

# Environmental Noise Assessment

## CCL02454 AT&T Cellular Facility

Inverness, California

BAC Job # 2019-198

Prepared For:

Complete Wireless Consulting

Attn: Kristin Crandell  
2009 V Street  
Sacramento, CA 95818

Prepared By:

**Bollard Acoustical Consultants, Inc.**



Dario Gotchet, Consultant

September 25, 2019



## Introduction

The CCL02454 AT&T Wireless Unmanned Telecommunications Facility (project) proposes the installation of cellular equipment within a lease area located on a parcel in Inverness, California (APN: 109-270-08). Specifically, the project parcel is located within the Point Reyes National Seashore. The externally mounted HVAC unit of a pre-manufactured concrete walk-in cabinet and an emergency diesel standby generator have been identified as the primary noise sources associated with the project. Please see Figure 1 for the proposed project site location. The studied site design is dated August 7, 2019.

Bollard Acoustical Consultants, Inc. has been contracted by Complete Wireless Consulting, Inc. to complete an environmental noise assessment regarding the proposed project cellular equipment operations. Specifically, the following assessment addresses daily noise production and exposure associated with operation of the project emergency generator and HVAC equipment.

Please refer to Appendix A for definitions of acoustical terminology used in this report. Appendix B illustrates common noise levels associated with various sources.

## Criteria for Acceptable Noise Exposure

### Federal

#### U.S. Department of the Interior – National Parks Service

The project parcel is located within the Point Reyes National Seashore – which is maintained by the National Parks Service (U.S. Department of the Interior). The Code of Federal Regulations (36 CFR 2.12) identifies noise criteria applicable to motorized equipment and machinery, such as those proposed in the project. Specifically, Title 36 (Parks, Forests and Public Property) Part 2 states the following:

36 CFR 2.12 Audio disturbances.

(a) The following are prohibited:

(1) Operating motorized equipment or machinery such as an electric generating plant, motor vehicle, motorized toy, or an audio device, such as a radio, television set, tape deck or musical instrument, in a manner: (i) That exceeds a noise level of 60 decibels measured on the A-weighted scale at 50 feet; or, if below that level, nevertheless; (ii) makes noise which is unreasonable, considering the nature and purpose of the actor's conduct, location, time of day or night, purpose for which the area was established, impact on park users, and other factors that would govern the conduct of a reasonably prudent person under the circumstances.

### State

#### California Coastal Commission

There is no identified California Coastal Commission noise level criteria that would be directly applicable to the project.

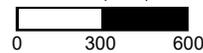


**Legend**

- Proposed AT&T Cellular Facility Lease Area
- Project Parcel Boundaries (Approximate)



Scale (Feet)



**CCL02454 AT&T Cellular Facility**  
Inverness, California

Project Site Location

**Figure 1**



## Local

### Marin Countywide Plan

The Marin Countywide Plan Noise Element (Policy NO-1.a) contains criteria pertaining to noise generated by stationary (non-transportation) noise sources, such as the proposed project equipment. Specifically, Policy NO-1.a states that the standards identified in Table 1 (Countywide Plan Figure 3-43) shall be applied to new residential projects, noise-sensitive land uses proposed near stationary noise sources, and new stationary noise-generating development proposed near existing residential or other noise-sensitive land uses.

**Table 1  
Benchmarks for Allowable Noise Exposure from Stationary Noise Sources**

Noise Level Descriptor	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Hourly $L_{eq}$ , dB	50	45
Maximum Level ( $L_{max}$ ), dB	70	65
Maximum Level, dB (Impulsive Noise)	65	60

Leq ("Equivalent Sound Level Pressure Level") is the constant sound energy that would produce the same noise level as actual sources that are fluctuating during the specified time period (one hour).

Guidelines for use of Table 1:

1. The measurements are made at the property line of the receiving land use. The effectiveness of noise mitigation measures should be determined by applying the standards on the receptor side of noise barriers or other property line noise mitigation measures.
2. The nighttime standards apply only when the receiving land use operates or is occupied during nighttime hours.
3. Sound-level measurements to determine maximum level noise shall be made with "slow" meter response.
4. Sound-level measurements for impulsive noise sources shall be made with "fast" meter response. Impulsive noises are defined as those that have sharp, loud peaks in decibel levels but that quickly disappear. Examples include a dog's bark, hammer's bang, and noise with speech or music content.
5. The allowable noise level standard shall be raised to the ambient noise level in areas where the ambient level already exceeds the standards shown in this table. For example, if the neighborhood already experiences daytime hourly noise levels of 60 dBA as an ambient condition, the noise level standard shall be raised to 60 dBA.
6. The allowable noise level shall be reduced 5 dB if the ambient hourly Leq is at least 10 dB lower than the noise-level standard shown in this table. For example, if the neighborhood experiences daytime hourly noise levels of 40 dBA as an ambient condition, the noise level standard shall be lowered to 45 dBA.

