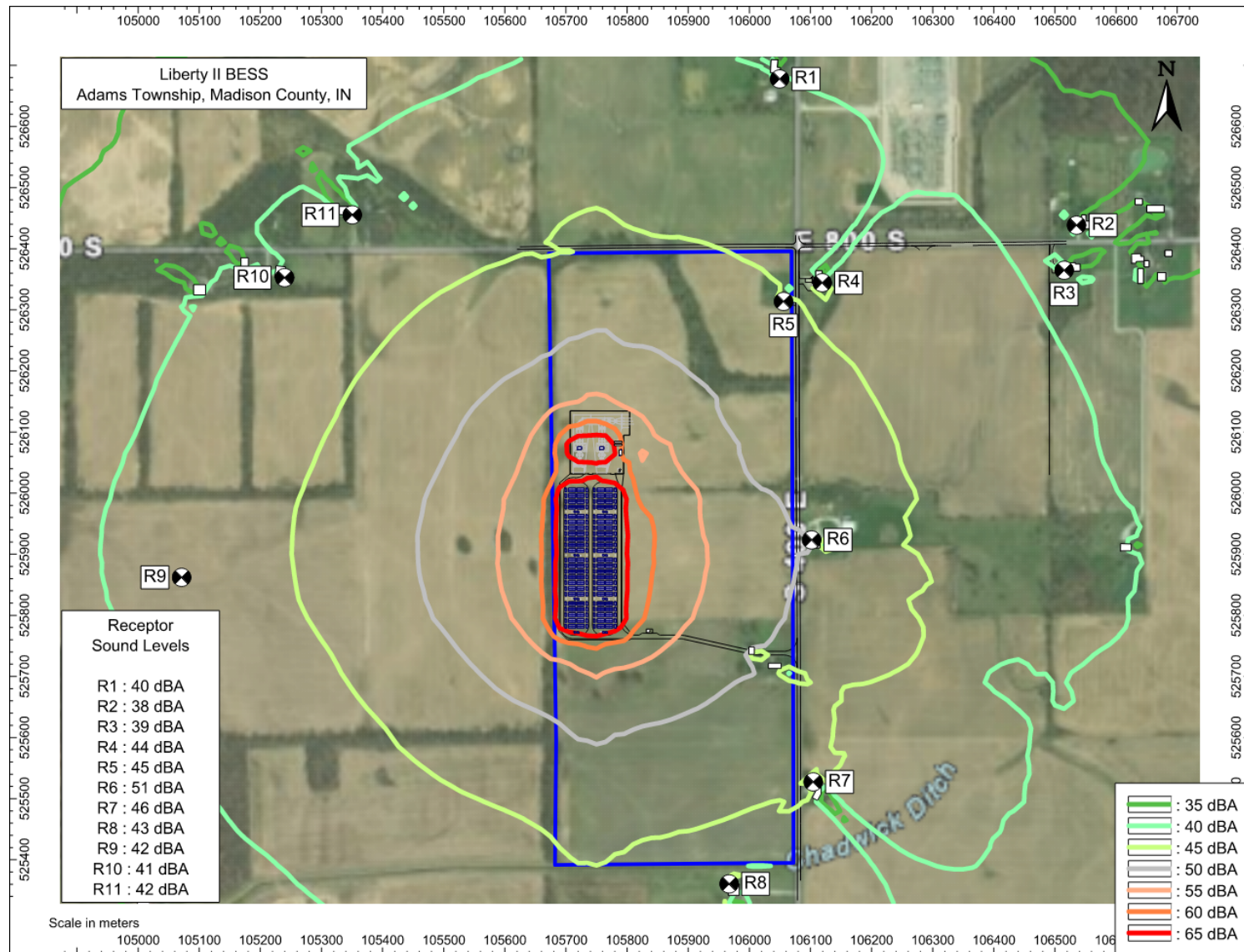


Figure 3: Estimated Project-Generated Sound Levels (dBA) with Proposed Layout

Reference: Liberty II BESS - Sound Assessment Study

Predicted Cumulative Operational Sound Results

In addition to this Project, a separate BESS facility is proposed east of the Project. This additional facility will have similar equipment and layout to the Project. A cumulative noise model was created to understand the effects of both BESS facilities on nearby noise-sensitive receptors. At Receptors R1 through R11, estimated sound levels from both BESS facilities are anticipated to be in the 42 to 51 dBA range, the 52 to 59 dBC range, and the 53 to 60 dBZ range. Note that 51 dBA is similar to the sound produced by a modern refrigerator at distance of 3 feet. A prominent tone analysis was also carried out for this situation, and the nearby identified receivers are not anticipated to receive prominent tones.

Conclusion

This pre-construction sound assessment was completed to evaluate sound produced by the Liberty II BESS facility. The Project is located in Adams Township, Madison County, Indiana amidst farmland and residential properties. The nearby residences were the main focus of this study. There were no quantitative sound level limits that were found that are applicable to the Project.

An operational noise model was developed and used to predict the sound levels generated by Project equipment, including sound from the proposed BESS inverters, battery containers, medium voltage transformers, substation transformers, and control house HVAC units. The noise modeling results demonstrated that the Project-generated sound levels are expected to be in the 41 to 51 dBA range, the 48 to 57 dBC range, and the 49 to 58 dBZ range. In addition, no nearby identified receptor is anticipated to receive sound with prominent tones.

Sincerely,

Stantec Consulting Services Inc.



Michael T. Conaway P.E.
Senior Acoustical Engineer/Noise Consultant
Phone: (763) 252-6822
Mobile: (612) 669-1325
mike.conaway@stantec.com



Jacob Poling INCE Bd. Cert.
Associate, Senior Acoustician
Phone: (763) 252-6965
Mobile: (952) 495-7858
jacob.poling@stantec.com

