Comment Letter I33

From: Murphy Smith
To: Harris, Susan
Subject: Boulder Brush Facilities: PDS2019-MUP-19-002; PDS2019-ER-19-16-001;
Date: Monday, February 03, 2020 10:22:32 AM
Attachments: Murphy Smith WindTurbine Noise April 26 (1).pdf

Dear Planning and Development Services, attn: Susan Harris

My name is Murphy Smith and I am submitting my comments regarding the Campo Wind Project and Boulder Brush Facilities DEIR, and want it on the record that myself and my family strongly oppose this project. I am a resident of Boulevard, a community which will be negatively affected by this project if it goes through. My background is in acoustics, audio and noise, as I got my associates degree in music business and technology and am the audio engineer at my own recording studio. Due to this background, I have an understanding of the physics of sound energy that a layperson does not, and have invested extra time, money,and effort to conduct my own research of the actual energy levels emitted by the wind turbines in the affected area. I have discussed my findings at several county planning and community meetings and I have attached my report which I presented at these meeting to include in these comments. I33-1

After looking at the DEIR for this project, I must voice my strong opposition once again. I find many aspects of the DEIR to misrepresent the facts but my background forces me to mostly contend with the section on Noise, Section 2.6. One of the problems with this report is the use of the A-weighted and C-weighted scales for decibel measurement, which are scales that by design misrepresent lower frequency sounds below 20 hertz so much that it basically erases them. This is a huge concern as the main frequencies of concern in relation to wind turbines are in the infrasonic range, which is below aforementioned 20 hertz. This skews the results very badly, as stated in my report. I measured signals coming from the existing Kumeyaay wind turbines at my home (5 miles away) which were over 100 dB on the linear SPL scale, however if the same signal was measured using the A-scale, the levels would be virtually erased! It is clear from facts like these that the reliance on weighted decibel scales such as A and C instead of using dB SPL used in preparing this DEIR is a distortion of the facts. I33-2

I also must contend with the fact that much of the DEIR uses software modeled noise, and not actual recorded measured noise levels. Software modelling, while powerful, does not accurately represent real-world noise levels. In fact, the software used, CadnaA, only models noise in the frequency range from 31 hertz to 8000 hertz. This is only about 40% of the human hearing range, which means that this software does not even fully represent audible noise pollution, not to mention the inaudible noise which is still produced. Once again, the lower frequency cutoff of 31 hertz neglects the region of noise which is audible between 20 and 31 Hertz, the high frequency cutoff of 8000 hertz disregards the audible noise between 8000 hertz and 20,000 hertz, and the software completely ignores the inaudible range below 20 hertz which is still a region of measurable vibratory energy. I33-3

There have been multiple sound professionals who have come to our community whose findings have disproved many of the presumptions of this DEIR. It seems that many of the parties interested in making this project happen are keenly trying to distort and misrepresent the existing ambient noise levels in this community in their own interest. The key point to remember is that low frequency waves like those from wind turbines are not absorbed by the atmosphere and therefore they can travel much further. According to Vestas, one of the turbine manufacturers, they emit 100 dB at the turbine itself. This energy is not absorbed by the atmosphere, in fact it is AMPLIFIED by resonances in the valleys of mountainous terrains like that of Campo and Boulevard, which explains why the signal could be even louder at my home which is 5 miles away from the existing turbines! This range of frequencies is amplified even further by the resonance inside homes.

I33-4

The scientific and medical community is still investigating the impacts of infrasound and noise pollution on human health and the environment. Most of the research shows that its effects are very negative, but the wind industry is trying to hide the facts no matter the toll on the environment or the communities. This DEIR is evidence of much of that. I plead with the San Diego County powers that be to do the right thing and protect its environment and citizens by withdrawing its support for the Campo Wind with Boulder Brush facilities project.

I33-5

San Diego Noise Ordinance 9962
AN ORDINANCE AMENDING TITLE 3, DIVISION 6, CHAPTER 4
l Section 36.401
l
“Disturbing, excessive or offensive
noise interferes with a person's right to
enjoy life and property and is
detrimental to the public health and
safety. Every person is entitled to an
environment free of annoying and
harmful noise.