*Source: Marin Countywide Plan Noise Element, Policy NO-1.a, Figure 3-43*

### **Noise Standards Applied to the Project**

Because the project parcel is located within the Point Reyes National Seashore, the federal noise criteria identified in 36 CFR 2.12 applicable on National Park Service lands was applied to the project equipment. In addition, the noise level standards established in the Marin Countywide Plan Noise Element were also applied to the project and assessed at the nearest noise-sensitive property within the County of Marin jurisdiction.

## Project Noise Generation

As discussed previously, there are two project noise sources which are considered in this evaluation; the externally mounted HVAC unit of the pre-manufactured concrete walk-in cabinet and the emergency diesel generator. The evaluation of potential noise impacts associated with the operation of each noise source is evaluated separately as follows:

### **HVAC Equipment Noise Source and Reference Noise Level**

The project proposes the installation of a pre-manufactured concrete walk-in cabinet equipped with one (1) externally mounted HVAC unit within the equipment lease area illustrated on Figure 1. According to the project applicant, the HVAC unit proposed for the project is a Marvair Airxcel, Inc. Model ECUA18ACA. Based on reference noise level data obtained from the manufacturer (Marvair Airxcel, Inc.), this specific HVAC unit model has a reference noise level of 62 dB at a distance of 5 feet. The manufacturer's noise level data specification sheet for the proposed HVAC equipment is provided as Appendix C.

### **Generator Noise Source and Reference Noise Level**

The project also proposes the installation of an emergency standby diesel generator within the lease area to maintain cellular service during emergency power outages. Based on the project site plans, a Generac Industrial Power Systems Model SD030 is proposed at this site. It is assumed that the proposed generator will be equipped with the Level 2 Acoustic Enclosure resulting in a reference noise level of 68 dB at a distance of 23 feet. The manufacturer's noise level data specification sheet for the proposed generator and acoustical enclosure is provided as Appendix D.

The generator which is proposed at this site would only operate during emergencies (power outages) and brief daytime periods for periodic maintenance/lubrication. According to the project applicant, testing of the generator would occur twice per month, during daytime hours only, for a duration of approximately 15 minutes. The emergency generator would not operate at night, except during power outages.

### **Predicted Facility Noise Levels Relative to the U.S. Department of the Interior**

The project HVAC equipment reference noise level of 62 dB at 5 feet equates to 42 dB at 50 feet, assuming standard spherical spreading loss (-6 dB per doubling of distance). Thus, the proposed project HVAC equipment would satisfy the Code of Federal Regulations noise level criteria of 60 dB at 50 feet established in 36 CFR 2.12. As a result, no further consideration of HVAC equipment noise mitigation measures would be warranted for the project relative to the U.S. Department of the Interior noise level criteria.

As previously mentioned, it is assumed that the project emergency standby diesel generator will be equipped with a Level 2 Acoustic Enclosure, resulting in a reference noise level of 68 dB at 23 feet. Assuming standard spherical loss, (-6 dB per doubling of distance) the reference noise level of 68 dB at 23 feet equates to 60 dB at 50 feet. As a result, the proposed project generator would not exceed the Code of Federal Regulations noise level criteria established in 36 CFR 2.12 of 60 dB at 50 feet. As a result, no further consideration of emergency generator noise mitigation

measures would be warranted for the project relative to the U.S. Department of the Interior noise level criteria.

### **Predicted Facility Noise Levels Relative to the Marin Countywide Plan**

The closest identified noise-sensitive receptors within the County of Marin jurisdiction (outside the national park) have been identified as existing residences located in excess of 10 miles from the proposed cellular facility lease area (near the community of Inverness). At that distance, combined project equipment noise level exposure is predicted to be well below the strictest Marin Countywide Plan noise level limits by a wide margin. Given the considerable setback to the nearest noise-sensitive receptors within the County of Marin jurisdiction, no further consideration of project equipment noise mitigation measures would be warranted relative to the Marin Countywide Plan noise level criteria.

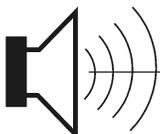
### **Conclusions**

Based on the equipment noise level data and analyses presented above, project-related equipment noise exposure is expected to satisfy the applicable U.S. Department of the Interior and Marin Countywide Plan noise level criteria. As a result, additional consideration of noise mitigation measures would not be warranted for this project.

