

Mason County Planning & Zoning Department

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July 6, 2015 - SPECIAL

Minutes of the Mason County Planning Commission meeting held at Summit Township Hall, 4879 Deren Rd, Ludington, on July 6, 2015 at 7:00 p.m.

MEMBERS PRESENT: Steve Bieniek, Michael Shaw, Tom Hooper, Doug Robidoux, Dennis Dunlap

MEMBERS ABSENT: Ralph Lundberg, Cary Shineldecker (both excused)

OTHERS PRESENT: Trudy Roy, Mary Reilly

The meeting was called to order at 7:00 p.m by Dennis Dunlap.

Addition or deletions to the agenda: None

Conflict of Interest: Ralph Lundberg and Cary Shineldecker were excused because of a conflict of interest with the Lake Winds Energy Park.

Dennis Dunlap opened public comment.

Evelyn Bergaila handed out a map showing her property and the turbines around her dwelling. Ms. Bergaila voiced concern about the cumulative decibel level with several turbines surrounding her property.

Dennis Dunlap closed public comment.

Correspondence: None

New Business: Dennis Dunlap asked HGC to present the sound study results to the Board.

Ian Bonsma, HGC Engineering, stated that the study took place between 3/23-3/29 and 4/6-4/12 of 2015. Five locations (1,2,5,6,7) were tested with attended measurements occurring generally between 9 pm and 6am when background noise is lowest. There were 40 minute on and 40 minute off periods with some 60 minute off periods if they were relocating to a new site. Data was collected in 10 minute intervals with 10-second data points. There had to be at least 30 valid data points within a 10 minute period for the data to be valid.

Ian Bonsma stated that the background sound from fans was less than 1 decibel and is adequately handled by subtracting 1.5 dBA from the background sound. Mr. Bonsma summarized the findings at each site and reviewed graphs and tables included in the written report.

Location 1: compliance is achieved with mitigation (NRO mode 2). Mitigation is required

1 to maintain compliance. There was good separation between the ON and OFF periods.
2 Ground level winds were moderate at 2.6 m/s. Measurement 44.3 dBA.

3
4 **Location 2:** compliance is achieved with mitigation (NRO mode 2). There was good
5 separation between the ON and OFF periods. Ground level winds were low (high wind
6 shear). Measurement 44.7 dBA (with turbines operating slightly under power). Mitigation
7 is required to maintain compliance.

8
9 **Location 5:** Two data sets are in report (Set C= 44.6 dBA, Set F=45.4 dBA). Nearby
10 turbines are not mitigated. Set F shows a non compliant result. Ground wind was
11 moderate with ON and OFF measurements at 3.2 and 3.4 m/s respectively. Moderate
12 level of interference in the ON condition (43 valid data points out of 60). There is a minor
13 exceedance of the 45.0 dBA standard. Mitigation is needed when the mitigation plan is
14 implemented throughout the entire LWEF.

15
16 **Location 6:** compliance is achieved with mitigation (NRO mode 2). There was poor
17 separation between the ON and OFF periods. Two OFF periods are shown in the data
18 (43.2 and 39.3 dBA). Ground level winds were moderate (2.9 m/s and 1.9 m/s for OFF
19 condition, 2.8 m/s for ON condition). Measurement 43.2(OFFa) 44.7 dBA (OFFb) (with
20 electrical power slightly below required). Mitigation is required to maintain compliance.

21
22 **Location 7:** Three data sets provided (Set B- 45.1 dBA, Set E-45.0 dBA, Set G-45.2
23 dBA). Ian Bonsma focused on Set G in the presentation. Ground level winds were
24 strong ON-4.7 m/s and off 4.7 m/s, Interference was caused by wind gusts producing 31
25 valid data points for the OFF period and 39 data points for the ON period. The site is
26 close to trees. There is a minor exceedance of the 45.0 standard. Additional turbines
27 should be placed in NRO modes when the mitigation plan is implemented throughout the
28 entire LWEF project.

29
30 Dennis Dunlap asked the board if they had any questions.

31
32 Tom Hooper stated that weather seems to be a problem in getting data. He asked if
33 there is a way to get data and such that weather is less of an issue.

34
35 Ian Bonsma stated that they have spent a lot of time in the field. HGC can show
36 compliance at certain times with the data they have, but there is also the question of
37 whether there are any 10 minute periods where there is an excess. "There are very few
38 times of year those measurements can be taken", such as the end of March and April as
39 long as the spring peepers [frogs] are not present. Summer months bring insect noises.
40 He stated the different jurisdictions use different methods to determine compliance.
41 "There is no one way to get data that is ideal."

