



T5@Chantilly – Project Charlie

Environmental Noise Study

CLIENT

T5 Data Centers

CLIENT CONTACT

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DATE

17 September 2026

We have reviewed the proposed equipment layout and associated sound data for the T5@Chantilly data center in Chantilly, Fairfax County, Virginia, located at the corner of Stonecroft Boulevard and Lee Road Dulles, as per the Corgan Campus Plan dated 30 July 2026. This report reviews data center noise compared to established — and proposed — criteria, summarizes the results of our ambient noise survey and acoustic model analyses, and presents recommendations for noise control to meet these guidelines.

1.0 Applicable Noise Standards

In order to establish the criteria that will be used to determine the acoustic success of the project, we review both legal standards and acoustics industry standard approaches to evaluating environmental noise impact.

1.1 Fairfax County Noise Standards

The project site is located in unincorporated Fairfax County, Virginia. Chantilly is a census-designated area and not an incorporated town, so no municipal noise ordinance applies and the County ordinance is the governing instrument. Noise is regulated under the Fairfax County Code of Ordinances, Chapter 108.1 ("Noise Ordinance"), adopted 17 November 2015 and effective 17 February 2016. Section 108.1-4-2 establishes maximum sound levels, expressed as A-weighted levels for continuous sound and unweighted levels for impulse sound, keyed to the use and zoning district classification of the receiving property.

Table 1: Fairfax County Maximum Sound Levels — Continuous Sound (County Code § 108.1-4-2)

Use and Zoning District Classification	Time of Day	Maximum Continuous Sound Level (dBA)
Residential Areas in Residential Districts	7:00 a.m. – 10:00 p.m.	60
Residential Areas in Residential Districts	10:00 p.m. – 7:00 a.m.	55
Non-Residential Areas in Residential Districts	All hours	60
Mixed Use Area	7:00 a.m. – 10:00 p.m.	65
Mixed Use Area	10:00 p.m. – 7:00 a.m.	60
Commercial Districts	All hours	65
Industrial Districts	7:00 a.m. – 10:00 p.m.	72
Industrial Districts	10:00 p.m. – 7:00 a.m.	65

The ordinance additionally sets impulse sound limits of 100 dB day / 80 dB night in residential areas, 100 dB in commercial districts and 120 dB day / 100 dB night in industrial districts. These are stated in the code as unweighted decibels and are not evaluated here, as the proposed equipment is not expected to produce impulsive sound.

These levels apply at the classification of the receiving property rather than that of the source property, and the ordinance applies them at any point within the property affected by the sound. No credit is therefore available for setback within a receiving parcel, and the governing compliance location is the nearest point of each receiving property to the site. It is also worth noting that the ordinance sets no octave-band or tonal provision for continuous sound, so compliance is assessed on a broadband A-weighted basis (octave-band and C-weighted results are included in this report for information).

.1 Zoning Context

The site and its immediate abutters are zoned I-3, Industrial Light Intensity, per Fairfax County Zoning Map sheet 44-1 (revised 09/03/2026). The surrounding area is predominantly I-3, I-4 and I-5. Residential land use in the vicinity is carried in planned districts — PDH (Planned Development Housing), PDC (Planned Development Commercial, which includes the Commonwealth Place at Westfields condominiums) and PRM (Planned Residential Mixed-Use) — together with R-C (Conservation) parcels to the west. Chapter 108.1 does not name the planned districts in its Maximum Sound Levels table, and the mapping of PDH, PDC and PRM onto the five tabulated classifications is a determination for the Zoning Administrator. *Our understanding of the classification of each receiver is given in Section 2.1, and where the determination is not settled we have applied the more stringent residential limit.*

Fairfax County Zoning Map sheet 44-1 annotates rezoning cases 78-S-063, 82-W-053 and 82-C/S-080-H on and around the parcel, and states that use or development of an annotated property is restricted beyond the base district regulations by proffered conditions or covenants. We have not been provided with these instruments. A proffered noise condition would supersede the by-right limits used in this report and should be obtained before the criteria are fixed.

.2 Emergency and Generator Testing Scenarios

Under § 108.1-5-1(g) the use of back-up generators during power outages resulting from storms and other emergencies is exempt from the noise limits, as is routine testing and maintenance of back-up generators provided that testing occurs between 7:00 a.m. and 9:00 p.m. and for no more than two consecutive or nonconsecutive hours in any one day. We note that this testing window is not the same as the 7:00 a.m. to 10:00 p.m. daytime period used in the Maximum Sound Levels table, and the two should not be conflated. Testing outside that window, or of longer duration, must be included in the compliance demonstration under the Noise Ordinance.