stantec.com

Attachment: Appendix A – Liberty II BESS Tonality Assessment

Appendix A
Liberty II BESS Prominent Tone Analysis

		One-Third Octave Band Center Frequency (Hz)																											
		25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
R1	Sound Level (dBZ)	40	42	39	43	43	43	37	39	38	35	33	34	33	32	32	34	32	30	28	25	22	21	3	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-6	2	-1	-2	-2	1	-1	-2	0	2	-2	-2	-2	-2	-3	-3	-1	-19	-3	0	0	0	
	Difference between adjacent upper band	3	-4	0	0	0	6	-2	1	2	2	-1	1	2	0	-2	2	2	2	3	3	1	19	3	0	0	0	0	
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R2	Sound Level (dBZ)	38	40	37	41	41	41	35	37	36	34	32	33	32	30	30	32	30	28	26	22	18	17	0	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-6	2	-1	-2	-2	1	-1	-2	0	2	-2	-2	-2	-2	-4	-4	-2	-17	0	0	0	0	
	Difference between adjacent upper band	3	-4	0	0	0	6	-2	1	2	2	-1	1	2	0	-2	2	2	2	4	4	2	17	0	0	0	0	0	
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R3	Sound Level (dBZ)	39	41	38	41	42	42	35	37	37	35	33	33	33	31	31	33	31	29	27	23	20	19	0	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-6	2	-1	-2	-2	1	-1	-2	0	2	-2	-2	-2	-2	-4	-4	-1	-19	0	0	0	0	
	Difference between adjacent upper band	3	-4	0	0	0	6	-2	1	2	2	-1	1	2	0	-2	2	2	2	4	4	1	19	0	0	0	0	0	
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R4	Sound Level (dBZ)	42	45	42	46	46	46	41	43	42	38	37	37	37	35	35	37	36	34	33	30	28	29	14	3	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-5	2	-1	-3	-2	1	-1	-2	0	2	-2	-2	-2	-1	-3	-2	1	-16	-11	-3	0		
	Difference between adjacent upper band	3	-4	0	0	0	5	-2	1	3	2	-1	1	2	0	-2	2	2	1	3	2	-1	16	11	3	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R5	Sound Level (dBZ)	44	46	43	47	47	47	43	44	43	40	38	38	38	36	36	38	37	35	34	32	30	32	17	7	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-4	2	-1	-4	-2	1	0	-2	0	2	-2	-1	-1	-1	-2	-2	2	-15	-10	-7	0		
	Difference between adjacent upper band	3	-4	0	0	0	4	-2	1	4	2	-1	0	2	0	-2	2	1	1	2	2	-2	15	10	7	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R6	Sound Level (dBZ)	45	48	45	48	48	48	44	46	46	44	42	43	43	41	43	44	43	41	40	38	36	39	25	17	12	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	3	-3	3	1	0	-4	3	-1	-1	-2	1	0	-2	1	2	-2	-2	-1	-2	-1	-2	2	-13	-8	-5	-12		
