

Comments on Revised Noise Impact Study

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June 5, 2013

Mr. Erle Townsend, Environmental Specialist
Maine Department of Environmental Protection
Division of Land Resource Regulation
17 State House Station
Augusta, ME 04333-0017

*Re: Independent Peer Review of the Revised Noise Impact Study for the
Saddleback Ridge Wind Project*

Dear Erle:

Tech Environmental, Inc. (TE) has completed an independent peer review of the acoustic impacts of the 33-MW Saddleback Ridge Wind Project with regard to Maine Site Location of Development (SLOD) Regulations. The project is located in the Town of Carthage, Franklin County.

The applicant is proposing to install (12) GE 2.75-103 2.75-MW wind turbines with 85-meter hub heights. The closest non-participating residence is approximately 3,120 feet to the southwest of the nearest turbine. The previous RSG sound studies for either GE or Siemens turbines were reviewed and found to be technically correct according to standard engineering practices.

The documents I received for this review include:

- A revised report by RSG, Inc., "Noise Impact Study for Saddleback Ridge Wind Farm" dated April 2013, which analyzes GE 2.75-103 turbines on an 85-m hub.

Review Standard

The purpose of this peer review is to determine if the acoustic studies submitted with the Application are reasonable and technically correct according to standard engineering practices and the Department Regulations on Control of Noise (06-096 CMR 375.10), referred to herein as the "Maine Noise Regulations". The nighttime sound limit at a Protected Location is 42 dBA (1-hour L_{eq}).

Sound Power Levels Assumed for the Turbines

The sound power level (L_w) on a decibel scale¹ is determined by the manufacturer through a series of prescribed field measurements using the International Standard IEC 61400-11 test method.² The IEC-reported sound power level for a given hub-height wind speed is an average value, meaning there is a scatter of values about the average and the actual sound power level emitted in the field may either be lower or higher. To quantify that variability in values of L_w , the IEC provides a method for assessing L_w measurement uncertainty and unit-to-unit turbine production uncertainty, combining both into a total uncertainty “K” factor (IEC Technical Specification 61400-14)³. The IEC method defines the “Declared Sound Power Level” as $L_w + K$, and the sum represents an upper-bound sound power level that, under the stated wind speed conditions, will not be exceeded 95% of the time. The Declared Sound Power Level should be used in acoustic modeling to ensure the predicted sound pressure levels are conservative estimates and reasonably account for known uncertainties.

The applicant followed this procedure in modeling sound power levels that are the IEC reported maximum value for the GE 2.75-103 turbine of 105.0 dBA plus an uncertainty K factor of 2.0 dBA. The applicant then added a 1.0 dBA modeling uncertainty factor for the ISO 9613-2 sound propagation method⁴ at an inland location, and thus a total sound power level of 108.0 dBA was modeled for each turbine. The modeling uncertainty factor of 1 dBA is in the middle of the 0 to 2 dBA range for modeling uncertainty listed as a rebuttable presumption in sub-section I(7)(c)(9) of the Maine Noise Regulations.

Conservatism of the Combined Uncertainty Factor

Our review of the sound test reports for the Stetson I and II wind energy facilities, where wind turbines are located on ridge top settings similar to Saddleback Ridge Wind Farm, reveal use of the IEC reported sound power level plus uncertainty K factor and adding 1 dBA for modeling uncertainty is a conservative modeling approach for assessing wind turbine acoustic impacts.⁵ Thus, RSG’s combined uncertainty factor of 3.0 dBA is appropriate and should accurately predict turbine sound levels.

¹ The sound power level is defined as $10 \cdot \log_{10} (W/W_0)$, where W is the sound power of the source in Watts and W_0 is the reference power of 10^{-12} Watts. The sound power level (energy density) and sound pressure level (what we hear) are not the same, yet both are reported using a decibel levels scale. An acoustic model uses the sound power level of a wind turbine along with other assumptions to calculate the sound pressure level heard at a receiver located a certain distance from the wind turbine.

² International Electrotechnical Commission, International Standard IEC 61400-11 Edition 2.1, “Wind turbine generator systems – Part 11: Acoustic noise measurement techniques,” Geneva, 2006.

³ International Electrotechnical Commission, Technical Specification TS 61400-14, “Wind turbines – Part 14: Declaration of apparent sound power level and tonality values,” Geneva, 2005.

⁴ International Organization for Standardization, Standard ISO 9613-2, “Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation,” Table 5.

⁵ Tech Environmental, Inc., “Independent Peer Review of the Sound Level Assessment for the Oakfield Wind Project,” September 1, 2011.

Acoustic Model and Assumptions

Sound levels from the wind turbines were predicted using the Cadna\A acoustic model, the International Standard ISO 9613-2 sound propagation method, and a conservative ground absorption factor of $G=0.5$ that represents winter frozen-ground conditions. Discrete receivers for residences were placed 4 m above grade, corresponding to second-floor windows. RSG used proper analytical tools for evaluating sound impacts. While the ISO method provides estimates of accuracy for source heights up to 30 m and the Saddleback Ridge Wind turbines are higher at 85 m, this acoustic modeling approach has been found to be accurate for utility wind turbine sounds on several past projects with similar hub heights.

The project is located in a mountainous, forested area with some residential properties to the east and south of the project. The two closest Protected Locations (Non-Participating residences) are approximately 4,200 feet to the east (Receiver 12) and 3,120 feet to the southwest (Receiver 29). A decibel contour map was generated for Saddleback Ridge Wind to allow verification of predicted sound levels at other residential locations.

The acoustic modeling results are conservative due to the following assumptions:

1. All wind turbines were assumed to be operating simultaneously and at the design wind speed, corresponding to maximum sound power.
2. All wind turbine sound power levels correspond to the IEC 61400-11 maximum sound power level plus a combined uncertainty factor of 3.0 dBA.
3. The acoustic model assumed the most favorable conditions for sound propagation, corresponding to a ground-based temperature inversion, such as might occur on a calm, clear night, or during a downwind condition with a moderate wind speed.
4. No attenuation from trees or other vegetation was assumed.
5. Winter frozen ground conditions were assumed for minimal ground absorption ($G=0.5$).
6. Excess attenuation from wind shadow effects and daytime air turbulence were ignored.

Acoustic Modeling Results

With this conservative modeling approach, the applicant predicted maximum sound levels and the results are documented in the tables and figures of the April 2013 RSG report. The maximum predicted sound level at any protected location (500 feet from a non-participating residence) is 40.3 dBA at Receiver 12B, and the maximum predicted sound level at any non-participating residence is 40.0 dBA at Receiver 12. These maximum levels comply with the daytime (55 dBA) and nighttime (42 dBA) limits in the Maine Noise Regulations. The maximum predicted sound level at any project boundary is 55 dBA at the boundary line east of T2, and this complies with the 75 dBA property boundary limit in the Maine Noise Regulations.

Tonal Sounds

An analysis of the sound power level spectrum for the GE 2.75-103 wind turbine reveals no potential to create a “tonal sound” as defined in the Maine Noise Regulations. Thus, the 5-dBA penalty for tonal sound does not apply to this project for permitting. Compliance sound testing will need to verify this assumption.

Low Frequency Sound

Though there are no limits for low frequency sound in the Maine Noise Regulations, the applicant offered a comparison of the maximum predicted turbine sound level in the three low-frequency 63 Hz bands of 16 Hz, 31.5 Hz, and 63 Hz. The modeling results reveal that maximum low-frequency sound levels at residences will be below the noise-induced vibration thresholds of American National Standard ANSI S12.2-2008, “Criteria for evaluating room noise.”

Short Duration Repetitive Sound (SDRS)

The definition of SDRS in the section of the Maine Noise Regulations that pertains to Wind Energy Developments is an impulse sound that is 5 dBA or greater “on the fast meter response above the sound level observed immediately before and after the event.” Typically this modulation of the turbine mid-frequency sound (the audible “swish-swish”) has an amplitude range of 2 to 6 dBA. The 5-dBA penalty for SDRS is applied to each 10-minute period in which more than five SDRS events occur.

The RSG Report provides a thoughtful analysis of the likelihood for SDRS to occur for Saddleback Ridge Wind. From an analysis of wind shear and turbulence data for Saddleback Ridge and the Spruce Mountain Wind project for which SDRS measurements are available, and considering the fact the GE 2.75-103 turbine has Advanced Loads Control (ALC) allowing each blade to pitch independently to the wind conditions, RSG concludes SDRS events will be infrequent at Saddleback Ridge. I conclude any correction for SDRS is likely to be well below the 1.7 dBA difference between the maximum predicted sound level at a Protected Location and the 42 dBA nighttime limit in the Maine Noise Regulations.

I note that the compliance testing requirements in Section I of the Maine Noise Regulations, “Sound Level Standards for Wind Energy Developments” do not specify how many 10-minute test periods must occur in the day or night, only that 12 such valid test periods must be presented in the compliance test report. I recommend that any permit the Department may issue for Saddleback Ridge Wind require that at least 6 of the 12 test periods used in the compliance test report represent the nighttime period (7 p.m. through 7 a.m.) during which the sound level limit is 42 dBA and during which wind shear and SDRS conditions are more likely.

Construction Noise

Construction of the Saddleback Ridge Wind Project will produce sound levels similar to those generated during roadway construction, and much of the heavy equipment is similar. Daytime construction activity is not subject to the limits in the Maine Noise Regulations. Any nighttime construction activity will need to comply with the nighttime limit in the Maine Noise Regulations.

Post-Construction Sound Level Testing

To ensure that the sound level predictions submitted by the applicant are accurate, and to ensure compliance with the Maine Noise Regulations, including the provisions regarding SDRS and tonal sound, the Department should require post-construction sound monitoring for the project, following the general test methodology outlined in the October 2011 Land Use Permit. Whereas Noise Reduced Operation (NRO) is no longer required to achieve continuous compliance with the Department's nighttime sound limit, I recommend that sound testing be done at just two locations, representing the nearest Non-Participating residence to the southeast (Receiver 12) and the nearest Non-Participating residence to the southwest (Receiver 29), which also lines up with the turbine array on the ridge. Sound compliance testing sometime during the first year of operation should be sufficient for this project given that NRO is no longer part of the sound compliance plan.

Summary

A peer review was done of the report by RSG, Inc., "Noise Impact Study for Saddleback Ridge Wind Farm" dated April 2013. The results confirm: the turbine maximum sound power level with a conservative uncertainty factor was used in the analysis; the acoustic model and its assumptions are appropriate; the sound receiver locations are appropriate; the decibel contour maps adequately cover the potential impact area; and the Department Regulations on Control of Noise (06-096 CMR 375.10) have been properly interpreted and applied for the Saddleback Ridge Wind Project. RSG's model estimates for the Saddleback Ridge Wind Project, which include a 3.0-dBA uncertainty factor, are conservative and tend to overstate actual turbine sound levels. No additional studies and/or monitoring requirements are warranted.

For the reasons stated above, I conclude that the acoustic studies submitted with the SLOD Application are reasonable and technically correct according to standard engineering practices and the Department Regulations on Control of Noise (06-096 CMR 375.10).

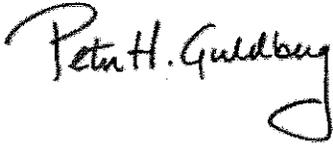
Recommendations

I recommend that any new permit the Department may issue for the Saddleback Ridge Wind Project require that at least 6 of the 12 test periods used in each sound compliance test report represent the nighttime period (7 p.m. through 7 a.m.) during which the sound level limit is 42 dBA, and that the compliance test report include a complete presentation of the data and calculations for the SDRS analysis.

Thank you for the opportunity to provide an independent peer review of the Saddleback Ridge Wind Project Noise Impact Study.

Sincerely yours,

TECH ENVIRONMENTAL, INC.

A handwritten signature in black ink that reads "Peter H. Guldberg". The signature is written in a cursive style with a large, looped initial 'P' and a long, sweeping underline.

Peter H. Guldberg, INCE, CCM
Managing Principal
3579/Letter Report June 5 2013 ver3

BROWN & BURKE

ATTORNEYS AT LAW
152 Spring Street- P. O. BOX 7530.
PORTLAND, MAINE 04112
TELEPHONE: 207-775-0265

RUFUS E. BROWN
M. THOMASINE BURKE

EMAIL: RBROWN@BROWNBURKELAW.COM
EMAIL: TBURKE@BROWNBURKELAW.COM

June 28, 2013

VIA EMAIL: Earle.Townsend@maine.gov

Earle Townsend, Project Manager
Maine Department of Environmental Protection
Division of Land Resource Regulation
17 State House Station
Augusta, ME 04333-0017

Re: *Remand for Saddleback Ridge Wind, LLC, L-25137-24-A-
N/L-25137-TG-B-H (Approval)- Comments of Appellants
Friends of Maine's Mountains et al. on Revised Noise Report*

Dear Mr. Townsend:

I have attached for review the reports performed for Appellants Friends of Maine's Mountains et al. on the *Noise Impact Study for Saddleback Ridge Wind Farm*, dated April 2003 by RSG.

These consist of the following:

1. The Report of E-Cooustic Solutions, dated June 28, 2013, titled "Issues Regarding the April 2013 Noise Impact Study for Saddleback Ridge Wind,"
2. The Report of Robert W. Rand and Stephen E. Ambrose, dated June 28, 2013 titled "Independent Peer Review, Comments on the Report of Noise Impact Study for Saddleback Ridge Wind Project," and,
3. The Report of Robert W. Rand and Stephen E. Ambrose, dated June 28, 2013 titled "Comments on the Peer review by Peter Guldberg."

Please email me that you have received this letter.

Thank you for your assistance.

Earle Townsend, Project Manager

June 28, 2013

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Sincerely,

A handwritten signature in black ink, appearing to be 'Rufus E. Brown', with a long horizontal line extending to the right.

Rufus E. Brown

REB/encl.

cc. Gordon Smith, Esq., with encl., via email
Robert Rand/Stephen Ambrose, with encl., via email
Rick James, with encl., via email
Clients

E-Coustic Solutions

NOISE CONTROL • SOUND MEASUREMENT • CONSULTATION
 COMMUNITY • INDUSTRIAL • RESIDENTIAL • OFFICE • CLASSROOM • HIPPA ORAL PRIVACY
 P.O. Box 1129, Okemos, MI, 48805
 RICKJAMES@E-COUSTIC.COM FAX: (855) 461-4103

RICHARD R. JAMES
 PRINCIPAL
 TEL: 517-507-5067

Issues regarding the April 2013

Noise Impact Study

For

Saddleback Ridge Wind

June 28, 2013

INTRODUCTION

Please accept the following comments on behalf of the Friends of Maine's Mountains (FMM) regarding the Noise Impact Study (NIS) dated April 2013 for the Saddleback Ridge Wind Farm. The following comments are a critical review of the April 2013 *Noise Impact Study for Saddleback Ridge Wind Farm* prepared by Resource Systems Group, Inc. (RSG) for Patriot Renewables, LLC, Quincy, Massachusetts.

This reviewer had submitted previous comments on the original October 2012 Noise Impact Study (NIS) also conducted by RSG for Patriot Renewables, LLC. The earlier review, dated December 9, 2010, was addressed to Mr. Rufus Brown under the title of: "*Critical Issues in the Patriot Renewables Noise Impact Study of the Saddleback Ridge Wind Project.*" In that earlier review a number of issues were identified including:

- 1) Problems with Cadna/A (Limitations on Use of ISO 9613-2 Algorithms)
- 2) Line vs. point source models.
- 3) Atmospheric Stability
- 4) Amplitude modulation/SDRS
- 5) Turbulence from Turbine Configuration
- 6) Problems with NRO modes
- 7) Problems with Low Frequency Noise
- 8) Wind Turbine Annoyance

This reviewer's Dec. 9, 2010 comments provided considerable background discussion that covered issues either mischaracterized or else not disclosed in the original NIA. It also included a series of deficiencies found in the report covering methodology, procedure and interpretation of the report findings.

In this reviewer's opinion the revised April 2013 Noise Impact Study for Saddleback Ridge Wind Farm by RSG for Patriot Renewables, LLC. continues to demonstrate many, if not most of the problems found in the original October 2012 NIS. For that reason, it is asked that this reviewer's Dec. 9, 2010 comments be considered as supplemental to this review.

FINDINGS

Specific comments and observations related to the April 2013 NIS are covered below. These will build upon the observations and commentary of the October 9, 2010 comments by this reviewer to Mr. Brown on the earlier NIS by RSG.

SOUND POWER AND MODELING ISSUES

Background: The description of how the model was developed shows that the model does not meet the requirements set forth in the revised Section I-Sound Level Standards for Wind Energy Developments of Chapter 375. At I(7)(c) the regulations define conditions to be represented in the sound model for the report:

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(c) A description of the equivalent noise levels expected to be produced by the sound sources at protected locations located within one mile of the proposed wind energy development. The description shall include a full-page isopleths map depicting the modeled decay rate of the predicted sound pressure levels expected to be produced by the wind energy development at each clearly identified protected location within one mile of the proposed wind energy development. The predictive model used to generate the equivalent noise levels expected to be produced by the sound sources shall be designed to represent the "predictable worst case" impact on adjacent properties and shall include, at a minimum, the following:

1. The maximum rated sound power output (IEC 61400-11) of the sound sources operating during nighttime stable atmospheric conditions with high wind shear above the boundary layer and consideration of other conditions that may affect in-flow airstream turbulence;
2. Attenuation due to geometric spreading, assuming that each turbine is modeled as a point source at hub height;
3. Attenuation due to air absorption;
4. Attenuation due to ground absorption/reflection;
5. Attenuation due to three dimensional terrain;
6. Attenuation due to forestation;
7. Attenuation due to meteorological factors such as but not limited to relative wind speed and direction (wind rose data), temperature/vertical profiles and relative humidity, sky conditions, and atmospheric profiles;
8. Inclusion of an "uncertainty factor" adjustment to the maximum rated output of the sound sources based on the manufacturer's recommendation; and
9. Inclusion, at the discretion of the Department, of an addition to the maximum rated output of the sound sources to account for uncertainties in the modeling of sound propagation for wind energy developments. This discretionary uncertainty factor of up to 3 dBA may be required by the Department based on the following conditions:
 - inland or coastal location, the extent and specificity of credible evidence of meteorological operating conditions, and the extent of evaluation and/or prior specific experience for the proposed wind turbines. Subject to the Department's discretion based on the information available, there is a rebuttable presumption of an uncertainty factor of 2 to 3 dBA for coastal developments and of 0 to 2 dBA for inland developments.

The underlined sections in the MDEP noise regulations are requirements that, in this reviewer's opinion were not met by the model developed by RSG for the revised Saddleback Ridge Wind Farm Noise Impact Study.

ISSUE 1-SOUND POWER LEVELS DO NOT REPRESENT WIND TURBINE OPERATION DURING PREDICTABLE WORST CASE CONDITIONS

The model developed by RSG of the SRW project is not adjusted to account for nighttime windshear which is generally higher than 0.2, the maximum windshear permitted during testing under the IEC61400-11 wind turbine sound power test procedure. The IEC61400 - 11 procedure requires testing when windshear 0.2 or less. It defines this as one of the conditions required for: "Normal Operation."

Nighttime atmospheric conditions tend to have higher windshear than during the day and these increases are associated with higher sound emissions from the wind turbines. Those higher emissions need to be addressed in the model by adjustments to the sound power (LW). Nighttime sound emissions during periods of high windshear and turbulence at hub and blade altitudes would produce higher apparent sound power levels than the apparent sound power levels reported for daytime "normal operation".

The sound power levels used to program the April 2013 NIS sound propagation model are from laboratory tests conducted during daytime weather conditions with low in-flow wind turbulence, and a smooth wind shear profile with a coefficient of less than 0.2. These are conditions associated with

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minimum sound emissions for each of the reported wind speed conditions. This failure to correct the sound power input data (Lw) for nighttime operation with high wind shears results in the model under predicting the "typical nighttime" condition of operations by 5 dBA or more not related to issues of confidence limits which are described below.

In the discussion about the source for the RSG model's sound power (LW) there is no mention of any adjustments to account for higher nighttime windshear and turbulence. However in the report's discussion on windshear and turbulence (See NIS Section 10.1.1 Wind Shear, and Figure 19) and associated narrative the referenced windshear and turbulence studies show that windshear of 0.2 to 0.5 are common occurrences. The bars which generally range from wind shear of 0.0 to 0.5 in Figure 19 indicate that 0.2 is exceeded roughly half the time. The NIS dismisses this by noting that wind shears of 0.55 or higher only occur 2% of the time. There is no discussion about the wind shear being between 0.2 and 0.5 roughly 50% of the time.

Since complaints of high noise emissions from wind turbines are often associated with nighttime operation and wind shear tends to be higher at night than during the day, it is not unreasonable to view the wind shear conditions exceeding 0.2 as being associated with nighttime operation. Thus, even if one accepts the premise that the extreme wind shears only occur 2% of the time, over the course of a year this represents 175 hours. This means high noise could be present for periods of an hour or more every other night over the course of the year. Including the effects of wind shear in the range of 0.2 to 0.5 for half the time with the 175 hours where the wind shear is more extreme shows that it is not appropriate to use the manufacturer's declared apparent sound power levels without adjustments to represent this as the nighttime predictable worst case conditions. Including an adjustment to the wind turbine lab test (IEC) to account for the higher noise during periods of higher wind shear means that the predicted sound levels received at properties will be higher than shown in the NIS contour maps and tables. This also means the conclusions will not be based on the predictable worst case situation but instead on a more moderate noise condition. Yet, the NIS dismisses the need to make any such corrections or adjustments while maintaining that the computer model represents conservative assumptions.

The peer review took no exceptions to the way the NIS presented and addressed this issue.

ISSUE 2A-CONFIDENCE LIMITS APPROPRIATE FOR SADDLEBACK RIDGE FOR ISO 9613-2 MODEL

The fact that predictions are made for receivers more than 1000 meters from the wind turbines and that locating wind turbines on ridges means the difference in height between source and receiver exceeds the limits for which the ISO model is validated are two significant elements that increase uncertainty in accuracy of sound propagation predictions. Yet, the NIS shows that the model does not even include the greatest degree of uncertainty anticipated for inland projects under the MDEP regulations much less the full 3 dB uncertainty called for in the ISO model standard.

The major deviations between the Saddleback Ridge model and the conditions/assumptions for which the ISO model was validated justify an upwards adjustment of the reported sound power level (105 dBA) by at least the 2 dBA rebuttable presumption for in-land projects permitted by MDEP and more appropriately the full 3 dB the ISO standard specifies as its tolerance for times when the model meets all of the assumptions. The NIS description of the conditions to be modeled are an acknowledgment that the real world conditions the model is attempting to represent are outside of the limits for which the iso-model has been validated. These deviations justify the need for an:

"...uncertainty factor of up to 3 dBA..."

The proper way to address the above issues would've been to use the full 3 dB tolerance for uncertainty as recommended by the ISO-9613-2 standard. Using the full tolerance would result in a 2 dB increase in the predicted sound pressure levels at receiving properties. That is sufficient to put the home that was 1.7 dB below the 42 dBA nighttime compliance limits (Buffer B-012) over the limit.

ISSUE 2B-IMPACT OF CONFIDENCE LIMITS APPROPRIATE FOR SADDLEBACK RIDGE ON SOUND POWER LEVEL

There are also confidence limits associated with the IEC 61400-11 test procedures used to determine the mean apparent sound power level reported in the GE noise test report for the 2.5MW-103 Wind Turbines under Normal Operation. This is reported as 105 dBA by GE and the NIS with associated octave band sound pressure levels. Per the IEC 61400-14 specification the mean apparent sound power level reported from IEC61400-11 must have the confidence limits added to obtain the Declared Apparent Sound Power Level (L_{WA}). This is calculated from the sum of the mean of the measured apparent sound power levels ($105 L_w$) added to the sample standard deviations (approximately 2 dBA). The result is that the base sound power that should be used as model input would be $107 L_{WA}$ before the confidence limits for the ISO 9613-2 model are added. Since the uncertainties of the measurements of sound power and the sound propagation model are independent the uncertainties are added.

In this reviewer's opinion the sound power level used as input into the Saddleback Ridge sound model is 110 dBA, not the 108 dBA used in the NIS.

The peer review did not take any exceptions to the way these issues were addressed in the NIS.

Issue 3-Ground Factor

The NIS reports a ground factor of 0.5 was used as the input parameter in the model and identified that ground factor is being associated with "mixed ground." The peer review acknowledges the use of the 0.5 ground factor the claims it was appropriate for "frozen ground" without mention of mixed ground. In the opinion of this reviewer, "frozen ground" would be the appropriate ground factor but frozen ground is generally modeled with a ground factor of 0.0 not 0.5. The use of 0.5 inappropriate for Ridge mounted turbines especially in regions with significant cold weather if the intent of the model is to represent "predictable worst-case" noise impacts as required by I.(7)(c).

There is significant debate among independent acousticians as to whether it is correct to assume that an elevated noise emitter will interact with the ground in the same manner as would sound from a noise source located at elevations of 30 meters or less. For example, on page 266 of section 4.1 *Decibel- Noise Calculations of the WindPro 2.7 User Guide (Oct. 2010)* there is a discussion of the appropriate ground factor to apply for wind turbines. That states:

General: The damping of noise due to ground attenuation follows the general case described by the ISO 9613- 2 code. The user is asked to select the general porosity of the ground with 0 being a hard surface and 1 being a porous surface. The default value is 1 but recent works suggest that 0 is a more appropriate value. (Emphasis added)

It would be appropriate for the model of the Saddleback Ridge project to follow these conservative suggestions. Had the model been programmed with a ground attenuation factor of 0.0 instead of 0.5 the sound levels at most receptor sites would increase about 1 dB. This increase of 1 dB in the predicted sound levels would further decrease the margin of safety between the sound levels predicted at sensitive receiving properties and the MDEP's 42 dBA nighttime noise limits.

This reviewer has to question the use of 0.5 in the first place and the peer reviewer's acceptance of the value in spite of the peer reviewer recognizing "frozen ground" is more appropriate for the "predictable worst-case" noise impact. This raises a question as to whether the peer reviewer was either extremely non-critical and accepting of the use of 0.5 in spite of it having a different meaning to the model developer and the peer reviewer or whether the peer reviewer is overtly attempting to paint over a deficiency in the sound propagation model presented in the Saddleback Ridge Noise report.

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Issue 4-Inter-turbine spacing, wakes and in-flow turbulence

It is generally accepted by acousticians working with wind turbines that to avoid having the wake and associated turbulence produced by one turbine become the inflow air for turbine(s) located downwind that a separation distance between turbines of at least 5 rotor diameters is required. For a wind turbine with a 103 meter blade five (5) rotor diameters is approximately 1,690 feet. Three (3) rotor diameters is 1014 feet. Inspection of the figures showing the location of the wind turbines on Saddleback Ridge finds that the turbines are closely spaced with inter-turbine spacing of less than 5 rotor diameters being a frequent occurrence. In some cases, the separation distance may be as little as 700 feet, less than three (3) rotor diameters.

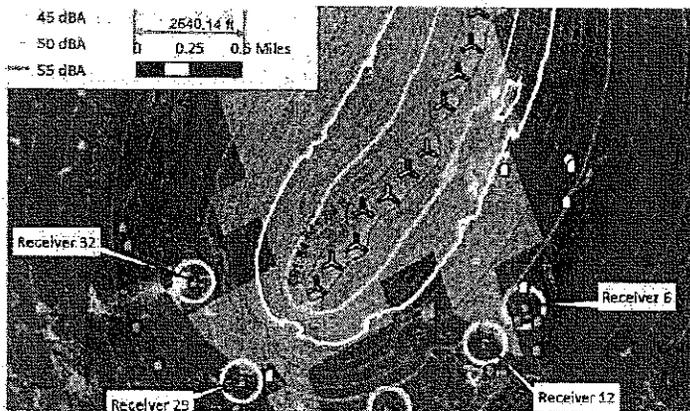


Figure 1-Interturbine spacing using SWR report Figure 18: Modeled Sound Pressure Levels (dBA) under Normal Operating Conditions

The RSG report acknowledges the need to maintain separation distances in its discussion at 10.1 Causes of amplitude modulation. That section states that to avoid amplitude modulation turbulence must be avoided. RSG notes that turbulence may be naturally occurring or created by wakes from upwind turbines. Again on page 25 the report states: *"Inflow turbulence between turbines in a turbine string can also affect noise from the wind farm. Proper turbine siting and operation minimizes this type of turbine wake impact."* No mention is made of the close inter-turbine spacing for this project and no adjustments are

provided in the model to account for such increased noise.

Once again this reviewer finds the RSG report failing to address issues that relate to the accuracy of the predicted values in spite of admissions that these issues are relevant to such accuracy. Further, the peer reviewer appears to accept the limited discussion on such topics and finds no fault in RSG not addressing them in the development of the model or not providing any discussion of how the model may not be representative of some atmospheric and operating conditions that could result in sound levels higher than what are predicted.

NET EFFECT OF THE ISSUES RAISED IN 1 TO 4 REGARDING MODEL REPRESENTATION AND SOUND POWER LEVELS

The proper use of confidence limits as shown above would result in the input sound power level being 110 dBA not the 108 dBA used in the NIS. This still does not address the difference between test conditions on the test stand and the real world conditions the model is supposed to represent or the impact of assuming the ground factor is 0.0 instead of 0.5.

The 110 dBA represents the sound power level that would be used if the model represented "Normal Operation." E.G. operation under conditions of low wind shear (under 0.2) and low turbulence as defined in IEC 61400 standards. Adjustments to the model to have it represent the "Predictable Worst-Case" noise impact associated with nighttime operating during nighttime stable atmospheric conditions with high wind shear above the boundary layer... when surface winds are calm or low such that there is no wind induced noise present an additional adjustment must be added to the 110 dBA sound power level representing "Normal Operation." Based on this reviewer's experience, there is at least a five (5) dB increase in the sound levels at receptor sites during the nighttime conditions with high wind shear and turbulence at the hub/blade elevations. This difference has been observed by this reviewer at many wind utilities and was also observed and documented during the sound studies

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conducted by the residents living near the Vinalhaven Island wind turbines. A five (5) dB adjustment would account for the observed increase in sound levels between daytime and nighttime sound levels at sensitive receiving locations.

