

My wife & I listened to the SD PUC Prevailing Wind Park Evidentiary Hearing held in Pierre last fall. The following Sunday we e-mailed Rick James of E-Coustic Solutions regarding 4.2MW turbines. From our readings we knew there were none this large in MN or SD & it seemed reckless by all levels of Government to permit this size turbine to be located near people forced to live in the "Sacrifice Zone".

I present excerpts from the Richard James letter but I beg you to study that letter:

The W-D & US Dept. of Energy have been aware of this problem with the larger turbines for nearly 40 yrs. We can thank politicians supporting the PTC & then placing a mandate on electric utilities. The electricity is not needed & w/o government support it is doubtful another turbine would be sited.

It is so simple. If you & others are unable to protect the Health, Safety, Welfare & Property Rights of the non-participants from the W-D & neighboring participants, the project should be altered or it should go away.

Karl Marx:

*"The theory of Communism may be summed up in a one sentence:
Abolish all private property."*

Lawrence Hunter (2011) says it best:

*"it boils down to the innocent sacrificing & suffering for the greater good,
property rights be damned".*

In this case, there is no greater good. We have a reliable source of electricity at less cost. Washington politicians from near & far have provided incentives for the W-D to write the ordinances including setbacks, and intimidate local officials by whatever means necessary to force non-participants into the "Sacrifice Zone".

For example, the 3 W-D were asked by our County Comm. "What are you willing to accept?" Yes, that was what those in the "Sacrifice Zone" got.

When we asked our P & Z BOA to use their discretion with the W-D & relocate some turbines to mitigate the negative impact on 40 - 50 people, they refused.

We learned in a court action the 4 appointed members of the P & Z BOA were conflicted.

This is part of the public record.

Our lawsuit is the first of two working its way through the court system.

When I was on the P & Z BOA during a question & answer with W-D;

a Deuel County Comm. sitting on the board whispered in my ear

"When I have a question, I call [REDACTED]". A couple days later [REDACTED] & I viewed an investigative reporter talking to a resident who was obviously leaving Callahan Wind Farm in El Paso County, CO. The reporter asked if some Co. Official couldn't help him with his plight domiciling in the "Sacrifice Zone".

The resident said he was given a phone # to [REDACTED] but he didn't return our phone calls. Roughly 2 years ago that same commissioner said "he had no wind contract." He used to but it was ended because there wasn't enough wind in his area. Today he has turbines sited on his property by NextEra.

What of this [REDACTED] Well in 2014 a Canadian firm empaneled a group of experts who recommended 40dba for its citizens, but 2 yrs. later [REDACTED], co-leader of that panel, recommended 50 dba for Deuel County residents.

Keep in mind with every increase of 10 dba the receptor perceives it as a doubling of loudness. After reading the findings from a number of PUC hearings this past year, it appears SD PUC has a similar problem as Deuel. Credence is given to W-D expert testimony but little to none for the other side. I had pointed this out a number of times at various forums. It was reported the above inconsistency to both Deuel & Grant County's P & Z BOA. Both of these county boards had an opportunity to ask Dr. Olson about that, but chose not to.

It seems, the past 40 yrs. setbacks have become encumbered by the "Green Energy" politics. W-D & their Lobbyist befriend politicians at every level. They use any means necessary for control. It is the politicians job to spend other people's \$ & they are at an alarming rate. And the least among us, the rate payer, is saddled with the bulk of monetary damage.

I voted for former Gov. Dugaard every time I was given the opportunity.

I considered him to be a tight - fistted Conservative, but during his tenure he has given millions of \$ to "Big Wind".

It will be interesting to see if our former Gov. retires to a utility company board.

Speaking of \$. During the Deuel County process one of our commissioners, paraphrasing, we don't want to do anything that may cause a Referendum Vote.

It could cost up to 30K. "That's big bucks." It cost [REDACTED] & I in excess of 250K to remove ourselves from the Deuel County tax rolls. We would have rather given that \$ to [REDACTED] [REDACTED] It probably is not a big deal to a W-D or a politician like our former Gov., but it is to this old man.

[REDACTED] & I showed our home to prospective buyers many, many times. And many asked about the turbines. I do not believe they asked because they would consider a purchase only if the home was located among or near the turbines.

By now you must know, naiveté has no bounds, but it seems to me you either protect all, or you protect none. [REDACTED] & I thought we were dealing with people who would do the right thing whether someone is watching or not, but the system has striped the character from these people & replaced it with greed. For me, I can have only one master.

What we are asking of you requires a great deal of character.

We are asking you 3 Commissioners to study the letter from Rick James, apply it to this project, and protect those innocent families forced to live in the "Sacrifice Zone".

Thank You.