.3 Zoning Ordinance Data Center Use Standards

The Fairfax County Zoning Ordinance data center use standards at § 4102.7.A(6), effective 11 September 2024, require that a noise study demonstrating compliance with Chapter 108.1 be submitted prior to site plan approval, and that a post-construction noise study including field measurements of the installed equipment at full operational load be submitted prior to issuance of a Nonresidential Use Permit.

1.2 Ambient Noise Survey

We measured ambient noise levels at two locations around the project site over a 24-hour period, from 7:00 p.m. on 18 August 2026 to 6:00 p.m. on 19 August 2026, to characterize the existing daytime and nighttime noise environment prior to development. Measurement locations are shown in Figure 1, below.

Figure 1: Ambient Measurement Locations



Measurements were taken with calibrated Norsonic Nor140 sound level meters with microphones at a 5 ft. height. The noise levels on site were recorded in 1-second increments and analyzed over 1-hour periods. In each 1-hour period we determined the L90 noise level — the level exceeded 90% of the time, or the statistical minimum level — which represents the underlying background level of noise when the louder, more intermittent sounds are ignored. For comparison to a noise ordinance, the L90 is typically used to determine whether the existing ambient noise should supersede the level published in the ordinance.

The measured hourly L90 levels are summarized below; nighttime hours per the Fairfax County definition are the 10:00 p.m. through 7:00 a.m. hours.

Table 2: Measured Ambient Noise Levels (hourly L90, dBA)

Hour (start)	Location 1	Location 2
7:00 PM	44dBA	48dBA
8:00 PM	44	45
9:00 PM	45	49
10:00 PM	45	51
11:00 PM	44	52
12:00 AM	44	52
1:00 AM	43	52
2:00 AM	42	52

Hour (start)	Location 1	Location 2
3:00 AM	42	51
4:00 AM	42	51
5:00 AM	44	51
6:00 AM	44	49
7:00 AM	44	48
8:00 AM	48	54
9:00 AM	51	54
10:00 AM	49	52
11:00 AM	47	45
12:00 PM	43	42
1:00 PM	43	41
2:00 PM	44	41
3:00 PM	45	43
4:00 PM	45	44
5:00 PM	44	43
6:00 PM	42	42
Lowest Daytime Hourly LA90	42*	41*
Lowest Nighttime Hourly LA90	42*	48*

* See discussion below for corrections due to insect activity

Measured ambient levels at both locations are below the Fairfax County limits applicable at the corresponding receiving classifications. The ambient noise level therefore does not supercede the criteria listed in the ordinance.

The lowest nighttime hourly L90, at Location 1, was measured at 42 dBA. We note, however, that this included significant influence from insect activity. The constant buzz of insects artificially inflates the measurement; if we were to take the measurements at face value, we would assume that existing conditions are far louder than in actuality. Lower ambient levels (quieter existing conditions) lead us to evaluate any new development more stringently.

In these scenarios, it is appropriate to ignore the sound levels measured at high frequencies where insect noise most dominates (ANSI 12.100-2014 recommends discounting the 2kHz, 4kHz, and 8kHz octave bands).

Table 3: Design Ambient — Octave-Band L90 for the Lowest Qualifying Hour (dB)

Location / Period	31.5	63	125	250	500	1k	2k	4k	8k	L90
Location 1 — 3:00am <u>Measured</u> SPL	42dB	45	42	34	31	27	21	38	37	42dBA
Location 1 — 3:00am SPL <u>w/o Insects</u>	42	45	42	34	31	27	--	--	--	33dBA

For the sake of the rest of this study, we will therefore consider the nighttime ambient noise level in the area surrounding the site to be 33dBA. The lowest ambient noise levels did not change appreciably from daytime to nighttime at this site.

Whenever feasible, it is advisable for new building developments of any kind – including data centers – to limit their environmental impact to either 45dBA or the existing ambient +10dBA measured outdoors at residential receptors sites, whichever is higher. This is consistent with many of the more stringent noise codes around the country, and results in very low noise levels inside of residential buildings. We therefore recommend that T5 adopt a voluntary criteria – more stringent than the local noise code – of 45dBA at any residential property lines.

1.3 Summary of Applicable Criteria

Based on the items identified above, we will evaluate the data center as follows:

.1 "Typical" 24-Hour/Day Operations (Building Cooling and Fuel Cells)

- Noise levels at residential property lines will be evaluated against the voluntary standard of 45dBA, 24 hours/day. Note that any noise level meeting this standard will, by definition, also meet the less stringent Fairfax County Noise Ordinance
- Noise levels at Industrial receiving properties will be evaluated against the Fairfax County Noise Ordinance nighttime noise ordinance limit of 65dBA at the property line.
- (No receivers in the range of our study fall in the mixed use or commercial district zoning requirements in the Noise Ordinance).