Based on the above this reviewer would suggest that the sound power level used as input to the sound propagation model of the GE 2.75MW-103 wind turbines is best represented as 115 Lw for a model that is to represent the "predictable worst case" noise impact for nighttime conditions as required in I(7)(c). Had the NIS sound propagation model met the requirements put forth by this review the result would be a seven (7) dBA increase in the predicted sound levels at sensitive receiving locations. This would significantly alter the conclusions. Many of the receiving properties would experience 'predictable worst case' sound levels that exceed the 42 dBA compliance limit set for nighttime under the MDEP regulations.

Again this reviewer finds the report focuses on issues such as wind and atmospheric conditions as they relate to the premise of wind induced sounds "masking" wind turbine sounds and not on how the wind and weather atmospheric conditions affect sound emissions and propagation. In the opinion of this reviewer that may be related to the observation that had the NIS focused on the way atmospheric conditions (both naturally occurring and those resulting from close spacing of wind turbines producing wakes and turbulence), measurement and model confidence limits, and non-conservative assumptions such as those related to ground factors the NIS would have been forced to conclude the project does not comply with current MDEP regulations.

Further the peer reviewer uncritically accepts both the focus and assertions of the RSG report.

INDEPENDENCE OF VIEW BY PEER REVIEWER

As is noted a number of times in the discussion, the reviewer found significant issues with many aspects of the model construction and the assumptions upon the NIS's conclusion that the project meets the MDEP requirements. However, for each of these issues the Peer Review is either mute or accommodating. This raises a question about whether the person conducting the peer review is sufficiently independent in approach to be an unbiased source of a peer review.

The facts, as known to this reviewer is that the peer reviewer and company, like RSG, is known to work closely with wind turbine project developers and utility operators accepts the RSG report without critical comments of the type outline in this review, leaves open the question of whether the MDEP is receiving an unbiased, independent peer review or one offers similar positions to those of the acousticians preparing the reports that the subject of the peer review.

CONCLUSIONS

This review of the Saddleback Ridge Wind Project NIS raises the question of whether the NIS report was prepared to inform others of the findings, as one would expect of an independent unbiased noise impact assessment, or is instead a report that uses that data as a means to support an a priori opinion. Instead of reporting and analyzing the facts as one would expect, the report uses them in a selective manner to demonstrate that the circumstances at the project site support that a priori opinion. Meanwhile, important questions about the validity and utility of the data that was collected are ignored.

If the sound propagation model had made the necessary adjustments to input data to make the model represent the predicable worst case noise impact as required by the MDEP regulations the results would have been dramatically different that what the NIS sound propagation model depicts. Instead of predicting that the closest non-participating receiving properties would be within the 42 dBA limit set for nighttime noise by the MDEP the adjustments which could add as much as 7 dB to the input sound power level the model would have shown that many of the non-participating properties and homes would be above the limit. Some by a fairly wide margin.

E-Coustic Solutions

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PAGE 7
JUNE 28, 2013

Throughout this review it is noted that where the reviewer has found questions and indications that the noise impact study does not conform to the requirements of the MDEP's wind turbine noise regulations the Peer-Reviewer has been generally supportive and accepting of these deficiencies. The MDEP should be expecting a critical review by their peer reviewer. This leaves open the question of whether the MDEP is receiving an unbiased, independent peer review or one that only offers similar positions to those of the acousticians preparing the reports that are the subject of the peer review.

Sincerely,
E-Coustic Solutions



Richard R. James, DCE

Independent Peer Review

June 28, 2013

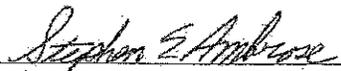
Comments on the report of:

Noise Impact Study for Saddleback Ridge Wind Project

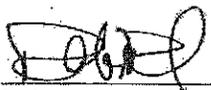
April 2013

prepared for - Patriot Renewables, LLC

prepared by - Resource Systems Group, Inc.



Stephen E. Ambrose, INCE (Brd. Cert.)



Robert W. Rand, INCE

Executive Summary

An independent review has been completed by Ambrose/Rand on the most recent "Noise Impact Study" for the proposed Saddleback Ridge Wind Farm in Carthage, Maine (referred to as the "Noise Report" in this review), prepared by Resource Systems Group, Inc. (RSG) April 2013. The Noise Report was voluminous and appeared well written, yet it showed gaps and did not inspire confidence in the noise predictions.

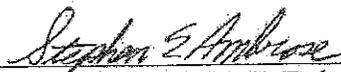
In our professional opinion, the Noise Report is:

- 1) *deficient* in its response to the requirements of the DEP in Chapter 375.10(I)7,
- 2) *merits conditions* by the DEP under Chapter 375.10(E) to protect public health and welfare.

Because of the deficiencies in the application, it is our professional opinion that the application should not be granted a permit. If the application is granted a permit despite the deficiencies, we believe the application merits, and should have, additional conditions applied to ensure the project can meet DEP night noise limits and especially, to protect the health and welfare of the nearby public. Following the modeling is not enough. The Board has the power to do more, and they should do more to protect the public's health and welfare.

The findings of this peer review are presented in more detail in the attachments.

Respectfully Submitted,


Stephen E. Ambrose, INCE (Brd. Cert.)


Robert W. Rand, INCE

1.0 DEFICIENCIES

The requirements of the DEP under 375.10(1)7 are listed in Attachment A. The Noise Report fails to comply with the Noise Rule as shown below.

(a) A map depicting the location of all proposed sound sources associated with the wind energy development, property boundaries for the proposed wind energy development, property boundaries of all adjacent properties within one mile of the proposed wind energy development, and the location of all protected locations located within one mile of the proposed wind energy development;

DEFICIENT: The figures provided (1, 18, and A1) fail to show property boundaries of all adjacent properties within one mile of the proposed wind energy development. The Noise Report did not provide the information required, therefore it is deficient as a matter of law.

(c) A description of the equivalent noise levels expected to be produced by the sound sources at protected locations located within one mile of the proposed wind energy development. The description shall include a full-page isopleths map depicting the modeled decay rate of the predicted sound pressure levels expected to be produced by the wind energy development at each clearly identified protected location within one mile of the proposed wind energy development. The predictive model used to generate the equivalent noise levels expected to be produced by the sound sources shall be designed to represent the "predictable worst case" impact on adjacent properties and shall include, at a minimum, the following:

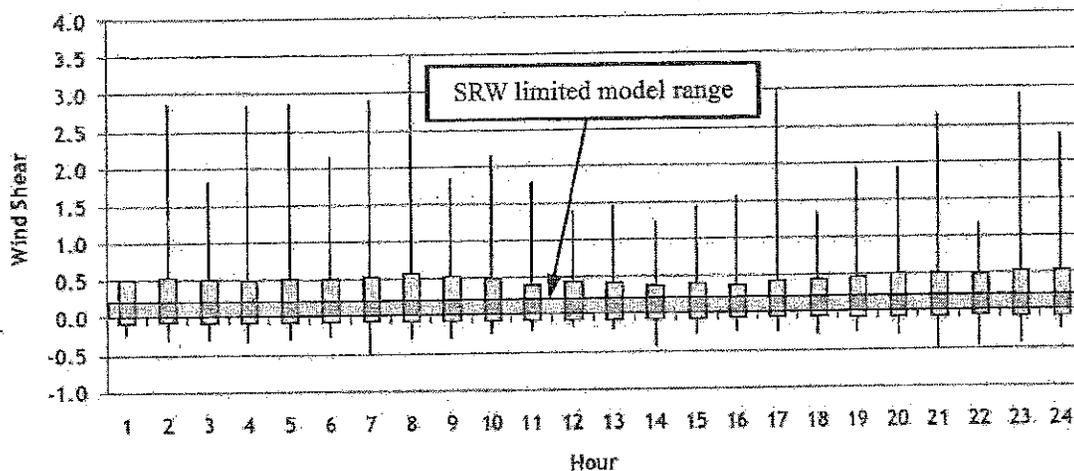
(c).1. The maximum rated sound power output (IEC 61400-11) of the sound sources operating during nighttime stable atmospheric conditions with high wind shear above the boundary layer and consideration of other conditions that may affect in-flow airstream turbulence;

DEFICIENT: The Noise Rule quoted above requires an applicant to model the noise assuming "predictable worst case" noise impacts. For that purpose it is required to analyze sound output in

accordance with the IEC 61400-11 standard with high wind shear. The Noise Report failed to do this. IEC 61400-11 specifies neutral wind profile conditions, that is, low wind shear (roughness length of 0.05 m, e.g. shear < 0.2). GE's standard practice is to quote maximum sound power output for low wind shear, e.g. "logarithmic wind profile for surface roughness (z_0, ref) = 0.03 m". This is a *low* wind shear condition, consistent with IEC 61400-11, NOT a high wind shear condition required by the DEP. To make the point more clearly, GE *offers* to supply maximum sound power output under high shear conditions, if requested.

The Noise Report figure below shows the wind shears that would be encountered at the site. The figure marks in red the very narrow range of operating wind shear within which, sound levels are guaranteed (0-0.2). It is clear that most of the time, the wind turbines would be operating *outside* guaranteed operating conditions. The Noise Report authors *did not request these data from GE and did not submit* the sound data for those "worst-case" conditions. Therefore it is deficient as a matter of law.

Figure 19: Wind profile power law exponent by time of day for 90 meter predicted wind speeds above 4 m/s. Boxes show 90% of data and "whiskers" are the +5% and -5% outliers



(c).8. Inclusion of an "uncertainty factor" adjustment to the maximum rated output of the sound sources based on the manufacturer's recommendation;

DEFICIENT: The Noise Report supplied the manufacturer's "typical" uncertainty of 2 dB. However, the DEP requires the model be designed to represent the "predictable worst case", IEC 61400-11 states that the "worst case" uncertainty may be on the order of 1.5 times the "typical" uncertainty. The Noise Report

authors did not seek or submit the manufacturer's recommended "worst case" uncertainty required by the DEP.

Further, wind turbines exhibit what is called "directivity"; like a speaker, sound levels are not uniform around the turbine and can exceed the single-point sound rating specified by IEC 61400-11. IEC 61400-11 states, in D.4.2 Directivity, "As an estimate of the standard uncertainty on the directivity, [1.414] times the combined standard uncertainty of the apparent sound power can be used in cases where a more detailed uncertainty analysis is not made." The Noise Report did not provide a detailed uncertainty analysis on the directivity of the GE turbines. Therefore the authors should have used the additional directivity factor in IEC 61400-11 of 1.414 times the "worst case" uncertainty derived from the single-point IEC-61400-11 measurement. However they did not use directivity uncertainty in the model at all.

The Noise Report did not provide the information required for "worst case" uncertainty and omitted IEC 61400-11 directivity as an uncertainty factor entirely; therefore it is deficient as a matter of law.

(c).9. Inclusion, at the discretion of the Department, of an addition to the maximum rated output of the sound sources to account for uncertainties in the modeling of sound propagation for wind energy developments. This discretionary uncertainty factor of up to 3 dBA may be required by the Department based on the following conditions: inland or coastal location, the extent and specificity of credible evidence of meteorological operating conditions, and the extent of evaluation and/or prior specific experience for the proposed wind turbines. Subject to the Department's discretion based on the information available, there is a rebuttable presumption of an uncertainty factor of 2 to 3 dBA for coastal developments and of 0 to 2 dBA for inland developments.

DEFICIENT: The Noise Report used a modeling uncertainty of 1 dB, which is not conservative; it's at the low end of the range used by the DEP. In the experience and judgment of the reviewers, this approach was insufficient. The Noise Report asks the department to use a minimum amount of uncertainty, yet without a solid track record validating the low uncertainty factor. These very large turbines haven't been demonstrated yet to any useful extent. Our evaluation and prior specific experience with wind turbines clearly supports that the DEP exercise its discretionary powers and require a model uncertainty factor of 3 dBA and a total uncertainty factor of 5 dB. There is too little data validating a less conservative approach at Maine facilities. The DEP should be more conservative with the uncertainty factors until there is more

experience with these applications. Based on our experience, The DEP should exercise its discretion to protect public health.

(It is understood that the DEP has chosen to use the wind industry interpretation of measurements at Stetson II to frame the rebuttable presumption of 0-2 dB model uncertainty. That leaves standing the unequivocal fact that the limited downwind data at Stetson II show an approximate 5 dB error from modeling based on manufacturer's sound power levels. The reviewers' experience at multiple wind turbine sites finds a similar and consistent level of error; at least 5 dB error compared to modeling from the manufacturers quoted sound power levels. The repeated, predictable 5-8 dB errors encountered in the field by the reviewers strongly indicate the project will not comply with the DEP's 42-dBA night limit.)

(e) A description of proposed major sound control measures, including their locations and expected performance.

DEFICIENT: The Noise Report described one form of noise control, the GE Advanced Loads Control (or ALC). The Noise Report authors stated, "we expect that this technology would result in lower occurrences of SDRS compared with other pitch control technologies (stall and common pitch control)", without furnishing any documentation, calculations, or engineering field test data on which to rest any such expectations. Simply stating it will do something on the SRW ridge without any proof is insufficient, and says, "Trust me". "Trust me" is a deficient response to the DEP and should be considered deficient as a matter of law.

(h) A description and map identifying one or more compliance testing locations on or near the proposed wind energy development site. The identified compliance testing locations shall be selected to take advantage of prevailing downwind conditions and be able to meet the site selection criteria outlined in subsection I(8)(d)(2).

DEFICIENT: No description and map identifying one or more compliance testing locations on or near the proposed wind energy development site was found in the Noise Report. The Noise Report did not provide the information required, therefore it is deficient as a matter of law.

- (i) *A description of the compliance measurement protocol as required by subsection 8 below.*

DEFICIENT: No description of the compliance measurement protocol as required by subsection 8 was found in the Noise Report. The Noise Report did not provide the information required, therefore it is deficient as a matter of law.

- (j) *A description of the complaint response protocol proposed for the wind energy development. The complaint response protocol shall adequately provide for, at a minimum:*

1. *A 24-hour contact for complaints;*
2. *A complaint log accessible by the Department;*
3. *For those complaints that include sufficient information to warrant an investigation, the protocol must provide for an analysis as set forth in (a) through (c) below. Sufficient information includes, at a minimum: the name and address of the complainant; the date, time and duration of the sound event; a description of the sound event, indoor or outdoor, specific location and a description of any audible sounds from other sources outside or inside the dwelling of the complainant. Analysis of the complaint by the licensee must include:*
 - (a) *documentation of the location of the nearest turbines to the complaint location and ground conditions in the area of the complaint location;*
 - (b) *weather conditions at the time of the complaint and surface and hub height wind speed and direction;*
 - (c) *power output and direction of nearest turbines; and*
 - (d) *notification of complaint findings to the Department and the complainant;*

4. *A plotting of complaint locations and key information on a project area map to evaluate complaints for a consistent pattern of site, operating and weather conditions; and*

5. *A comparison of these patterns to the compliance protocol to determine whether testing under additional site and operating conditions is necessary and, if so, a testing plan that addresses the locations and the conditions under which a pattern of complaints had occurred.*

DEFICIENT: No description of the complaint response protocol proposed for the wind energy development was found in the Noise Report. The Noise Report did not provide the information required, therefore it is deficient as a matter of law.

**2.0 The project merits conditions by the DEP under Chapter 375.10(E)
to protect public health and welfare.**

The requirements of the DEP under Chapter 375.10(E) are listed in Attachment A. Points are presented below to explain that the SRW project will create noise impacts and merits conditions if permitted.

2.1. The project is unlikely to comply with the Maine DEP nighttime noise limit of 42 dBA for several "protected location" properties and in so doing, worsen community noise impacts.

RSG's previous Noise Impact Studies were insufficient to gain permits for the applicant and were dated October 2010, March 2011 and May 2012. RSG's April 2013 Noise Report is for 12 GE 2.75-103 2.75 MW turbines on the ridge of Saddleback Mountain. The 2013 Noise Report on the Saddleback Ridge Wind project ("SRW") was for "assessing the potential for SRW's compliance with a 42 dB sound limit at nighttime protected locations, as ordered on March 5, 2013 by the Maine Supreme Court."

RSG modeled so close to 42 dBA during this round that it was required to get agreement from multiple land owners in order to comply. RSG's results indicate that the 42-dBA nighttime noise limit is exceeded by up to 4 dB at approximately 3 to 5 "protected location" properties when using a total noise uncertainty adjustment of 3 dB. The Noise Report shows 8 properties agreed to being participating land owners exempting the property from 42 dBA through deed, quitclaim covenant, or easement, signing away right to claims. The Noise Report authors did not explain or justify their choice of using easements as noise control which appear to waive claims for health impacts on children.

When the DEP's formerly recommended 5-dB total uncertainty adjustment is applied, the number of "protected location" properties increases, with 2 more that have *not* waved their rights to noise levels below 42 dBA nighttime. There are at least 7 other "protected location" properties with predicted noise levels greater than 41.5 dBA. (It should be noted that 1/10 dB precision is impractical; noise levels do not track to a 1/10 of a dB in the field.) When sustained SDRS occurs, the DEP mandates a 5-dBA penalty on the measured levels, resulting in levels over 42 dBA at all nearby locations.

In the Noise Report, RSG used only a 3 dB uncertainty adjustment "to account for both sound power and sound propagation uncertainty according to the current DEP noise rules." A 3-dB uncertainty has proven to be clearly insufficient based on the reviewers experience at Maine, Massachusetts, Michigan and

Wisconsin and other wind turbine sites. Large industrial wind turbines "worst case" sound levels are consistently 5-8 dB louder than predicted from manufacturer's "typical" sound power levels. One year of Mars Hill sound measurements determined facility sound levels [1] were 5 dB higher than the model predicted and at times as high as 7-8 dB.

Figure 1

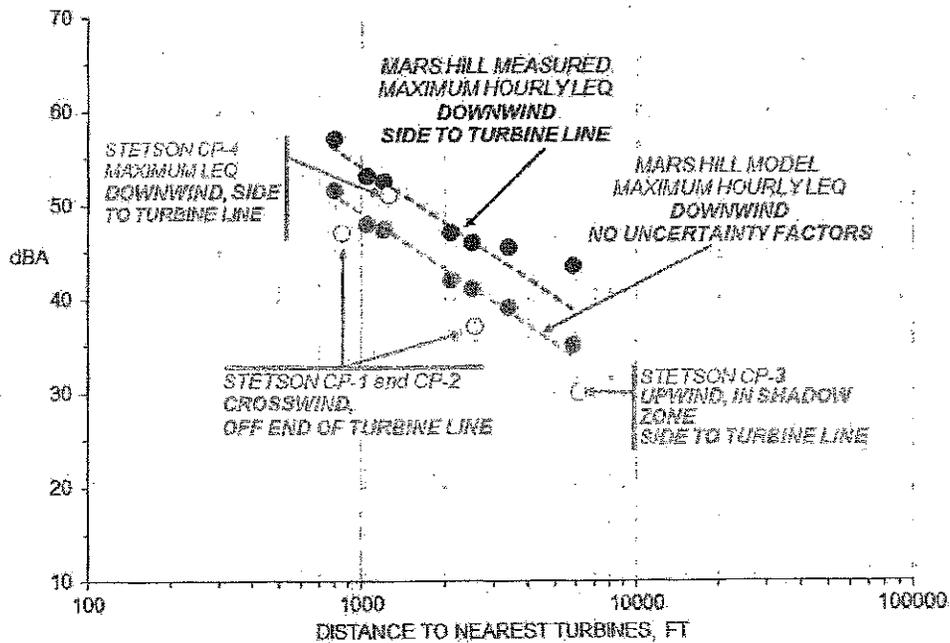


Figure 1. Comparison of Model and Measured Far Field Noise Levels: Mars Hill: 28 GE1.5sle Wind Turbines, and Stetson: 38 GE1.5sle Wind Turbines. The downwind data are similar for both facilities, supporting a minimum 5 dB uncertainty adjustment is needed for modeling from sound power levels.

Careful review of the field data underlying the DEP routine rulemakings indicates that the full 5 dB uncertainty adjustment is warranted and appropriate. After the 2008 year-long study at Mars Hill, the DEP considered it necessary to apply a minimum of 5 dB for the uncertainty adjustment for future wind project applications. Recently, this was inappropriately decreased to 0-2 dBA for mountain locations based on a flawed analysis of wind turbine measurements at Stetson [2]. A careful review of the limited Stetson

¹ MARS HILL: Data compiled from Sound Level Study: Compilation Of Ambient & Quarterly Operations Sound Testing. October 15, 2008. Maine DEP Order No. L-21635-26-A-N.

² STETSON: Data compiled from Operations Compliance Sound Level Study, LURC Final Development Plan Permit DP4788, Condition Number 6. Noise; JULY 27, 2009.

downwind data (see CP-4 in Figure 1 below) determined that the Stetson facility has the potential for the same 5-dB noise increases over the basic noise prediction model as used for Mars Hill (same turbines).

The downwind data represents the highest noise levels from a large noise source. Noise levels upwind and crosswind are lower than downwind. Stetson CP-4 was the only reported location measured downwind. The limited downwind noise data at Stetson CP-4 has strong agreement with measurements made at Mars Hill for the same distance.

Based on our experience, the 7-8 dBA difference measured at Mars Hill beyond 2500-ft is representative and probable for homes near the SRW (see Figure 2). However, it is apparent that an additional 2-3 dB safety margin above the 5 dB uncertainty would have been prudent to ensure compliance with the Supreme Court order. Given the small track record in Maine for large facilities, the Noise Report has too little consideration for including prediction model safety factors. **The DEP should exercise its discretion under 10(E) and require 5 dB total uncertainty to assure compliance.**

Figure 2

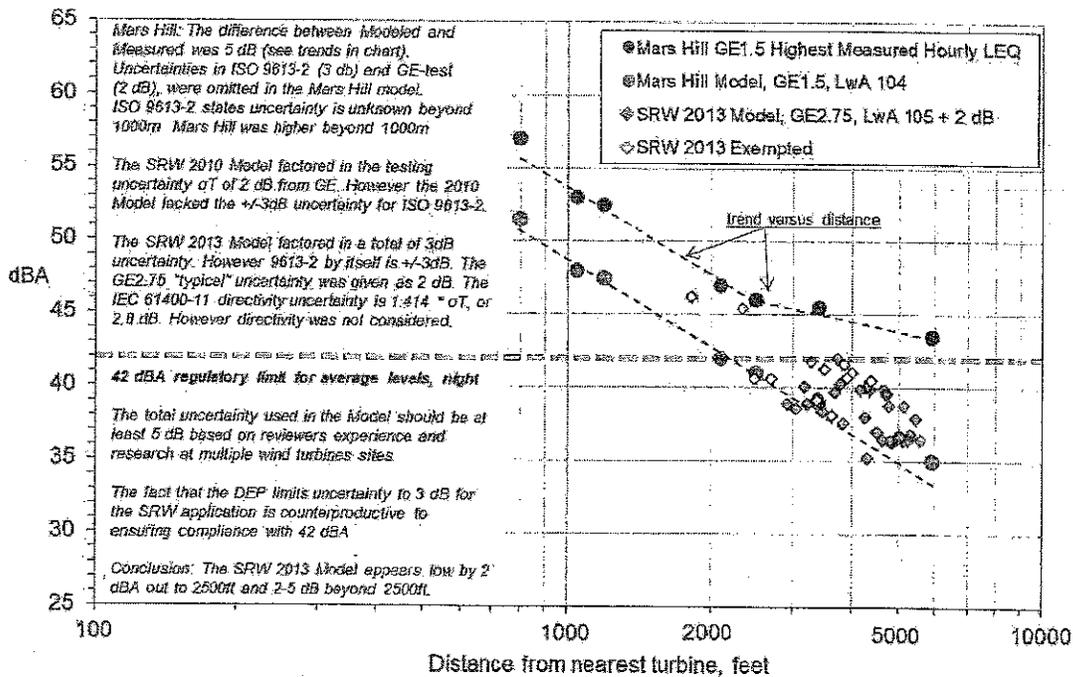


Figure 2. Comparison of SRW 2013 Model, and measured levels at Mars Hill (quieter, lower-power turbines).

The peer-reviewers find that the RSG model is too low by at least 2 dB compared to actual field-measurements showing at least a 5-dB difference between model and measured levels for ridge-top wind turbines in Maine. The Noise Report's modeled sound levels are provided in Table 1 below, which includes a column presenting the computed total with a 5-dB uncertainty. It was found that two non-participating locations could exceed 42 dBA and another seven are within 1/2 dB of 42 dBA. Since sound meter variability are at least +/-1 dB, it may be assumed that these locations could be found to exceed the 42 dBA limit when measured in the field. When sustained SDRS penalties are assessed in accordance with the DEP routine rulemaking, all nearby locations are above 42 dBA.

The Noise Report authors did not explain or justify using easements as noise control which appear to waive claims for health impacts on children. They did not explain how children in exempted properties are protected by their noise control method (they aren't protected). This is a serious health issue that was formally recognized at least as far back as 2006 [3]. Without the easements, the facility does not comply with the 42 dB night noise limit. With the easements, and accounting for the typical model errors found at numerous wind facilities, at least two non-participating homes are also exposed to levels over 42 dBA.

Regardless of the State's demonstrated enthusiasm for wind energy, it should not permit developments to proceed using a noise control option that deliberately puts children at risk.

Our evaluation and prior specific experience with wind turbines clearly supports that the DEP exercise its discretionary powers and require a model uncertainty factor of 3 dBA and a total uncertainty factor of 5 dB. There is too little data validating a less conservative approach at Maine facilities. The DEP should exercise its discretion to protect public health.

³ Guldberg, P., Prefiled Direct Testimony, Vermont Public Service Board Docket 7156, June 27, 2006.

Table 1

Receiver	ID	Ht, m	UTM X,m	UTM Y,m	Elev,m	Modeled dBA	Closest WT	Dist,m	Dist,f	5 dB uncertainty	with SDRS
B001	Participating	1.5	391783	4940550	421	46.2	T07	556	1825	48.2	53.2
1	Participating	4	391938	4940511	379	45.4	T07	713	2339	47.4	52.4
2	Participating	4	392419	4940590	341	42.0	T08	1133	3718	44.0	49.0
B002	Participating	1.5	392361	4940686	349	41.8	T08	995	3254	43.8	48.8
3	Participating	4	392444	4940545	333	41.6	T08	1174	3851	43.6	48.6
B004	Participating	1.5	392263	4940346	316	41.3	T07	1062	3484	43.3	48.3
4	Participating	4	392407	4940273	307	41.0	T07	1213	3980	43.0	48.0
B005	Participating	1.5	391993	4939740	291	40.7	T06	1187	3895	42.7	47.7
B023	Participating	1.5	390156	4939007	318	40.6	T01	759	2489	42.6	47.6
23	Participating	4	390132	4938946	310	40.6	T01	821	2694	42.6	47.6
5	Participating	4	392094	4939622	278	40.5	T06	1336	4383	42.5	47.5
25	Participating	4	390372	4938626	373	39.2	T01	1023	3357	41.2	46.2
24	Participating	4	390287	4938558	349	38.1	T01	1106	3628	40.1	45.1
B012	Non-Participating	1.5	391679	4939311	299	40.3	T03	1149	3768	42.3	47.3
B022	Non-Participating	1.5	391000	4938847	346	40.1	T01	966	3168	42.1	47.1
12	Non-Participating	4	391795	4939197	287	40.0	T03	1304	4278	42.0	47.0
B006	Non-Participating	1.5	391958	4939559	280	39.9	T05	1269	4164	41.9	46.9
11	Non-Participating	4	391828	4939202	286	39.9	T03	1327	4355	41.9	46.9
6	Non-Participating	4	392084	4939473	266	39.9	T05	1416	4646	41.9	46.9
22	Non-Participating	4	391069	4939700	343	39.7	T01	1117	3666	41.7	46.7
7	Non-Participating	4	392107	4939470	264	39.7	T05	1436	4710	41.7	46.7
8	Non-Participating	4	392048	4939374	266	39.6	T03	1435	4707	41.6	46.6
032***	Non-Participating	4	389532	4939545	269	39.4	T01	1028	3373	41.4	46.4
B032***	Non-Participating	1.5	389676	4939640	290	38.9	T01	887	2910	40.9	45.9
29	Non-Participating	4	389908	4938895	300	38.9	T01	979	3213	40.9	45.9
13	Non-Participating	4	391832	4939000	271	38.8	T03	1455	4774	40.8	45.8
9	Non-Participating	4	392196	4939369	255	38.8	T05	1565	5133	40.8	45.8
B029	Non-Participating	1.5	389933	4938951	297	38.6	T01	925	3036	40.6	45.6
28	Non-Participating	4	389816	4938869	304	38.4	T01	1053	3455	40.4	45.4
19	Non-Participating	4	390977	4938441	358	38.0	T01	1296	4253	40.0	45.0
10	Non-Participating	4	392192	4939147	243	37.9	T03	1663	5455	39.9	44.9
27	Non-Participating	4	389870	4938675	304	37.6	T01	1166	3827	39.6	44.6
21	Non-Participating	4	390815	4938311	351	37.0	T01	1368	4488	39.0	44.0
15	Non-Participating	4	391595	4938484	282	36.9	T01	1620	5316	38.9	43.9
16	Non-Participating	4	391246	4938318	314	36.8	T01	1532	5025	38.8	43.8
33	Non-Participating	4	389037	4939922	232	36.7	T01	1541	5055	38.7	43.7
18	Non-Participating	4	391074	4938252	331	36.6	T01	1509	4952	38.6	43.6
30	Non-Participating	4	389259	4939023	256	36.5	T01	1413	4635	38.5	43.5
20	Non-Participating	4	390961	4938206	341	36.5	T01	1509	4951	38.5	43.5
34	Non-Participating	4	389000	4940058	234	36.5	T01	1608	5276	38.5	43.5
14	Non-Participating	4	391687	4938452	279	36.5	T01	1706	5598	38.5	43.5
B034	Non-Participating	1.5	389158	4940058	252	36.4	T01	1461	4792	38.4	43.4
17	Non-Participating	4	391177	4938244	319	36.4	T01	1562	5124	38.4	43.4
31	Non-Participating	4	389097	4939299	243	36.3	T01	1478	4850	38.3	43.3
26	Non-Participating	4	390540	4938330	358	35.2	T01	1308	4292	37.2	42.2

Table 1. Table adapted from Noise Report, Table A-4. SRW Model reveals difficulties with regulatory compliance. The Noise Report uses a 3-dB uncertainty. A column has been added showing noise levels with a total 5-dB uncertainty factored in, a typical minimum error found at other sites by the reviewers.