Please see attached report for specific references and details.
Thank you,
Murphy Smith

I33-6

Infrasonic Impressions

Recording and observing subsonic sound pressures near San Diego and Imperial County wind farms

A Preliminary Investigation

Murphy Smith and Christina Cole

I33-7

Equipment

- Infiltec INFRA 20 LED microbarograph
- Spatial Wind Averaging Array (Filters and Tubing)

Software

- AmaSeis – vibration logging software developed by Incorporated Research Institutions for Seismology (IRIS)
- SigView- Signal analysis
- Unit Conversion website https://www.translatorscafe.com/unit-converter/en/sound-pressure-level/3-9/millipascal-sound%20pressure%20level%20in%20decibels/

Recording Locations

- Home – Paloma Way in Boulevard, CA
- Desert View Tower near In- Ko-Pah
- Ocotillo Public Park
- Road near Ocotillo Wind project

(String J, Turbine 99)

- Farmland in El Centro, CA
- Several more sites in Boulevard to be recorded soon...

Sound and Numbers

- 1 Pascal = 93.98 dB SPL
- 1 milliPascal = 1/1000th of a Pascal
- INFRA20 measures in “counts” equal to 1 milliPascal +/- 0.2 milliPascal
- 30 milliPascals= 63.5 dB SPL

Decibel SPL

- Sound pressure level reference tables and comparisons from
- https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm
- http://www.sengpielaudio.com/TableOfSoundPressureLevels.htm

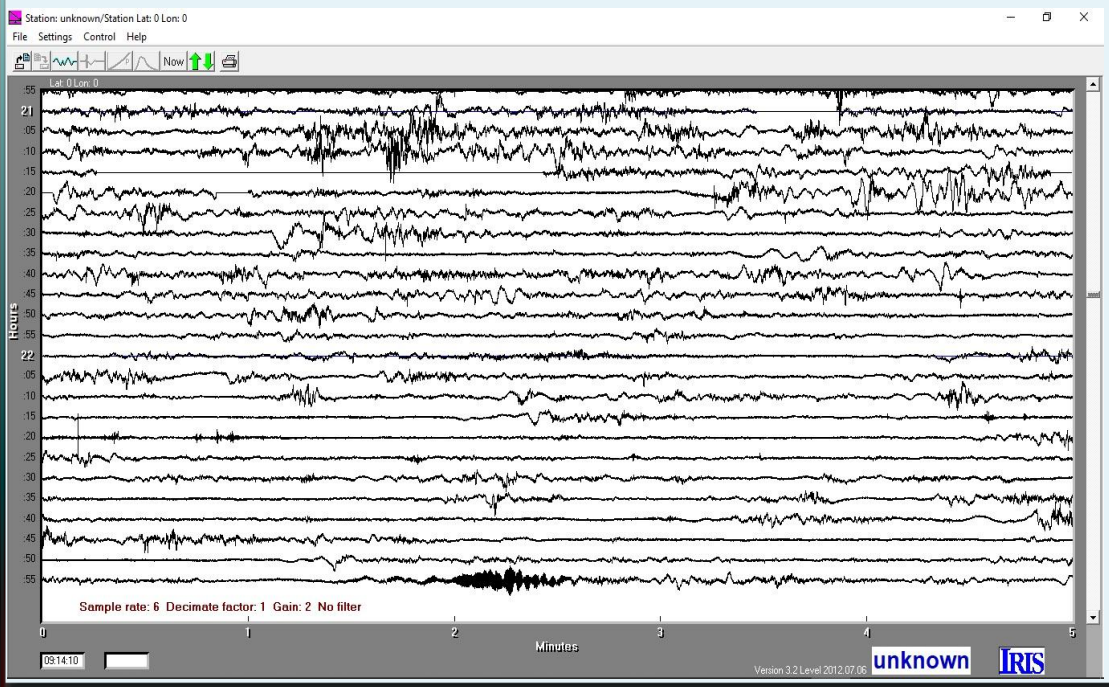
Previous Related Research

- These papers provided a framework on which to build upon and focus our research
- Wilson Ihrig Acoustics 2014 and 2019 ILFN Reports