George L. Holborn Sioux Falls, SD

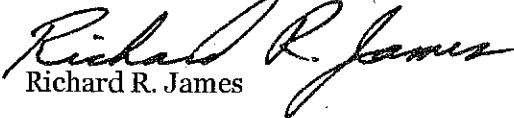
other theories, such as the NOCEBO effect, which rely upon people's imagining the sensations are not correct.

These studies, and the experience I have gained in working at a number of wind projects for groups of people living with wind utilities around their property, have moved the arguments about safe distances and sound levels of audible noise outwards to be more protective. In 2008 I used standard acoustical procedures to determine the proper sound level for wind turbines of the 1.5 MW size in quiet rural communities. I concluded that the limits would need to be 35 dBA (Leq) to not result in annoyance or sleep disturbance and that a setback of 1.25 miles would be protective. I can no longer say that 1.25 miles is enough. There is increasing evidence that, for those who are sensitive to the pressure pulsations, even larger setbacks are required.

Dr. Schomer has also published a paper where he applies the same acoustical procedures I used in 2008 to arrive at the limit of 35 dBA (Leq).³ He applies three different models and arrives at the conclusion that wind turbine sounds should be limited to no more than 36 to 38 dBA (Leq). This low limit is needed to account for the pulsations and low frequency tones and other characteristics that are not addressed with a dBA standard. In other words, the sound emitted by the larger model wind turbines needs dBA limits that are very low because the real source of complaints are not adequately measured using the A-Weighting scale.

I would urge the local government to set limits that are protective. 38 dBA (Leq) should be the maximum threshold, if A-weighting is used for the criteria. If a C-weighted criterion was considered, it should be 50 dBC (Leq). It would be best for a large setback and protective threshold to be set by the local authorities. This does not preclude the developer with entering into agreements with non-participating landowners to compensate them for any noise trespass on their properties and for the resulting annoyance and other adverse impacts.

Sincerely,
E-Coustic Solutions LLC


Richard R. James

³ Schomer, P. D., et. al., "A possible criterion for wind farms," published in the Proceedings of Meetings on Acoustics, 173rd Meeting, June 2017, paper 4aNSb3.

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October 15, 2018

To: Mr. George Holborn

Subject: Infra and Low Frequency Noise Impact of Utility Scale Wind Turbines on Residents of Wind Projects

Dear Mr. Holburn:

I would like to address the potential for adverse impacts to people who are living in or near the footprint of 4.2 MW wind turbines.

First, it should be recognized that this size of wind turbine is new. There is no experience using land-based turbines of this size in communities with residential and rural property where people occupy or work in homes and other structures. What is known about the larger models beginning with the 2 and 2.5 MW wind turbines of the type operating in the Wisconsin Shirley Wind Project is that they produce significant infra and low frequency pulsations that result in a consistent set of complaints that related to sensations of pressure, tinnitus, dizziness, nausea, headaches, etc.. None of these effects can be explained as being an effect of audible sounds. Those are more commonly associated with annoyance and sleep disturbance. Even larger wind turbines will produce more infra and low frequency sound even if they produce the same A-weighted sound levels as did earlier models. The acoustic energy shifts into lower frequency as size increases.

While the Shirley wind project consists of only eight 2.5 MW wind turbines located in a rural area with mixed agricultural, dairy, and residential land use has resulted in 3 families abandoning their homes (distances of 3500 feet to over one mile from the nearest wind turbine) and over 50 complaints from other families. The Brown County Health Department has declared a 2.5-mile zone around that project to be a "Human Health Hazard" which is a formal status under Wisconsin Law.

This project has been heavily studied by a variety of acousticians, including myself, who have concluded that infra sound is a special problem with these larger models and that it must be considered as a source of adverse impacts on the people living near them. Dr. Paul Schomer, Emeritus Director of the Acoustical Society's Standards Committee has studied the Shirley Wind homes and published a paper describing the vestibular mechanism that is triggering the reported symptoms¹. Recent laboratory studies² have shown that in blinded experiments test subjects who self-identify as being sensitive to wind turbine infra and low frequency sound can sense the pressure pulsations at sound levels far below the threshold of audibility. In other words, the test subjects could not hear any sound when the pulsations were present, but they could feel it and determine the direction from which it was being produced. Some of the test subjects who did not sense the pulsations at wind projects were able to sense the pulsations in the laboratory study while others did not. The ability to sense the pulsations under controlled laboratory conditions supports the current understanding that the wind turbine's pressure pulses are linked to the complaints and that

¹ Schomer, P.D., et. al, "A theory to explain some physiological effects of the infrasonic emissions at some wind farm sites," published in the peer reviewed Journal of the Acoustical Society of America, Pages 1356-1365, February 2015.

² Cooper, S. E., "Subjective Perception of wind Turbine Noise – The Stereo Approach" published in the Proceedings of Meetings on Acoustics, 174th Meeting, Dec. 2017, paper 4pNS5.