2.2. There is no noise impact assessment in the Noise Report, and one absolutely needs to be there. *Impact is not a number, but rather a human response to a change in the acoustic environment.* There is strong evidence for a negative community noise response as experienced at other Maine wind turbine sites. The resulting deficiency is that 1) regulatory oversight is uninformed about the potential for adverse community impacts, and 2) the project could adversely affect nearby residents, without remedy.

This review acknowledges and understands that Maine's regulatory framework is not open to discussion or debate for this application. At the same time, there are very clear indications from the regulatory framework, the Noise Report's design and the experience of the reviewers that the neighbors' health and welfare will be compromised if the facility is installed and operated. The DEP has the power to exercise discretion. There isn't much information yet from the limited uncertainty factors the DEP has chosen for wind turbine modeling. Experience with wind turbine noise impacts leads us to urge the DEP to exercise additional conditions within its discretion to protect public health near large industrial wind turbines.

Noise regulation standards are meant to protect the public safety, health, and welfare. Welfare means well-being, the absence of infirmity. It is well recognized by the State of Maine that noise must be controlled to protect the public well-being. However, the existing regulatory limits by themselves do not adequately inform the observer as to their potential for failure to protect the public well-being.

In Maine, wind turbines are being sited in rural and wilderness areas. Over 90 percent of the land area in Maine is rural, and some 60 percent [4] of Maine residents live in rural areas where it is very quiet. The Maine noise regulations were crafted to address an urban noise issue. They are too high for rural areas. The noise complaints that have surfaced at wind facilities in Maine confirm that the Maine noise limit of 45 dBA,night (recently reduced to 42 dBA,night by the State legislature and DEP acknowledging the adverse noise impacts of wind turbines in rural Maine) remains too high to prevent a serious noise impact in quiet rural areas. Even Hessler Associates advocates for no more than 39.5 dBA, night.

Wind turbines create low frequency noise, which enters into homes at significant distances out to a mile, or more, disturbing sleep and activities. The A-weighted sound level is recognized as a poor metric for regulating low frequency noise because it filters out low frequency noise. The best way to use the dBA as a regulatory limit for low frequency noise is to reduce the allowed level, just as the legislature has done, but to a level that prevents complaints in the quiet rural areas of Maine. Annoyance forming the basis for

⁴ Maine rural areas, populations at http://www.ers.usda.gov/datafiles/Rural_Definitions/StateLevel_Maps/ME.pdf

complaints from wind turbine noise starts in the low 30s dBA, some 10 dBA below the Maine regulatory limit at night.

The Noise Report should have assessed whether the regulatory limit is an appropriate criterion to prevent complaints. Since the regulatory limit is not sufficient to prevent complaints, then a suitable criterion should have been provided that does prevent complaints, and the project evaluated to that criterion. This was not found in the Noise Report. The resulting deficiency is that 1) regulatory oversight is uninformed about the potential for adverse community impacts, and 2) the project could adversely affect nearby residents, without remedy.

Maine Noise Regulation Limitations

The USEPA published a very significant environmental noise document in 1974, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (550/9-74-004). This was a compilation of 55 community noise studies conducted primarily in urban areas exposed to a variety of transportation, commercial and industrial sources. Urban areas were of prime interest because this is where the majority of the population resided. The recommended noise limits were based on the logarithmic equivalent average of the time-varying dBA noise levels, abbreviated as Leq. The noise limits were separated in to two-groups, daytime and nighttime. Daytime is 55 dBA and nighttime is 10 dB more stringent at 45 dBA to minimize indoor nighttime sleep interference. This criterion is applicable for urban areas and includes a 5 dB margin of safety. It can be noted that without the 5 dB margin of safety, the noise limits would be 60-dBA day and 50-dBA night.

In the late 1980's, Maine adopted noise limit regulations to address a specific nighttime noise problem in Portland. A significant number of residential neighbors were complaining about nighttime noise being generated by a nearby commercial facility loading ships. The Maine DEP sought expert assistance and held public hearings for interested parties to present evidence and findings. In the end, the DEP came to a compromise between commercial and residential land use. Commercial activities would need to limit their activity noise levels at nearby noise-sensitive properties, which meet the DEP definition of "protected location". The noise limit will vary depending on the predominant zoning and existing noise levels. Urban areas would have higher noise limits of 60-dBA daytime and 50 dBA nighttime, whereas non-urban areas would be limited to 55 dBA and 45 dBA, respectively. The difference is that the 5 dB margin of safety was removed for urban areas. In the end, the DEP adopted the USEPA noise limit recommendations for urban areas *and applied them to the entire State including quiet rural areas.*

Unfortunately, the DEP did not recognize the cautionary warnings presented in Appendix D related to quiet and rural acoustic environments. Maine has only a few urban areas, whereas the state is dominated by rural or remote land, having noise levels at least 20 to 30 dB quieter. This explains why there are so many noise complaints about wind turbines. A Maine court recognized this and reduced the nighttime noise limit by 3 dB to 42 dBA.

Applying the findings presented in EPA Appendix D results in a nighttime noise guideline of 35 dBA for rural areas. Wind turbine noise levels vary up and down with wind speed and blade rotation. The DEP noise limit is mandated to be decreased by 5 dBA when this sound variation meets the definition for "short duration repetitive sound" (SDRS). The SDRS penalty would reduce the 42-dBA night noise limit to 37 dBA, which is only 2 dB higher than the USEPA 35 dBA finding.

Criterion development

This section outlines briefly a method that assesses for noise impact to determine a criterion to prevent noise complaints. The EPA Normalized Ldn has been used to assess for community noise impact from its inception in 1974 [5] to present day. Acoustic consultants working for the wind industry have used the EPA method successfully to prevent complaints *for projects other than wind power* [6]. However, the authors of this report have not found a single wind turbine study that assessed to prevent complaints.

The authors developed a chart (see Figure 3) for simple review of potential community noise impacts *using the same Normalized CNR Method employed by other acoustical consultants*. Noise levels were also compared to well-known wind turbine noise annoyance findings [7]. Noise impact was determined for predicted SRW noise levels of 35 to 40 dBA at nearest non-participating residences (37 to 42 dBA when factoring in the 5-dB uncertainty found at Mars Hill). The result:

- Widespread Complaints and a significant percentage of people highly annoyed.

The analysis determines that the Noise Report is deficient because it is designed to create complaints and high annoyance for nearby residents which will impact public health and well-being. The Noise Report

⁵ "Information On Levels Of Environmental Noise Requisite To Protect Public Health And Welfare With An Adequate Margin Of Safety", EPA 550/9-74-004, March 1974.

⁶ Example of Normalized CNR use on a project *other than wind power*: Menge, C., Residential impact criteria and abatement strategies for roller coaster noise, Harris Miller Miller & Hanson, Inc. Internoise 2002.

⁷ Pedersen E, Persson Waye K., Perception and annoyance due to wind turbine noise: A dose-response relationship, Journal of the Acoustical Society of America 116, 2004.

design is in direct conflict with 1) the preamble of CMR 375.10, 2) standard engineering practices to protect the public, and 3) the INCE membership Canon of Ethics, which require members to hold paramount the safety, health and welfare of the public.

These deficiencies of the Noise Report call for additional conditions by the DEP using its discretion under Chapter 375.10.E to protect public health and welfare.

Figure 3

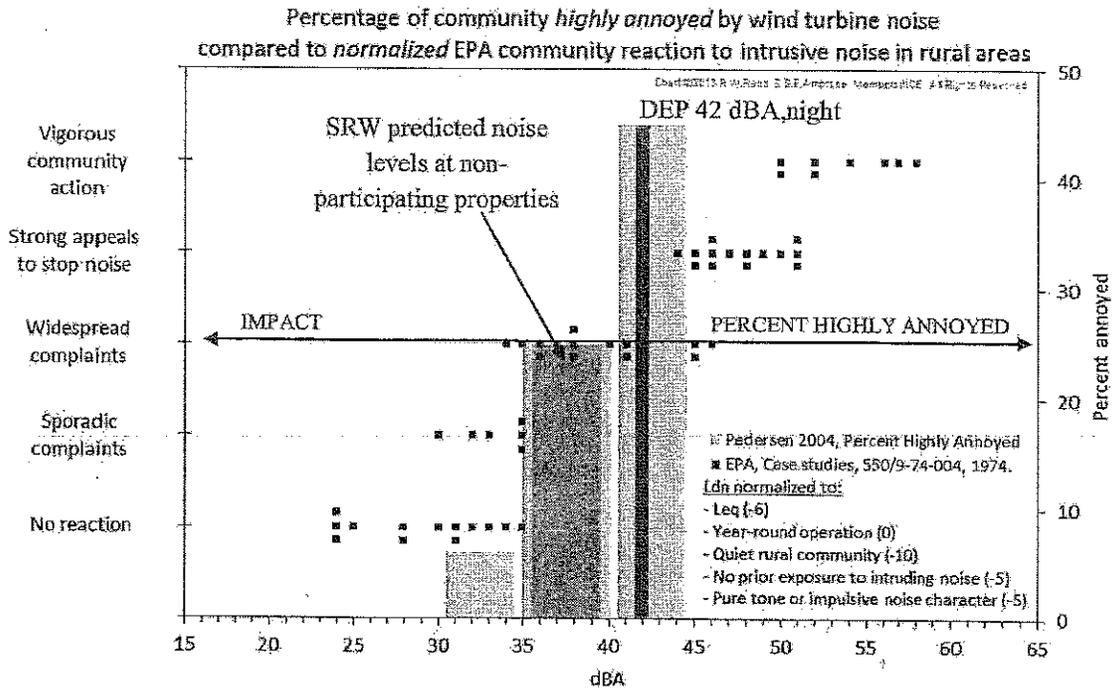


Figure 3. Reaction level and percentage of people annoyed by wind turbine noise in rural areas, with SRW predicted noise levels. Actual noise levels are expected to be higher than predicted.

What is annoyance, and why is it useful in the context of identifying protective noise levels? The EPA answered those questions in its 1974 Condensed Version of EPA Levels Document, on page 21 [8]:

"For the purpose of identifying protective noise levels, annoyance is quantified by using the percentage of people who are annoyed by noise."

From this definition, the acoustic consultant and regulating body can employ the already-determined levels of annoyance to wind turbine noise to develop and assess a criterion protective of public health and welfare. The Noise Report omitted this work entirely.

⁸ Excerpt from Condensed Version of EPA Levels Document, 1974, page 21:

Discussion

- Q. Is annoyance simply a "welfare" effect?
- A. Annoyance is a reflection of adverse effects which cannot be ascribed solely to "health" or "welfare." "Public health and welfare" in the context of the Noise Control Act is an indivisible term; there are no separate "health" effects or "welfare" effects. "Public health and welfare" includes personal comfort and well-being, and the absence of mental anguish, disturbances and annoyance as well as the absence of clinical symptoms such as hearing loss or demonstrable physiological injury.
- Q. What is annoyance due to noise?
- A. Noise annoyance may be viewed as any negative subjective reaction to noise on the part of an individual or group. It is not an indication of weakness or inability to cope with stress on the part of the annoyed. More likely it signifies transient (or possibly lasting) stress beyond the control of the conscious individual. This is often expressed on social surveys as the percentage of people who express differing degrees of disturbance or dissatisfaction due to the noisiness of their environments. For the purpose of identifying protective noise levels, annoyance is quantified by using the percentage of people who are annoyed by noise. This is felt to be the best estimate of the average general adverse response of people, and in turn, is viewed as reflecting activity interference and the overall desire for quiet.
- Q. Are people annoyed at levels below an L_{dn} of 45 or 55 dB?
- A. Individuals, or even groups, may be annoyed by noise at low levels—the dripping faucet or humming fluorescent bulb are good examples. Annoyance depends very much on the situation, and on individual differences and noise durations.
- Q. What do complaints represent?
- A. Complaints are used by officials as an indication that a noise problem exists (although a noise problem may well exist in the absence of specific complaints). However, they do not necessarily represent the magnitude of a noise problem. The number of people who file complaints is only a very small percentage of those who are annoyed.

2.3. Contrary to the Noise Report's assurances, the project will induce building vibration and rattle from wind turbine noise emissions in the 16 Hz octave band.

The Noise Report states,

"Low frequency sound is a component of the sound generated by wind turbines. As with infrasound, high levels of low frequency sound can induce rattling in light-weight partitions in buildings. The American National Standards Institute standard, ANSI S12.2, "Criteria for Evaluating Room Noise", recommends that levels be kept below 65 dB at 16 Hz, 65 dB at 31.5 Hz, and 70 dB at 70 Hz inside the building to prevent moderately perceptible vibration and rattles. As discussed below, low frequency sound from SRW is modeled to be well below these parameters."

The Noise Report omits analysis of the 16 Hz octave band low frequency sound, stating,

"Of all permanently occupied participating and non-participating residences the highest sound level outside at 31.5 Hz is 63 dB and at 63 Hz is 59 dBA. This modeled sound level is below the noise-induced vibration threshold. Modeling at infrasound frequencies was not conducted, as modern wind turbines typically do not generate problematic infrasound levels."

The Noise Report was deficient in not providing 16 Hz noise measurements for peer review to assess the statement. Despite carefully listing recommended noise limits to prevent vibration and rattles, the Noise Report did not bother to model low frequency sound at 16 Hz.

A comparative evaluation was done by the peer-reviewers using data [9] from Siemens 2.3-93 wind turbines, similar yet smaller and with shorter blades than the SRW turbines. In that reference's Figure 8.1-6b, the 16 Hz octave band sound level was documented at 8 dB higher than the 31.5 Hz band. In that reference's Section 8.3, the outside to inside noise reduction at 16 Hz was measured at 4-5 dB. The 16 Hz octave band interior noise level for residences near the SRW turbines was estimated assuming 1) the highest sound level outside at 31.5 Hz is 63 dB, 2) the difference between 16 and 31.5 Hz bands is comparable (+8 dB), and 3) the outdoor-indoor reduction is comparable (-4 dB conservatively, for windows open), using the equation shown below.

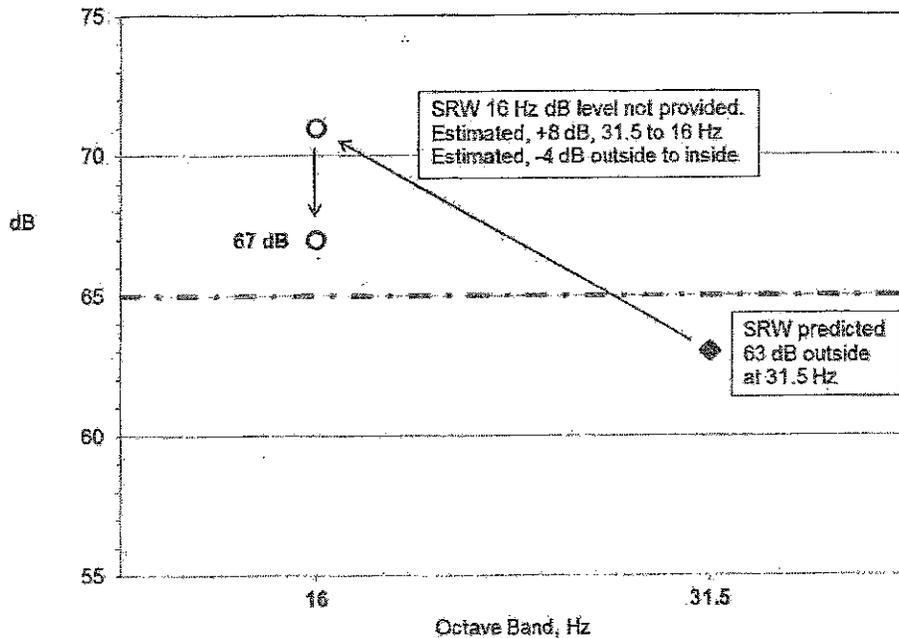
⁹ O'Neal, R., et al, A Study of Low Frequency Noise and Infrasound from Wind Turbines, Epsilon Associates, July 2009.

$$L_{\text{inside}}(16\text{Hz}) = L_{\text{outside}}(31.5\text{Hz}) + 8 - 4$$

$$L_{\text{inside}}(16\text{Hz}) = 63 + 8 - 4$$

$$L_{\text{inside}}(16\text{Hz}) = 67 \text{ dB (exceeding ANSI S12.2's 65 dB)}$$

The computation looks like this.



The peer-reviewers concluded that the facility's low frequency noise levels *will* induce perceptible building vibration and rattle from wind turbine noise emissions in the 16 Hz octave band.

It is worth noting that the SRW's modeled outdoor level in the 31.5 Hz band on which this evaluation was based is an *average* level, and *did not* factor in the total uncertainty found at other sites nor the "worst case" uncertainty required by the DEP and defined in IEC 61400-11. The Noise Report also *did not* account for, or supply measurements of, low frequency amplitude modulation in the 31.5 and 16 Hz bands for review. Modulated, peaking and louder low frequency noise levels impinging on the houses could result in a higher percentage of time with perceptible vibration and rattle.

This deficiency of the Noise Report call for additional conditions by the DEP using its discretion under Chapter 375.10.E to protect public health and welfare.

2.4. Contrary to the Noise Report's assurances, there is little evidence of increased far-field noise reduction for the revised GE 2.75 octave band spectra.

Figure 3

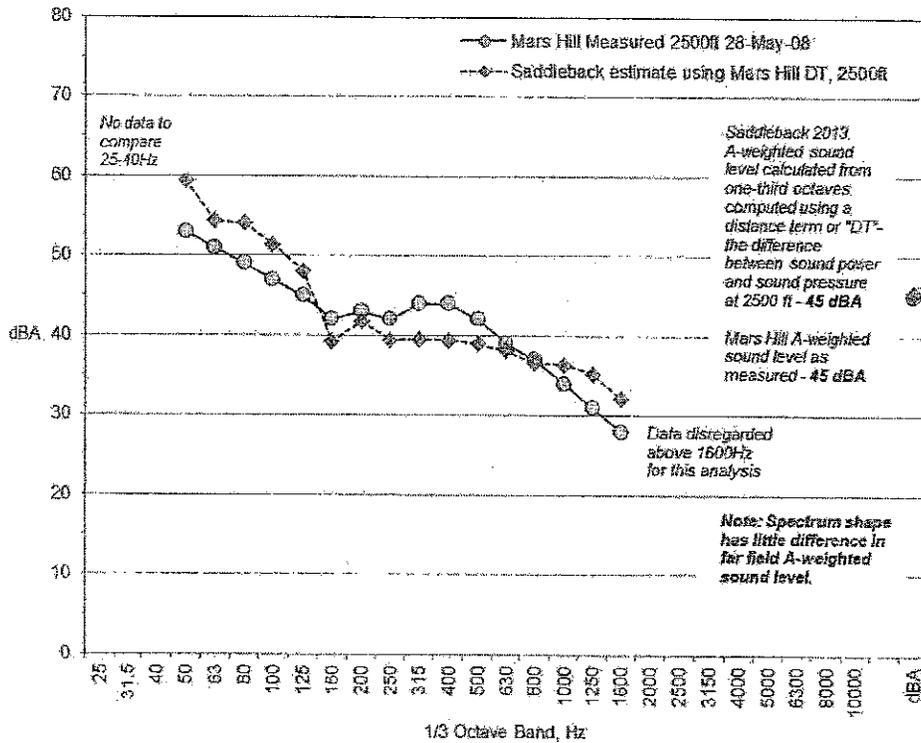


Figure 3. Conceptual evaluation of differences in far-field dBA level due to differences in spectra shape. Although the GE 2.75 has a lower spectrum shape in the 200-800 Hz bands compared to the GE 1.5sle, there was no significant difference found in the dBA level in this example test.

The Noise Report stated that the GE 2.75 MW wind turbines have "less sound energy in the lower frequencies and more sound energy in the higher frequencies. This has the effect of lowering sound levels at a distance, since higher frequency sound attenuates more quickly than low frequency sound." To evaluate this statement, the peer-reviewers obtained a real-world "distance term" (sound drop with distance) at Mars Hill where strong complaints and legal action surfaced. The model sound power level was compared to the measured sound pressure level for the distance of 2500 feet on May 28, 2008. The resulting distance term (DT: model minus measured) was applied to the SRW GE 2.75 sound power levels

to compute a sound pressure level spectrum and dBA value for 2500 feet [10]. The result is shown in Figure 3 above. This test is provided as an example of how to assess spectrum shape effects on dBA. However, contrary to RSG assurances, no significant reduction in dBA was found. It was inferred from this result that the Noise Report does not account for "worst case" propagation conditions found in the real world, which is a deficiency.

This deficiency of the Noise Report call for additional conditions by the DEP using its discretion under Chapter 375.10.E to protect public health and welfare.

¹⁰ The distance term used for this example evaluation is shown here in decibels for the one-third octave bands from 50 to 1600 Hz, from data obtained May 28, 2008 at 2500 feet.

F, Hz:	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600
DT, dB:	53	57	59	57	56	64	68	59	57	55	55	58	58	59	61	63

Attachment A. Chapter 375.10.1(7) Submissions**(7) Submissions**

Technical information shall be submitted describing the wind energy developer's plan and intent to make adequate provision for the control of sound. The wind energy developer's plan shall contain the following:

- (a) A map depicting the location of all proposed sound sources associated with the wind energy development, property boundaries for the proposed wind energy development, property boundaries of all adjacent properties within one mile of the proposed wind energy development, and the location of all protected locations located within one mile of the proposed wind energy development;
- (b) A description of the major sound sources, including tonal sound sources and sources of short duration repetitive sounds, associated with the construction, operation and maintenance of the proposed wind energy development;
- (c) A description of the equivalent noise levels expected to be produced by the sound sources at protected locations located within one mile of the proposed wind energy development. The description shall include a full-page isopleths map depicting the modeled decay rate of the predicted sound pressure levels expected to be produced by the wind energy development at each clearly identified protected location within one mile of the proposed wind energy development. The predictive model used to generate the equivalent noise levels expected to be produced by the sound sources shall be designed to represent the "predictable worst case" impact on adjacent properties and shall include, at a minimum, the following:
 1. The maximum rated sound power output (IEC 61400-11) of the sound sources operating during nighttime stable atmospheric conditions with high wind shear above the boundary layer and consideration of other conditions that may affect in-flow airstream turbulence;
 2. Attenuation due to geometric spreading, assuming that each turbine is modeled as a point source at hub height;
 3. Attenuation due to air absorption;
 4. Attenuation due to ground absorption/reflection;
 5. Attenuation due to three dimensional terrain;
 6. Attenuation due to forestation;
 7. Attenuation due to meteorological factors such as but not limited to relative wind speed and direction (wind rose data), temperature/vertical profiles and relative humidity, sky conditions, and atmospheric profiles;
 8. Inclusion of an "uncertainty factor" adjustment to the maximum rated output of the sound sources based on the manufacturer's recommendation; and
 9. Inclusion, at the discretion of the Department, of an addition to the maximum rated output of the sound sources to account for uncertainties in the modeling of sound propagation for wind energy

developments. This discretionary uncertainty factor of up to 3 dBA may be required by the Department based on the following conditions: inland or coastal location, the extent and specificity of credible evidence of meteorological operating conditions, and the extent of evaluation and/or prior specific experience for the proposed wind turbines. Subject to the Department's discretion based on the information available, there is a rebuttable presumption of an uncertainty factor of 2 to 3 dBA for coastal developments and of 0 to 2 dBA for inland developments.

- (d) A description of the protected locations near the proposed wind energy development.
- (e) A description of proposed major sound control measures, including their locations and expected performance.
- (f) A comparison of the expected sound levels from the proposed development with the sound level limits of this regulation.
- (g) A comparison of the expected sound levels from the proposed development with any quantifiable noise standards of the municipality in which the proposed development will be located and of any municipality which may be affected by the noise.
- (h) A description and map identifying one or more compliance testing locations on or near the proposed wind energy development site. The identified compliance testing locations shall be selected to take advantage of prevailing downwind conditions and be able to meet the site selection criteria outlined in subsection I(8)(d)(2).
- (i) A description of the compliance measurement protocol as required by subsection 8 below.
- (j) A description of the complaint response protocol proposed for the wind energy development. The complaint response protocol shall adequately provide for, at a minimum:
 1. A 24-hour contact for complaints;
 2. A complaint log accessible by the Department;
 3. For those complaints that include sufficient information to warrant an investigation, the protocol must provide for an analysis as set forth in (a) through (c) below. Sufficient information includes, at a minimum: the name and address of the complainant; the date, time and duration of the sound event; a description of the sound event, indoor or outdoor, specific location and a description of any audible sounds from other sources outside or inside the dwelling of the complainant. Analysis of the complaint by the licensee must include:
 - (a) documentation of the location of the nearest turbines to the complaint location and ground conditions in the area of the complaint location;
 - (b) weather conditions at the time of the complaint and surface and hub height wind speed and direction;
 - (c) power output and direction of nearest turbines; and
 - (d) notification of complaint findings to the Department and the complainant;

4. A plotting of complaint locations and key information on a project area map to evaluate complaints for a consistent pattern of site, operating and weather conditions; and
5. A comparison of these patterns to the compliance protocol to determine whether testing under additional site and operating conditions is necessary and, if so, a testing plan that addresses the locations and the conditions under which a pattern of complaints had occurred.

Attachment B, Chapter 375.10(E) Terms and Conditions**E. Terms and Conditions**

The Board may, as a term or condition of approval, establish any reasonable requirement to ensure that the developer has made adequate provision for the control of noise from the development and to reduce the impact of noise on protected locations. Such conditions may include, but are not limited to, enclosing equipment or operations, imposing limits on hours of operation, or requiring the employment of specific design technologies, site design, modes of operation, or traffic patterns.

The sound level limits prescribed in this regulation shall not preclude the Board under Chapter 375.15 from requiring a developer to demonstrate that sound levels from a development will not unreasonably disturb wildlife or adversely affect wildlife populations. In addition, the sound level limits shall not preclude the Board, as a term or condition of approval, from requiring that lower sound level limits be met to ensure that the developer has made adequate provision for the protection of wildlife.

Stephen E. Ambrose, INCE, Bd. Cert.
 15 Great Falls Road, Windham, ME 04062
 tel: 207.892.6691 - seaa@myfairpoint.net

Robert W. Rand, INCE
 65 Mere Point Road, Brunswick, ME 04011
 rrand@randacoustics.com - tel: 207.632.1215

June 28, 2013

Rufus E. Brown, Esq.
 Brown & Burke
 152 Spring Street
 P.O. Box 7530
 Portland, ME 04112

Subject: Comments on the Peer Review by Peter Guldberg of Tech Environmental
 Saddleback Ridge Wind Farm, Carthage, Maine. RSG, Inc. Revised April 2013

Rufus:

At the request of the appellants in the Saddleback case (Docket BEP-12-137) our professional opinion is provided herein of the DEP's independent peer review (IPR) by Peter Guldberg of Tech Environmental, by letter June 5, 2013. The letter reviewed the most recent Noise Impact Study (the "Noise Report") performed by RSG, Inc. for the proposed wind turbine facility consisting of 12 GE 2.75-103 2.75 MW turbines on Saddleback Mountain in Carthage, Maine - the Saddleback Ridge Wind project ("SRW").

Guldberg/TE stated the purpose of his review was to "determine if the acoustic studies submitted with the Application are reasonable and technically correct according to standard engineering practices and the Department Regulations on Control of Noise (06-096 CMR 375.10)." He gave full approval to the Noise Report.

It is important to consider the source of the review. Additional information offered some troubling insight into the Guldberg/TE review method and approach as listed below.

1. Guldberg/TE has performed preconstruction noise studies on at least three large wind turbine projects that now appear to exceed state regulatory noise limits and have resulted in strong complaints and appeals to stop the noise. He ignored noise impacts and was wrong on every project reviewed. See attachment 1.
2. We understand Guldberg/TE is on the board of directors of The Environmental Business Council of New England, Inc., an organization dedicated to "enhance business and job growth of both established and emerging environmental and energy businesses". Records released in 2011 under the Freedom Of Information Act (FOIA) reveal that Guldberg/TE sought to "handle organized opposition to community wind projects" with other organizations working with the wind power industry. See attachments 2-1&-2.

By all appearances, this person comes from a background with affiliations that are wind industry based. He has affiliated himself with the industry. He is not independent.

More questions arose as soon as we read Guldberg/TE's review on the SRW Noise Report.

3. Guldberg/TE completely missed the numerous deficiencies that render the Noise Report deficient as a matter of law.

4. Guldberg/TE was silent about noise impacts for neighbors including children living near the proposed SRW. This is absolutely counter to 1) the preamble of CMR 375.10, 2) standard engineering practices, and 3) the INCE membership Canon of Ethics, which require members to hold paramount the safety, health and welfare of the public.

What is even more troubling is that in 2006, Guldberg/TE gave cautionary direct testimony to the Public Service Board of Vermont on Docket 7156 [¹]. Guldberg/TE identified major deficiencies in the application under review; under-estimating sound power and maximum received sound levels, a lack of impact assessment for neighbors, and other deficiencies. Guldberg/TE recommended measuring at an existing wind facility with the turbines under consideration to determine the extent of impulsive noise. Guldberg/TE said that the report had underestimated the sound level "by 5 to 8 decibels". He said that the author "had failed to demonstrate that the project will not have an undue adverse health impact on public health." Guldberg/TE wrote a specific caution about noise impacts on special-needs children.

In stark contrast to Guldberg/TE's 2006 testimony, Guldberg/TE completely missed numerous deficiencies in the SRW Noise Report, and said nothing about noise impacts on children.