.2 "Generator Testing" Operations (Building Cooling, Fuel Cells, and Generator Testing)

Emergency Generator testing is planned for daytime hours (7am to 9pm). If held within these hours and if testing lasts no more than two hours in any one day, is exempt under Noise Ordinance § 108.1-5-1(g).

On the outside chance the testing ultimately needed to extend longer than 2 hours at any point, we have also compared the generator testing to daytime noise standard:

- Daytime noise levels at residential property lines will be evaluated against the voluntary standard of 45dBA. Note that any noise level meeting this standard will, by definition, also meet the less stringent criteria under the Fairfax County Noise Ordinance
- Daytime noise levels at Industrial receiving properties will be evaluated against the Fairfax County Noise Ordinance daytime noise ordinance limit of 72dBA at the property line.
- (No receivers in the range of our study fall in the mixed use or commercial district zoning requirements in the Noise Ordinance).

.3 "Emergency" Operations (Building Cooling and All Generators)

Emergency operations during a power failure are exempt under Noise Ordinance § 108.1-5-1(g) and are presented for reference only. The campus is served by two independent power sources, the Dominion Energy utility grid and the on-site gas-fired fuel cells. The emergency scenario assumes the simultaneous loss of both, requiring all 26 generators to carry the full cooling load. Loss of either source alone — most likely the grid — is the more probable event and would call for fewer generators. This scenario is therefore a bounding case, not an expected condition, and sets the upper limit of noise from any credible power failure.

Compliance is assessed on a broadband A-weighted basis, consistent with the Fairfax County ordinance, which contains no octave-band or tonal provision for continuous sound. Modeled octave-band and dBC levels are reported for reference.

2.0 Acoustic Model Analysis

To analyze the potential acoustic impact of the site on surrounding properties, we developed a computer model in the CadnaA software platform, which implements the ISO 9613-2 environmental sound propagation algorithms. The model projects the combined effect of all noise sources on site, while taking into account site topography and screening of buildings on site. Once preliminary site noise impact is determined, noise mitigation measures can also be tested within the model.

2.1 Model Parameters & Assumptions

The following section outlines the geometric and acoustic parameters defined in our model.

.1 Geometric Inputs

The overall building configuration is based on the Campus Plan prepared by Corgan for T5@Chantilly, dated 30 July 2026. The site comprises a single two-story data center building of approximately 312,000 SF and 75 ft. in height, with rooftop air-cooled chiller mechanical cooling, a stacked generator yard, and an adjacent fuel cell yard to the northwest. A retention pond lies to the east.

Table 5: Building Geometric Inputs

Item	Value	Note
Critical load	50 MW	Per Campus Plan dated 30 July 2026
Gross floor area	312,000 SF	150,000 SF total data hall; 25 MW data halls; 333 W/SF
Building height	~75 ft. (2 stories+roof)	Roof 44 ft. AFF at high point
Fuel cell yard	60 MW	Adjacent yard to the northwest; 24 units

Finished floor elevation and site grading are per the civil grading plan; local topography is included in the model.

Table 6: Model Input Dimensions — Acoustic Source Heights

Item	Height Above Grade*	Note
Data center roof	44 ft.	High point of roof
Chillers (rooftop)	59.5 ft.	Top of chiller; primary acoustic source is the fan at top of unit
Chiller discharge with silencer	66.5 ft.	48 in. silencer plus 3 ft. service plenum. +7 ft.
Generators — stacked (10) Generators — at grade (16)	40 ft. 20 ft.	Top of generator, two-story stacked arrangement
Transformers	40 ft.	Stacked with the generators; not reported separately
Fuel cells	30 ft.	Fuel cell yard w/ 35 ft screening

* Height Above Grade indicates the “acoustic centre” of the noise source for use in the model, which may vary slightly from the elevation at the top of the equipment. Equipment design is very preliminary and geometric characteristics may change as the design progresses.

.2 Sound Source Data

Equipment selections for this project are not yet fully finalized. At the direction of the project team, equipment is assumed to be consistent with the other T5 projects with which we are involved, and the sound data referenced from that project has been used for this analysis. No project-specific equipment has yet been specified.