Simple Turbine Rotation to Frequency Method

- Count how many times a blade rotates through the top of the turbine in one minute.
- Divide that number by 60

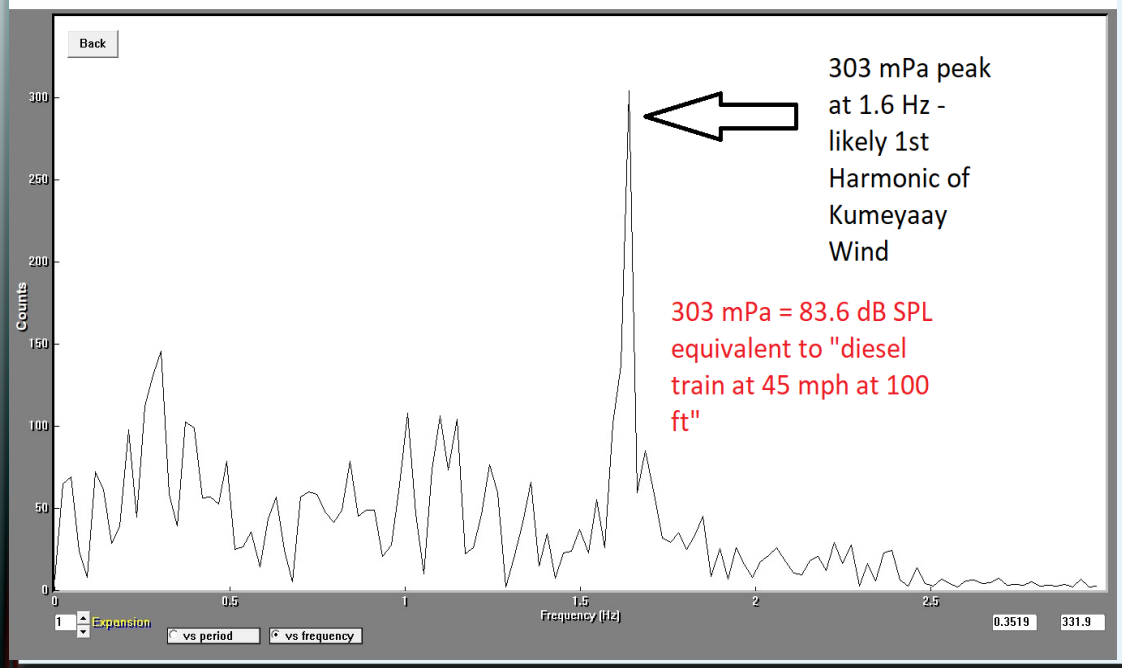
Paloma Way- April 17, 2019
Moderate Wind Gusts