What made Guldberg/TE depart so far from his previously careful, cautionary approach in 2006? What did the neighbors around the SRW ever do to Guldberg/TE to get his rubber stamp in 2013?

Further, we understand that Guldberg/TE has recently advocated changing the Massachusetts DEP noise-compliance test method, which would have the effect of making it easier to comply with the DEP's noise limits, but not change the noise impact, for wind projects with which Guldberg/TE is associated. Guldberg/TE wrote a letter to a Mr. Ruiz who is the owner of a Kingston, Ma wind turbine which Peter studied before construction. The letter is attached.

Guldberg/TE says the Massachusetts DEP noise test method is "scientifically invalid". This is an attended noise measurement method used for decades now in Massachusetts. It measures the maximum (Slow response) noise level for the intrusive noise against the (Slow response) L90-background. The Mass DEP tests compliance as an increase being less than 10 dB over the existing background L90. It's a simple test

¹ Guldberg, P., Prefiled Direct Testimony, Vermont Public Service Board Docket 7156, June 27, 2006.

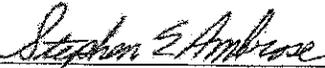
that has worked well over the years when properly conducted. Guldberg wants to change L_{max} over L90 to L90 over L90 for wind turbines. That would have the effect of ignoring the average and maximum levels produced by the wind turbine. The difference using this Guldberg/TE method in a test is that the wind turbine facility could now "pass" the test but the community noise impacts would remain the same. This method could also allow larger, louder turbines to be installed and operated near homes.

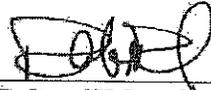
These are not the actions of a person upholding public safety, health, and welfare.

Guldberg/TE is now associated with multiple wind turbine projects that have exceeded noise limits and created complaints and appeals to stop the noise. FOIA records suggest a conflict of interest. The picture that has emerged in our review is not one of an independent, impartial, careful advisor.

Commercial developments that generate noise must strive to be good acoustic neighbors to surrounding residences. Wind turbine facility applicants have only distance as a reliable noise control option. Applicants and the DEP depend on impartial, carefully prepared advice from acoustical consultants who work to uphold the law and protect public safety, health, and welfare, to ensure the project will comply with noise regulations and prevent complaints and noise impacts.

Respectfully Submitted,


Stephen E. Ambrose, INCE (Brd., Cert.)


Robert W. Rand, INCE

Attachment 1

Guldberg/TE has performed preconstruction noise studies on at least three large wind turbine projects that now appear to exceed state regulatory noise limits and have resulted in strong complaints and appeals to stop the noise. He ignored noise impacts and was wrong on every project reviewed.

1.1 Kingston, Massachusetts

Guldberg/TE performed and certified preconstruction noise study for four large 1.5+ MW wind turbines in Kingston [2]. The reports evaluated the cumulative impact of the three 1.5+ MW O'Donnell wind turbines and the fourth 1.5+ MW Town wind turbine. Guldberg/TE reports concluded that all four turbines separately and together would comply with the Massachusetts DEP noise limits (no more than 10 dB over the background L90). No community noise impact assessment was found in the preconstruction noise studies. This is required in order to determine if there will be a noise impact.

Result: Complaints and strong appeals to stop the noise emerged soon after the O'Donnell turbines were started up, and legal action commenced. In 2013, a professional Noise Evaluation determined that the O'Donnell wind turbines significantly exceeded the MADEP noise limits, with the following [3].

Using the average operational levels measured at the four residential locations and the average ambient levels measured at the reference location, NCE assessed compliance with the MADEP noise regulation. Of the four neighborhood locations, two were found to be in excess of this regulation with increases over the reference/background noise level of 12 and 16 decibels. NCE also calculated the increases of the maximum measured residential levels over the minimum measured reference levels. This worst-case assessment produced overages of 13 to 22 decibels above the reference background. The turbine induced noise is significantly above the MADEP regulation that only permits up to a 10 decibel increase.

² Guldberg, P., Acoustic Study of the O'Donnell Wind Energy Project, Kingston, Massachusetts. Tech Environmental, April, June and November 2010.

³ Bahtharian, M., Beaudry, A., O'Donnell Wind Turbines Noise Evaluation, Kingston, MA. NCE, Inc. April 2013.

1.2 Fairhaven, Massachusetts

Guldberg/TE performed and certified the preconstruction noise study for two large 1.5-MW wind turbines in Fairhaven in 2011 and previously in 2007 [4]. It was stated in 2007 that the wind turbines would be inaudible to neighbors at least 40 percent of the time. No change was made to that statement in 2011. No review of noise levels, audibility or community noise impact was provided for similar sized 1.5-MW turbine noise impacts (Mars Hill, Freedom, and Vinalhaven, Maine; and many others).

Result: Strong complaints and appeals to stop the noise emerged soon after the turbine started operating. Following Massachusetts DEP field tests in 2012, the Guldberg/TE noise predictions were found to be 2-10 dB deficient (see Figure A1.2-1 below). The Mass DEP declared the facility out of compliance with State noise limits. The Fairhaven Board of Health has ordered the facility shut down at night until measures can be taken to reduce the noise levels.

Figure A1.2-1

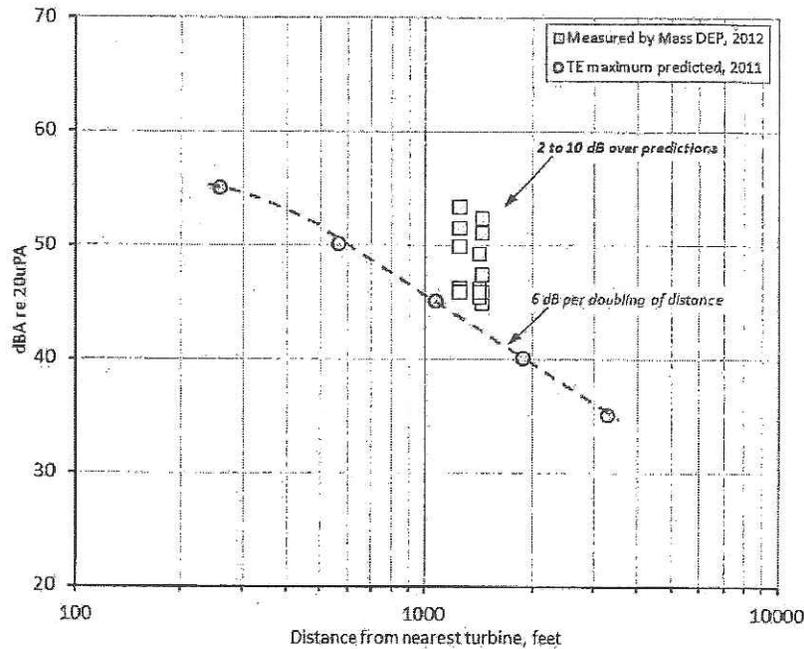


Figure A1.2-1. Fairhaven predicted levels and Mass DEP 2012 measurements (comparison by authors).

⁴ Guldberg, P., Acoustic Study Of Vestas V82 Wind Turbines Fairhaven, Massachusetts, Tech Environmental, September 2011; first study performed May 2007, and Supplemental Information issued May 11, 2007.

1.3 Nantucket Island, Massachusetts

Guldberg/TE performed and certified the preconstruction noise study for the 100kw wind turbine at the Nantucket High School [5]. Uncertainties were apparently not considered in the model, and the highest wind speed assessed was 8 m/s, well below actual wind speeds aloft on Nantucket. The predicted highest levels at the nearest neighbors was 33 to 44 dBA. No community noise impact assessment was found in the preconstruction noise study.

Result: Strong complaints and appeals to stop the noise emerged in the nearby residential area soon after the turbine started operating. The actual noise levels measured in 2012 were 5-6 dB higher than predicted and a prominent tone or hum was found [6]. Measurements indicated that the Town and the MADEP noise limits were exceeded respectively by up to 12 dBA and 20 dBA at the nearest properties.

Figure A1.3-1

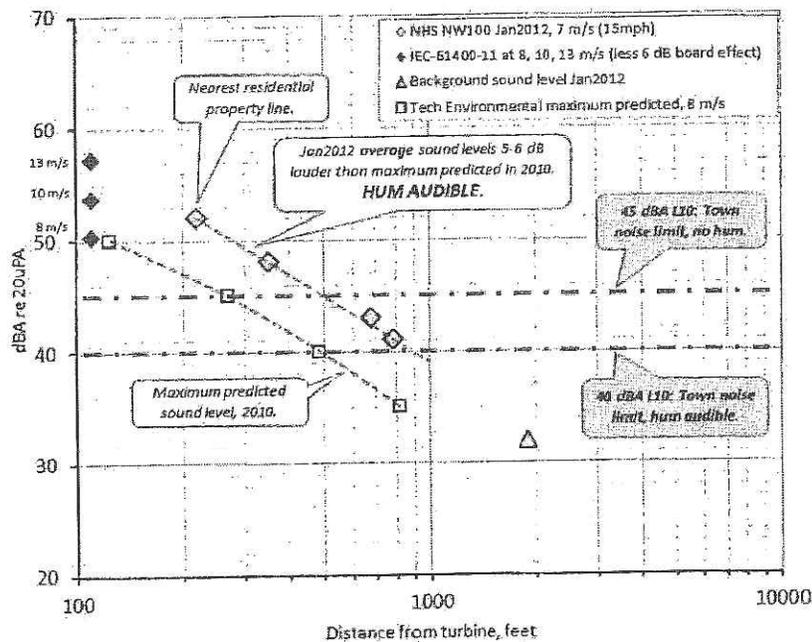


Figure A1.3-1. Nantucket High School 100kw wind turbine predicted levels and field survey results, comparison from Advisory Letter, Attachment C (by authors).

⁵ Guldberg, P., Acoustic Study of the Nantucket High School Wind Turbine. Tech Environmental, June 2010.
⁶ Ambrose, S., Rand, R., Advisory Letter, Madaket Wind Turbine Acoustic Analysis. February 2012.

Attachment 2-1

Records released in 2011 under the Freedom Of Information Act (FOIA) reveal that Guldberg/TE sought to "handle organized opposition to community wind projects" with other organizations working with the wind power industry.

FOIA e-mail record shown below from Guldberg/TE (Peter Guldberg, president of Tech Environmental, Inc. and on the Board of Directors of the Environmental Business Council of New England), communicating with the Massachusetts Clean Energy Center, coordinating a meeting at the offices of HMMH, Inc. (another acoustical consulting firm in Massachusetts); January 12, 2011.

From: Peter Guldberg
To: Orlando Martinez;
Subject: RE: conference call
Date: Wednesday, January 12, 2011 3:11:15 PM

Orlando-

Fine, I'll expect your call.

Did you get the message I sent about the EBC wind energy group meeting on 1/18 Tuesday 10 a.m. at HMMH (Burlington). The group would welcome your attendance to discuss how our respective organizations can handle organized opposition to community wind projects in Mass. Are you available? (More information—call Steve Barrett at 781-852-3125.

-Peter

From: Orlando Martinez [mailto:OMartinez@MassCEC.com]
Sent: Wednesday, January 12, 2011 2:43 PM
To: Peter Guldberg
Subject: conference call

Peter,
 Can we have a brief conference call to go over your proposed scope of work? How about 1 pm tomorrow, Thursday?

Orlando Martinez
 Project Manager
 Massachusetts Clean Energy Center
 55 Summer St, 9th Floor, Boston, MA 02110
 (617)315-9324 Fax: (617)315-9356
 omartinez@masscec.com



Attachment 2-2

Peter Guldberg, president of Tech Environmental, Inc. (Guldberg/TE) and on the Board of Directors, Environmental Business Council of New England, Inc.

4/19/2011 Environmental Business Council of Ne...



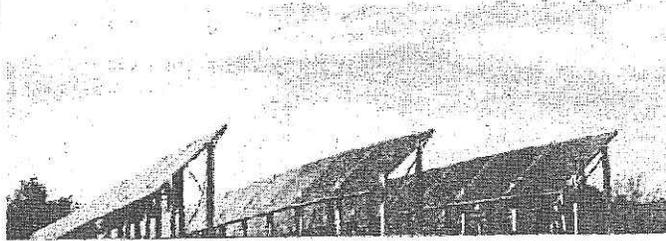
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Peter H. Guldberg

Former President
Company: Tech Environmental, Inc.
Address: Reservoir Place, 1621 Trapelo Road, Waltham, MA 02451
E-mail: pguldberg@teinc.com
Phone: 781-596-1229
Curriculum Vitae



Mr. Guldberg is President of Tech Environmental, Inc. (TE), which solves air quality, odor and noise problems for clients in the energy, manufacturing, commercial, real estate and municipal services sectors. Since its founding in 1984, TE has established a reputation for providing its clients with quick-response, high quality consulting services (www.techenv.com). TE hosts many of the EBC committee meetings at their office at Reservoir Place.

Mr. Guldberg has 28 years of experience as an air quality and noise consultant. He has prepared and given expert testimony before State Environmental Boards in the States of Illinois, Indiana, Maine, Massachusetts, and Vermont before the Texas House of Representatives Committee on the Environment, and in court. Mr. Guldberg has taught courses on dispersion modeling, meteorology and air pollution regulations since 1977 for U.S. EPA's Air Pollution Training Institute, the Air & Waste Management Association and several universities, training over 1,400 professionals in the field including key air quality staff in over 20 State agencies and most U.S. EPA regional offices. He holds an M.S. in Atmospheric Science from the University of Michigan, a B.S. in Math from MIT, and is a Certified Consulting Meteorologist (CCM).

www.ebcne.org/index.php?id=122&no...
4/19/2011



May 10, 2013

Mr. Kially Ruiz, President
 Aquinergy, LLC
 60 Almy Knoll Terrace
 Portsmouth, RI 02871

Re: Comments on the DEP L_{max} -to- L_{90} Test Method for Kingston Wind

Dear Kially:

I understand the DEP L_{max} -to- L_{90} test method that was applied in testing the Town of Falmouth's wind turbines is part of a larger Acoustic Monitoring Test Protocol proposed for the Kingston Wind Independence Turbine.¹ Along with other acoustic consulting professionals, I have voiced concerns about the L_{max} -to- L_{90} test method in discussions with regulatory officials over the past ten months regarding existing wind energy projects. Specifically, the method used in the Falmouth tests has significant scientific flaws. As you requested, this letter provides a quick summary of those concerns.

The L_{max} -to- L_{90} Test Method is Inconsistent with How Existing Projects Were Permitted

To be enforceable, a regulatory standard, such as the DEP Noise Policy, needs to be transparent and easily understood, and test results to enforce the standard need to be replicable. Unfortunately, the L_{max} -to- L_{90} test method does not meet these criteria. Existing wind energy projects in Massachusetts, including Kingston, were designed in conformance with the Noise Policy and its L_{90} -to- L_{90} test method. DEP's use of the L_{max} -vs.- L_{90} test method is inconsistent with how projects were designed to ensure compliance with the State Noise Regulation, and it is inconsistent with the sound power levels provided by turbine manufacturers under International Standard IEC 61400-11, which form the basis for the turbine layout. Basic fairness under the law would suggest that projects be tested and judged using the same methodology under which they were approved and permitted. Since no manufacturer can provide L_{max} sound power levels, it is impossible to design a project to meet the L_{max} -to- L_{90} test method.

The Comparison of Two Different Sound Metrics is Scientifically Invalid

By definition the L_{max} sound level is the highest sound level recorded, and the L_{90} sound level is one of the lowest levels recorded (representing the quietest 10% of the time) during the monitoring period. *With no turbines operating*, there is a significant spread in the existing sound-environment between L_{max} and L_{90} levels, by definition. That spread can exceed 10 dBA. This phantom increase in the L_{90} level is always present and is due to the improper comparison of dissimilar sound metrics.

¹ HMMH, "Final Scope for Acoustical Monitoring of Kingston Wind Independence Wind Turbine," March 15, 2013.

Comments on the L_{max} -to- L_{90} Test Method

May 10, 2013

When a measurement is made with the turbine on, the increase due to the turbine cannot be separated from the phantom increase (caused by dissimilar sound metrics) because the spread in the baseline sound caused by comparing dissimilar metrics is not audible. Thus, the L_{max} -vs.- L_{90} test method can significantly over-predict the increase in the ambient sound level attributable to the new source (the wind turbine). This phantom increase cannot be properly attributed to the source and thus the L_{max} -vs.- L_{90} test method is scientifically invalid in my opinion.

The L_{max} -vs.- L_{90} Test Method Can Produce a Fictitious Violation

The L_{max} -vs.- L_{90} Method used in Falmouth compared the L_{max} sound level (turbine on) to a baseline (turbine off) L_{90} sound level. By definition, the maximum sound level L_{max} is always higher than the quietest-10%-of-the-time sound level L_{90} .

Sound data from the Falmouth site reveal that L_{max} levels are significantly higher than L_{90} levels when the wind turbines are turned off. From the DEP report "Attended Sampling of Sound from Wind Turbine #1, Falmouth, MA" (May 2012), the Appendix B Sampling Data for "Background Sound Levels" show the following spread between L_{max} and L_{90} 5-second sound levels. The L_{max} levels listed below match DEP's method, i.e. they are the 1st highest 5-second measurements in each 5-minute period.

Table 1
Background Sound Levels at 211 Black Smith Shop Road, Falmouth
Turbines Off, March 7 and 8, 2012

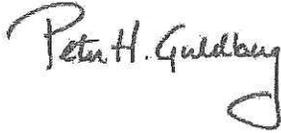
Start Time of 5 min period	L_{max} (dBA)	L_{90} (dBA)	$L_{max} - L_{90}$ Spread Phantom Increase (dBA)
3/7, 2:30 a.m.	34.5	29.3	5.2
3/7, 2:42 a.m.	35.1	29.0	6.1
3/7, 2:50 a.m.	34.4	28.8	5.6
3/7, 3:15 a.m.	48.5	30.3	18.2
3/7, 3:23 a.m.	49.4	30.7	18.7
3/7, 3:32 a.m.	49.5	30.8	18.7
3/8, 2:23 a.m.	46.7	40.0	6.7
3/8, 2:30 a.m.	46.1	40.0	6.1
3/8, 2:37 a.m.	44.9	39.5	5.4
3/8, 2:55 a.m.	50.5	40.7	9.8
3/8, 3:02 a.m.	46.1	40.7	5.4
3/8, 3:07 a.m.	49.1	39.8	9.3

Comments on the L_{max} -to- L_{90} Test Method**May 10, 2013**

In summary, while I understand the L_{max} -to- L_{90} test method was used by DEP at the Town of Falmouth wind turbines, and is being used at other existing wind energy projects, this method has significant scientific flaws. Accordingly, I have concerns as to the accuracy of the test method in fairly judging compliance of existing wind projects with the DEP Noise Policy.

Sincerely,

TECH ENVIRONMENTAL, INC.



Peter H. Guldberg, INCE, CCM
President
3749/Letter May 10 2013

Verrill Dana_{LLP}

Attorneys at Law

GORDON R. SMITH
ATTORNEY
gsmith@verrilldana.com
Direct: 207-253-4926

ONE PORTLAND SQUARE
PORTLAND, MAINE 04112-0586
207-774-4000 • FAX 207-774-7499
www.verrilldana.com

July 3, 2013

VIA Electronic Mail

Erle Townsend, Project Manager
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

**Re: Licensee Response to Comments by Appellants
Saddleback Ridge Wind, LLC
L-25137-24-A-N/L-25137-TG-B-N (approval)**

Dear Erle,

I am writing on behalf of licensee Saddleback Ridge Wind, LLC ("SRW") in response to comments submitted on June 28, 2013 by appellants Friends of Maine's Mountains et al. ("Appellants") in the above-captioned remand proceeding before the Board of Environmental Protection. In addition to responses contained in this letter, SRW's acoustic engineer, Resource Systems Group ("RSG") has provided technical responses in a separate memorandum, which is attached to this letter.

Together with the RSG memorandum, SRW offers the following responses to Appellants' comments:

1. Appellants claim that SRW did not submit a map showing property boundaries of all adjacent properties within one mile of the project. (Ambrose and Rand at 2.)

Response: The Law Court's remand order required the Board to apply the 42 dBA limit. Specifically, the remand order stated, "We vacate the Board's order and remand for further review using the 42 dBA nighttime sound level limit introduced in 06-096 CMR 375(10)(1)(2)(b)." Friends of Maine's Mountains v. Bd. of Env'tl. Prot., 2013 ME 25, ¶ 17. The remand order does not reference the sound rule's procedural submission requirements. In accordance with the Court's order, SRW submitted substantive information demonstrating that the Project will comply with the 42 dBA limit. The referenced property boundary map is not relevant to that analysis. Nevertheless, it is attached to this submission as Exhibit A.

July 3, 2013

Page 2

2. Appellants claim that SRW did not provide documentation demonstrating the effectiveness of the GE Advanced Loads Control (ALC) technology in reducing SDRS. (Ambrose and Rand at 5.)

Response: As discussed in detail in SRW's Noise Impact Study submitted to the Board on April 9, 2013, the Project is not expected to result in significant SDRS that would affect compliance with the 42 dBA limit. This analysis is based on several factors. First, an analysis of a year of meteorological data collected at the Project site indicates that site-specific conditions are not conducive to significant amplitude modulation that can cause SDRS. Second, extensive monitoring and analysis of sound emissions at an operating wind power facility (Spruce Mountain Wind) indicate that similar site conditions and project layout have not caused amplitude modulation that would result in application of an SDRS penalty. Finally, SRW provided information regarding ALC, a newly-available independent blade pitch technology expected to reduce the incidence of amplitude modulation. The description of ALC was provided to the Board for informational purposes but is not necessary for the Project to demonstrate compliance. In any event, once the Project is operational it will be required to demonstrate compliance with the 42 dBA limit, including any penalty for SDRS, through sound monitoring under worst case conditions.

3. Appellants claim that SRW erred by not identifying proposed compliance testing locations. (Ambrose and Rand at 5.)

Response: As noted above in Response #1, the Law Court's remand order did not require SRW to make all of the submissions contained in Chapter 375(10)(1)(7). Submission of proposed compliance testing locations is not relevant or helpful to the Board in its review of SRW's compliance with the 42 dBA sound limit. Nevertheless, SRW has identified proposed compliance testing locations on the map attached as Exhibit A. These locations were chosen based on the locations recommended in the June 5, 2013 peer review by Tech Environmental and based on the measurement procedures established by Chapter 375(10)(1)(8)(d).

4. Appellants claim that SRW erred by not providing a description of the compliance measurement protocol. (Ambrose and Rand at 6.)

Response: As noted above in Response #1, the Law Court's remand order did not require SRW to make all of the submissions contained in Chapter 375(10)(1)(7). A description of the compliance measurement protocol will not assist the Board in its review of SRW's compliance with the 42 dBA sound limit when Chapter 375(10)(1)(8) explicitly establishes the compliance measurement procedures that must be followed. SRW will perform its sound monitoring in accordance with Chapter 375(10)(1)(8).

July 3, 2013

Page 3

5. Appellants claim that SRW erred by not including a complaint response protocol. (Ambrose and Rand at 6-7.)

Response: As noted above in Response #1, the Law Court's remand order did not require SRW to make all of the submissions contained in Chapter 375(10)(I)(7). The submission of a complaint response protocol will not assist the Board in its review of SRW's compliance with the 42 dBA sound limit. Regardless, the Project's complaint response protocol, which is consistent with Chapter 375(10)(I)(7)(j), which has been reviewed and approved by Department staff, and which is unaffected by the Law Court's remand order, is contained in SRW's Site Law license.

6. Appellants claim that SRW "did not explain or justify using easements as noise control which appear to waive claims for health impacts on children." (Ambrose and Rand at 11.)

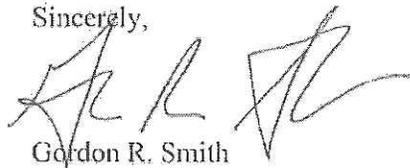
Response: Exemption from noise limits by sound easement is specifically provided for by Chapter 375(10)(C)(5)(s). The exemption by easement is unaffected by the Board's adoption of the wind power specific sound rules in Chapter 375(10)(I). A sound easement is an agreement between a developer and a landowner in which the landowner is compensated for a specific use of the landowner's property.

7. Appellants claim that the newly adopted wind power noise rules, including the 42 dBA nighttime sound level, are insufficient to prevent complaints and as a result SRW should have assessed the project's noise impacts against a standard suggested by Appellants rather than against DEP Rules Chapter 375(10)(I). (Ambrose and Rand at 13-17.)

Response: The wind power specific sound rules contained in Chapter 375(10)(I) were adopted by the Board after an exhaustive rulemaking on the issue of wind power sound. During the rulemaking the Board considered various methods of sound regulation and ultimately adopted the numerical limits and associated requirements contained in Chapter 375(10)(I)(2)(b). These are the specific limits that Appellants argued must be applied in their appeal to the Law Court of the Board's affirmance of the Project. Appellants can hardly now argue that a different limit should apply. In any event, the Law Court instructed the Board to apply the 42 dBA limit, not to consider whether yet another set of standards is appropriate.

Thank you for your attention to this matter. Please contact me with any questions.

Sincerely,



Gordon R. Smith

cc: Cynthia Bertocci
Mark Bergeron
Peggy Bensinger, Esq.
Rufus Brown, Esq.



MEMORANDUM

To:	Gordon Smith, Verrill Dana LLP Todd Presson, Patriot Renewables LLC
From:	Kenneth Kaliski, P.E., INCE Bd. Cert.
Subject:	Response to Saddleback Ridge Wind Appellant Filing of June 28, 2018 Regarding Noise Issues
Date:	3 July 2013

We have reviewed the reports of Rick James of E-Cooustic Solutions, and Robert Rand and Stephen Ambrose, dated June 28, 2013, submitted on behalf of the appellants to the Saddleback Ridge Wind project. The appellants' various claims are numbered below, followed by our responses.

1) The appellants make a number of claims regarding the validity of the predictive sound modeling used for Saddleback Ridge Wind (SRW), including:

- That SRW's sound model did not assume predictable worst case conditions because it used the manufacturer's sound power output for low wind shear conditions rather than high wind shear conditions. (Ambrose and Rand at 2-3; James at 2-3.)
- That SRW's use of a 2 dB manufacturer's uncertainty factor was insufficient because it did not account for the effect of directivity. (Ambrose and Rand at 3-4.)
- That the monitoring data from the Stetson Mountain wind power project does not support the use of 3 dB overall modeling uncertainty because Stetson compliance testing was not done under downwind conditions. (Ambrose and Rand at 8-10.)
- That SRW should have used a ground absorption factor of 0.0 (for frozen ground) rather than 0.5 (for mixed ground). (James at 4.)
- That SRW should have used a 3 dB modeling uncertainty factor rather than a 1 dB modeling uncertainty factor because there is too little data to validate the use of 1 dB and because of the height of the turbines above receptors. (Ambrose and Rand at 4-5; James at 3-4.)

Response: The modeling procedures established in the new Maine DEP Chapter 375 noise rules are based on the experience gained comparing preconstruction modeling with post-construction sound measurements. Some of these comparisons, as well as more recent examples, are shown in Table 1, below. In each, the modeling used the same ground factor as the Saddleback model ($G=0.5$), but with a +5 uncertainty factor (whereas Saddleback uses +3). The monitoring results are re-evaluated using the current compliance requirements, i.e. looking at 12 10-minute samples meeting the described criteria, which include the turbines generating their maximum rated sound power, receptors generally downwind of the turbines, and conditions of high wind shear.

The results show that the models over-predicted measured sound levels by, on average, 4.0 dB. All models over-predicted by 2 dB or more. These results show that the +5 dB uncertainty added to the modeling results by these projects is conservative, and that dropping the uncertainty level to +3 dB is still a conservative approach.

Table 1: Comparison of modeled and monitored sound levels, using current compliance criteria (Chapter 375(I)(5))

Site	Receptor	Date	Winds	Modeled Level	Monitored Level	Difference
Rollins	RNA	11/25/2011	Downwind	45.1	41.8	+3.3
	RNB	11/25/2011	Crosswind	43.5	41.5	+2.0
	RSA	11/25/2011	Downwind	43.2	40.5	+2.7
Spruce	-	April 2012	Downwind	47.0	41.3	+5.7
Stetson II	ST2-B	11/18/2010	Downwind	44.5	40.7	+3.8
		12/8/2010	Downwind	44.5	41.9	+2.7
	ST2-D	11/18/2010	Downwind	45.2	40.8	+4.4
		12/8/2010	Downwind	45.2	40.2	+5.0
Bull Hill	A	11/24-25/ 2012	Downwind	43.3	37.2	+6.1
Average						+4.0

The appellants present their own chart of monitoring data from Mars Hill. However, this data was not collected using the current protocol outlined in Chapter 375(10)(I)(e), nor was it analyzed for compliance using the current methodology. The same Mars Hill monitoring results were presented to DEP by Ambrose & Rand in a report dated December 9, 2010 in opposition to the Saddleback Ridge Wind project, on their Figure A.3-1, which is part of the record of this permitting proceeding. Between then and now, the compliance assessment methodology has changed, including the change from evaluating the highest 10-minute Leq to an arithmetic average of 12 10-minute Leqs, but their evaluation of the Mars Hill monitoring results remains

the same. It is impossible to make any conclusions using Mars Hill if the monitoring data was not analyzed according to the procedures described in the regulation that will be applied to Saddleback.

The appellants discuss the need for additional uncertainty factors for wind shear and directionality. However, the tests done under the DEP compliance protocol at all of the wind farms noted in the above table were done under high wind shear as a requirement. In addition, they were done in both the downwind and crosswind positions. Tests were done under various ground cover conditions, including frozen and non-frozen ground.