	Difference between adjacent upper band	3	-3	-1	0	4	-3	1	1	2	-1	0	2	-1	-2	2	2	2	1	2	1	-2	13	8	5	12	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R7	Sound Level (dBZ)	42	45	42	45	45	45	39	42	41	40	39	39	39	37	37	39	37	35	34	31	30	32	16	5	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	3	-3	3	1	0	-6	3	-1	-1	-2	1	0	-2	0	1	-2	-2	-1	-3	-2	2	-16	-10	-5	0	0		
	Difference between adjacent upper band	3	-3	-1	0	6	-3	1	1	2	-1	0	2	0	-1	2	2	2	1	3	2	-2	16	10	5	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R8	Sound Level (dBZ)	42	44	41	44	44	44	38	41	39	38	36	37	36	34	33	37	34	32	31	29	27	29	12	1	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	3	-4	3	1	0	-6	3	-2	-1	-2	1	-1	-2	0	3	-2	-2	-1	-3	-2	2	-17	-11	-1	0	0		
	Difference between adjacent upper band	4	-3	-1	0	6	-3	2	1	2	-1	1	2	0	-3	2	2	2	1	3	2	-2	17	11	1	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R9	Sound Level (dBZ)	41	44	41	44	44	44	38	40	39	37	35	36	35	33	33	36	33	31	30	27	24	25	7	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	3	1	0	-6	3	-1	-2	-2	1	0	-2	0	3	-2	-2	-2	-3	-2	0	-17	-7	0	0	0		
	Difference between adjacent upper band	3	-3	-1	0	6	-3	1	2	2	-1	0	2	0	-3	2	2	2	2	3	2	0	17	7	0	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R10	Sound Level (dBZ)	41	43	40	44	44	44	39	40	39	36	35	35	35	33	33	35	33	31	29	26	24	25	8	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-6	2	-1	-3	-2	1	-1	-2	0	2	-2	-2	-2	-2	-3	-2	1	-17	-8	0	0		
	Difference between adjacent upper band	3	-4	0	0	0	6	-2	1	3	2	-1	1	2	0	-2	2	2	2	3	2	-1	17	8	0	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
R11	Sound Level (dBZ)	41	43	40	44	44	44	39	41	39	38	36	37	37	35	35	35	33	32	29	27	24	25	8	0	0	0	0	
	Tonal threshold	15	15	15	15	15	15	15	15	8	8	8	8	8	5	5	5	5	5	5	5	5	5	5	5	5	5		
	Difference between adjacent lower band	2	-3	4	0	0	-5	2	-1	-2	-2	1	0	-2	0	0	-2	-2	-2	-2	-3	-2	0	-17	-8	0	0		
	Difference between adjacent upper band	3	-4	0	0	0	5	-2	1	2	2	-1	0	2	0	0	2	2	2	3	2	0	17	8	0	0	0		
	Tonal? (Yes/No)*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	

*The difference between upper and lower adjacent bands must both be above the tonal threshold for there to be a prominent tone in the specific band