Table 7: Modeled Sound Source Sound Power Levels (Lw, dB re 10⁻¹² W)

Equipment	PWL (dB) at Octave Band Center Frequency (Hz)									dBA
	31.5	63	125	250	500	1k	2k	4k	8k	
Chiller — discharge	95	95	102	96	98	98	94	89	85	102
Emergency generator	114	114	106	99	99	99	97	87	96	104
Transformer	–	–	85	–	–	–	–	–	–	69
Fuel cell	97	95	93	90	87	83	79	73	66	89

The values listed represent equipment sound power levels used as inputs to the acoustic model. They should not be interpreted as predicted sound pressure levels at the property line or nearby receivers. Referenced from the T5 Lincoln project per project team direction and not from a project-specific submittal; all values require confirmation against the submittals for the equipment ultimately selected.

.3 Operational Scenarios

Equipment quantities are as advised by Corgan T5: 56 chillers, 26 emergency generators (24 critical and 2 house), and 32 transformers, and 24 fuel cell units. The generator count was reduced from 32 to 26 by T5 on 15 September 2026; 16 units remain at grade and the balance of 10 are stacked. One generator is modeled as operating in the testing scenario, selected as the unit nearest the closest receiver.

Table 8: Operational Scenarios

Condition	Chillers	Generators	Transformers	Fuel Cells
Normal Operations	56	0	26	24
Generator Testing	56	1	26	24
Emergency (Power Failure)	56	26	26	0

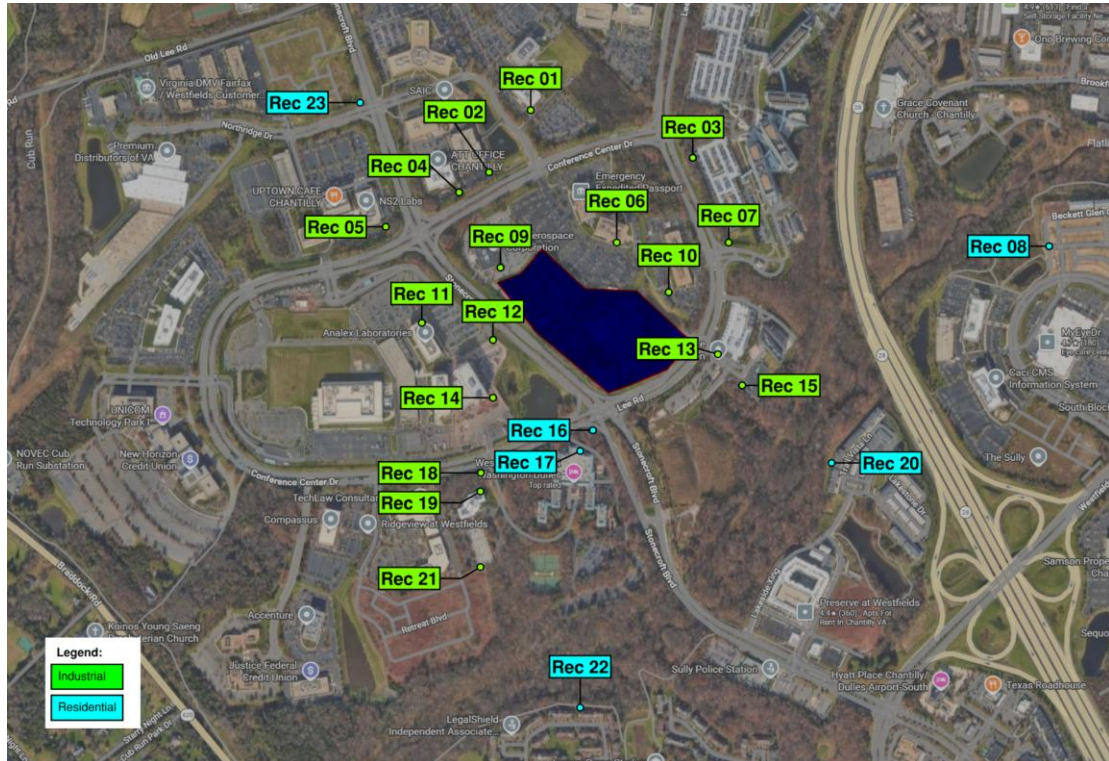
The following scenarios were evaluated:

- Normal Operations — all continuously operating cooling equipment at typical design capacity, plus transformers and the fuel cell yard. Emergency generators do not operate. Evaluated against the nighttime code limits and the 45 dBA project criterion.
- Generator Testing Operations — routine generator exercise and testing, scheduled during daytime hours. T5 advise a weekly exercise of approximately 30 minutes, a monthly test of approximately one hour and an annual load test of approximately four hours. One generator is modeled as operating in this scenario, selected as the unit nearest the closest receiver. Evaluated against the daytime code limits and the 45 dBA project criterion.
- Emergency Operations (Power Failure) — all 26 emergency generators operating with the fuel cell yard out of service, representing a full loss of on-site power and grid power. All chillers in operation, powered by the generators. Presented for information.