The modeling assumptions identified in RSG's report are generally more conservative than standard practice outside of Maine. As an example, members of the British DTI/BERR Noise Working Group on wind farm noise recommend:

"On the evidence available, we consider that ISO 9613-2 calculations using either $G=0$ or $G=0.5$ ($G_s = G_m = G_r$) will lead to appropriate prediction of noise immission¹ levels at typical receptor locations, depending on the input values of other parameters. The use of either (a) $G = 0$ together with measured (IEC 61400-11 test) sound power levels or (b) $G = 0.5$ (with a 4 metres receptor height) together with vendor's warranted sound power levels (or measured turbine sound power levels plus an allowance for measurement uncertainty), will generally result in realistic estimates of noise immission levels at receptor locations downwind of wind turbines. Noise immission levels calculated using these combinations of parameters can generally be relied on for the purposes of noise assessment."²

As another example, the Ireland EPA requires the use of $G=0.5$, unless over water or where the ground is completely hard. They do not require any uncertainty value added to the mean sound power of the turbines.

As noted in the statement above from the British working group members, the use of $G=0.5$ with the manufacturer's sound power uncertainty added is considered equivalent to $G = 0$ with no uncertainty applied. In the case of the submittal, the former method is used, with additional uncertainty added.

Regarding the appellants' claim that the sound model should use sound power outputs based on high wind shear, GE warrants its sound power figures for all meteorological conditions. The GE warranty does not distinguish between high wind shear and low wind shear in providing sound power numbers; and contrary to appellant's claim, GE does not have separate sound

¹ "Immission" refers to the level of sound received.

² Bowlder, D., Bullmore, A.I., Davis, B., Hayes, M., Jiggins, M., Leventhall, G., McKenzie, A., "Prediction and Assessment of Wind Turbine Noise – Agreement about relevant factors for noise assessment from wind energy projects," Acoustics Bulletin, Vol 34 no 2, 2009

power values for high shear conditions for these turbines. Please see the letter from GE attached as Exhibit B.

2) The appellants claim that sound monitoring at Stetson II "shows an approximate 5 dB error from the modeling based on manufacturer's sound power levels" and that "the reviewer's experience at multiple wind turbine sites finds a similar and consistent level of error; at least 5 dB error compared to modeling from the manufacturer's quoted sound power levels."

Response: The values in Table 1 for Stetson are based on our own evaluation of the Stetson II data provided in the Stetson Wind II, LLC operational sound testing report prepared by Bodwell EnviroAcoustics LLC in March 2011. During those tests, winds were consistently from the west and the test positions were all east of the turbines. During the valid periods, wind turbines were generating maximum rated sound power, and wind speeds at 10 meters were generally below 6 mph. During these periods, and even outside these periods, the measured 10-minute sound levels varied little. Our calculation of the range in the model's overestimation of measured compliance levels ranged from 2.6 to 5.0 dB. Putting it in the same terms as the appellants, the monitoring at Stetson II shows that the model, using only the manufacturer's mean sound power level would require uncertainty additions of between 0 dB and 2.3 dB. If we look at all of the monitoring sites, the combined sound power and propagation uncertainty that would be added to the model averages 1.0 dB. As noted above, the combined sound power and propagation uncertainty that has been added to the SRW model is 3.0 dB.

3) Appellants claim that at Mars Hill and other projects in Maine, monitored downwind sound levels exceeded model predictions (using no uncertainty factors) by 5 dB; and exceeded model predictions (using no uncertainty factors) by 7-8 dB at receptors beyond 2,500 feet from turbines. (Ambrose and Rand at 9-10.)

Response: As noted above, the Mars Hill monitoring data is not collected nor evaluated according to the current DEP methodology, which includes a higher level of quality control, techniques to control for background noise, different SDRS and tonal methods; and different averaging times and methods. More recent monitoring done consistent with the current methodology shows that the approach used in the Saddleback Ridge noise assessment is conservative and consistent with the allowable range of values given by the DEP Chapter 375(10)(I) regulation.

4) Appellants claim that SRW erred by not modeling predicted sound levels for the 16 Hz octave band and that sound levels at 16 Hz will exceed ANSI recommended levels. (Ambrose and Rand at 18-19.)

Response: The appellants' estimate of the worst-case participant 16 Hz sound level is speculation. First, there is no data available on the infrasound levels from the GE turbine that is proposed at Saddleback Ridge. There is no foundation to establish that the Siemens turbine measured in Texas has a similar spectral shape as the GE proposed at Saddleback Ridge. As an example, the difference between the 16 Hz and 31.5 Hz octave band sound levels cited by the appellants in Texas is 8 dB. In comparison, the difference between those two octave bands measured near the GE turbines at the Rollins project averaged 4 dB. Finally, the ISO 9613 methodology is not intended for estimating infrasound. While the subject of low-frequency sound is important, the Law Court did not remand the application to DEP for evaluation of low frequency noise, as low frequency noise is not regulated by DEP outside of its contribution to an overall A-weighted sound level.

5) Appellants' claim that, based on measurements taken by appellants at Mars Hill, SRW's modeling using updated GE sound power curves was flawed. (Ambrose and Rand at 20-21.)

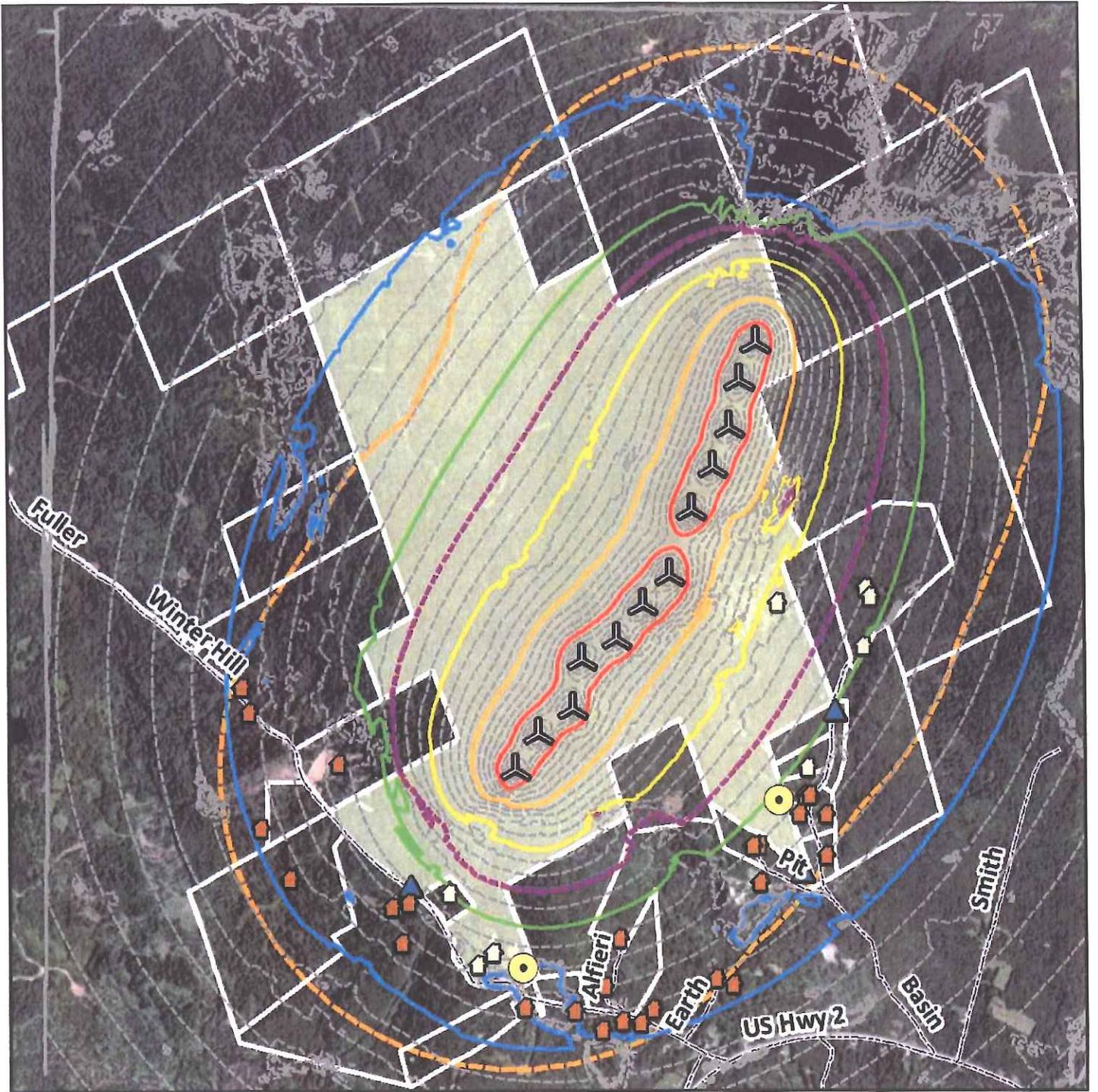
Response: The appellants make an argument that the modeling conducted by the applicant is not consistent with their measurement of attenuation from a completely different wind farm, Mars Hill. The Mars Hill project has more than twice as many turbines and tighter turbine spacing. While the appellants' approach is novel, it is an "apples to oranges" comparison and not consistent with the requirements of Chapter 375(10), which require site-specific parameters when preparing predictive modeling estimates of sound levels.

6) Appellants claim that turbines must be spaced five rotor diameters apart in order to avoid inflow turbulence and that several of SRW's turbines are only spaced three rotor diameters apart. (James at 5.)

Response: The appellants say that "it is generally accepted by acousticians working with wind turbines that to avoid having the wake and associated turbulence produced by one turbine become the inflow air for turbine(s) located downwind, that a separation distance between turbines of at least 5 rotor diameters is required." No support is given for this assertion. Acousticians generally have no expertise in calculating the level of turbulence created by a wind turbine. A similar claim was made in testimony submitted by Mr. James in the Saddleback Ridge Wind DEP permitting proceeding, and at that time he cited a teleconference with "GE management in charge of land and offshore wind turbines."¹ We know of no rule-of-thumb with respect to turbine spacing and turbulence. Turbine spacing at SRW is based on site-specific topography, meteorology and other factors, and was developed based on the expertise of the

¹ Letter from Rick James to Rufus Brown, December 9, 2010, as part of Exhibit 2 to a December 10, 2010 filing by Rufus Brown on behalf of Friends of Maine's Mountains.

project developer and wind turbine manufacturer to define acceptable turbulence limits and to site and operate the turbines accordingly. In this case, the turbine layout for this project has been approved by GE.



- Non-Participating
- Participating
- Potential Monitoring Sites
- Preconstruction Sound Monitors
- Wind Turbines
- Roads
- Adjacent Properties (per deed descriptions)
- 1 Mile Radius from Turbines
- Project Area

- Sound isolines**
- 1 dBA Interval
 - 35 dBA
 - 40 dBA
 - 42 dBA
 - 45 dBA
 - 50 dBA
 - 55 dBA

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GE Power & Water

Matthew I Thompson
 Commercial Leader
 Northern U.S. & Canada
 Renewable Energy

1 River Road, Bldg 53-402S
 Schenectady, NY 12345

T 518 385 5696
 M 307 851 1862
 matthew.thompson@ge.com

Andy Novey
 Patriot Renewables, LLC
 549 South Street
 Quincy, MA 02186
 Office 857-403-0119
 Cell 617-413-9922

July 3, 2013

Subject: GE 2.75-103 Guaranteed Sound Power Output

Dear Mr. Novey,

The GE product specification defines the near field sound emission level of our wind turbine, which is generally a guaranteed value irrespective of wind shear. The product specification for the GE 2.75-103 wind turbine proposed for use by Saddleback Ridge Wind, LLC guarantees a maximum sound power output of 105 dBA with an uncertainty of 2 dBA at the turbine hub height, irrespective of wind shear. No other maximum sound power specification is offered.

Very truly yours,

Matthew Thompson
 Commercial Leader
 Northern U.S. & Canada



July 11, 2013

Mr. Erle Townsend, Environmental Specialist
Maine Department of Environmental Protection
Division of Land Resource Regulation
17 State House Station
Augusta, ME 04333-0017

**Re: *Review and Response to Comments by Appellants
Saddleback Ridge Wind Project***

Dear Erle:

I have reviewed the comment letters from Rick James, Robert Rand and Stephen Ambrose, submitted on behalf of the Appellants to the Saddleback Ridge Wind project, and the Licensee responses -- a letter from Gordon Smith of Verrill Dana and a technical memo from Ken Kaliski of RSG. As you requested, I am commenting on the technical portion of the appellants' documents and the licensee responses. I am not commenting on legal issues.

Review of the Ambrose/Rand and James Letters on NIS for Saddleback Ridge Wind

I have reviewed the June 28 letter from Ambrose and Rand on behalf of the appellants. The appellants' claims are grouped together and numbered below, followed by my responses.

1. Appellants claim the map of property boundaries is insufficient as a matter of law.

Response: The property boundaries shown on the predicted sound contour map (Figure 18) in the RSG report are sufficient for determining that the redesigned project complies with all sound limits in Chapter 375(10)(I).

2. Appellants claim the RSG report did not assess sound impact for high wind shear conditions. Appellants claim larger uncertainty factors than those used by RSG (+2 dBA for sound power level, +1 dBA for modeling uncertainty) and a ground factor of $G=0$ should have been used. Appellants base their opinions in part on measurements from the Mars Hill project.

Response: International Standard IEC 64100-11 does not limit test conditions to low shear conditions. Appellants are misinterpreting the "reference roughness length" of 0.05 m, which is used after field measurements are collected to adjust the data to "reference conditions" (Section 8, Equation 7). Section 7.2.1 of the IEC Standard lists acoustic measurement requirements and directs that measurements be taken to cover as broad a range of wind speeds as possible. By

necessity, turbine manufacturers test their products for a wide range of wind shear conditions as they need to understand the sound power produced under all operating conditions and obtain the relevant data for offering purchasers a performance guarantee. No low-shear limit is imposed on testing done under the IEC Standard. The letter from GE Wind Energy provided by the Licensee confirms that the maximum sound power level of 105 dBA with an uncertainty level of 2 dBA corresponds to operations under all wind shear conditions, including high wind shear.

The appellants' suggested value of $G=0$ for the model is inappropriate as that would treat the ground surface as an acoustic mirror, perfectly reflecting all sound energy.

The appellants' use of data from Mars Hill is inappropriate. The data were not collected using the current protocol outlined in Chapter 375(10)(I)(e), and the method for processing and use of compliance measurements has changed significantly since the Mars Hills analysis was done.

Uncertainty factors and other modeling assumptions act together to provide a level of conservatism in the predicted sound levels. The modeling procedures recommended in the recently revised Chapter 375 noise regulations are based on experience gained comparing preconstruction modeling with post-construction sound measurements. The RSG noise impact study was done in accordance with the Department's established noise impact assessment procedures with regard to the selection of the uncertainty factors and the ground factor value of $G=0.5$. From my independent examination of the compliance test results for Stetson and other inland Maine wind energy projects that were properly tested, I have concluded that these established procedures yield a sufficiently conservative result in terms of predicted maximum turbine sound levels. It should be noted that compliance testing required by the Department is done under temperature inversion conditions that represent high wind shear and thus the worst case for sound impacts. In conclusion, the RSG report modeled the worst case conditions for the GE turbine in accordance with Chapter 375(10)(I).

3. Appellants claim the description of Advanced Loads Control (ALC) in the RSG report represents a deficiency.

Response: ALC is not relied upon for the compliance demonstration in the RSG report. Since ALC is designed to perform better than standard blade pitch control, it is reasonable to assume that incidents of SDRS will be minimal for the project. The maximum predicted sound level at any Protected Location is 40.3 dBA at Receiver 12B, which is 1.7 dBA below the nighttime limit of 42 dBA. That is an adequate margin of safety for possible SDRS incidents that might occur during compliance testing for Saddleback Ridge Wind project.

4. Appellants claim the RSG report did not specify proposed compliance monitoring locations.

Response: The Department, in consultation with its acoustic consultant, is the one that determines the sound compliance monitoring locations and those are often made a Condition of any permit that is issued. The TE review report dated June 5 recommends compliance monitoring at Receivers 12 and 29.

5. Appellants claim a different sound limit than the 42 dBA listed in Chapter 275(10)(I) should be applied to Saddleback Ridge Wind.

Response: The wind energy specific sound rules contained in Chapter 375(10)(I) were adopted by the Board after an exhaustive rulemaking on the issue of wind power sound. The 42 dBA nighttime limit for Protected Locations was set by the Board to protect all persons living on a residential parcel. The Board did not exclude children in its considerations. The Law Courts' Remand Order requires the Board to apply the 42 dBA sound limit.

6. Appellants claim turbine spacing for the project is too small, stating wind turbines should always be spaced 5 rotor diameters apart.

Response: The appellants are not experts in the design and layout of wind energy projects, nor do they have the information and expertise held by the manufacturer GE Wind Energy or the Licensee Patriot Renewables in judging the proper turbine spacing for a specific site, considering topographical and meteorological conditions, and the performance of the specific turbine. The comments by the appellants are pure speculation and should be treated as such. GE has offered warranties for the project, taking into account the possible wake turbulence from adjacent turbines in the planned layout. The RSG report, which used the maximum sound power level and uncertainty factor listed in the GE warranty, modeled the worst case conditions for the project in accordance with Chapter 375(10)(I).

Review of the Licensee Responses

The technical information in the RSG memo and the Verrill Dana letter provide a full reply to appellants' claims and comments. I agree with their responses.

Response to the Ambrose and Rand Letter on Guldberg Peer Review

I have reviewed the June 28 letter from Ambrose and Rand on behalf of the appellants to the Saddleback Ridge Wind project. The appellants' claims are numbered below, followed by my responses.

1. Appellants claim Tech Environmental, Inc. (TE) performed preconstruction noise studies on three wind turbine projects in Massachusetts (Kingston, Fairhaven, Nantucket), that TE-predicted sound levels do not match actual sound levels from those operating projects, and that the three projects exceed regulatory limits.

Response: In Massachusetts, the DEP Noise Policy limits the increase in the 1-hour L_{90} sound level to no more than 10-dBA above a pre-construction L_{90} baseline. Compliance with the Noise Policy is proved by comparing L_{90} measurements made with the sound source operating to L_{90} measurements with the sound source turned off. All existing wind energy projects in Massachusetts have been planned and constructed in accordance with this Noise Policy and its written L_{90} -to- L_{90} test procedure.

- a. In Kingston, the O'Donnell wind project was constructed using a different make and model of turbine, and using a different layout, than that analyzed by TE in its pre-construction sound impact study. Since the project built by O'Donnell is not the one analyzed by TE, no before and after comparison of sound levels can be made. No DEP compliance tests have been done on the O'Donnell wind project. The NCE report mentioned by the appellants is seriously flawed and did not follow either ANSI or DEP test protocols.
- b. In Fairhaven, the Town of Fairhaven wind project was constructed using Sinovel SL1500 turbines. TE provided the pre-construction sound impact study to the Town in September 2011 for the SL1500 project; the TE report makes no mention of turbine audibility. Compliance testing has revealed that when evaluated with the L_{90} -to- L_{90} test consistent with how it was permitted, Fairhaven Wind complies with the DEP Noise Policy and actual sound levels are comparable to predicted levels in the TE pre-construction sound study.

Mass. DEP, however, decided to change its compliance limit for wind turbine projects *after* Fairhaven Wind was permitted and built and to apply a more stringent sound limit, a comparison of the L_{max} sound level with the turbine ON to the L_{90} level with the turbine OFF, *retroactively* to the project. Since the L_{max} level is by definition always higher than the L_{90} level, DEP found that Fairhaven Wind exceeded the new more stringent standard by 0.7 to 2.9 dBA under certain wind conditions (Mass. DEP report dated May 21, 2013). The owner/operator is pursuing blade pitch modifications to lower sound levels and in the interim one turbine is being kept off during nighttime hours. Evaluated using the DEP Noise Policy under which Fairhaven Wind was permitted and constructed, actual sound level measurements are comparable to the TE pre-construction report model predictions.

- c. In Nantucket, a small NW100 turbine was constructed at the Town's High School. TE provided the pre-construction sound impact study in July 2010 to the Nantucket Public Schools. The TE report notes there are high background sound levels at the project site. The Ambrose report mentioned by the appellants is seriously flawed and did not follow either ANSI or DEP test protocols, nor did it account for high background sound levels from other nearby noise sources. No DEP compliance tests have been done on the Nantucket High School wind turbine.
2. Appellants claim Guldberg is affiliated with the wind energy industry and not independent.

Response: I have provided objective acoustic consulting advice to State and local governments regulating the wind industry and to project proponents regarding the likely sound level impacts of proposed projects. In the State of Maine, I only provide acoustic consulting services to Maine DEP and provide no services for the wind energy industry. Neither TE nor I have ever worked for the Licensee. There is no conflict of interest regarding my work for Maine DEP in providing a critical review of the Saddleback Ridge Wind project.

The email listed by appellants (Attachment 2-1) was publicized by a resident of Falmouth, Massachusetts in that Town's local newspaper in an unsuccessful attempt to bar TE from bidding on a municipal contract with the Town of Falmouth to do an independent peer review of another consultant's work. TE was awarded that work by the regulatory agency. The Environmental

Business Council (EBC) effort mentioned in the email involved the development of educational materials for Town Boards to help them fairly evaluate a project with respect to local By-Laws. The attached letter to the Editor of the Falmouth Enterprise, published in May 2011, provides the facts surrounding the EBC meeting.

3. Appellants claim TE missed deficiencies in the RSG report “Noise Impact Study for Saddleback Ridge Wind Farm” dated April 2013, which “render the report deficient as a matter of law”.

Response: The RSG noise impact study was properly done following the Department’s established noise impact assessment procedures. Issues regarding the law are addressed by the Licensee in the letter from Verrill Dana.

4. Appellants claim the TE peer review of the RSG report ignored noise impacts on nearby neighbors to the project, including children.

Response: The RSG report predicted sound impacts at the two closest Protected Locations (residences), which are approximately 4,200 feet to the east (Receiver 12) and 3,120 feet to the southwest (Receiver 29). A decibel contour map was also generated for Saddleback Ridge Wind to allow verification of predicted sound levels at all other residential locations. The wind energy specific sound rules contained in Chapter 375(10)(I) were adopted by the Board after an exhaustive rulemaking on the issue of wind power sound. The 42 dBA nighttime limit for Protected Locations was set by the Board to protect all persons living on a residential parcel. The Board did not exclude children in its considerations. The Law Courts’ Remand Order requires the Board to apply the 42 dBA sound limit.

5. Appellants claim Guldberg testimony in a Vermont case seven years ago is somehow relevant to the Saddleback Ridge Wind project.

Response: Testimony from the Vermont case is not relevant to Licensee’s application. In particular, the State of Vermont does not have a noise regulation for wind energy projects or for impulse noise. By contrast, Maine DEP has issued wind energy specific sound rules contained in Chapter 375(10)(I), rules that include limits for impulse noise (Short Duration Repetitive Sound).

6. Appellants claim Guldberg has advocated changing the Massachusetts DEP noise compliance test method, referring to a letter to Mr. Kially Ruiz dated May 10, 2013. Appellants also claim the L_{\max} -to- L_{90} test method has been used for decades in Massachusetts.

Response: The facts are the opposite from those claimed by Appellants. Until last year, no energy project in Massachusetts was evaluated using an L_{\max} -to- L_{90} compliance test, and all were evaluated using the long-standing L_{90} -to- L_{90} test that is defined in DEP procedure manuals. Massachusetts DEP changed the Noise Policy test method it applies to wind energy projects in 2012 by administrative fiat, without rule-making and without taking comment from the public or from acoustic professionals. I have pointed out the significant problems with DEP’s change of test method.

Most existing wind turbines in Massachusetts are small municipal projects and the officials in those Towns are understandably concerned and upset about the fact DEP is now applying a more stringent sound limit, a comparison of the L_{max} sound level with the turbine ON to the L_{90} level with the turbine OFF, *retroactively* to projects that were permitted to comply with the L_{90} -to- L_{90} comparison in the Noise Policy. Mr. Ruiz operates Kingston Wind Independence, a one-turbine project on the Town landfill for the Town of Kingston. The letter dated May 10 answers a request from Mr. Ruiz to summarize arguments I have made in meetings with DEP staff and the DEP Commissioner over the past year. Other well-respected acoustic consultants in the region have voiced these same concerns in the same meetings with DEP. All of this information was presented to Mass. DEP a year ago.

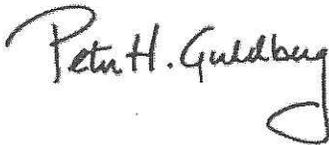
7. Appellants claim Guldberg is associated with multiple wind projects that have exceeded noise limits and claim he has a conflict of interest.

Response: As detailed in the Response to claim #1, I have no conflict of interest regarding the Saddleback Ridge Wind project, and I provide Maine DEP with independent, expert advice regarding the compliance of applicant proposals with the Maine DEP Noise Regulations, Chapter 375(10)(I).

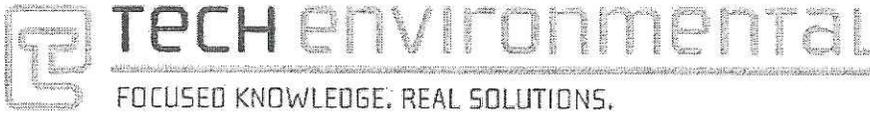
No DEP compliance tests have been done on two of the three projects listed by the appellants and no objective evidence of non-compliance exists for those projects. For the third project, DEP found that Fairhaven Wind exceeded a more stringent standard than the one under which it was permitted by 0.7 to 2.9 dBA, for certain wind conditions. Pre-construction predicted sound levels in the TE report for Fairhaven Wind are comparable to the L_{90} -to- L_{90} test results for Fairhaven Wind, confirming that TE properly evaluated Fairhaven Wind at the time the project was planned and permitted, using the DEP Noise Policy in effect at that time.

Respectfully submitted,

TECH ENVIRONMENTAL, INC.



Peter H. Guldberg, INCE, CCM
 Managing Principal
 3579/Letter of Response to Appellants July 11 2013



May 31, 2011

Mr. Bill Hough, Publisher
Falmouth Enterprise
50 Depot Avenue
Falmouth, MA 02540

Re: Turbine Email 'Troubling'

To the Editor:

In his letter "Turbine Email Troubling" published May 24 in the *Falmouth Enterprise*, J. Malcolm Donald's reading of my email and his rush to judgment reveals a basic misunderstanding. As a professional that often provides support to Town planning and zoning boards, I have witnessed a recurring problem for Town boards when they are evaluating a wind energy special permit application. The issues they must deal with are complex, and in regards to acoustics the terminology can be baffling. Organized opposition groups often overwhelm Town boards with documents, "studies," and articles from the web that appeal to fear. The barrage of material directed at zoning boards, and the ferocity of many of the claims, makes it difficult for laymen serving on such boards to do their job of fairly evaluating a project with respect to local By-Laws. To help local officials, the Environmental Business Council has undertaken an initiative to develop educational materials on wind turbines and their potential environmental impacts, and to provide those materials to Town boards so they are better equipped to understand and thoughtfully consider all the information they receive, including testimony from opponents. That is how the EBC working group has decided to "handle" the problem several of us professionals have identified. The working group is not "actively working against" anyone. Mr. Steve Barrett of HMMH is to be commended for leading this initiative and giving his time to the goal of developing objective, educational materials for Town boards. Some wind energy projects will be approved, and others will be denied a permit, as local officials make decisions. Our role as professionals is to help Town boards understand the issues, and separate the facts from the speculation, so they can make a reasoned decision consistent with local By-Laws.

Sincerely yours,

TECH ENVIRONMENTAL, INC.

A handwritten signature in cursive script that reads 'Peter H. Guldberg'. The signature is written in dark ink and is positioned above the typed name.

Peter H. Guldberg
President

Bertocci, Cynthia S

From: Leola Ballweber <muttermutt@yahoo.com>
Sent: Tuesday, June 11, 2013 3:00 PM
To: Townsend, Erle
Subject: Sound problems in Woodstock

Dear Mr. Townsend,

It was requested of me to share with you some of the experiences I have had here in Woodstock concerning the sound from Spruce Mountain Wind, LLC. I live 1.2 miles from tower 1 and approx. 1.5 miles from tower 2. I have done hand held metering at night with readings of 50 to 57 dba. When we have a rain storm, the brook by the house is running higher, I can here the turbines over both the rain and the sound of the brook.

At times they sound like jet engines and and at other times they just whoosh whoosh, either way it eats on a person's nerves to have their peace on earth destroyed by man made machines.

Spruce Mountain Wind petitioned DEP to drop the NRO at their wind project and I and others contested it. The one sound monitor that the company had was found to be not working. The mice had chewed the wires and caused it to malfunction. If we had not made an issue of it, then we would have never know that the company could not monitor itself. DEP does not have the power to enforce regulations, which is a big disappointment, because these turbines have not had the due process of study as to how they affect humans and animals. Privatization of these companies also is a hindrance to enforce. Action, then counter actions and our courts just don't have the laws to enforce the protection of the people.

Right now, Woodstock voted in an ordinance, done by the people, yet, Patriot Renewables, LLC, owners of Spruce Mountain Wind Project, has come back to the Selectmen and asked about "IF" changes could be made so that at some point they could put larger turbines on the mountain. This to me is a tell tale sign that they may be looking to expand somewhere in Woodstock in the near future. The life span of these turbines now are suppose to be twenty years and I ask why are the so concerned this early in the game.

I can tell you that this project affects more than just Woodstock. The town of Sumner and adjoining townships are affect by the travel of sound beyond the town line. It affects peoples emotions when they feel they have no control over the sound and sites they are forced to accept because of poor laws that were put into affect hastily and not given full thought and research.

I hope that I have been some help in understanding what has affected me and how it has affected me. We need sound laws to regulate a wind program that basically has minimal regulations and no way to enforce what is in place.

Thank-you for your time and as I sign off with all my letters.... May God guide you , keep you and send his Angels to watch over you.