42
43 Dennis Dunlap asked about data that was gathered with ground wind above ANSI 3 m/s,
44 is the data valid above 3m/s?

45
46 Ian Bonsma explained that they use a large wind screen to help obtain good data up to

1 5m/s. There can be “wind buffeting” on the microphone at high winds, those data points
2 need to be removed. It is a wind project “you need wind to get these things running”.
3 “We had about two nights out of ten with good wind shear (low ground wind) and that
4 condition does not last the entire night.” Mr. Bonsma stated that “The cut-off at 3 m/s is
5 too low, 5 m/s is more reasonable”. HGC reviewed the data in audio recordings and
6 compared the maximum sound level to the measured LAeq as well.

7
8 Dennis Dunlap asked for Consumers Energy to make their presentation.

9
10 Peter Guldberg, Tech Environmental (TE), explained his qualifications. TE performed
11 data collection side-by-side with HGC. He stated that HGC did not follow the ANSI
12 standards because they placed the anemometer too low to the ground and did not
13 exclude data collected over 3 m/s which, in his opinion, is required by ANSI. Microphones
14 must be tripod mounted approximately 1.5 meters above the ground (or 5 feet). On the
15 night of April 7, at site 5, Mr. McCabe mounted his microphone only 3 feet above the
16 ground while TE’s microphone was 5 feet above the ground.

17
18 Peter Guldberg stated that this level of the microphone being too close to the ground and
19 surface vegetation inflated the sound attributed to the wind turbines and invalidated the
20 measurements. Mr. McCabe, at Location 5, placed his anemometer only 4 feet above
21 the ground while TE’s was 6 feet above the ground. Peter Guldberg stated that this lower
22 height under reports ground wind and invalidates the measurement.

23
24 Mr. Guldberg stated that at Location 7 on March 26, ANSI S12.18—the wind velocity can
25 only be 3 m/s at a height of 2 meters above the ground. Nothing the HGC report shows
26 they screened out measurements when winds were over 7.5 mph. The surface winds
27 were too high at Location 7 for accurate testing. Mr. Guldberg stated that there is no
28 flexibility in the ANSI standard that allows for ground wind above 3 m/s. Each 10 second
29 period must be reviewed for surface wind speeds. Tables in the TE report show surface
30 winds, HGC’s does not. Mr. Guldberg stated that the data from that period on that night
31 from location 7 was “highly contaminated” and had to be thrown out.

32
33 At Location 5, April 7 Mr. Guldberg compared wind speeds during the ON and OFF
34 periods to show variation in wind speed and how wind speeds do not “cancel each other
35 out”. Wind speeds were 40% higher than during the turbine off period and that wind was
36 attributed to the wind turbines.

37
38 Mr. Guldberg stated that HGC did not follow the ANSI standard requiring 7 mph
39 maximum ground wind. Location 5 and 7 measurements are not valid. Wind noise
40 collected on the microphone are wrongly attributed to the wind turbines. HGC used
41 interpolation and only valid data can be used to determine compliance. There are
42 sufficient data from 10 minute periods to form conclusions about compliance that follow
43 ANSI and were taken at full acoustic power.

44
45 Dennis Dunlap asked Peter Guldberg if the fall and spring testing results in their report
46 are testing turbines in NRO Mode 2, Peter Guldberg confirmed that all of those are in

1 NRO mode 2 [with the exception of site 5 is not mitigated].

2
3 Dennis Dunlap asked if Peter Guldborg had any issue with the data from Location 7
4 (Table 9). Mr. Guldborg stated that he had a problem with all of the data because it did
5 not screen for surface wind speeds during each 10 second period. "I did not focus on that
6 data set, only the two exceedences."

7
8 Dennis Dunlap asked about data blocks. Peter Guldborg said that they start and stop on
9 the 10 minute period by the clock. HGC designed the measurement dates and their own
10 protocol. You can still compare similar 10 second blocks.

11
12 Mary Reilly asked Ian Bonsma about the three data sets for site 7. What should the
13 Planning Commission consider when looking at the different data sets?

