



**TOWN OF BOURNE
BOARD OF HEALTH
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**MINUTES
JUNE 15, 2011**

Members : Kathy Peterson, Chairman; Stanley Andrews, Vice-Chairman; and Galon Barlow-

Meeting was called to order-7:00 pm

Public comment on Draft Wind Turbine Regulation.--. Ms. Peterson stated that the meeting was for public comment. Speakers need to sign in to speak. No new evidence. No experiences. Only comment on the regulations as drafted. The Board will not be accepting any questions. Board wanted comment after the draft version was put out. One audience member passed out something to the Board members. The first speaker was John Lipman, President of Lipman Development Strategies on behalf of Jerry Ingersoll. Representing New Generation Wind Project. Mr. Lipman made several comments. First he stated that the Bylaw is still in a cursory draft form and needs more work and needs more comment than can be done at this one hearing. This is not to ignore Board's work to date. This regulation deals with a very complex science. Mr. Lipman stated that as his group has gone thru the regulation they believe that there is a lack of clarity and completeness. Mr. Lipman stated that the proposed regulation measures sound as decibels but does not use the standard scientifically accurate measure of decibels on what is known as the a-rated scale. There are a number of different scales. Mr. Lipman stated that this can lead to ambiguity. On the issue of sound, there are the establishment of caps in the reg of 65 db during the day, with no rating, and 40 db at night. He questioned what the cap means. Is it an hourly noise or an annual noise or an average as proposed by the World Health Organization. Does it mean you cannot exceed the 40 db at any time during that 7 PM to 7 AM period? Mr. Lipman stated that it is well known that there are normal exceedances above the 40 db just from the Scenic Highway.

The applicants feel that noise from wind turbines should be carefully regulated but that the regulations should be within the same limits that you would apply to other common residential and commercial noise. Traffic and lawn equipment and commercial equipment can exceed this value. Mr. Lipman commented that there was still a section that said 'xx' in terms of the modulation. These are things that need to be filled in before meaningful comment can be made. There is also uncertainty as to whether all of the aspects of the regulation are within the purview of the Board of Health. Mr. Lipman stated that there are peer review findings which show that there are no health impacts at sound levels that exceed the ambient by less than 10 dBA. The regulation requires no shadow flicker passing the property line except through a variance. This may be a legitimate interest of the Town, but Mr. Lipman questions whether it should be the Board of Health that regulates it or should it be some other Board. Mr. Lipman finally stated that it has been postulated that a photosensitive epileptic seizure can be triggered by flicker and that this is generally seen in the frequency range of 5-30 times per second, there is no peer reviewed study to verify connection between photoepileptic seizures and turbines. It is never easy to put together such a regulation. Mr. Lipman again thanked the Board for all the work on the regulation but he and New Generation Wind believes that more time is needed to flesh out the regulation and to fill in blanks where there are XX's. There needs to be more time for public comment as well. He is asking that the Board should work to complete entire document, recirculate it, give 21 days of written and verbal comment, which is standard, and allow their experts to come in to make comment and answer technical questions. It is an important issue from his clients perspective and he understands that it is in unchartered water for any Board of Health but he feels that any regulation should have a strong scientific basis and be fair to all land users and landowners.

Kathy Sherman from Brewster was the next to speak. Ms. Sherman is a neuro scientist and has done a lot of review of regulations across the world. She is not aware of any peer reviewed studies that show the absence of health effects. She does know that in Denmark and Sweden they limit emissions, the sound received from wind turbines, to 40 and that effects on sleep are seen increasingly at 30+ decibels. In Ireland, EPA puts a penalty on amplitude modulation and this may be more appropriate to address the annoying characteristics. In terms of a level of 65 as a cap, that is past what the WHO considers beyond tolerance for allowing the enjoyment of outdoor activities. She stated that the premise that being near a highway masks wind turbine should does not have any peer reviewed evidence. She feels that there is actually contradictory evidence. Ms. Sherman has several specific suggestions---define amplitude modulation, perceptible is plus or minus 3.