Sincerely:

274

Leola R. Ballweber
506 Cushman Road
Bryant Pond, ME 04219
207-809-9371

Bertocci, Cynthia S

From: Leola Ballweber <muttermutter@yahoo.com>
Sent: Tuesday, June 11, 2013 3:29 PM
To: Townsend, Erle
Subject: footnote on Sound

Mr. Townsend,

One addition on sound here in Woodstock and I know there has not been any study on it: Here at my home, I experience an echo of the sound from the turbines. The mountains are set in a form that causes the sound to bounce off the other mountains in the area and travel back at my home. This basically enhances the sound to a more compounded level. I live in the valley, so it leaves me to question what exactly is happening concerning the sound and how it travels and echoes back from the mountains around my home. I know that the sound maps that were presented by the company showed that the sound at my residence would be no higher than 35 dba. The company that did the sound map was WRONG. Any company can put in whatever numbers, into a computer program, and show a wonderful presentation. The presentation was flawed and not conducive to truth in this instance. There is nothing that can be done for my situation, but I would ask that it not be repeated again, just for the sake of industrial development.

I am aware that Jay Cashman, Inc. had to have connections to someone to buy the mountain top and access. The land has been leased around the project and private citizens and Bayroot, LLC are getting paid money by the project. Bayroot, LLC is part of the Yale Investment fund, (as in College Alumni), and is managed by Wagner. Everyone has their hand in the money till, but the citizens have no rights and respect for the sacrifices forced onto them by these large companies. I will add that the stripping of lumber did not start until the project was a definite "GO" and what a mess they made here on the mountain. Again, Thank-you for your time and God Bless and Keep you and may his Angels be with you always.

Sincerely:

Leola R. Ballweber
506 Cushman Road
Bryant Pond, ME 04219

Bertocci, Cynthia S

From: alice barnett <mckaybarett@gmail.com>
Sent: Monday, June 10, 2013 11:57 AM
To: Townsend, Erle
Subject: FOIA Peter Goldberg

It is worth noting that in the last four years, the DEP staff refused to read my transmittals to them, referring them instead, unread, to the "3rd party" consultant. The 3rd party consultant now is Peter Guldberg from Massachusetts, who is a board member of the EBC; a wind promotion organization, with FOIA revealing his intent to counter adverse perceptions about wind turbines; Peter is also the author of the preconstruction noise studies at Kingston, Nantucket, and Fairhaven which have all produced strong appeals to stop the noise, and violate State noise limits. If the Maine DEP operates now the way it has in the past, should we count on enlightenment occurring?

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Monday, June 10, 2013 12:02 PM
To: Townsend, Erle
Subject: Enforcement procedure for Saddleback Ridge Wind

What is the complaint protocol? Two monitors?

8. It is unclear from the record how the Department and Board intend to enforce sound level limits for wind projects. In its response to public comment, the Board noted, “[T]he 42 dBA sound limit is an enforceable standard which must be met regardless of pre-development modeling predictions.” The Board’s rules provide guidance on obtaining measurements for enforcement, but not on the enforcement procedure.

2 C.M.R. 06 096 375-14 § 10(H)(4.1)(a) (2012). MAINE SUPREME JUDICIAL COURT Reporter of
Decisions Decision: 2013 ME 25 Docket: BEP-12-137 Argued: November 8, 2012 Decided: March 5, 2013

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 11:48 AM
To: 'alice barnett'
Subject: RE: Saddleback Ridge Wind receivers.

Alice –

The map on page 22 of the new Noise Impact Study for Saddleback shows that the properties you list below are outside of the 42 dBA line around the Saddleback project. Therefore, under the law, there will be no adverse impacts due to excessive noise at the properties because the noise will be within allowable limits. Also, as you know, these sites are not protected from scenic impacts because they are not considered scenic resources of state or national significance.

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

From: alice barnett [<mailto:mckaybarentt@gmail.com>]
Sent: Monday, June 10, 2013 11:54 AM
To: Townsend, Erle
Subject: Saddleback Ridge Wind receivers.

1. The record is unclear about which specific individuals are appealing to this Court. The parties that appealed the Department's decision to the Board, however, included several individuals who own properties that are located near the project site and were used in the Noise Impact Study.

MAINE SUPREME JUDICIAL COURT Reporter of Decisions Decision: 2013 ME 25 Docket: BEP-12-137 Arg...ued: November 8, 2012 Decided: March 5, 2013

John Steele is receiver #32, he does not WIND in his backyard as he operates a tourist business. His overnight campers remark on the good night's sleep they get in the Maine woods.

David Jackson is receiver # 29. He does not WIND in his backyard as he wants to open a tourist business in 2015.

Douglas Geis is receiver # 22. He does not want WIND in his backyard as he wishes for his children and grand children to always enjoy their piece of wilderness on Gray's MTn (Saddleback Ridge).

Patrick Gorham is receiver # 12 and he does not want WIND in his backyard as he understands Maine real estate and the price of a beautiful view.

Patriot Renewables sound study has the closest receiver at 3,120 feet. All of the above have structures under 4000 from a turbine. Unless WIND buys these properties, they are valueless.

John Steele is receiver #32, he does not WIND in his backyard as he operates a tourist business. His overnight campers remark on the good night's sleep they get in the Maine woods. 207-272-8012

David Jackson is receiver # 29. He does not want WIND in his backyard as he wants to open a tourist business in 2015. 207-562-4764

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Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Tuesday, June 11, 2013 2:22 PM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind receivers.

In the words of Supreme Court Judges..."what are you going to say to these people?...sorry?"

On Tue, Jun 11, 2013 at 11:48 AM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

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Erle Townsend

Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

(207) 991-8078 | Erle.Townsend@Maine.gov

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Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 2:28 PM
To: 'alice barnett'
Subject: RE: Saddleback Ridge Wind receivers.

Alice -

The Department cannot enforce a law that doesn't exist. The standards in Site Law rules and in the Windpower Act are pretty clear. Noise from the project is limited to 42 dBA or less at protected locations. These are protected locations, and the noise from the project will be less than 42 dBA at them, therefore the standards are met. Scenic impacts are regulated for scenic resources of state or national significance, which are clearly defined in the law. These locations are not scenic resources of state or national significance, so scenic impacts on these locations are not regulated. These are the laws and rules that we have to work with.

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

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Erle Townsend

Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection

17 State House Station | Augusta ME 04333

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Patrick Gorham is receiver # 12 and he does not want WIND in his backyard as he understands Maine real estate and the price of a beautiful view. 207-357-7525

Patriot Renewables sound study has the closest receiver at 3,120 feet. All of the above have structures under 4000 feet from a turbine. Unless WIND buys these properties, they are valueless.

Bertocci, Cynthia S

From: .alice barnett <mckaybarentt@gmail.com>
Sent: Tuesday, June 11, 2013 3:09 PM
To: Townsend, Erle
Subject: structure codes.
Attachments: DEPEricHammstructure codes 001.jpg

Notice that Eric Ham called one of my structures as a "permanent" roof. That structure was in place before application was accepted by DEP. Who is Eric Ham to call the structure with the permanent roof a recreational vehicle? The axles were destroyed by the bull dozer pulling this structure to my parcel.

It is a seasonal residential occupancy providing living, cooking and sleeping facilities and does have a permanent outdoor sanitary facility.

-amb

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 3:17 PM
To: 'alice barnett'
Subject: RE: structure codes.

Alice --

The letter states that Eric's determination is specifically based on "the two structures represented by the photos appear to be recreational vehicles; therefore they are not considered to be residences under the above definition". Do you have a HHE-200 for the septic system?

Erle Townsend
Environmental Specialist - Division of Land Resource Regulation
Department of Environmental Protection
17 State House Station | Augusta ME 04333
(207) 991-8078 | Erle.Townsend@Maine.gov

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-amb

Carthage Property

Wednesday, December 1, 2010 2:0

From: "Ham, Eric" <Eric.Ham@maine.gov>
To: "Alice Barnett" <gempaint@yahoo.com>, "dan mckay" <mckaydan2@gmail.com>
Cc: "Warren Brown" <Warren_Brown@umit.maine.edu>, "Andy Novey" <ANovey@jaycashman.com>, "Hallowell, Dawn" <Dawn.Hallowell@maine.gov>

Ms. Barnett and Mr. Mckay,

Thank you for all of the recent information you have submitted regarding your property in Carthage.

I have been gathering information in order to make a determination for the purposes of the Saddleback Ridge Wind project (L-25137-24-A-N, L-25137-TG-B-N) noise regulations. Mr. Mckay's original email states that the purposes of the Saddleback Ridge Wind application, he would like the property to be considered a residence or planned residence and be treated as a protected location.

Chapter 375(10)(G) (16) defines a residence as planned when the owner of the parcel of land on which the residence is to be located has received all applicable land use permits and the time for beginning construction under such permits has not expired. It also states that these permits must be obtained prior to submitting an application. I spoke with a representative from the town of Carthage on multiple occasions and was told that town did not require building permits for new residences. The town does however require permits for any of wastewater disposal system. I requested information from you regarding any permits you have obtained for future residence's on the parcel. You stated that you did not yet have a permit for wastewater disposal. I also forwarded along a temporary harvest notification form for my review. I contacted the Department of Conservation and was informed that they have not received that filing. If filed in the proper timeframe, the Department does not consider this as documentation of a planned residence. This does not indicate the location of the residences and the 'change of use' stipulation of the notification is solely for the use of approved timber harvest standards to the parcel.

The photo that was forwarded to me of the two existing structures on the property shows two camper trailer one with a permanent roof and one without. 375(10)(G) (14) defines a residence as a building of structure including manufactured housing, maintained for permanent or seasonal residential occupancy providing for cooking and sleeping facilities and having permanent indoor or outdoor sanitary facilities, excluding recreational vehicles, tents, and watercraft. The two structures represented by the photos appear to be recreational vehicles; therefore they are not considered to be residences under the above definition.

Based on the facts outlined above including the information you submitted, and the Department's Rules, the Department determines that there are no existing residences or planned residences on the property and therefore, the property is not a protected location.

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Tuesday, June 11, 2013 3:43 PM
To: Townsend, Erle
Subject: Re: structure codes.

No I do not. Would it make a difference? An out house is used every where on this mountain...

What is a recreational vehicle?

On Tue, Jun 11, 2013 at 3:17 PM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

Alice –

The letter states that Eric's determination is specifically based on "the two structures represented by the photos appear to be recreational vehicles; therefore they are not considered to be residences under the above definition". Do you have a HHE-200 for the septic system?

Erle Townsend

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-amb

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Tuesday, June 11, 2013 4:32 PM
To: Townsend, Erle
Subject: Re: Enforcement procedure for Saddleback Ridge Wind

same as Woodstock yet, mice ate wires etc. wrong hotline number etc....we cannot win.
 Any fines set? Any compensation for sufferers?

On Tue, Jun 11, 2013 at 2:38 PM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

Alice –

The complaint protocol for Saddleback is spelled out in section 5(G) of the original license (the license that was appealed):

"G. Complaint Response. In light of concerns raised by interested persons in this proceeding regarding the investigation of sound related complaints at similar facilities, the applicant must set up a toll free complaint hotline designed to allow concerned citizens to call in a noise related complaint 24 hours per day, 7 days per week. The hotline number must be clearly noticed to all abutting property owners and posted in prominent locations around the project site and within the towns of Carthage, Canton, and Dixfield municipal offices. For those complaints that include sufficient information to warrant an investigation, the applicant must, within two business days of receipt of the complaint, collect the complainant information (name, location, time of complaint and other complaint information) and the meteorological and operational data from the project at the time of the complaint, and submit that information to the Department and the complainant. At the Department's request, the applicant shall plot complaint locations and key information on a project area map to evaluate complaints for a consistent pattern of site, operating and weather conditions; and submit this analysis to the Department with a comparison of these patterns to the compliance protocol outlined above to determine whether testing under additional site and operating conditions is necessary and if so, shall propose a testing plan that addresses the locations and the conditions under which the pattern of complaints has occurred. The applicant will be responsible for the reimbursement of all costs incurred by the Department in the review of any noise related complaint."

Should investigation of a complaint or complaints show that there was or is a violation, normal enforcement procedures would apply. A Notice of Violation (NOV) would be issued, probably resulting in a Consent Agreement (CA) and some kind of mitigation to bring the project into compliance.

I think that the reason the Board rules don't talk about enforcement is because the Board doesn't do enforcement, the Department does.

Erle Townsend

Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

[\(207\) 991-8078](tel:2079918078) | Erle.Townsend@Maine.gov

From: alice barnett [mailto:mckaybarentt@gmail.com]

Sent: Monday, June 10, 2013 12:02 PM

To: Townsend, Erle

Subject: Enforcement procedure for Saddleback Ridge Wind

What is the complaint protocol? Two monitors?

8 It is unclear from the record how the Department and Board intend to enforce sound level limits for wind projects. In its response to public comment, the Board noted, “[T]he 42 dBA sound limit is an enforceable standard which must be met regardless of pre-development modeling predictions.” The Board’s rules provide guidance on obtaining measurements for enforcement, but not on the enforcement procedure.

2 C.M.R. 06 096 375-14 § 10(H)(4.1)(a) (2012). MAINE SUPREME JUDICIAL COURT Reporter of
Decisions Decision: 2013 ME 25 Docket: BEP-12-137 Argued: November 8, 2012 Decided: March 5, 2013

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 4:47 PM
To: 'alice barnett'
Subject: RE: structure codes.

If you had the HHE-200, it might help establish a date for permitting of the trailer as a residence.

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-amb

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Wednesday, June 12, 2013 9:30 AM
To: Townsend, Erle
Subject: Re: structure codes.

What is a recreational vehicle? You need to know Carthage does not require that septic rule as many, many people set up their own septics. Are they structures and being taxed as such? Yes

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-amb

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Wednesday, June 12, 2013 2:58 PM
To: 'alice barnett'
Subject: RE: structure codes.

Alice –

Here is a link to the FAQ page about septic systems and other subsurface disposal systems. [<http://www.maine.gov/dhhs/rmecdc/environmental-health/plumb/faq.htm>] The second and third questions are applicable in your case, I think.

There is no specific definition of a recreational vehicle in the NRPA or Site law, but there is one in 10 M.R.S.A. 214-A §1432(18-A), in the section of Maine law that governs the "Regulation of Business Practices between Recreational Vehicle Manufacturers, Distributors and Dealers". Here's the link to that page of Maine law: <http://www.mainelegislature.org/legis/statutes/10/title10sec1432.html>

The definition is:

18-A. Recreational vehicle. "Recreational vehicle" means a vehicle that is either self-propelled or towed by a consumer-owned tow vehicle, is primarily designed to provide temporary living quarters for recreational, camping or travel use, complies with all applicable federal vehicle regulations and does not require special highway movement permits to legally use the highways. "Recreational vehicle" includes motor homes, travel trailers, fifth-wheel trailers and folding camping trailers.

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-amb

Bertocci, Cynthia S

From: alice barnett <mckaybarett@gmail.com>
Sent: Thursday, June 13, 2013 1:49 PM
To: Townsend, Erle
Subject: visual cumulative
Attachments: mtbluevisualcumulative.jpg



mtbluevisualcumulative.jpg

The image is manipulated from a photo simulation in Saddleback Ridge Wind project application. The photographer was on Mount Blue summit in Weld Maine. The first towers are the actual locations set by Patriot Renewables in their photo. The second towers are my simulation of where I think they will be on Colonel Holman Mountain in Dixfield, Maine. The third set of towers, a viewer will see, is on Canton Mountain looking south.

3. Evaluation criteria.

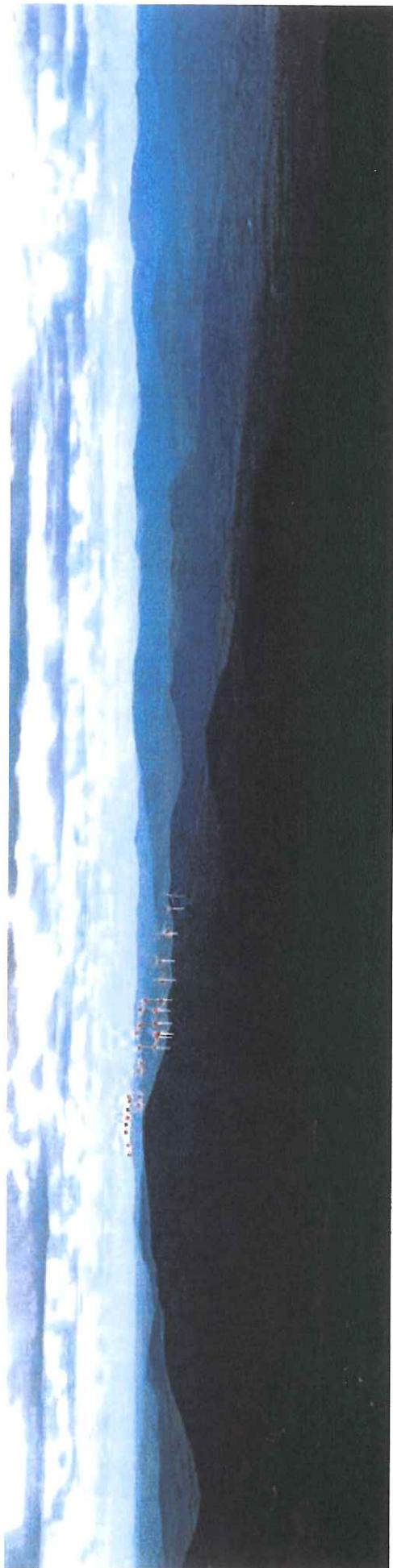
- A. The significance of the potentially affected scenic resource.
Mt. Blue Park = 70,000 visitors annum.
- B. The existing character of the surrounding area is undulating, curvy, glacial worn, forested, sugarloaves.
- C. The expectation of the typical viewer = wilderness.

The image shows the cumulative scenic impact of three developments proposed by one WIND company. Can you imagine what the **night** sky will look like?

LD 1147 An Act To Protect Maine's Scenic Character. Alice McKay Barnett Carthage Maine



mtbluevisualcumulative.jpg



Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Friday, June 14, 2013 9:54 AM
To: Townsend, Erle
Subject: Spruce Mountain Wind complaints.

<http://woodstockwindordinance.blogspot.com/p/comments-complaints.html>

Erle, Has anyone asked Mike Rogers of Maine Revenue Services what will happen to the town's valuation?

OOps, we are talking sound and complaint protocol I hope.

Is complaint protocol an area that can be addressed in this remand?

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Friday, June 14, 2013 11:26 AM
To: 'alice barnett'
Subject: RE: Spruce Mountain Wind complaints.

Alice –

As far as I know, there has been no contact with Mike Rogers regarding any property valuation issues related to any licensed or proposed wind projects.

The Court order is pretty specific regarding the area of review for the remanded Order: "We vacate the Board's order and remand for further review using the 42 dBA nighttime sound level limit as introduced in 2 C.M.R. 06 096 375-15 § 10(I)(2)(b) (2012)."

The specific rule referenced, 375-15 § 10(I)(2)(b), is:

"(2) Sound Level Limits for Routine Operation of Wind Energy Developments

The sound levels resulting from routine operation of a wind energy development measured in accordance with the measurement procedures described in subsection I(8) shall not exceed the following limits:

- (a) 75 dBA at any time of day at any property line of the wind energy development or contiguous property owned or controlled by the wind energy developer, whichever is farther from the proposed wind energy development's regulated sound sources; and
- (b) 55 dBA between 7:00 a.m. and 7:00 p.m. (the "daytime limit"), and **42 dBA between 7:00 p.m. and 7:00 a.m. (the "nighttime limit") at any protected location.**

That being said, if you have a specific concern regarding the complaint protocol for Saddleback, let me know about it and I'll look into it for you.

Thanks

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Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Thursday, June 20, 2013 8:22 AM
To: Townsend, Erle
Subject: Barnett structure SRW

The 5th wheeler has, and for the last 3 years had, a pitch roof measuring 16 feet 10 inches from peak to ground that you could not legally haul down the highway. It also has no axles for they were removed upon moving the trailer to site. This structure was on site before Patriot Renewables had their public meeting in Carthage prior to permit submission. thank you -amb

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Thursday, June 20, 2013 9:09 AM
To: 'alice barnett'
Subject: RE: Barnett structure SRW

Alice –

The definition of recreational vehicle talks about a RV being “primarily designed to provide temporary living quarters” (see below). The removal of the axles and the addition of the roof are after-market modifications. Also there is nothing in the record to show that the trailer (and additions) is there legally – no building permit or other documentation from the town, and no HHE-200 for the privy.

18-A. Recreational vehicle. "Recreational vehicle" means a vehicle that is either self-propelled or towed by a consumer-owned tow vehicle, is primarily designed to provide temporary living quarters for recreational, camping or travel use, complies with all applicable federal vehicle regulations and does not require special highway movement permits to legally use the highways. "Recreational vehicle" includes motor homes, travel trailers, fifth-wheel trailers and folding camping trailers.

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Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Monday, June 24, 2013 8:08 AM
To: Townsend, Erle
Subject: Is the information true?

Why have an independent acoustical engineer test your wind turbine? Because independent engineers will include all the data collection points.

Noise measurements taken from the sides of the turbines, rather than the back or front are in general louder. The loudest of the two sides is the side where the blades are coming down to you and the blade tips are pointing directly at you. This noise from the side is commonly called a random assault or the rope effect of the wind moving down the blades that weigh as much as seven tons each. This is similar to the noise heard from the rope when you jump rope at high speeds.

When doing acoustic noise research be sure have a data collection point about 50 degrees out from where the tips of the blades point. The noise level at this point is 2 Decibels higher.

[22 hours ago](#) · [Like](#)

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Tuesday, June 25, 2013 4:07 PM
To: Townsend, Erle
Subject: campers

Rocky Mountain Terrain Park in Carthage Maine has thousands of campers a year, Can their location be protected?

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Wednesday, June 26, 2013 10:03 AM
To: 'alice barnett'
Subject: RE: campers

Alice –

The Rocky Mountain Terrain Park does not meet the definition of a protected location. Any residences associated with the park would be considered protected locations. Examination of the sound contour map in the April, 2013 NIS shows the Rocky Mountain Terrain Park to be well beyond the 42 dBA sound contour.

It seems unlikely that the turbines would be heard at all above the noise generated by the users of the park, judging from the videos on their website.

Thank you

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From: alice barnett [<mailto:mckaybarentt@gmail.com>]
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Bertocci, Cynthia S

From: alicè barnett <mckaybarentt@gmail.com>
Sent: Thursday, June 27, 2013 9:50 AM
To: Townsend, Erle
Subject: SRW monitor requests

Hi Erle,

I have spoken to all four receivers below and they request noise monitors at their locations. Thank You -amb

John Steele is receiver #32, he does not WIND in his backyard as he operates a tourist business. His overnight campers remark on the good night's sleep they get in the Maine woods. [207-272-8012](tel:207-272-8012)

David Jackson is receiver # 29. He does not want WIND in his backyard as he wants to open a tourist business in 2015. [207-562-4764](tel:207-562-4764)

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Patrick Gorham is receiver # 12 and he does not want WIND in his backyard as he understands Maine real estate and the price of a beautiful view. [207-357-7525](tel:207-357-7525)

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Thursday, June 27, 2013 9:52 AM
To: 'alice barnett'
Subject: RE: SRW monitor requests

Is John Steele the guy at the Rocky Mountain park you mentioned yesterday?

Erle Townsend
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Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Thursday, June 27, 2013 10:43 AM
To: Townsend, Erle
Subject: Re: SRW monitor requests

yes and his wife owns 2 structures with-in receptor map. Will forward receptor numbers..

On Thu, Jun 27, 2013 at 9:51 AM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

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Erle Townsend

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John Steele is receiver #32, he does not WIND in his backyard as he operates a tourist business. His overnight campers remark on the good night's sleep they get in the Maine woods. [207-272-8012](tel:207-272-8012)

David Jackson is receiver # 29. He does not want WIND in his backyard as he wants to open a tourist business in 2015. [207-562-4764](tel:207-562-4764)

Douglas Geis is receiver # 22. He does not want WIND in his backyard as he wishes for his children and grand children to always enjoy their piece of wilderness on Gray's MTn (Saddleback Ridge). 207-562-7746

Patrick Gorham is receiver # 12 and he does not want WIND in his backyard as he understands Maine real estate and the price of a beautiful view. 207-357-7525

Bertocci, Cynthia S

From: alice barnett <mckaybarentt@gmail.com>
Sent: Friday, June 28, 2013 2:25 PM
To: Townsend, Erle; alice barnett
Subject: outhouses in Carthage
Attachments: Mancini camp andouthouse.JPG; Mancini outhouse has a barrell for containment.JPG; neighbors outhouse.JPG; no holding tank.JPG

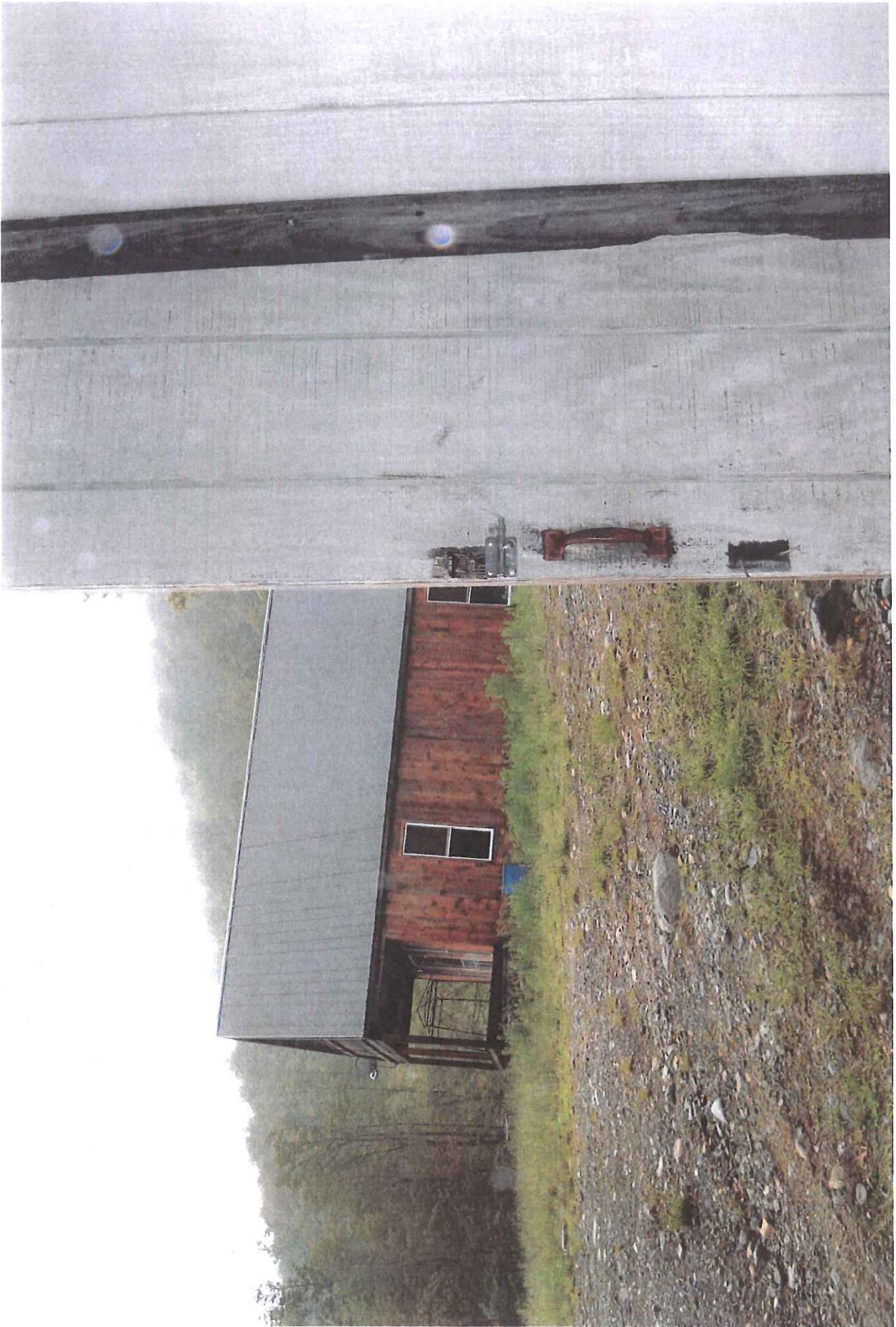
The town of Carthage premise is and has always been, "You build it and we come tax it later." In other words you don't need a building permit in Carthage to build because there is no comprehensive plan. There are several people in my area alone that can and will swear to this fact.

Camps were built in our area we are now finding out that they were taxed even before a septic and or a out house was installed. One camp was given a PVG from Patriot Renewables with an outhouse just like ours on site. Reference "Mancini".