.4 Area of Study

The computer model maps noise levels over a region extending beyond the site, where overall sound levels are mapped and plotted, and allows detailed analyses at specific discrete receptors. Twenty-three receiver positions were placed around the site at 5 ft. height, on the receiving property nearest the site at each location. Receiver positions are shown in Figure 2.

Figure 2: Receiver Locations and Classification



Receivers 16 and 17 warrant comment. Both are mapped I-3, Industrial Light Intensity, and are occupied by the Westfields Marriott and the adjoining conference center. Chapter 108.1 contains no category for transient lodging, so a literal reading of the ordinance would apply the industrial limit of 65 dBA at these positions. In our experience, however, hotels and other overnight accommodation are commonly treated as noise-sensitive receivers in other jurisdictions, and occupants have the same expectation of a quiet sleeping environment as a resident. We therefore recommend the project be designed to come as close to the residential criterion as is practicable at Receivers 16 and 17, and we have applied the 55 dBA Noise Ordinance residential limit and our voluntary 45dBA residential limit at these positions throughout this report. This is a conservative posture adopted on our recommendation rather than a requirement of the ordinance, and it should be understood as such when the results are reviewed.

Table 9: Receiver Positions and Applied Classification

Rec	Receiving Land Use / Zoning Basis	Classification Applied	Limit — Night (dBA)	Project Criterion (dBA)
01 – 07	Industrial — I-3 / I-4 / I-5	Industrial District	65	n/a
08	Residential	Residential Area in Residential District	55	45
09 – 15	Industrial — I-3 / I-4 / I-5	Industrial District	65	n/a
16, 17	Mapped I-3; residential applied by recommendation	Residential Area in Residential District	55	45
18 – 19	Industrial — I-3 / I-4 / I-5	Industrial District	65	n/a
20	Residential — PRM	Residential Area in Residential District	55	45
21	Industrial — I-3 / I-4 / I-5	Industrial District	65	n/a
22	Residential	Residential Area in Residential District	55	45

Classification per the receiver figure at Figure 2. Receivers 08, 20 and 22 lie in planned districts containing dwellings — PDC, PRM and PDH-8 respectively — and are treated as residential. Receivers 16 and 17 are mapped I-3 and are occupied by the Westfields Marriott and conference centre; the residential classification is applied at these two positions on our recommendation for the reasons set out above. Note that the acoustic model workbook currently assigns the industrial code row to Receivers 08, 16, 17 and 22; the residential limits applied in this report override that assignment and the workbook should be updated to match.

2.2 Initial Model Results — No Mitigation

With the parameters noted above, the model was first run for Normal Operations with no noise mitigation, to establish the baseline impact of the facility. Noise levels for Normal Operations are evaluated relative to the nighttime standards.

Table 10: Model Results — Normal Operations, No Mitigation

Rec	SPL (dB) at Octave Band Center Frequency (Hz)								dBA	dBC	Code		Voluntary Residential Limit	
	63	125	250	500	1k	2k	4k	8k			dBA	Meets	dBA	Meets
01	26	38	37	46	52	46	30	–	54	59	65	Yes	–	–
02	27	43	41	50	56	51	37	8	58	63	65	Yes	–	–
03	27	40	38	50	56	50	35	–	58	61	65	Yes	–	–
04	27	42	41	49	55	49	36	6	57	62	65	Yes	–	–
05	21	34	36	43	46	39	22	–	48	55	65	Yes	–	–
06	35	49	48	57	62	58	49	31	65	69	65	Yes	–	–
07	25	38	40	47	50	44	30	–	53	59	65	Yes	–	–
08	21	31	31	39	44	36	8	–	46	53	55	Yes	45	No
09	32	45	44	52	58	54	48	40	61	65	65	Yes	–	–
10	31	46	46	54	58	54	45	26	61	66	65	Yes	–	–
11	32	44	43	52	58	53	41	18	60	65	65	Yes	–	–
12	32	45	45	53	59	54	48	37	61	66	65	Yes	–	–
13	28	42	43	51	55	50	40	16	58	63	65	Yes	–	–
14	33	47	46	54	60	55	46	23	62	67	65	Yes	–	–
15	26	43	43	51	56	52	39	7	59	63	65	Yes	–	–
16	30	44	46	54	59	54	44	24	61	65	55	No	45	No
17	32	46	46	54	59	55	45	21	62	67	55	No	45	No
18	27	40	39	48	53	48	35	1	56	61	65	Yes	–	–
19	27	40	39	47	53	47	34	–	55	60	65	Yes	–	–
20	23	36	38	47	52	45	27	–	54	58	55	Yes	45	No
21	19	32	32	37	38	29	9	–	42	52	65	Yes	–	–
22	18	31	32	42	45	37	13	–	47	52	55	Yes	45	No
23	19	32	33	40	43	36	17	–	46	52	55	Yes	45	No