She suggests that because of the high/low frequency content that the Board not ignore this. She also stated that for pre-existing ambient sound the State is looking for the sound level that is exceeded 90% of the time for ambient, at the quietest times, seasonally, and diurnally, but it is still ambiguous. She encouraged the Board to develop standards for ambient sampling. How many samplings need to go into ambient? In Denmark and Sweden they do model it out and validate it by showing that as the sound pressure increases the perception of the sound increases. It is a much more conservative model. All of the information that is available is largely from 600 kw not industrial sized. They are only studies that didn't show health effects from sound pressure, but they had a broad survey and in all groups tested, the self reported health effects was about 26%.

John Brennan from Bournedale was next to speak. Mr. Brennan stated that he resided at 25 Chamber Rock Rd. Mr. Brenna thanked Board for the draft. He stated that it is a good start. He was concerned and was looking for value for the XX db. He noticed that the definition of a Wind Farm is not in draft. Merriam Webster defines a wind farm as an area of land with a cluster of wind turbines which drive electrical generators. He believes that a distinction needs to be made between an individual wind turbine and a wind farm. Ms. Peterson stated that regulation is for each individual turbine. If someone had 48 turbines, they would have to have a permit for each of the 48 turbines. Mr. Brennan stated that he is speaking about the cumulative effect of many turbines from a wind farm. He suggested separation distances from the self-proclaimed most stringent country in the work, Australia. The suggested distances between wind farms and dwellings is between $\frac{1}{2}$ to $\frac{3}{4}$ of a mile, 2600 feet to 3900 feet. The setback changes according to factors like the # of turbines, the locations relative to dwellings, sound power level of the turbine, topography, and existing background noise environment. When putting together a regulation all these factors should be met before any approval is given. Mr. Brennan called for report from developer that would provide background noise locations, time and duration of the background noise, monitoring regime, wind speed monitoring locations and heights above ground, and others. He suggested comparison of the predicted noise levels against a criterion on which integer wind speed for the closest dwellings to the wind farm. He takes this to mean that the wind studies that need to be provided from the dwellings themselves not from the location of the wind turbines. If the wind study is from the wind turbine locations it may not give the correct picture. Comparison of predicted noise levels against the criteria at each integer wind speed for the closest dwellings to the windfarm showing compliance with the proposed modification or operating strategy in place. In other words the applicants need to prove the work and do ahead of time. Then once the turbines are in place, there needs to be some measure

than can be reported back. This is where compliance checking comes in. The Board should impose a condition that requires compliance checking within a certain time frame. Something needs to be in place to monitor wind speed and then need to report back to the Board on a regular basis. It is not enough to just have the applicant say that they can do these things. There has to be compliance after the fact. Mr. Brennan has another section on amplitude modulation. He stated that amplitude modulations should be the most important thing looked at. It has greatest impact on people within their homes. One of the thing imposed is that if there an a-rated 5 dbA exceedance, there will be a fine. He stated that this is significant. He stated that since to reduce this the distance between source and dwelling has to be approximately doubled or the noise source output to be reduced by 2/3 rds. In terms of wind turbines this means that the distance between the turbines and the nearest dwellings might need to be doubled or up to 2/3 of the turbines would have to be removed from the project.

Lydia Manter—Ms. Manter stated that she is speaking for Peggy and Ray Burke 62 Clarissa Joseph Road. Ms. Manter read from material and stated the following: On page 3, she questioned the distance to abutters. She believes that theabutters should be within 10 x rotor diameter of the new Bourne bylaw. On page 4, the comment is that sound engineers shall have no financial interest, especially when baseline is being determined. Also on page 4, the threshold cap of 64 db is too high and higher than state level of 60 db which includes city noise, highways, and other noises. At last BOH meeting she stated that she heard mention of variances from noise and modulation. It was mentioned that variances would have to be obtained from all abutters if noise or modulation exceeded the values that the BOH regulated. Ms. Manter stated that the distances of all abutters must be defined in conjunction with the new bylaw, 10 times the rotor diameter. She further stated that the Board should only give a variance if it is within the parameters of the bylaw and if it will do no harm to any other abutter, and this must be proven. Ms. Manter stated that on page 4 under Catastrophic failure, there should be a plan to deal with fire and hazardous material escaping from the WECS's onto the population and into the ground water. Blade and ice throw must be addressed. She has a question on abandonment- She believes that the timeframe might be too long. If blades fall down from the turbine if after a certain amount of inactive time, who is going to pay for material and fluids and decommissioning of the entire turbine. She further stated that page 5 is very important in terms of variances but unfortunately the wording is not in draft yet. She believes that it should be a full vote of the Board and abutters within 10 x the rotor diameter. Lastly, she stated that the PD and Fire must have a key.