This concludes our environmental noise assessment for the proposed CCL02454 AT&T Cellular Facility in Inverness, California. Please contact BAC at (916) 663-0500 or [dariog@bacnoise.com](mailto:dariog@bacnoise.com) with any questions or requests for additional information.

## Appendix A Acoustical Terminology

<b>Acoustics</b>	The science of sound.
<b>Ambient Noise</b>	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
<b>Attenuation</b>	The reduction of an acoustic signal.
<b>A-Weighting</b>	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
<b>Decibel or dB</b>	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
<b>CNEL</b>	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
<b>Frequency</b>	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
<b>L<sub>dn</sub></b>	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
<b>Leq</b>	Equivalent or energy-averaged sound level.
<b>L<sub>max</sub></b>	The highest root-mean-square (RMS) sound level measured over a given period of time.
<b>Loudness</b>	A subjective term for the sensation of the magnitude of sound.
<b>Masking</b>	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
<b>Noise</b>	Unwanted sound.
<b>Peak Noise</b>	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.
<b>RT<sub>60</sub></b>	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
<b>Sabin</b>	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
<b>SEL</b>	A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.
<b>Threshold of Hearing</b>	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
<b>Threshold of Pain</b>	Approximately 120 dB above the threshold of hearing.

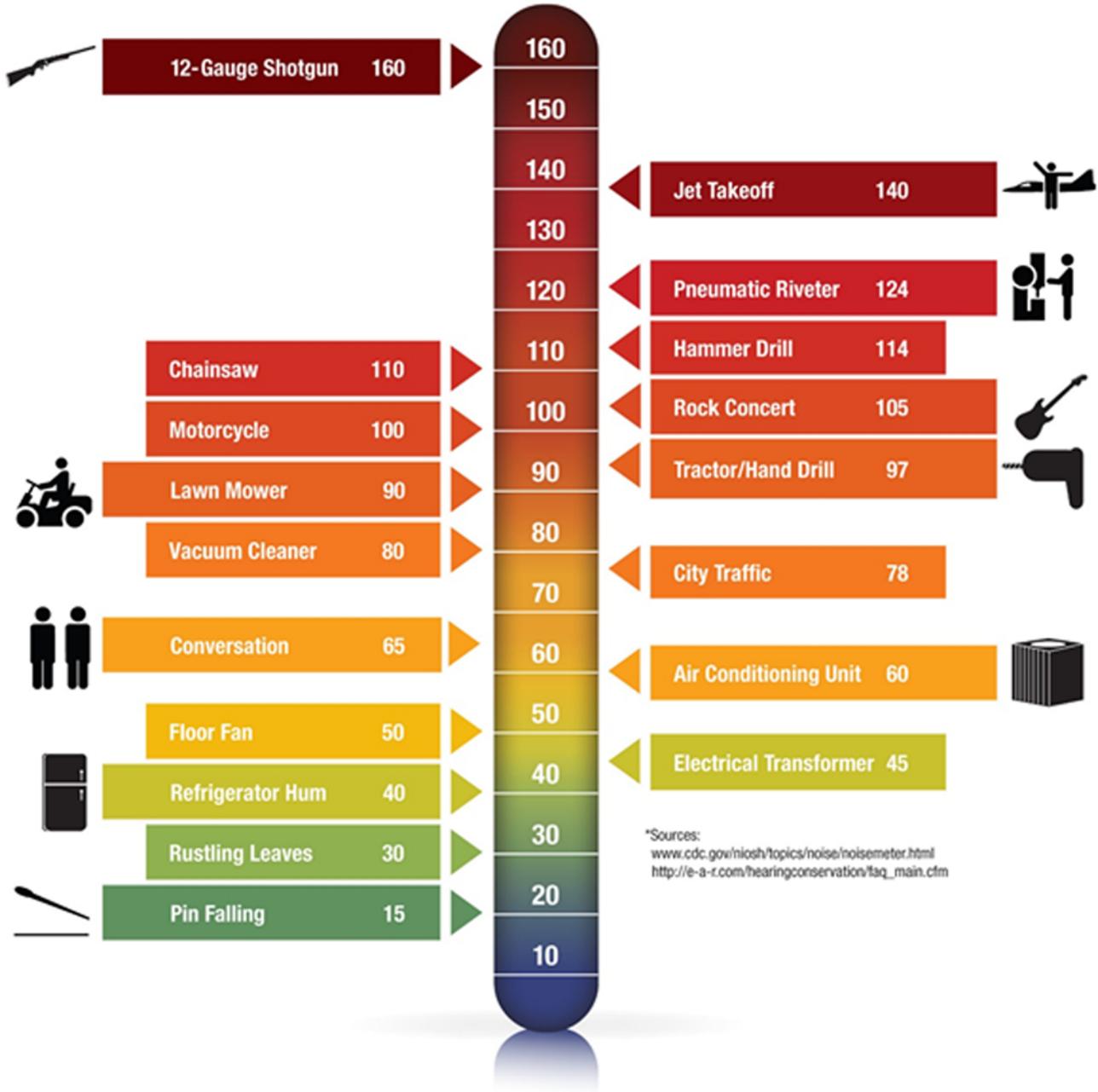


BOLLARD

Acoustical Consultants

# Appendix B

## Typical A-Weighted Sound Levels of Common Noise Sources Decibel Scale (dBA)\*



\*Sources:  
[www.cdc.gov/niosh/topics/noise/noisemeter.html](http://www.cdc.gov/niosh/topics/noise/noisemeter.html)  
[http://e-a-r.com/hearingconservation/faq\\_main.cfm](http://e-a-r.com/hearingconservation/faq_main.cfm)

# Appendix C

## Marvair

156 Seedling Drive  
Cordele, Georgia 31015  