Code is the applicable Fairfax County Noise Ordinance limit; Recommendations is the voluntary criterion we recommend at residential receivers. Each pair gives the level in dBA and whether the predicted level meets it. Nighttime limits apply, 55 dBA at residential receivers and 65 dBA at industrial receivers. Exceedances of the Ordinance are shown in red. Predicted sound pressure levels at the receiver positions, 5 ft. height, with no noise mitigation applied. Octave-band values are unweighted. C-weighted levels are included for information; the Ordinance sets no dBC limit for continuous sound.

Without mitigation the facility does not comply with either the Voluntary criteria the Fairfax County Noise Ordinance. Predicted levels exceed the 55 dBA nighttime residential limit at

Receivers 16 and 17 by 6 and 7 dB respectively. Mitigation is therefore required for code compliance at some receptors.

3.0 Noise Mitigation

3.1 Recommended Noise Mitigation Measures

As a means of achieving compliance with the Noise Ordinance and approaching the project criterion, rooftop chiller noise may be addressed directly at the source by installing the following:

- ~5 ft. acoustic silencers at each chiller discharge.
- ~8 in. acoustic inlet louvers at each chiller intake.
- Acoustic wraps to the chiller compressors.
- The silencer, together with an access plenum required for equipment service, raises the chiller discharge above the top of the units. The resulting discharge elevation is reflected in the model.

Table 11: Mitigation Insertion Loss (dB)

Mitigation Measure	Insertion Loss (dB) at Octave Band Center Frequency (Hz)								Pressure Drop (in. w.g.)
	63	125	250	500	1k	2k	4k	8k	
5 ft. chiller discharge silencer	6	10	17	21	28	34	14	11	0.11
8 in. chiller inlet acoustic louver	7	8	8	12	19	20	19	18	0.33
Chiller compressor wrap	5	10	14	23	27	21	15	10	–

Insertion loss values per manufacturer data for the products proposed. Pressure drop is stated for coordination with the mechanical design.

Final silencer selection, pressure drop, structural impacts, maintenance access and compatibility with the mechanical design will need to be confirmed through coordination with the mechanical engineer and equipment manufacturer.

3.2 Model Results with Mitigation — Normal Operations

We have modeled the data center equipment with the addition of the mitigation measures described in Section 3.1.

Table 12: Model Results with Mitigation — Normal Operations

Rec	SPL (dB) at Octave Band Center Frequency (Hz)								dBA	dBC	Code		Voluntary Residential Limit	
	63	125	250	500	1k	2k	4k	8k			dBA	Meets	dBA	Meets
01	21	29	27	33	36	29	25	–	39	50	65	Yes	–	–
02	22	33	32	39	42	35	33	8	45	54	65	Yes	–	–
03	21	30	25	31	31	26	21	–	37	51	65	Yes	–	–
04	23	32	31	37	41	34	32	6	44	53	65	Yes	–	–
05	16	25	25	29	29	20	14	–	34	46	65	Yes	–	–
06	30	39	37	42	45	40	42	29	49	60	65	Yes	–	–
07	19	29	27	30	27	21	16	–	35	49	65	Yes	–	–
08	15	22	19	23	23	13	–	–	28	44	55	Yes	45	Yes
09	29	36	36	44	49	43	47	40	53	59	65	Yes	–	–
10	25	36	34	38	40	34	34	17	44	56	65	Yes	–	–
11	27	35	33	40	45	38	38	18	48	57	65	Yes	–	–
12	28	36	36	43	48	42	45	37	52	59	65	Yes	–	–
13	22	33	30	33	31	27	25	5	38	53	65	Yes	–	–
14	29	37	34	41	45	39	40	22	48	58	65	Yes	–	–
15	20	34	30	34	32	28	24	–	39	52	65	Yes	–	–
16	25	35	33	37	37	32	32	13	43	55	55	Yes	45	Yes
17	27	37	34	38	40	34	33	12	45	57	55	Yes	45	Yes
18	22	31	28	33	36	29	26	–	40	52	65	Yes	–	–
19	22	30	27	33	36	29	25	–	39	51	65	Yes	–	–
20	17	26	26	29	28	22	13	–	34	47	55	Yes	45	Yes
21	14	22	20	22	19	9	–	–	27	44	65	Yes	–	–
22	13	21	20	26	26	17	2	–	31	42	55	Yes	45	Yes
23	14	22	23	28	29	20	11	–	33	44	55	Yes	45	Yes