John Riha was the next speaker— Mr. Riha stated that he had a few points and handed out information to the Board. Mr. Riha stated that he has information from the International League Against Epilepsy and it was also a study done by the Neuroscience Institute that was working to define aspects of Shadow flicker. The study came up with the known fact that wind turbines are known to produce shadow flicker by the interruption of sunlight. Looking at the known parameters of the seizure promoting effect of flicker, contrast, frequency, ratio, etc. the study determined that the proportion of patients affected by viewing wind turbines expressed as distance in multiples of hub height of the turbine showed that seizure risk does not decrease significantly until the distance exceeds 100 times the hub height. Since risk does not diminish with viewing distance, flash frequency is therefore the critical factor and should be kept to a maximum of 3 per second. On wind farms the shadows cast by one turbine on another turbine should not be viewable by the public and if the cumulative flash rate exceeds 3 per second there is a problem. In the study the incidents in 17-19 year olds is more than 5 times greater than in those younger. Photosensitivity persists in 75 percent of patients in the study. Also, Flicker from turbines that interrupt or reflect sunlight in frequencies greater than 3 hz poses a potential risk for inducing photosensitive seizures. In the regulation on page 4 – where it states that shadow flicker shall not exceed 3-60, the study shows that anything greater than 3 would pose a risk of inducing seizures. In case of turbines with 3 blades the maximum speed of rotation should not exceed 60 rpm. The layout of the wind turbines should not create multiple flicker and should not be visible to public. On Page 4 under thresholds, where the Board addresses days and nights, and it was being shown the measurements above ambient, he questions what ambient is and how it is determined. This has to be arrived at critically. The ambient needs to be determined at the residence affected. If there is a question of noise or shadow flicker, how do you measure it? The measurement has to be at the homes. The readings submitted should be from within the community. There is a scientific fact that times of year affect ambient sound. He believes that March is the best time to do ambient air studies. Mr. Riha also believes that defining abandonment as no use in 365 days is not appropriate. He believes that 120 days more appropriate.

Chris Kapsambelis is the final speaker.- Mr. Kapsambelis stated that his comments have to do with procedural matters. The regulation calls for a preconstruction study noise study by an engineering consultant selected by the Board and paid with fund supplied by the applicant. Mr. Kapsambelis stated that based on past experience, he believes that preconstruction noise study predictions fail to do prevent resident complaints or annoyance or ill health. It is a fair assumption that the Board will have to deal with some post

construction complaints. To address the complaints the Board will have to hire consultants to conduct noise measurements to determine compliance. He stated that the standard protocol is mentioned in a letter to David Carrignan where the MA DEP requires noise readings for each wind speed increment for each hour of the day for each complaint location. The readings are done with the turbine off and with turbine on. He calculated that it would take some 27,000 readings over several months to accumulate the data. The data would have to be analyzed to find if it complies. This will be a very expensive effort for the Town and for the applicant. Mr. Kamsambelis stated that there were no provisions in the proposed regulation for the applicant to cooperate in the post construction study. The applicant would have to turn the turbines off and on for measurements to be made. In addition in the draft, there is no funding provisions for post construction study. He stated that if there is a violation, who is responsible. If the permit was granted in good faith by Board after consultant was hired by Board, could the Board be libel since they approved the project. Could the applicant state that the Board of Health did not hire a competent consultant and the Board be libel for all damages. Mr. Kapsambelis also stated that once the turbines are constructed, there is no way to mitigate short of shutting turbine down or moving residents. Finally he stated that perhaps a setback is the best answer after all.

Ms. Peterson stated that everyone has spoken who wanted to comment. Next agenda has discuss and possible vote. Ms. Peterson stated that she will meet with Brian Wall, Town attorney. Information will be sent to Attorney Wall.

Stanley motion to adjourn. Skip seconded the motion. Adjourned 7:37 PM