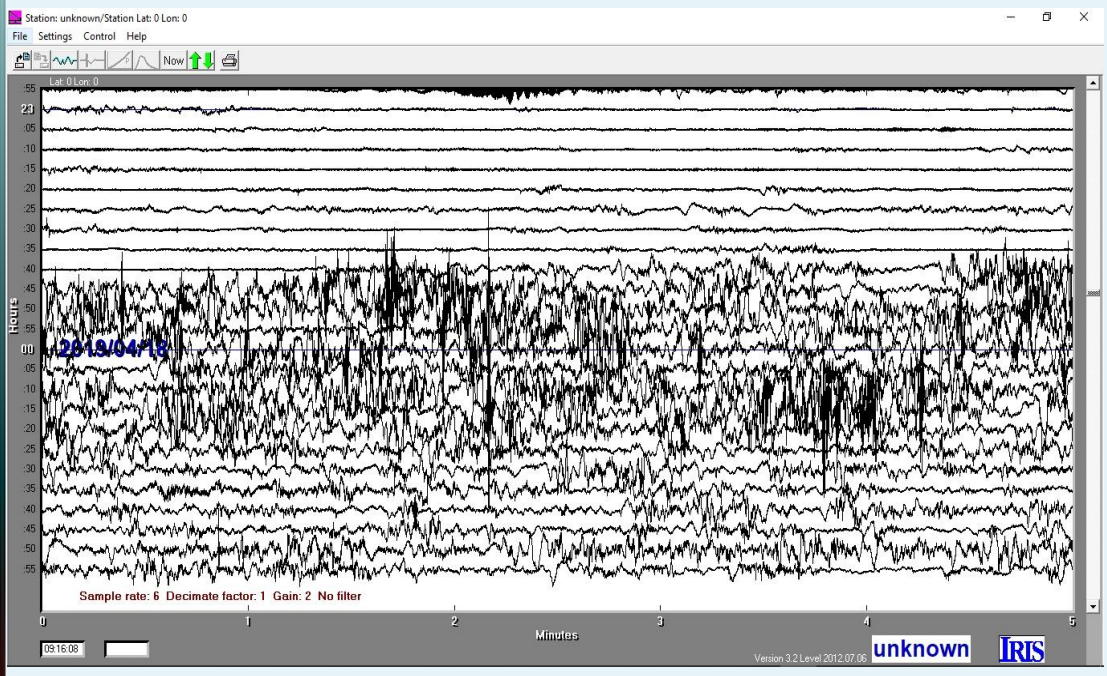
Reading Frequency Analyses

- Sound frequency on x axis
- Level on y axis
- Different colored arrows point to likely fundamental blade passing frequencies of turbines
- Matching colored diamonds above harmonics of same frequency
- Repetitive signals with corresponding harmonics imply cyclical sounds, therefore not other environmental noises.

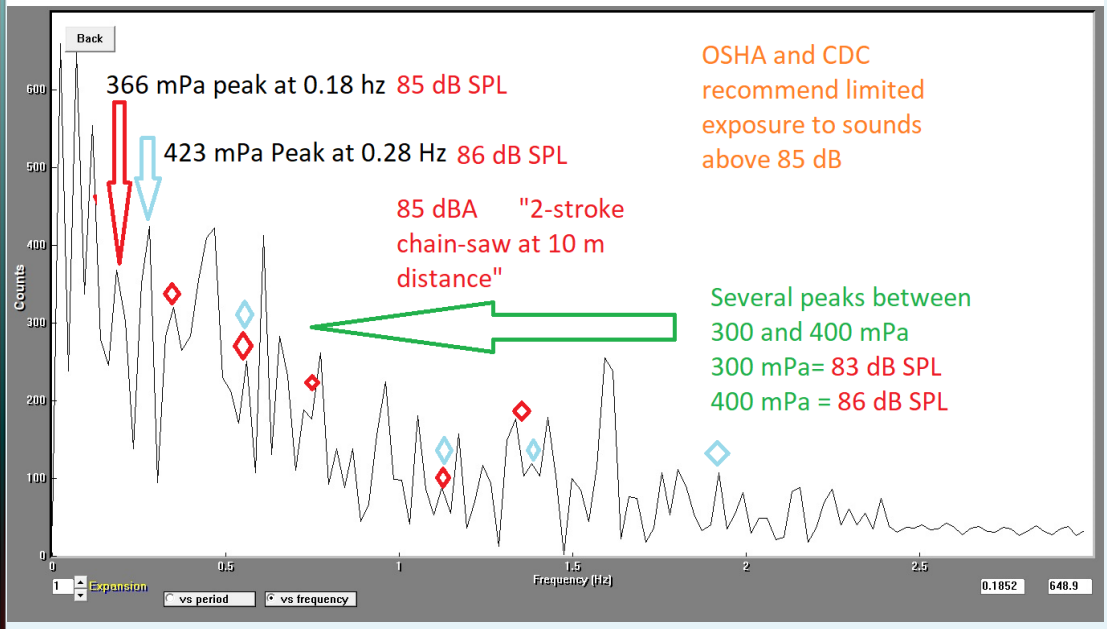
Paloma Way- April 17, 2019 2pm
Moderate Gusts of Wind