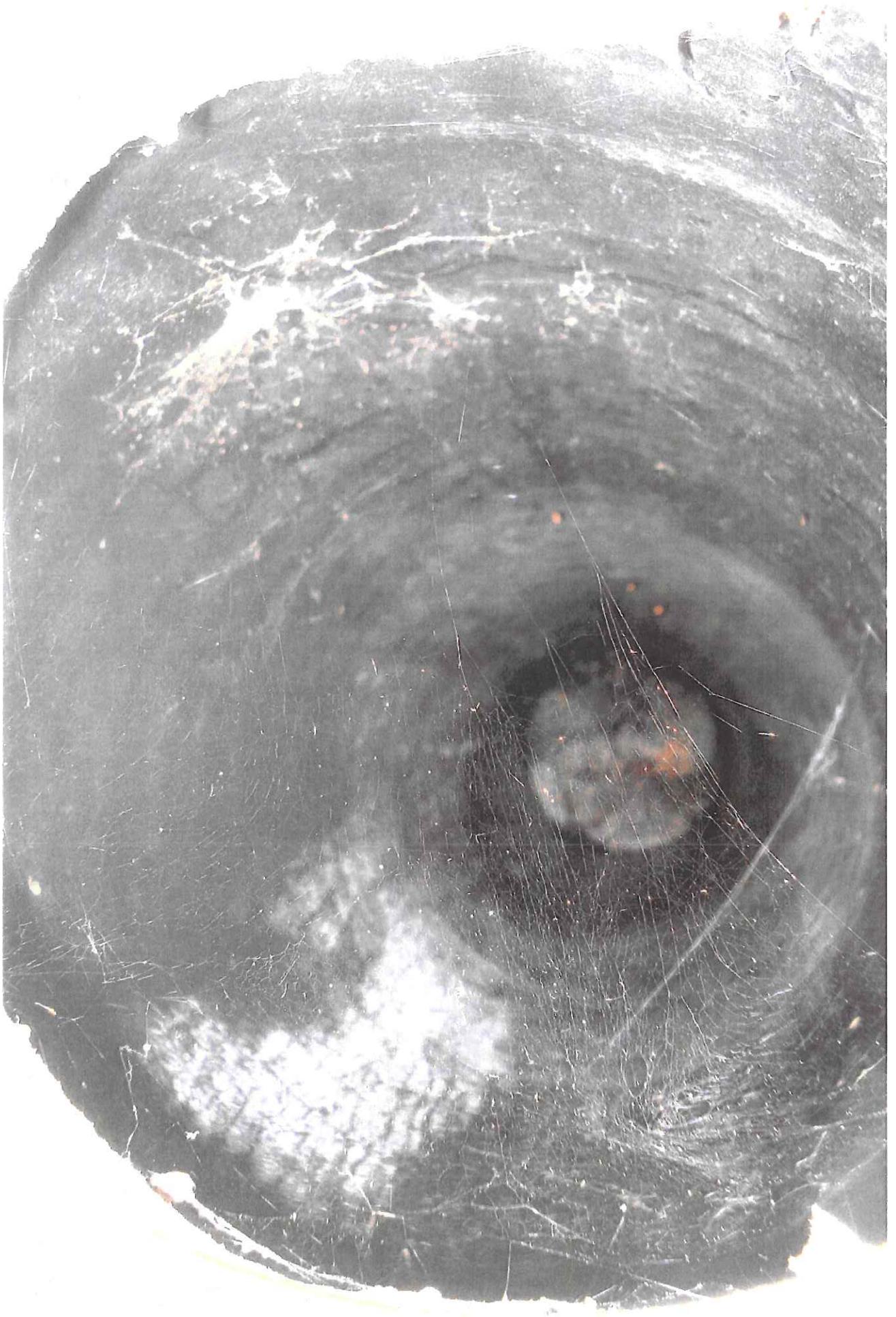
Also we have contacted the town fathers and they are privy to the fact that we have a structure. They find it in their best interest that they do not acknowledge it. As far as our house goes we were never told about HHE-200 also because we still did not need a building permit.

The reason we built an outhouse on our site is we saw so many at camps in Carthage that we thought it was the norm.

If your concern is my toilet/sewage then you are admitting that I have a structure.



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Bertocci, Cynthia S

From: Hart Daley <bucktracker@yahoo.com>
Sent: Saturday, June 08, 2013 10:51 AM
To: Townsend, Erle
Subject: Clarification on sound estimates - Saddleback Ridge - Carthage

Dear Mr. Townsend,

I would like to ask a few questions regarding the noise studies involving the proposed Saddleback Wind Project in Carthage, ME. I live in Dixfield approximately 2 miles from the top of Morrison Hill, which is just S/W of the proposed project site. From my residence, which is in the basin between Saddleback Ridge and Colonel Holman Ridge, I can hear tractor trailer trucks travelling on Route 2 quite loudly on a quiet morning / evening...so you can understand my concern about noise emitted from these turbines, especially if I end up being surrounded by them due to the CUMULATIVE noise impact that will be created if Saddleback Ridge, Canton Wind and Colonel Holman projects become a reality. I am concerned that my family and myself will have to move from this beautiful quiet area and even more concerned that I will not be able to sell my home due to the massive devaluation of my property values that most certainly will occur from this cumulative effect.

1. Why is it that if Patriot Renewables LLC declares they are going to operate within "legal sound limits" they have offered residents in Carthage \$10,000 cash or buyouts of their property? (I can provide the actual documents written by Patriot Renewables LLC)
2. In layman's terms, as I am not an acoustics specialist, can you explain the doubling of sound by dBA? I have been told that if the normal noise limit is 20 dBA then 40 dBA is far more than a doubling of sound.
3. I realize that the wind industry measures sound from different distances to residences, however is it taken into consideration if there are no physical barriers between the residence and the turbine? The reason I ask is my house is located at the base of a mountain with a completely unobstructed path to the top of the mountain. There are no trees 500' feet high between my house and the mountain top so the turbine noise will have a direct unbuffered path to my house.
4. What is the "design wind speed" needed for the turbines to generate maximum sound power?
5. It is assumed that all wind turbine sound power levels correspond to the IEC 61400-11 maximum sound power level (plus a combined uncertainty factor of 3.0 dBA). If the permit allows 42 dBA at night does that mean it could actually increase to 43, 44 or 45 dBA because of the uncertainty factor?
6. It says the acoustic model assumed the most favorable conditions for sound propagation, corresponding to a ground based temperature inversion, such as might occur on a calm, clear night or during a downwind condition with a moderate wind speed. I live in an area that is accustomed to 18 - 20 dBA on a regular basis (according to Patriot Renewables own documents) and I would like to know how much louder this will be at 42 dBA? I would also like to know what is considered "moderate wind speed"?
7. Why is it that wind projects list (2) different sound levels? A daytime and a nighttime noise level ie: 55 dBA / 42 dBA? If the facility is capable of working at 42 dBA at night, then why can't they just work at that sound level all the time?

8. I have read many studies that low frequency sound (lfs) does cause adverse health affects in humans. Can you assure me that there will be no adverse health affects subjected upon my family by (1) the Saddleback Ridge project and (2) by a CUMULATIVE effect created by being surrounded by (3) industrial wind projects? This is a very very serious concern.

9. It states SDRS has an impulse sound of 5 dBA. Does this mean that when this occurs the sound levels may jump from 42 dBA to 47 dBA unexpectedly during the night? I know for a fact that surrounding residents in Woodstock, near the Spruce Wind project have complained about noise / sound problems and that their peace and quiet has been forever changed.

10. Is Tech Environmental Inc., funded in any way by Patriot Renewable LLC or are any employees / technicians directly influenced in any way by Patriot Renewables LLC. ? The reason I ask is to make sure the sound studies conducted are not biased in any way, shape or form.

Thank you in advance for your time in answering these questions,

Sincerely,

Hart Daley
7 Hidden Meadow Lane
Dixfield, ME 04224

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 8:37 AM
To: Hart Daley
Subject: RE: Clarification on sound estimates - Saddleback Ridge - Carthage

Mr. Daley –

I have responded to your questions in the yellow highlights below.

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

From: Hart Daley [<mailto:bucktracker@yahoo.com>]
Sent: Saturday, June 08, 2013 10:51 AM
To: Townsend, Erle
Subject: Clarification on sound estimates - Saddleback Ridge - Carthage

Dear Mr. Townsend,

I would like to ask a few questions regarding the noise studies involving the proposed Saddleback Wind Project in Carthage, ME. I live in Dixfield approximately 2 miles from the top of Morrison Hill, which is just S/W of the proposed project site. From my residence, which is in the basin between Saddleback Ridge and Colonel Holman Ridge, I can hear tractor trailer trucks travelling on Route 2 quite loudly on a quiet morning / evening...so you can understand my concern about noise emitted from these turbines, especially if I end up being surrounded by them due to the CUMULATIVE noise impact that will be created if Saddleback Ridge, Canton Wind and Colonel Holman projects become a reality. I am concerned that my family and myself will have to move from this beautiful quiet area and even more concerned that I will not be able to sell my home due to the massive devaluation of my property values that most certainly will occur from this cumulative effect.

1. Why is it that if Patriot Renewables LLC declares they are going to operate within "legal sound limits" they have offered residents in Carthage \$10,000 cash or buyouts of their property? (I can provide the actual documents written by Patriot Renewables LLC)

The sound limits in Chapter 375 (the legal sound limits) apply at "protected locations". If a property owner sells a developer an easement that allows the project to exceed those limits, then that property is no longer a protected location, and the limits do not apply there.

2. In layman's terms, as I am not an acoustics specialist, can you explain the doubling of sound by dBA? I have been told that if the normal noise limit is 20 dBA then 40 dBA is far more than a doubling of sound.

According to the April, 2013 Noise Impact Study for Saddleback, page 5, section 3.4, "However, for every 10 dB increase in sound pressure, we *perceive* an approximate doubling of loudness. Small changes in sound level, below 3 dB, are generally not perceptible."

3. I realize that the wind industry measures sound from different distances to residences, however is it taken into consideration if there are no physical barriers between the residence and the turbine? The reason I ask is my house is located at the base of a mountain with a completely unobstructed path to the top of the mountain. There are no

trees 500' feet high between my house and the mountain top so the turbine noise will have a direct unbuffered path to my house.

Again quoting from the April, 2013 Noise Impact Study for Saddleback, page 21, section 9.1: "The method takes into account source sound power levels, surface reflection and absorption, atmospheric absorption, geometric divergence, meteorological conditions, *walls and barriers*." [emphasis added] This means that the absence of walls and/or barriers is also accounted for.

4. What is the "design wind speed" needed for the turbines to generate maximum sound power?

From page 16 of the April, 2013 Noise Impact Study for Saddleback, section 7.2: "the maximum sound power level from a GE 2.75-103 and GE 2.85-103 turbine is 105 ± 2 dBA with *wind speeds of 7 m/s and greater* (10 meter anemometer height)." [emphasis added] m/s means meters per second; 7 m/s is about 15.7 miles per hour.

5. It is assumed that all wind turbine sound power levels correspond to the IEC 61400-11 maximum sound power level (plus a combined uncertainty factor of 3.0 dBA). If the permit allows 42 dBA at night does that mean it could actually increase to 43, 44 or 45 dBA because of the uncertainty factor?

No, the uncertainty factor is there to provide a safety margin in the calculations. In order to claim that the model shows compliance with the 42 dBA limit, the calculations before accounting for the uncertainty factor would have to show that the project would not exceed 39 dBA in this case. The uncertainty factor is then added to the level the model comes up with to account for any errors (uncertainty) in the model, giving the final calculated value of 42 dBA.

6. It says the acoustic model assumed the most favorable conditions for sound propagation, corresponding to a ground based temperature inversion, such as might occur on a calm, clear night or during a downwind condition with a moderate wind speed. I live in an area that is accustomed to 18 - 20 dBA on a regular basis (according to Patriot Renewables own documents) and I would like to know how much louder this will be at 42 dBA? I would also like to know what is considered "moderate wind speed"?

Based on where you live, and the sound contour maps in the April, 2013 Noise Impact Study for Saddleback, your house is well over a mile beyond the 30 dBA line. The map doesn't go out far enough to show your house, but it seems to me that the project-generated noise level at your house would be between 20 and 25 dBA. I will try to get more detailed information on this from the independent peer-review agent and get back to you.

7. Why is it that wind projects list (2) different sound levels? A daytime and a nighttime noise level ie: 55 dBA / 42 dBA? If the facility is capable of working at 42 dBA at night, then why can't they just work at that sound level all the time?

Under the Department's rules, 06-096 CMR 375 § 10, developments in general are allowed to be louder during the daytime than they are at night. This applies to things like truck terminals, cement plants, gravel pits, and wind farms, to name a few. In this particular case, the applicant has not proposed any change in the operation of the project between daytime and nighttime hours. This means that there should be no change in the noise generated based on the time of day, so if the project meets the 42 dBA limit at night it will also meet it during the daytime.

8. I have read many studies that low frequency sound (lfs) does cause adverse health affects in humans. Can you assure me that there will be no adverse health affects subjected upon my family by (1) the Saddleback Ridge project and (2) by a CUMULATIVE effect created by being surrounded by (3) industrial wind projects? This is a very very serious concern.

LFS is not currently regulated under Maine law. It is a subject that is coming under increased scrutiny by the regulatory community around the world, and so far there is no consensus. I have seen many reports that claim LFS is a problem, and many others that claim that it is not. To my knowledge, there are no peer-reviewed studies that support the claims of adverse health effects. Until there is a

change in the rules and/or laws that the Department operates under, noise regulations will continue to apply to audible sounds only.

There is also no current provision for regulation of cumulative noise effects from different projects in Site law.

9. It states SDRS has an impulse sound of 5 dBA. Does this mean that when this occurs the sound levels may jump from 42 dBA to 47 dBA unexpectedly during the night? I know for a fact that surrounding residents in Woodstock, near the Spruce Wind project have complained about noise / sound problems and that their peace and quiet has been forever changed.

The 5 dBA impulse sound is the amount of sudden increase in noise that defines an event as SDRS. It may bring the noise level from 30 to 35 dBA or from 42 to 47 dBA, depending on how loud the project is when it occurs. It is important for you to keep in mind that the projected maximum sound from the project at your residence is well below the 42 dBA maximum, so that you would not be exposed to anything near 47 dBA regardless of whether SDRS occurs.

10. Is Tech Environmental Inc., funded in any way by Patriot Renewable LLC or are any employees / technicians directly influenced in any way by Patriot Renewables LLC. ? The reason I ask is to make sure the sound studies conducted are not biased in any way, shape or form.

Tech Environmental, like any consultant the Department hires, was required to certify that they had no conflict of interest before we could hire them. The Department is very aware of the importance of independence in an outside consultant.

Thank you in advance for your time in answering these questions,

Sincerely,

Hart Daley
7 Hidden Meadow Lane
Dixfield, ME 04224

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Friday, June 28, 2013 1:33 PM
To: 'Nadianichols'
Subject: RE: Saddleback Ridge Wind Project

Ms. Gray -

Thank you for your inquiry. The Department's rules regarding noise impacts, Chapter 375 § 10(I), are clear and specific regarding where the limits apply and how they are measured. A Protected Location is defined as:

"Any location, accessible by foot, on a parcel of land containing a residence or planned residence or approved residential subdivision, house of worship, academic school, college, library, duly licensed hospital or nursing home near the development site at the time a Site Location of Development application is submitted; or any location within a State Park, Baxter State Park, National Park, Historic Area, a nature preserve owned by the Maine or National Audubon Society or the Maine Chapter of the Nature Conservancy, The Appalachian Trail, the Moosehorn National Wildlife Refuge, federally-designated wilderness area, state wilderness area designated by statute (such as the Allagash Wilderness Waterway), or locally-designated passive recreation area; or any location within consolidated public reserve lands designated by rule by the Bureau of Public Lands as a protected location.

At protected locations more than 500 feet from living and sleeping quarters within the above noted buildings or areas, the daytime hourly sound level limits shall apply regardless of the time of day.

Houses of worship, academic schools, libraries, State and National Parks without camping areas, Historic Areas, nature preserves, the Moosehorn National Wildlife Refuge, federally-designated wilderness areas without camping areas, state wilderness areas designated by statute without camping areas, and locally-designated passive recreation areas without camping areas are considered protected locations only during their regular hours of operation and the daytime hourly sound level limits shall apply regardless of the time of day."

The model used in the Saddleback analysis predicts the sound levels at many thousands of locations, in a 10-meter by 10-meter grid around the project. Noise levels at property lines are regulated, but not always as strictly as noise levels at a residence. The model predicts noise levels at property lines to be within the limits allowed by the Department's rules.

I do not know if someone could successfully sue under a federal statute. The Department only enforces state laws and standards.

Thank you

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

From: Nadianichols [mailto:nadianichols@aol.com]
Sent: Friday, June 28, 2013 11:44 AM
To: Townsend, Erle
Subject: Saddleback Ridge Wind Project

Dear Mr. Townsend,

The question I have with these sound studies is this: if the computer modeled sound is being "modeled" from the non-participating residents houses, shouldn't this actually be measured from the property line? Isn't this going to be considered an "illegal taking" by the town/government if it turns out that the landowner cannot use, sell or develop that land within the receptor zone due to undue noise/infrasound? If the permit is issued and this situation occurs, can't the landowner sue based on the recent decision by the Supreme Court regarding compensation for loss of use under the 5th Ammendment of the Constitution?

Just wondering.

Respectfully,
Penelope Gray
270 River Road
Carthage, Maine
04743
Harraseeket Inn
Freeport Maine

Bertocci, Cynthia S

From: Cathy Mattson <fryewood@roadrunner.com>
Sent: Friday, June 28, 2013 4:54 PM
To: Townsend, Erle
Cc: Aho, Patricia
Subject: Saddleback Ridge Wind project

June 27, 2013

Mr. Erle Townsend
 Environmental Specialist
 Division of Land Resource Regulation

Department of Environmental Protection
 17 State House Station
 Augusta ME 04333

Dear Mr. Townsend,

Please give careful consideration to the comment filing from Attorney Rufus Brown who is representing Friends of Maine's Mountains, Friends of Saddleback and Individual Appellants. This filing includes professional noise reviews from Rick James, Rob Rand, and Steve Ambrose. We are greatly concerned that there will be noise issues with the Saddleback Ridge Wind project.

Noise assessments and predictions are difficult to model and within the mountainous areas it seems even more unreliable and unpredictable. Pre-construction vs Post-construction is greatly different in areas where the normal noise levels are 25-35 dBA on a regular basis. There are many variables that give inaccurate results when sound-modelling is used as the only means of assessment. When Warren Brown was the DEP Consultant and Jim Cassida was on Staff, we discussed this individually and in work sessions.

The composition of the land itself, the proximity to water bodies, the ridges and valleys, the species of trees, the vegetative growth, the existing background noise, the intermittent background noise, general changes in atmospheric conditions, etc. all play a role in how noise is perceived by the human body. It appears that many identified receptor locations for this specific project, have now signed waivers for protection of the 42 dBA nighttime maximum noise levels. Unfortunately, they may not know what they have just given away. I have found that the average homeowner has little concept of how this all is connected and how human health, welfare and safety play a role in their overall well-being when their acoustic environment is suddenly altered.

Based on my location in the Town of Roxbury, along Route 17 and within two to three miles of the Record Hill Wind project, it concerns me that there are so many locations in the Saddleback Ridge Wind project that could be greatly affected by residual noise from this project once it becomes operational. My 75-acre property consists of some valley areas as well as some higher ridge areas and the noise from the RHW project is very much noticeable in certain locations compared to the near quiet conditions enjoyed prior to the construction of the project.

I urge you to consider actual noise assessments of existing projects now in operation and compare that data to the predicted noise levels assessed under the pre-construction conditions. Please allow time for the proper research and the use of current advanced technological equipment and existing reports to adequately assess the affects of the Saddleback Ridge Wind project before it is issued a license.

Thank you for your consideration of my comments.

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Sincerely,

Cathy Mattson

Fryewood Farm
1011 Roxbury Rd
Roxbury, ME 04275

207-364-2616

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Friday, June 07, 2013 4:50 PM
To: Townsend, Erle
Subject: Saddleback Ridge Wind

Erle,

May I ask the engineer from Tech Environmental to please explain, in layman's language, how the sound contours changed so dramatically from the previous mapping when the night time limit was 45dBA ?

Dan McKay Dixfield.

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Friday, June 07, 2013 5:22 PM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind

Thank you, Erle,
I am totally confused now. I will get back to you .
Dan McKay

On Fri, Jun 7, 2013 at 5:10 PM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

Hi Dan --

Here is the response from Tech Environmental:

"If one compares the sound contour maps for the May 2012 RSG report (Figure 17) and the April 2013 RSG report (Figure 18), they are actually quite similar, with the more recent map showing a slightly smaller impact area. That difference is caused by two changes: 1) the revisions to the Maine Noise Regulations for wind turbines that specify the modeling uncertainty factor for non-coastal locations (0-2 dBA); and 2) the switch from a Siemens to a GE turbine. The 2012 RSG report used a modeling uncertainty factor of 3 dBA that is larger than the 1 dBA value selected for the 2013 report, which is in the middle of the 0-2 dBA range listed in the revised Regulations."

I hope this answers your question

Thanks and have a great weekend

Erle Townsend

Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [mailto:mckaydan2@gmail.com]
Sent: Friday, June 07, 2013 4:50 PM
To: Townsend, Erle
Subject: Saddleback Ridge Wind

Erle,

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Dan McKay Dixfield.

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Friday, June 07, 2013 6:10 PM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind

Erle,

Could you tell me what this permit number indicates?
Department Orders L-25137-24-A-N, L-25137-TG-B-N (approval)
Saddleback Ridge Wind, LLC – Saddleback Ridge Wind Project
Thanks, Dan

On Fri, Jun 7, 2013 at 5:21 PM, dan mckay <mckaydan2@gmail.com> wrote:
Thank you, Erle,

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Dan McKay

On Fri, Jun 7, 2013 at 5:10 PM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

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I hope this answers your question

Thanks and have a great weekend

Erle Townsend

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Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]

Sent: Friday, June 07, 2013 4:50 PM

To: Townsend, Erle

Subject: Saddleback Ridge Wind

Erle,

May I ask the engineer from Tech Environmental to please explain, in layman's language, how the sound contours changed so dramatically from the previous mapping when the night time limit was 45dBA ?

Dan McKay Dixfield.

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 5:58 AM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind

Are we looking at the same sound contour maps? Using the attached scale and measuring the map distance from center of turbine number 4 to the 45dBA line, I come up with over .5 miles with the June 2012 map. Upon doing the same for the 2013 map, I come up with less than .5 miles. Roughly, I measure a difference of 1300 Feet or a change of 38%. This is a huge change and requires a more in depth explanation to this old engineer.

On Fri, Jun 7, 2013 at 5:10 PM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

Hi Dan –

Here is the response from Tech Environmental:

“If one compares the sound contour maps for the May 2012 RSG report (Figure 17) and the April 2013 RSG report (Figure 18), they are actually quite similar, with the more recent map showing a slightly smaller impact area. That difference is caused by two changes: 1) the revisions to the Maine Noise Regulations for wind turbines that specify the modeling uncertainty factor for non-coastal locations (0-2 dBA); and 2) the switch from a Siemens to a GE turbine. The 2012 RSG report used a modeling uncertainty factor of 3 dBA that is larger than the 1 dBA value selected for the 2013 report, which is in the middle of the 0-2 dBA range listed in the revised Regulations.”

I hope this answers your question

Thanks and have a great weekend

Erle Townsend

Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [mailto:mckaydan2@gmail.com]
Sent: Friday, June 07, 2013 4:50 PM
To: Townsend, Erle
Subject: Saddleback Ridge Wind

Erle,

May I ask the engineer from Tech Environmental to please explain, in layman's language, how the sound contours changed so dramatically from the previous mapping when the night time limit was 45dBA ?

Dan McKay Dixfield.

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 6:06 AM
To: Townsend, Erle
Subject: Saddleback Ridge Sound

Erle,

A footnote to the sound modeling map is as follows:

These results are shown using 1.5 meter receiver heights. Sound levels at homes may be different, as these are modeled at 4.0 meters

This is a disturbing revelation and the applicant should do further work to establish what this difference will be.

Dan McKay Dixfield

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 6:20 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

"6. Excess attenuation from wind shadow effects and daytime air turbulence were ignored."

Can you have the independent sound engineer explain " shadow effects " and " air turbulence" and precisely how attenuation is related to these parameters. Is there a mathematical formula describing this relationship ? If so, is there any assumptions used in coordination with this formula ?

Dan McKay

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 6:34 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

I can't find the map in the 2013 sound assessment report that shows the turbine numbers?

Dan

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 6:47 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

Have you ever wondered why your car doesn't stay as quiet as it was when brand new ? The applicant needs to address sound/ maintenance relationship with associated costs. The applicant should also described potential noise sources from the many moving parts of the wind energy conversion machines.

dan

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Sunday, June 09, 2013 6:58 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

Does anyone in the department have the time to look over past and proposed wind projects in Maine and determine if Saddleback has the most residences noted as receptors? People are part of the environment too. Alleviating noise impacts is as easy as relocating wind projects to where people aren't.

Dan

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 10, 2013 9:47 AM
To: 'dan mckay'
Subject: RE: Saddleback Ridge Wind

Dan -

Those numbers are the original permit that the Department approved, and that Friends of Maine Mountains appealed to the Board and then to the court. There are two numbers, but only one permit – the two numbers are for tracking purposes. One is for the Site Law portion of the permit, the other is for the NRPA portion. Every time there is an Amendment, or an appeal ruling that changes the permit, a new number is generated to track that change. The change in the number is usually the next-to-last letter in the sequence. The two you listed are the "A" and the "B", Amendments start with "C" and go from there. The appeal is special, when the court required the review under the new noise limits, the permit license number for that review kept the "A" and "B", but the last letter changed from "N" to "Z" to designate it as being the result of an appeal.

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Friday, June 07, 2013 6:10 PM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind

Erle,

Could you tell me what this permit number indicates ?
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 Saddleback Ridge Wind, LLC – Saddleback Ridge Wind Project
 Thanks, Dan

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Hi Dan –

Here is the response from Tech Environmental:

"If one compares the sound contour maps for the May 2012 RSG report (Figure 17) and the April 2013 RSG report (Figure 18), they are actually quite similar, with the more recent map showing a slightly smaller impact area. That difference is caused by two changes: 1) the revisions to the Maine Noise Regulations for wind turbines that specify the modeling uncertainty factor for non-coastal locations (0-2 dBA); and 2) the switch from a Siemens to a GE turbine. The 2012 RSG report used a modeling uncertainty factor of 3 dBA that is larger than the 1 dBA value selected for the 2013 report, which is in the middle of the 0-2 dBA range listed in the revised Regulations."

I hope this answers your question

Thanks and have a great weekend

Erle Townsend

Environmental Specialist - Division of Land Resource Regulation

Department of Environmental Protection

17 State House Station | Augusta ME 04333

[\(207\) 991-8078](tel:(207)991-8078) | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Friday, June 07, 2013 4:50 PM
To: Townsend, Erle
Subject: Saddleback Ridge Wind

Erle,

May I ask the engineer from Tech Environmental to please explain, in layman's language, how the sound contours changed so dramatically from the previous mapping when the night time limit was 45dBA ?

Dan McKay Dixfield.

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 10, 2013 10:15 AM
To: 'dan mckay'
Subject: RE: Saddleback Ridge Wind

Dan –

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From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Sunday, June 09, 2013 5:58 AM
To: Townsend, Erle
Subject: Re: Saddleback Ridge Wind

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Dan McKay Dixfield.

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 10, 2013 10:30 AM
To: 'dan mckay'
Subject: RE: Saddleback

Dan --

What this statement says to me is "there are a couple of factors in the real world that help to deaden the sound from wind turbines (wind shadow effects and daytime air turbulence), but in the interest of being conservative, we pretended that these things do not exist at this site, and any mitigating effect they will have in the real world was ignored." So if they build the turbines, the real-world effects of wind shadow and daytime air turbulence will help to make the noise level quieter at protected locations than what the model came up with.

I will try to get a definition of the terms and how they are evaluated from the engineer for you, and I'll ask him to confirm my little analysis above as well.

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From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Sunday, June 09, 2013 6:20 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

"6. Excess attenuation from wind shadow effects and daytime air turbulence were ignored."

Can you have the independent sound engineer explain " shadow effects " and " air turbulence" and precisely how attenuation is related to these parameters. Is there a mathematical formula describing this relationship ? If so, is there any assumptions used in coordination with this formula ?

Dan McKay

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 10, 2013 10:53 AM
To: 'dan mckay'
Subject: RE: Saddleback

Dan -

The turbine numbers are the same as they have always been. The May, 2012 NIS doesn't have the map with the turbine numbers, either.

Erle Townsend
Environmental Specialist - Division of Land Resource Regulation
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17 State House Station | Augusta ME 04333
(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Sunday, June 09, 2013 6:34 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

I can't find the map in the 2013 sound assessment report that shows the turbine numbers?

Dan

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 10, 2013 11:40 AM
To: 'dan mckay'
Subject: RE: Saddleback

Dan –

Since there is no definition for “receptor” in statute or rule, there’s no accurate way to compare the numbers of receptors listed at a project. One applicant might decide to go a certain distance from the turbines and call anything within that distance a receptor, while another applicant might decide to look at receptors based on a certain level of sound attenuation, or some other factor. Similarly, if you look at “protected locations”, that number is subject to change at any project, since an applicant can buy easements from property owners and reduce the number without physically changing anything.

A quick check shows that the Saddleback NIS's look at 45 residences and other protected locations, and Canton's NIS's look at 62. So the answer to your question in the simplest sense is “no, Saddleback does not have the most receptors”. But without a definition for a receptor, it's apples and oranges.

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[\(207\) 991-8078](tel:2079918078) | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
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To: Townsend, Erle
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Erle,

Have you ever wondered why your car doesn't stay as quiet as it was when brand new? The applicant needs to address sound/ maintenance relationship with associated costs. The applicant should also described potential noise sources from the many moving parts of the wind energy conversion machines.

dan

Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Monday, June 10, 2013 6:14 PM
To: Townsend, Erle
Subject: Re: Saddleback

Sorry, I'm making it too complicated . Within a one mile radius, which project or proposed project has the most structures fit for occupancy ?

How does the department evaluate which portions of quantified allowances can be waived with easements ? Properties subject to higher than allowed sound levels can be disqualified from protection by easement. What other levels of environmental impacts are allowed disqualification from permit exposure by easement. Is phosphorous amounts allowed to exceed limits by easement ? Can the department be subject to lawsuit if a buyer purchases property with a sound easement and later finds the noise is far worse than he expected ?

On Mon, Jun 10, 2013 at 11:39 AM, Townsend, Erle <Erle.Townsend@maine.gov> wrote:

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366

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Dan

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 8:46 AM
To: 'dan mckay'
Subject: RE: Saddleback

Dan –

The numbers I gave you on Canton and Saddleback were for the one-mile radius, I don't have the numbers for all the projects we have looked at. The noise easements are allowed because they are for a private part of the environment. Something like a phosphorus easement would not be allowed because the phosphorus plan is there to protect a public resource (a lake), and the state will not grant such an easement. We have no control over what a private citizen will tolerate on their own private property, so as long as there is no problem with a public resource, easements are allowed. It's almost the same as if they had bought the property. They could make as much noise as they wanted, but they couldn't pollute the streams. As far as the lawsuit goes, the buyer should be informed of the easement when he buys the property. Like most aspects of real estate transactions, it's buyer beware.