229-273-0753

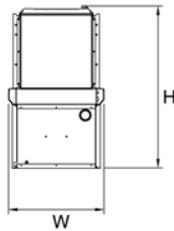
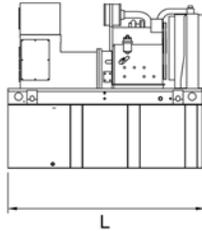
Sound Pressure Level for the Industrial Product Air Conditioners (dBA)						
Distance From Unit (Feet)	Model Number					
	ECUA06ACA	ECUA08ACA	ECUA012ACA	ECUA018ACA		
5			51.5	62		
10			50.7	58		
20			47.8	55		
30			46.5	51		
40			45.6			
50			45.6			
60						
70						
80						

- Notes: (1) Date: July 1, 2019  
(2) Background Sound Pressure Level: 41 dBA  
(3) Sound Level Meter 1 Meter Above Ground Directly in Line with Outdoor Coil  
(4) All units - 410A Refrigerant

# Appendix D

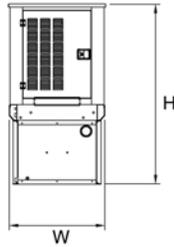
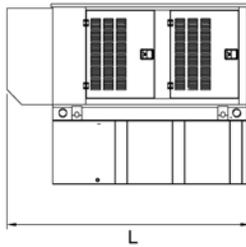
## SD030

## dimensions, weights and sound levels



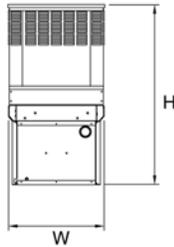
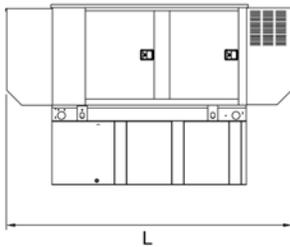
### OPEN SET

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	76	38	46	2060	82
20	54	76	38	59	2540	
48	132	76	38	71	2770	
77	211	76	38	83	2979	
109	300	93	38	87	3042	



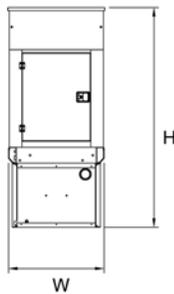
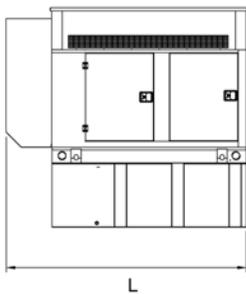
### STANDARD ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	95	38	50	2362	77
20	54	95	38	63	2842	
48	132	95	38	75	3072	
77	211	95	38	87	3281	
109	300	95	38	91	3344	



### LEVEL 1 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	113	38	50	2515	70
20	54	113	38	63	2995	
48	132	113	38	75	3225	
77	211	113	38	87	3434	
109	300	113	38	91	3497	



### LEVEL 2 ACOUSTIC ENCLOSURE

RUN TIME HOURS	USABLE CAPACITY (GAL)	L	W	H	WT	dBa*
NO TANK	-	95	38	62	2520	68
20	54	95	38	75	3000	
48	132	95	38	87	3230	
77	211	95	38	99	3439	
109	300	95	38	103	3502	

\*All measurements are approximate and for estimation purposes only. Weights are without fuel in tank. Sound levels measured at 23ft (7m) and does not account for ambient site conditions.

- Tank Options
- MDEQ OPT
  - Florida DERM/DEP OPT
  - Chicago Fire Code OPT
  - IFC Certification CALL
  - ULC CALL

Other Custom Options Available from your Generac Industrial Power Dealer

**YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER**

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.