14
15 Ian Bonsma stated that one set was slightly under power with high ground wind. Set E
16 had lower ground level winds with averages of 3.4 and 3.2 with 55 valid data points for on
17 and 50 for off with slightly less electrical power than the requirement. Set G is "not a great
18 data set" but shows a slight excess. There are details for each data set in the appendix.
19 We can add the 2M wind height data if that would be beneficial.

20
21 Location 1 is a great data set with no interference. We did not get those conditions at
22 location 6 or 7. We are picking locations based on wind direction and trying to get
23 downwind of the turbines. "We can certainly find compliance in LWEP, but that is when a
24 person is not downwind from the turbines." Mr. Bonsma stated Location 6 is one of the
25 most difficult to test because any west or north wind will blow the sound away from the
26 receptor.

27
28 Ian Bonsma stated there was a 5 m/s criteria in the ANSI standard and that was used in
29 the fall. Wind gusts at 6-7 m/s on the microphone will be removed but not the wind sound
30 that goes through the trees.

31
32 Tom Hooper asked if there is a difference between the American ANSI standard and
33 Canada?

34
35 Ian Bonsma stated that Ontario has specific guidelines and they use unattended
36 measurements based on 10 meter height wind speeds. Mr. Bonsma stated that the ANSI
37 standard is not developed for wind turbine noise, it was developed more for factories with
38 a steady sound level.

39
40 Dennis Dunlap asked about the criticism of the height of the microphone or anemometer.

41
42 Ian Bonsma could not respond to the issue of Mr. McCabe's microphone heights.

43
44 Peter Guldborg stated that the ANSI standards are adequate for all types of industrial
45 sound sources.

1 Ian Bonsma stated that wind noise was about 5 m/s at some sites. HGC listened to the
2 audio recordings for false noise on the microphone and screened out that data where
3 there was buffeting on the microphone.

4
5 Mary Reilly asked if 3 m/s is required by ANSI, why was 5 m/s used.

6
7 Ian Bonsma stated that there is not a requirement to strictly follow the ANSI standard.

8
9 Mary Reilly stated that the use of “generally follow the ANSI standard” was intentional in
10 the ordinance to allow some latitude for wind turbine sound testing versus other kinds of
11 facilities.

12
13 Peter Guldborg stated it is important to use 3 m/s threshold, especially when .2 decibel
14 over limit is considered a violation.

15
16 Dennis Dunlap invited questions from the public.

17
18 Aldon Maleckas asked why we are using a 6 or 7 mph standard when wind speeds are
19 higher than that the majority of the time?

20
21 Ian Bonsma stated that higher wind speed data was used because sound of the wind
22 turbines is highly dependent on the wind speed. Mr. Bonsma stated there is an ANSI
23 standard for 5 m/s and that 3 m/s is not required.

24
25 Susan Kaiser asks about measurements taken on her property. Her house is to the north
26 of the turbines but an east wind was used for testing. She asked “Wouldn’t winds from
27 the south produce a greater noise disturbance from WTG 25?”

28
29 Ian Bonsma stated that a south wind would be louder from her property. He stated that
30 down wind sounds are louder than up wind or side winds. “There were not too many
31 nights with a south wind during that testing period. There were some nights when it was
32 too windy and we could not test during those nights.” Mr. Bonsma pointed out the
33 direction of the wind for each test site in the table in the report.

34
35 Ian Bonsma stated that when the facility expands the mitigation plan, because
36 compliance has been shown with mitigation, site 5 and 7 should be included in that
37 process. The sites tested “are representative locations” of all of the unpooled properties
38 in the project.

39
40 Peter Guldborg stated that with location 5 had an ideal time for testing but HGC called
41 the testing off early.

42
43 Ian Bonsma stated that they had relied on forecasting and during testing wind speeds
44 were not increasing.

1 Peter Guldberg stated that the engineer mentioned that hub height wind speeds were
2 forecast to increase but HGC still left early and missed a good opportunity to collect data.

3
4 Evelyn Bergaila stated that the sound levels are barely met under mitigation modes when
5 turbines are in optimal weather conditions. She asked "During snow, sleet, fog, high
6 humidity, wind sheer, rain, etc. the turbines are louder but the sound cannot be tested
7 during these times. What is your response?"

8
9 Ian Bonsma stated there is not a lot of data for turbines in rain and snow because they
10 can cause interfering noise on the microphone. He stated that sources can seem louder
11 on certain on evenings when background sound is very low. Background at 20 dB or 45
12 dB really makes a difference on how loud the turbines sound. "There is no indication that
13 the turbines are actually louder under different weather conditions."