Code is the applicable Fairfax County Noise Ordinance limit; Recommendations is the voluntary criterion we recommend at residential receivers. Each pair gives the level in dBA and whether the predicted level meets it. Nighttime limits apply. Predicted sound pressure levels at the receiver positions, 5 ft. height, with 5 ft. chiller discharge silencers, 8 in. chiller inlet acoustic louvers and chiller compressor wraps in place.

With the recommended mitigation, predicted levels comply with the Fairfax County Noise Ordinance at all twenty-three receiver positions with substantial margin. The governing industrial position is Receiver 09 at 53 dBA, 12 dB below the 65 dBA limit, and the highest residential position falls from 62 dBA unmitigated to 45 dBA at Receiver 17, 10 dB below the 55 dBA limit. Source treatment at the chillers is sufficient to achieve compliance.

The voluntary 45 dBA project criterion is also met at every residential receiver position: 28 dBA at Receiver 08, 43 dBA at Receiver 16, 45 dBA at Receiver 17, 34 dBA at Receiver 20, 31 dBA at Receiver 22 and 33 dBA at Receiver 23.

3.3 Model Results with Mitigation — Generator Testing Operations

The model was also run for the Generator Testing scenario with the mitigation measures in place. The generator testing program advised by T5 comprises a weekly exercise of approximately 30 minutes, a monthly test of approximately one hour, and an annual load test of approximately four hours. The weekly and monthly tests fall within the exemption at § 108.1-5-1(g), which applies to testing carried out between 7:00 a.m. and 9:00 p.m. and lasting no more than two hours in any one day. The annual four-hour load test exceeds that duration and is therefore not exempt. We understand from T5 that all testing will be scheduled within the 7:00 a.m. to 9:00 p.m. window. Results are therefore reported against the daytime limits of 60 dBA at residential receiving properties and 72 dBA at industrial receiving properties, and against the 45 dBA voluntary project criterion at residential receiving properties.

Table 13: Model Results with Mitigation — Generator Testing Operations

Rec	SPL (dB) at Octave Band Center Frequency (Hz)								dBA	dBC	Code		Voluntary Residential Limit	
	63	125	250	500	1k	2k	4k	8k			dBA	Meets	dBA	Meets
01	31	32	32	37	39	35	25	–	44	59	72	Yes	–	–
02	33	37	36	42	45	40	34	8	48	61	72	Yes	–	–
03	29	32	29	36	38	35	22	–	42	58	72	Yes	–	–
04	32	36	36	41	44	39	32	6	48	61	72	Yes	–	–
05	27	28	27	31	31	23	14	–	36	55	72	Yes	–	–
06	42	43	42	47	49	46	42	29	54	69	72	Yes	–	–
07	27	30	28	30	28	23	16	–	36	55	72	Yes	–	–
08	22	23	21	24	25	16	–	–	30	51	60	Yes	45	Yes
09	37	39	40	46	50	45	47	40	54	65	72	Yes	–	–
10	35	38	36	40	42	37	35	17	47	64	72	Yes	–	–
11	36	38	38	43	47	42	38	18	50	64	72	Yes	–	–
12	36	39	39	45	49	44	46	37	53	65	72	Yes	–	–
13	28	33	30	33	32	28	25	5	39	57	72	Yes	–	–
14	36	40	40	45	48	44	40	22	52	65	72	Yes	–	–
15	26	34	31	34	33	28	24	–	40	56	72	Yes	–	–
16	28	35	34	37	38	33	32	13	43	58	60	Yes	45	Yes
17	31	37	34	38	40	34	33	12	45	60	60	Yes	45	Yes
18	32	33	31	36	39	34	27	–	43	60	72	Yes	–	–
19	31	32	30	36	39	34	25	–	42	59	72	Yes	–	–
20	23	27	27	30	29	23	13	–	35	52	60	Yes	45	Yes
21	20	23	21	23	21	13	–	–	29	49	72	Yes	–	–
22	21	22	22	28	28	20	3	–	33	49	60	Yes	45	Yes
23	27	27	28	32	34	28	12	–	38	55	60	Yes	45	Yes

Code for this scenario is the Fairfax County daytime limit — 60 dBA at residential receivers and 72 dBA at industrial receivers — as generator testing is scheduled during daytime hours. The 45 dBA voluntary project criterion is shown at

residential receiving properties. Testing held between 7:00 a.m. and 9:00 p.m. and for no more than two hours in any one day is in any event exempt under § 108.1-5-1(g).