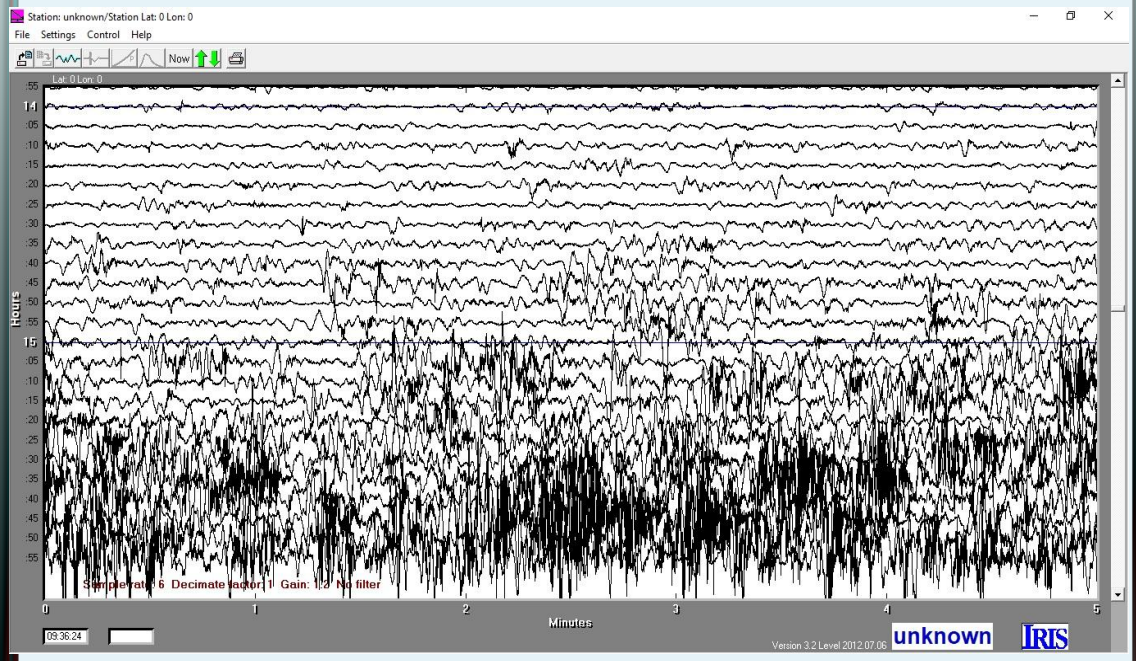
Paloma Way – April 17 4pm WindStorm



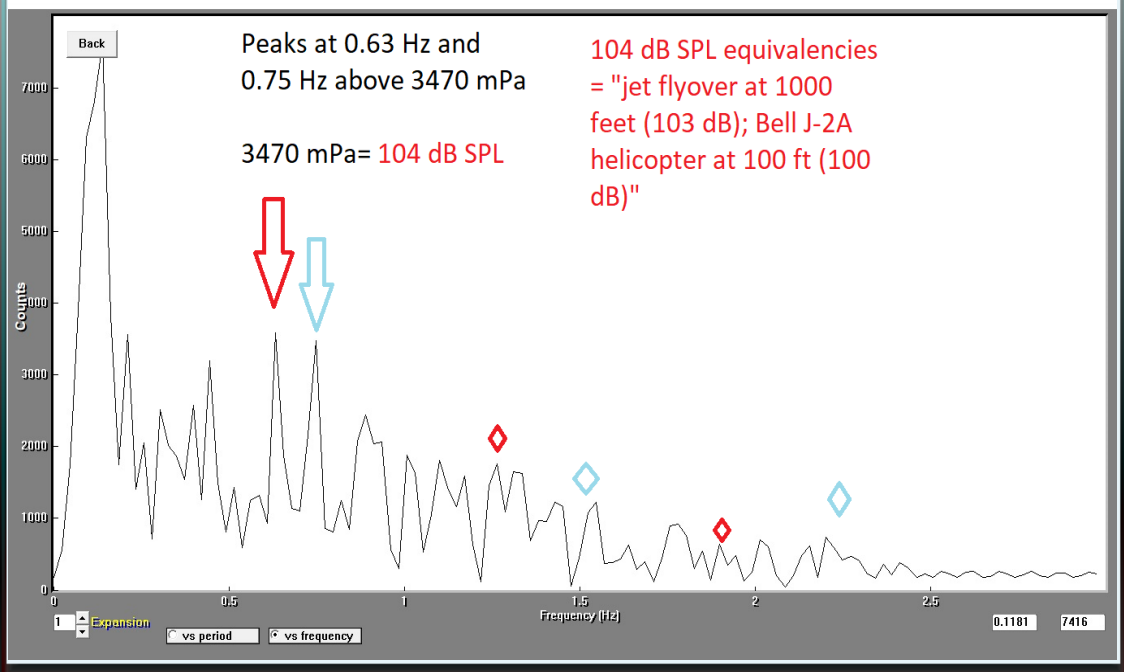
Paloma Way – April 17 4pm WindStorm Frequency Analysis