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Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 11, 2013 4:55 PM
To: 'dan mckay'
Subject: RE: Saddleback

Dan –

This is from section 5(F) of the license (the one that was appealed):

"F. Post-construction Monitoring Program. To ensure that the modeling and predictions submitted by the applicant and deemed reasonable by the Department correctly predicted sound levels and that the project continues to meet the noise standards reflected in this permit over time, the applicant must conduct post-construction sound level monitoring at least once during the first year of project operation, and then once each successive fifth year thereafter until the project is decommissioned. Additional compliance monitoring may also be required by the Department in response to a complaint and any subsequent enforcement action by the Department, and for validation of the applicant's calculated sound levels when requested by the Department."

I am not aware of any studies or data relating noise to equipment age.

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Bertocci, Cynthia S

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Sent: Tuesday, June 11, 2013 5:19 PM
To: Townsend, Erle
Subject: Re: Saddleback

Erle,

Thank you for your time. I do feel the department has been asked to render decisions on matters beyond traditional environmental aspects and somewhat, into the unknown. I have had engineering training, although not a whole lot in sound, but, I do feel with so many people (the ones with no easements) speaking of the life changing disturbances caused by the noise emanating from energy converting wind machines, that further examination will reveal a lot we all wished we knew now.

Dan

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Bertocci, Cynthia S

From: Townsend, Erle
Sent: Wednesday, June 12, 2013 3:53 PM
To: 'dan mckay'
Subject: RE: Saddleback Ridge Wind
Attachments: saddleback original sound contour map for GE turbines.docx

I compared the sound contour map from the newest NIS with the original one in the application (attached copy of map image – couldn't figure out how to get the whole page by itself). If you look at the faint contours as well as the colored ones, and compare them to the lines on the new sound contour map, you can see that they are the same lines, but that the labeling is different. The line for 45 dBA in the original map is the same as the line for 43 dBA in the new map. This is a result of the new regulations, like the engineer said. In the real world, the noise experienced at these locations will not change, and based on the conservative nature of the model (as discussed in the peer review) should actually be less than what the model predicts.

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Sent: Friday, June 07, 2013 4:50 PM

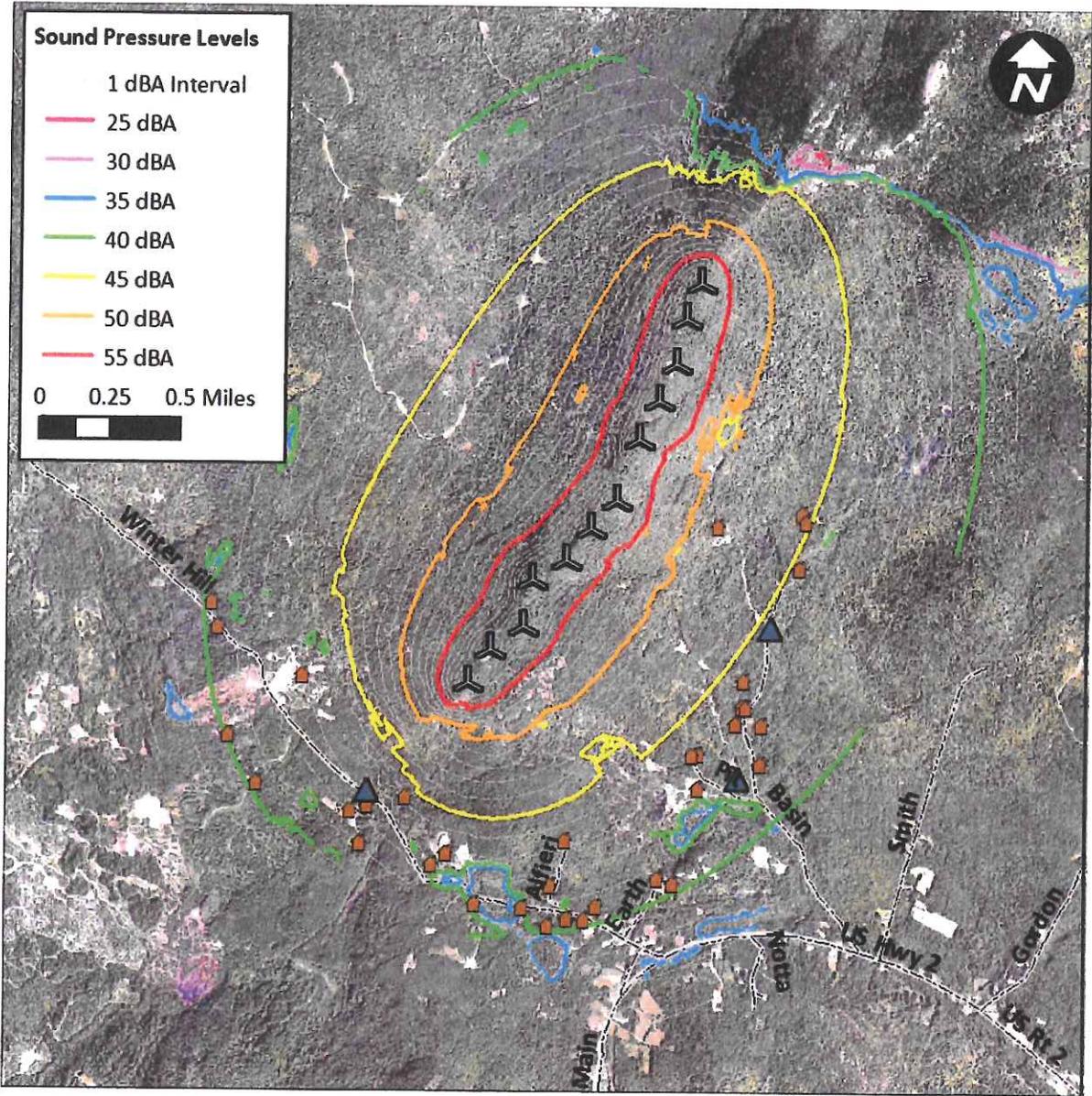
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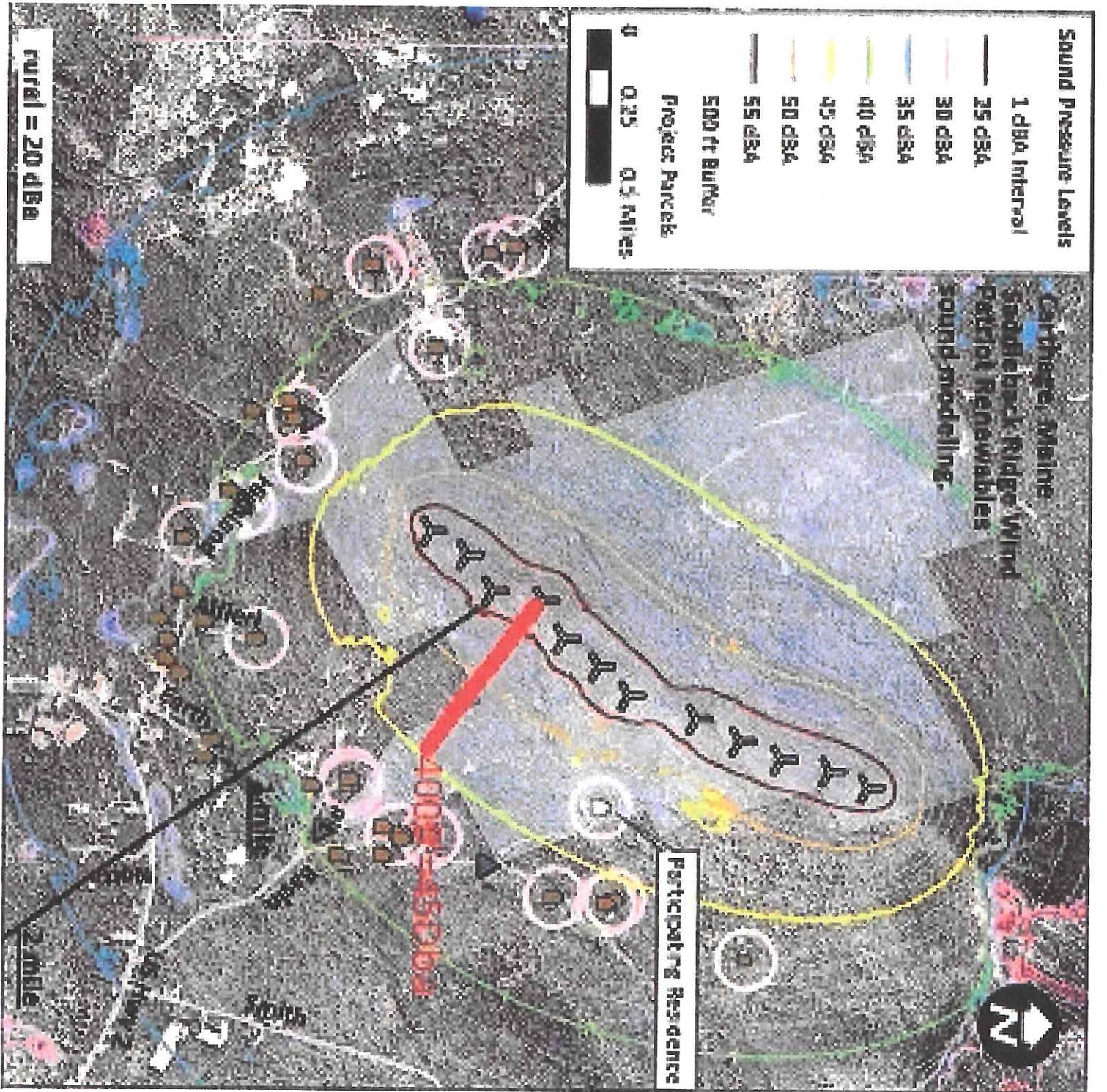


Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
Sent: Wednesday, June 12, 2013 5:17 PM
To: Townsend, Erle
Subject: Saddleback sound contour map
Attachments: saddleback sound model map.BMP

Erle,
Could you find out where this attached map came from ?

Dan



Bertocci, Cynthia S

From: dan mckay <mckaydan2@gmail.com>
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To: Townsend, Erle
Subject: Saddleback

Erle,

Has anyone ever prepared a cost estimate for full time, real time sound monitoring per location ?

Dan

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Thursday, June 13, 2013 8:32 AM
To: 'dan mckay'
Subject: RE: Saddleback

I have never seen one, it's not something we would ask for.

Erle Townsend
Environmental Specialist - Division of Land Resource Regulation
Department of Environmental Protection
17 State House Station | Augusta ME 04333
(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Thursday, June 13, 2013 5:04 AM
To: Townsend, Erle
Subject: Saddleback

Erle,

Has anyone ever prepared a cost estimate for full time, real time sound monitoring per location?

Dan

Bertocci, Cynthia S

From: Townsend, Erle
Sent: Thursday, June 13, 2013 8:30 AM
To: 'dan mckay'
Subject: RE: Saddleback sound contour map

It looks very much like the one from the May 2012 revised noise assessment, but it has some extra stuff on it. The sound contours look the same though. The May 2012 assessment is the one they did for the alternate turbines.

Erle Townsend
Environmental Specialist - Division of Land Resource Regulation
Department of Environmental Protection
17 State House Station | Augusta ME 04333
(207) 991-8078 | Erle.Townsend@Maine.gov

From: dan mckay [<mailto:mckaydan2@gmail.com>]
Sent: Wednesday, June 12, 2013 5:17 PM
To: Townsend, Erle
Subject: Saddleback sound contour map

Erle,
Could you find out where this attached map came from ?

Dan

Bertocci, Cynthia S

From: Norm Mitchell <norman123445@yahoo.com>
Sent: Sunday, June 16, 2013 2:50 PM
To: Townsend, Erle
Subject: Fw: Saddleback wind
Attachments: c.jpg; c2.jpg; ease.jpg

Oops here are the pics

----- Forwarded Message -----

From: Norm Mitchell <norman123445@yahoo.com>
To: "Erle.Townsend@maine.gov" <Erle.Townsend@maine.gov>
Sent: Sunday, June 16, 2013 2:47 PM
Subject: Saddleback wind

Mr Townsend Could you please explain to me how it is legal for a landowner to give a lease to some one to break the law? If you read the samples from the saddle back application they plainly state they give the wind company the right to break the law , all federal and sate laws that may apply, as well as violate the DEP rules on sound and pollute wells. How can the land owner give permission to break the Law ? Are not the laws put in place to protect people even from themselves? thanks Norman Mitchell east Dixfield

EXHIBIT C

WIND POWER PROJECT EASEMENT

THIS EASEMENT is made by and between **Wilfred J. Deane, Jr. and Teresa E. Deane** with an address of P.O. Box 97, Buckfield, ME 04220 ("Deane"), **Dennis and Diane McAlister** of 20 J&A Lane, Buckfield, ME 04220 ("McAlister"), **William F. Kremer**, with a mailing address of 38 North Buckfield Road, Buckfield, ME 04220 ("Kremer") (Deane, McAlister and Kremer collectively herein referred to as "Grantor"), as the owners of certain lots or parcels of land situated in the Town of Carthage, Franklin County, Maine more particularly described in deeds to Grantor recorded in the Franklin County Registry of Deeds in Book 2871, Page 233 (Deane), Book 3528, Page 33 (McAlister), and Book 3528 Page 36 (Kremer) (hereinafter referred to as the "Property"), and **SADDLEBACK RIDGE WIND, L.L.C.**, a Massachusetts limited liability company having a mailing address at 549 South Street, Quincy, MA 02169 ("Grantee"), or its successors and assigns.

WHEREAS Grantee plans to operate a wind power project, including wind turbine generators and towers on Saddleback Mountain in Carthage, Maine and related equipment, facilities, infrastructure and substructures (hereinafter referred to as the "Wind Power Project"), on lands near the Property that are further described in a lease to Grantee dated November 15, 2012, memorandum of which is recorded in the Franklin County Registry of Deeds in Book 3500, Page 195; a lease to Grantee dated June 2, 2009, recorded in Book 3215, Page 42; a lease to Grantee dated October 8, 2008, recorded in Book 3124, Page 349, a lease to Grantee dated February 17, 2009, recorded in Book 3124, Page 345; and a lease to Grantee to be recorded for land described in deeds dated September 14, 2011 and recorded in Book 3384, Page 94 and dated January 14, 2013 and recorded in Book 3518, Page 276, all as the same may be reconfigured from time to time ("Grantee's Land"); and

WHEREAS, the Wind Power Project may emit sound at levels that may exceed current or future Maine Department of Environmental Protection quiet nighttime sound limits for the Property, and additionally may cast shadows onto or produce a shadow flicker effect on the Property;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants, with Quietclaim covenant, a perpetual easement to Grantee for: (a) the right to have sound generated from the Wind Power Project impact the Property and exceed otherwise applicable federal, state, local or other maximum sound level limits applicable to locations on the Property; and (b) the right to cast shadows or shadow flicker from the Wind Power Project onto the Property.

If the Wind Power Project is not constructed and delivering energy to the electrical grid within ten (10) years of the date of this Easement, this easement shall automatically expire, without any written release by Grantee. This Easement shall also automatically expire, without any written release by Grantee, in the event the Wind Power Project shall be decommissioned or abandoned and then remain inoperative for a period of five (5) consecutive years.

This Easement shall extend to, be binding upon and shall inure to the benefit of heirs, personal representatives, successors and assigns of the parties hereto. The burden of the easement and rights hereby granted shall run with the Property and shall pass automatically to successor owners of the Property. The benefit of the easement and rights hereby granted is appurtenant to and shall initially benefit the leasehold interest of Grantee in Grantee's Land, but may, at the option of Grantee be further transferred in whole or in part, and may be sold, leased, assigned, pledged, and mortgaged by Grantee in gross, it being the specific intent of the parties that such benefit may be transferred to any successors or assignees of Grantee that own or operate the Wind Power Project, as it may be modified, divided or expanded from time to time.

The benefit of the Easement hereby granted and the covenants and agreements contained herein may be enforced by Grantee, its successors and assigns, by any appropriate legal or equitable remedy. In the event that Grantee, its successors or assigns, shall bring an action against Grantor, its successors or assigns, by reason of a breach or violation of this Easement by Grantor or its successors and assigns, to enforce its rights hereunder, the substantially prevailing party in such action shall be entitled to recover its reasonable attorneys' fees and court costs incurred in such action from the non-prevailing party.

Grantor acknowledges that it has been fully and fairly compensated for any and all claims of damages or harm (including diminished property value) related to the foregoing and Grantor hereby releases Grantee from and for any and all claims of disturbance or nuisance associated with the Wind Power Project. Notwithstanding the foregoing, however, in the event that any of Grantee's construction activity in connection with the Wind Power Project shall, within two years of the completion of construction, affect the structural integrity of existing structures on the Property as of the date hereof, including but not limited to foundations and footings, or shall cause contamination or drawdown (depletion) of any drinking water well serving the current improvements on the Property, Grantee shall be responsible for and shall either conduct repairs or pay for the reasonable costs of any repairs or replacements that may be necessary as a result.

By its acceptance hereto, Grantee, as the operator of the Wind Power Project referenced above, hereby covenants and agrees that it shall not use the Property for operational access to the Wind Power Project, provided, however, that the foregoing limitation shall not affect any access by Grantee (or its successors, assigns, or permitted licensees) for timber management, hunting, recreational use, or any other use for which access over the Property has historically been used. Grantee further covenants and agrees that in the event Grantee, or its successors or assigns (including contractors, agents, or employees of Grantee) shall cause damage to the primary access road serving the Property (i.e., the Old County Road) by use of logging trucks, heavy equipment operations or otherwise, Grantee shall be responsible for and shall reasonably repair and restore the road to its immediately prior condition. The foregoing shall in no way obligate Grantee to repair any damages or conditions caused by any other users of the road, nor shall it obligate Grantee to repair ordinary or customary wear and tear on the road for the benefit of Grantor or any other party.

Each party agrees that they shall execute such additional documents or instruments, and shall undertake such actions as are necessary and appropriate to effectuate the intent of this

WIND POWER PROJECT EASEMENT

THIS EASEMENT is made by and between Western Maine Realty, LLC, a Maine limited liability company with an address of 549 South Street, Quincy, MA 02169 ("Grantor"), the owner(s) of a certain lot or parcel of land situated in the Town of Carthage, Franklin County, Maine more particularly described in the deed to Grantor from Betsy L. Macine, dated November 26, 2012 and recorded at the Franklin County Registry of Deeds in Book 3499, Page 76, and shown on the attached Exhibit A (hereinafter referred to as the "Property"), and **SADDLEBACK RIDGE WIND, LLC**, a Massachusetts limited liability company having a mailing address at 549 South Street, Quincy, MA 02169 ("Grantee"), or its successors and assigns.

WHEREAS Grantee plans to operate a wind power project, including wind turbine generators and towers on Saddleback Mountain in Carthage, Maine and related equipment, facilities, infrastructure and substructures (hereinafter referred to as the "Wind Power Project"), on lands near the Property that are further described in a lease to Grantee dated November 15, 2012, memorandum of which is recorded in the Franklin County Registry of Deeds in Book 3500, Page 195; a lease to Grantee dated June 2, 2009, recorded in Book 3215, Page 42; a lease to Grantee dated October 8, 2008, recorded in Book 3124, Page 349; a lease to Grantee dated February 17, 2009, recorded in Book 3124, Page 345; and a lease to Grantee to be recorded for land described in deeds dated September 14, 2011 and recorded in Book 3384, Page 94 and dated January 14, 2013 and recorded in Book 3518, Page 276, all as the same may be reconfigured from time to time ("Grantee's Land"); and

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If the Wind Power Project is not constructed and delivering energy to the electrical grid within ten (10) years of the date of this Easement, this easement shall automatically expire, without any written release by Grantee. This Easement shall also automatically expire, without any written release by Grantee, in the event the Wind Power Project shall be decommissioned or abandoned and then remain inoperative for a period of five (5) consecutive years.

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Bertocci, Cynthia S

From: Townsend, Erle
Sent: Monday, June 17, 2013 9:56 AM
To: 'Norm Mitchell'
Subject: RE: Saddleback Wind

Mr. Mitchell –

Thank you for your concerns. The Department's rules regarding allowable noise levels apply to "protected locations" as defined in the rules. When a property owner gives a developer an easement such as the one you reference below, the property in question is no longer a protected location. Consider a situation where the developer purchases the property outright – there are no restrictions on noise within the developer's owned property. In the case of an easement like this, the property owner sells (or leases) the right to exceed certain limits, thereby removing the Department's jurisdiction over that category of impact.

The easement language you sent me specifically requires the grantee (the developer) to pay for any structural damage or contamination/depletion of drinking water wells that occurs within two years of project completion due to construction of the project on the property covered by the easement. There is no license to "pollute wells".

I hope this answers your concerns.

Thank you

Erle Townsend
Environmental Specialist - Division of Land Resource Regulation
Department of Environmental Protection
17 State House Station | Augusta ME 04333
(207) 991-8078 | Erle.Townsend@Maine.gov

From: Norm Mitchell [<mailto:norman123445@yahoo.com>]
Sent: Sunday, June 16, 2013 2:51 PM
To: Townsend, Erle
Subject: Saddleback Wind

Mr Townsend Could you please explain to me how it is legal for a landowner to give a lease to some one to break the law? If you read the samples from the saddle back application they plainly state they give the wind company the right to break the law , all federal and sate laws that may apply, as well as violate the DEP rules on sound and pollute wells. How can the land owner give permission to break the Law? Are not the laws put in place to protect people even from themselves? thanks Norman Mitchell east Dixfield

Bertocci, Cynthia S

From: Norm Mitchell <norman123445@yahoo.com>
Sent: Monday, June 17, 2013 8:03 PM
To: Townsend, Erle
Subject: Re: Saddleback Wind

If agreements can be made between landowners and abutters outside of the parameters of DEP (environmental safety), why could we not: Agree to allow raw sewage to run across our own property; Agree to allow a chemical dumping site beside our own property; Agree to allow an unregulated gas tank and pump (for recreation vehicles) beside our own property in the woods; Agree to allow clear cutting ? the list goes on. So a landlord can subject a tenant to illegal sound levels as a rented residence is not protected is that what you are saying if they lease the land and others live on it then the tenant is not protected ? also did you read where it stated that the right to have sound generated from wind power project impact the property and exceed otherwise applicable federal, state, local or other , maximum sound level limits applicable to location on the property. This sounds like child abuse to me can a parent give away the protection for a child ? and yes I am very concerned about this.

From: "Townsend, Erle" <Erle.Townsend@maine.gov>
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Bertocci, Cynthia S

From: Townsend, Erle
Sent: Tuesday, June 18, 2013 11:07 AM
To: 'Norm Mitchell'
Subject: RE: Saddleback Wind

Mr. Mitchell –

See my response highlighted within your text below.

Thank you

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
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I hope this answers your concerns.

Thank you

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Bertocci, Cynthia S

From: Norm Mitchell <norman123445@yahoo.com>
Sent: Tuesday, June 18, 2013 6:00 PM
To: Townsend, Erle
Cc: Governor
Subject: Fw: Saddleback Wind

So Mr Townsend you stated buildings and structures located on leased camp lots, owned by the applicant and used for seasonal purposes, are not considered protected locations. Noise limits only apply at protected locations.

are you saying that if its not a camp or a seasonal home it is a protected location even if leased to the wind developer ? A residence is a protected location period is that right ?

Also the way I read this the wilton and Dixfield noise levels come into play right as I know this project is located near both town lines and both towns have noise standards in place

B. Applicability

(1) This regulation applies to proposed developments within municipalities without a local quantifiable noise standard and in unorganized areas of the State. When a proposed development is located in a municipality which has duly enacted by ordinance an applicable quantifiable noise standard, which (1) contains limits that are not higher than the sound level limits contained in this regulation by more than 5 dBA, and (2) limits or addresses the various types of noises contained in this regulation or all the types of noises generated by the development, that local standard, rather than this regulation, shall be applied by the Board within that municipality for each of the types of sounds the ordinance regulates. This regulation applies to developments located within one municipality when the noise produced by the development is received in another municipality and, in these cases, the Board will also take into consideration the municipalities' quantifiable noise standards, if any.

also the lease would violate this provision as well would in not

Sound Level Limits**(1) Sound From Routine Operation of Developments**

(a) Except as noted in subsections (b) and (c) below, the hourly sound levels resulting from routine operation of the development and measured in accordance with the measurement procedures described in subsection H shall not exceed the following limits:

(i) At any property line of the development or contiguous property owned by the developer, whichever is farther from the proposed development's regulated sound sources:

75 dBA at any time of day.

Terms and Conditions

The Board may, as a term or condition of approval, establish any reasonable requirement to ensure that the developer has made adequate provision for the control of noise from the development and to reduce the impact of noise on protected locations. Such conditions may include, but are not limited to, enclosing equipment or operations, imposing limits on hours of operation, or requiring the employment of specific design technologies, site design, modes of operation, or traffic patterns.

The sound level limits prescribed in this regulation shall not preclude the Board under Chapter 375.15 from requiring a developer to demonstrate that sound levels from a development will not unreasonably disturb wildlife or adversely affect wildlife populations. In addition, the sound level limits shall not preclude the Board, as a term or condition of approval, from requiring that lower sound level limits be met to ensure that the developer has made adequate provision for the protection of wildlife.

is there a study someplace that they did on sound levels and wildlife ?

RESIDENCE: A building or structure, including manufactured housing, maintained for permanent or seasonal residential occupancy providing living, cooking and sleeping facilities and having permanent indoor or outdoor sanitary facilities, excluding recreational vehicles, tents and watercraft.

PROTECTED LOCATION: Any location, accessible by foot, on a parcel of land containing a residence or planned residence or approved residential subdivision, house of worship, academic school, college, library, duly licensed hospital or nursing home near the development site at the time a Site Location of Development application is submitted; or any location within a State Park, Baxter State Park, National Park, Historic Area, a nature preserve owned by the Maine or National Audubon Society or the Maine Chapter of the Nature Conservancy, The Appalachian Trail, the Moosehorn National Wildlife Refuge, federally-designated wilderness area, state wilderness area designated by statute (such as the Allagash Wilderness Waterway), or locally-designated passive recreation area; or any location within consolidated public reserve lands designated by rule by the Bureau of Public Lands as a protected location.

At protected locations more than 500 feet from living and sleeping quarters within the above noted buildings or areas, the daytime hourly sound level limits shall apply regardless of the time of day.

Houses of worship, academic schools, libraries, State and National Parks without camping areas, Historic Areas, nature preserves, the Moosehorn National Wildlife Refuge, federally-designated wilderness areas without camping areas, state wilderness areas designated by statute without camping areas, and locally-designated passive recreation areas without camping areas are considered protected locations only during their regular hours of operation and the daytime hourly sound level limits shall apply regardless of the time of day.

Transient living accommodations are generally not considered protected locations; however, in certain special situations where it is determined by the Board that the health and welfare of the guests and/or the economic viability of the establishment will be unreasonably impacted, the Board may designate certain hotels, motels, campsites and duly licensed campgrounds as protected locations.

This term does not include buildings and structures located on leased camp lots, owned by the applicant, used for seasonal purposes.

For purposes of this definition, (1) a residence is considered planned when the owner of the parcel of land on which the residence is to be located has received all applicable building and land use permits and the time for beginning construction under such permits has not expired, and (2) a residential subdivision is considered approved when the developer has received all applicable land use permits for the subdivision and the time for beginning construction under such permits has not expired.

this did not say located on land leased by the applicant, but land owned by the applicant and leased to others for camps

The sound levels resulting from routine operation of a wind energy development measured in accordance with the measurement procedures described in subsection I(8) shall not exceed the following limits:

- (a) 75 dBA at any time of day at any property line of the wind energy development or contiguous property owned or controlled by the wind energy developer, whichever is farther from the proposed wind energy development's regulated sound sources; and
- (b) 55 dBA between 7:00 a.m. and 7:00 p.m. (the "daytime limit"), and 42 dBA between 7:00 p.m. and 7:00 a.m. (the "nighttime limit") at any protected location.

these leases state they don't have to follow DEP rules did you read where it stated that the right to have sound generated from wind power project impact the property and exceed otherwise applicable federal, state, local or other, maximum sound level limits applicable to location on the property
see sec A above there are limits therefor this lease is not valid and should be ignored by the DEP you give them permission to violate your rules?

there are limits even on there own land !

Thank you for your time and work Norman Mitchell East Dixfield.

----- Forwarded Message -----

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To: Norm Mitchell <norman123445@yahoo.com>
Sent: Tuesday, June 18, 2013 11:07 AM
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To: Norm Mitchell <norman123445@yahoo.com>
Sent: Monday, June 17, 2013 9:56 AM
Subject: RE: Saddleback Wind

Mr. Mitchell –

Thank you for your concerns. The Department's rules regarding allowable noise levels apply to "protected locations" as defined in the rules. When a property owner gives a developer an easement such as the one you reference below, the property in question is no longer a protected location. Consider a situation where the developer purchases the property outright – there are no restrictions on noise within the developer's owned property. In the case of an easement like this, the property owner sells (or leases) the right to exceed certain limits, thereby removing the Department's jurisdiction over that category of impact.

The easement language you sent me specifically requires the grantee (the developer) to pay for any structural damage or contamination/depletion of drinking water wells that occurs within two years of project completion due to construction of the project on the property covered by the easement. There is no license to "pollute wells".

I hope this answers your concerns.

Thank you

Erle Townsend
 Environmental Specialist - Division of Land Resource Regulation
 Department of Environmental Protection
 17 State House Station | Augusta ME 04333
 (207) 991-8078 | Erle.Townsend@Maine.gov

From: Norm Mitchell [<mailto:norman123445@yahoo.com>]
Sent: Sunday, June 16, 2013 2:51 PM
To: Townsend, Erle
Subject: Saddleback Wind

Mr Townsend Could you please explain to me how it is legal for a landowner to give a lease to some one to break the law? If you read the samples from the saddle back application they plainly state they give the wind company the right to break the law , all federal and sate laws that may apply, as well as violate the DEP rules on sound and pollute wells. How can the land owner give permission to break the Law ? Are not the laws put in place to protect people even from themselves? thanks Norman Mitchell east Dixfield