Predicted levels during generator testing comply with the daytime limits at every position with substantial margin, and would also satisfy the more stringent nighttime limits. The highest industrial position is Receiver 09 at 54 dBA and the highest residential position is Receiver 17 at 45 dBA. The 45 dBA voluntary project criterion is met at every residential receiver position. Levels at the residential positions are within 1 dB of those predicted for Normal Operations, so Normal Operations remains the governing design condition.

3.4 Model Results with Mitigation — Emergency Operations (Power Failure)

The model was also run for Emergency Operations with all 26 emergency generators operating, the fuel cell yard out of service, and the mitigation measures in place. This condition represents the simultaneous loss of both power sources serving the campus — the Dominion Energy utility grid and the on-site gas-fired fuel cells — and is the worst case the facility can produce. The loss of either source alone, which we would expect to be the more likely event, would leave the other in service and require fewer generators, producing levels below those reported here. While we expect ***a true emergency power outage would not be subject to code limitations*** under § 108.1-5-1(g), this is presented as a reference condition.

Table 14: Model Results with Mitigation — Emergency Operations (Power Failure)

Rec	SPL (dB) at Octave Band Center Frequency (Hz)								dBA	dBC	Code		Voluntary Residential Limit	
	63	125	250	500	1k	2k	4k	8k			dBA	Meets	dBA	Meets
01	42	41	42	46	48	45	23	–	52	70	65	Yes	–	–
02	43	45	45	49	51	49	29	1	56	71	65	Yes	–	–
03	40	40	40	47	49	46	26	–	53	68	65	Yes	–	–
04	43	44	44	48	50	46	26	–	54	71	65	Yes	–	–
05	39	37	37	39	40	34	12	–	46	67	65	Yes	–	–
06	52	51	51	55	57	55	40	29	62	79	65	Yes	–	–
07	37	35	34	36	36	31	17	–	43	65	65	Yes	–	–
08	31	28	26	30	30	23	–	–	37	59	55	Yes	–	–
09	48	48	48	52	54	52	36	23	59	76	65	Yes	–	–
10	42	43	41	44	46	43	31	17	51	71	65	Yes	–	–
11	47	46	46	51	53	50	32	10	57	75	65	Yes	–	–
12	48	48	48	52	53	51	36	24	58	76	65	Yes	–	–
13	37	36	34	36	35	32	25	5	43	66	65	Yes	–	–
14	47	48	48	52	54	52	36	22	59	75	65	Yes	–	–
15	35	37	35	37	37	32	24	–	44	64	65	Yes	–	–
16	41	39	39	43	44	41	30	14	49	69	55	Yes	–	–
17	43	42	40	44	45	42	31	12	51	71	55	Yes	–	–
18	41	40	39	43	45	42	24	–	50	70	65	Yes	–	–
19	41	39	38	42	45	42	23	–	50	69	65	Yes	–	–
20	33	31	32	34	34	28	13	–	40	61	55	Yes	–	–
21	32	28	26	28	28	23	–	–	36	60	65	Yes	–	–
22	32	29	28	34	34	28	–	–	40	60	55	Yes	–	–
23	38	36	37	40	42	37	11	–	47	66	55	Yes	–	–

Code is shown for reference only; emergency generator operation during a power outage resulting from a storm or other emergency is exempt from the Ordinance limits, and the voluntary criterion is not applied. Modelled as the simultaneous loss of both the utility grid and the on-site fuel cells, with all 26 generators operating; this is the bounding case for the facility.

Under the emergency scenario the highest residential position is Receiver 17 at 51 dBA and the highest industrial position is Receiver 06 at 62 dBA. Although this scenario is exempt, predicted levels remain within the Ordinance limits at every receiver position. Because this bounding case complies at every receiver position, all lesser power-failure conditions — including the single-source outages we would expect to be more likely — comply by inspection. We recommend confirming with the County that emergency generator operation is treated as exempt, consistent with our reading of § 108.1-5-1(g).

4.0 Next Steps

4.1 Continued Analyses as the Design Progresses

We will update the model as equipment selections, building configuration and the rooftop mechanical layout are refined. We recommend post-construction sound level measurements at the completion of construction to verify the modeled results, which will also satisfy the post-construction noise study required prior to issuance of the Nonresidential Use Permit under Zoning Ordinance § 4102.7.A(6).

This concludes our review at this time. Please advise regarding any comments or questions that arise while reviewing this report