14
15 Evelyn Bergaila stated that it is not background noise that makes the turbines louder, it is
16 a "womp, womp, womp" sound coming from the turbine. She stated that the sound is not
17 the worst when wind is about 3 m/s- it is under other conditions, like sleet or rain, when it
18 is the loudest.

19
20 Ian Bonsma stated that at the International Wind Turbine Conference in Glasgow, the
21 main focus was amplitude modulation. It is not certain how to measure amplitude
22 modulation at this point but research is underway. Some researchers claim 10-15 dB
23 other state 3 to 5 dB caused by amplitude modulation. 10 minute measurements tend to
24 average out amplitude modulation so some jurisdictions are going to a 1 minute max. Mr.
25 Bonsma stated that amplitude modulation "is sudden, short, and unexpected which can
26 lead into annoyance."

27
28 Ian Bonsma stated that some turbines in LWEF create more of a "swooshing or
29 thumping" sound than others and the measurements include those sounds. "Some of the
30 largest jurisdictions in the world are struggling with amplitude modulation."

31
32 William Parsons submitted a question that asked for unpooled property owners to be able
33 to vote on this issue. William Parsons then stated that the turbines are loudest when wind
34 is from the south and it is worse outside than inside.

35
36 Evelyn Bergaila submitted a question about properties surrounded by multiple wind
37 turbines and setbacks to multiple turbines.

38
39 Ian Bonsma stated that turbines are getting quieter with more electrical output. The
40 setback can be changed in order to meet the noise requirements. He stated that the
41 minimum setbacks may need to be increased when there are multiple turbines.

42
43 Evelyn Bergaila asked about the multiple turbines near her property line. Would the
44 mitigation plan work there?

45
46 Ian Bonsma said there is no detail right now on how the mitigation would be propagated

1 throughout the site. There are 4 sites with mitigation implemented; there would need to
2 be a review on how the mitigation reduced sounds at those sites.

3
4 Evelyn Bergaila asked if you could study the turbine noise only down wind and interpret
5 how that would impact a given property.

6
7 Ian Bonsma stated that there are some studies that do that to assess turbine noise, but
8 all jurisdictions have slightly different protocols. In Ontario they test sound power from
9 turbines [down wind] to verify that sound power used in the planning stages was
10 accurate.

11
12 Mary Reilly asked Ian Bonsma how data was removed if the ground wind speeds were
13 over 5 m/s.

14
15 Ian Bonsma stated that they listened to the tapes to determine false noise on the
16 microphone. Sometimes notes were taken on site and those points were removed.

17
18 Mary Reilly asked if the entire 10 minute period is recorded or only a sample?

19
20 Ian Bonsma stated that the entire 10 minute period is recorded.

21
22 DIRECTORS REPORT: The Planning Commission will be meeting tomorrow night at
23 6:00 PM in Scottville.

24
25 Dennis Dunlap opened public comment.

26
27 Jeanne Parsons stated that she lives among 7-8 wind turbines and "last night they were
28 wumping and bumping" so bad it woke me up at 3 in the morning.

29
30 Evelyn Bergaila stated that when the project was approved, everyone was certain that
31 they could measure sound. "Now we find out about all of the problems" with sound
32 measurement. A third party, independent, contractor is important for testing. She asked
33 the board about their decision making process for the mitigation plan.

34
35 Aldon Maleckas asked a question about Figure 6 in the Tech report. The ANSI standard
36 is 6.7 mph. The majority of data points are about 6.7 mph and up to 20 mph. "Do we
37 really want to delete all of those data points?"

38
39 Eric Jefferies stated that in the beginning, several professional stated that the turbines
40 could meet the sound level maximums even under the worst conditions. His family is
41 moving and trying to sell their home. He has to disclose problems with the turbines to
42 potential buyers. He further stated regarding Tech Environmental, "It is difficult and
43 awkward to have the person partially responsible for allowing these turbines around my
44 home now be on my property to undermine the consultant that is trying to advise the
45 County."

Dennis Dunlap closed the public comment period. He stated that the board had a lot of information to process and would work diligently to come up with a conclusion.

Meeting adjourned at 9:00 PM.

The next meeting will be July 21, **7:00 PM** at 102 E. 5th Street, Scottville.


Steve Rieniek

Steve Bieniek
Mason Planning Commission Secretary