Paloma Way – April 18, 2019
A Windy Morning

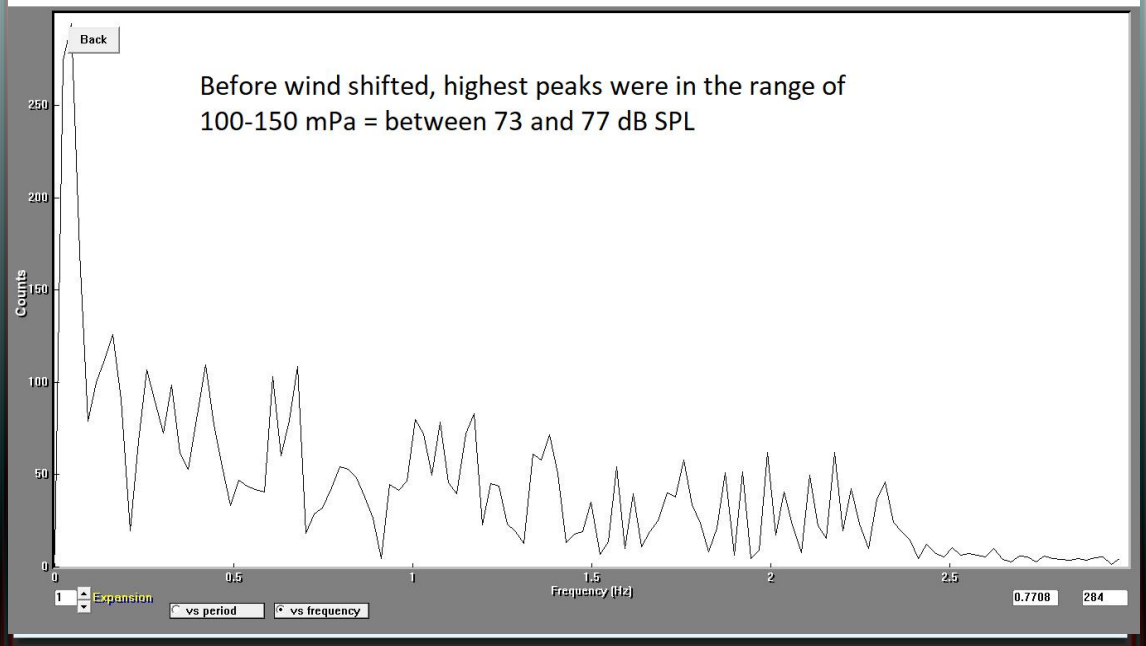


April 18, 2019 Morning Windstorm Frequency Analysis

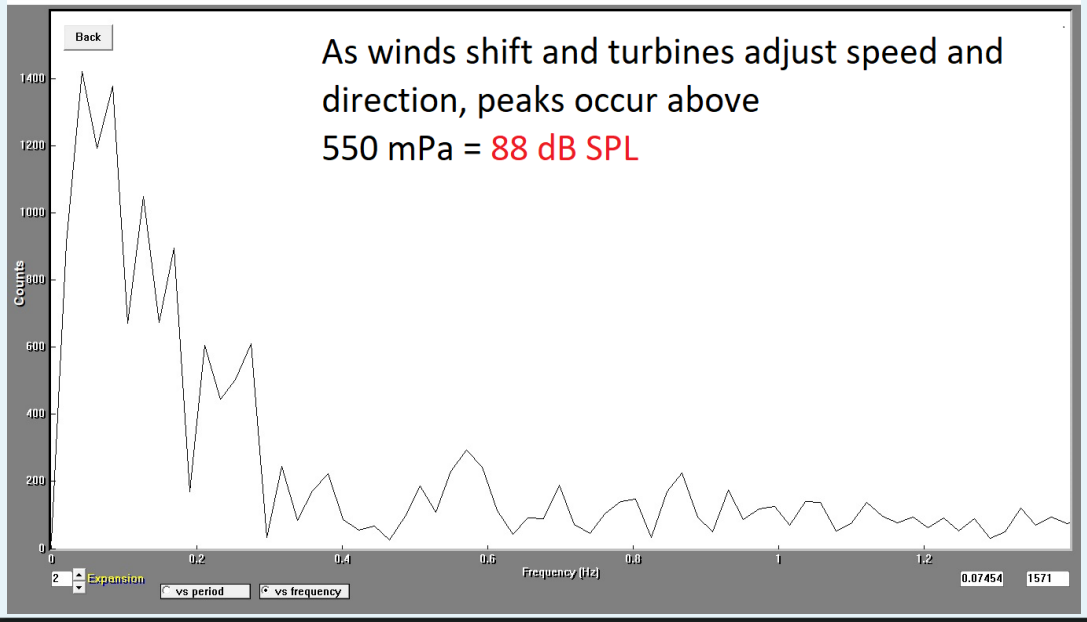


Ocotillo Wind Turbines measured up close

Ocotillo Wind Turbine 99
April 18, 2019 Before Wind Shift



Ocotillo Wind Turbine 99
April 18, 2019 After Wind Shift



As the Crow Flies

- Distance from Ocotillo to Boulevard is approximately 17 miles

How does this ILFN travel so far?

- The wavelengths are much longer, so less energy is lost and there is negligible atmospheric absorbtion.
- Like the souped up car driving down the road from you, playing their music, but all you hear is the bass.
- Wind pushes sound even faster in currents.
- There are fewer structures to break up longer waves in rural areas, esp. deserts.

Why is dBa weighting inaccurate for infrasonic sound?

- The dBa scale is based on human hearing and compensates for perceptive qualities of the ear.
- Infrasonic sound is felt more than heard, and sensed by the ear and vestibular system in ways that are not strictly hearing (via vibration, air pressure, conduction, and resonance)

CDC and OSHA Noise Dosages

- “The noise dose is based on both the sound exposure level and how long it lasts (duration) so for each increase or 3-dB (NIOSH) or 5-dB (OSHA) in noise levels, the duration of the exposure should be cut in half”
- https://www.cdc.gov/niosh/topics/noise/reducenoiseexposure/regsguidance.html

CDC/NIOSH/OSHA Chart

- Time to100% noise dose=Exposure level per NIOSH = Exposure level per OSHA
- 8 hours 85 dBA 90 dBA
- 4 hours 88 dBA 95 dBA
- 2 hours 91 dBA 100 dBA
- 1 hour 94 dBA 105 dBA
- 30 minutes 97 dBA 110 dBA
- 15 minutes 100 dBA 115 dBA

San Diego Noise Limits

- One hour average maximum of between 45-70 dBa based on zoning
- https://www.sandiegocounty.gov/content/dam/sdc/cob/ordinances/ord10364.pdf

San Diego Noise Ordinance 9962

AN ORDINANCE AMENDING TITLE 3, DIVISION 6, CHAPTER 4

- Section 36.401
- “Disturbing, excessive or offensive noise interferes with a person's right to enjoy life and property and is detrimental to the public health and safety. Every person is entitled to an environment free of annoying and harmful noise.”