

# **Kibby Expansion Wind Power Project Franklin County, Maine -- Peer Review**

Warren L. Brown

April 7, 2010

Submitted by:

EnRad Consulting  
516 Main Street  
Old Town, Maine 04468

Submitted to:

Marcia Spencer-Famous  
Land Use Regulation Commission  
Augusta ME 04433

## Table of Contents

Review Basis.....	3
1.0 Introduction .....	3
1.1 General Information On Sound/Noise.....	3
1.2 Applicable Noise Standards .....	3
2.0 Preconstruction Condition .....	3
2.1 Monitoring Methodology .....	4
2.2 Noise Monitoring Results.....	4
3.0 Construction Noise.....	4
4.0 Operation Noise .....	4
4.1 Wind Turbine Noise Sources.....	4
4.2 Operational Noise .....	4
4.2.1 Noise Modeling Results and Comparison to MDEP Standard .....	5
5.0 Conclusion.....	5
Conclusion - (Peer Review) .....	5

## **Review Basis**

Trans Canada Maine Wind Development (TransCanada) proposes the development of a wind power generating facility in the boundary mountains of western Maine known as the Kibby Expansion Wind Power Project (Kibby Expansion Project). The Kibby Expansion Project is located in the unincorporated townships of Kibby and Chain Of Ponds in Franklin County, Maine. The general project area is located along the ridge line of Sisk Mountain. The surrounding area is currently actively managed for forest products. At the request of the Land Use Regulation Commission (LURC) a peer review is undertaken to determine if the noise study is reasonable and technically correct according to standard engineering practices and the Commission Regulations on Control of Noise (12 MRSA §685-B(4-B)(A)). The review includes the original study dated November 2009 and a subsequent memorandum dated April 6, 2010.

## **1.0 Introduction**

The Kibby expansion project will include up to 15 wind turbines capable of generating up to 45 MW of electric power. Ambient noise measurements were made at identified nearby protected locations.

### ***1.1 General Information on Sound/Noise***

Informational

### ***1.2 Applicable Noise Standards***

Correctly identified

## **2.0 Preconstruction Condition**

Ambient sound data collected was correlated to Greenville Municipal Airport meteorological data (approximately 55 miles east of the sound monitoring location). Chapter 375.10 H(2)(2.4)(f) specifies, "Measurement periods shall be avoided when the local wind speed exceeds 12 mph..." (reviewer's emphasis). Ambient measurements are not reported with local meteorological conditions.

Meteorological data from several surrounding airports, suggests at a minimum, that October 22 – 23 data (considerably elevated) may be affected by gusty winds. Since the data set is ample without these two days and removal results in no change of findings, I would recommend leaving October 22-23 data out of the average.

Surface wind conditions do not always correlate with turbine level wind speeds. Temperature inversion with periods of high windshear often yield light or calm surface winds with vigorous turbine level wind speeds.

## ***2.1 Monitoring Methodology***

Standard

## ***2.2 Noise Monitoring Results***

The reviewer discussion in section 2.0 recommends documenting the daytime/nighttime averages for this rural area excluding data that appears to be influenced by high winds.

## **3.0 Construction Noise**

Standard discussion.

## **4.0 Operation Noise**

### ***4.1 Wind Turbine Noise Sources***

Informational

### ***4.2 Operational Noise***

Wind turbine prediction modeling incorporates a number of standard or conservative factors including:  
conservative -- ground absorption coefficient,  
standard -- atmospheric conditions for atmospheric absorption  
ample inclusion of proximal turbines (Kibby wind project, and proposed Kibby wind project expansion),  
standard -- no foliage attenuation, and  
conservative -- +5 dB tolerance added for manufacturer specification and model uncertainty

Short duration repetitive and/or tonal sounds are not expected from the proposed project based on limited literature research and manufacturer specification. The noise assessment does not discuss increased wind shear/temperature inversion conditions.

The transformer is located sufficiently distant to produce negligible impact at nearby protected locations.

#### ***4.2.1 Noise Modeling Results and Comparison to MDEP Standard***

Very conservative predictive modeling findings are well within the MDEP standards

## **5.0 Conclusion**

TRC concludes the proposed Kibby Expansion Project noise will be well below MDEP standards.

The reviewer concurs that the Kibby expansion Project noise will be well below MDEP standards.

### **Conclusion - (Peer Review)**

In my opinion the Kibby Expansion Project noise assessment is reasonable and technically correct according to standard engineering practices required by LURC under 12 MRSA §685-B(4-B)(A) Regulations on Control of Noise (06-096 CMR 375.10).

The wind project prediction model is based on the following prediction assumptions:

- ground absorption factor – reflective (G=0),
- 8 km turbine inclusion radius (to include Kibby and Kibby expansion wind projects)
- 5 dB manufacturer and model uncertainty factor inclusion,
- individual wind turbine spherical wave fronts,
- atmospheric attenuation based on 50°F, 70% RH,
- no attenuation due to foliage,
- all wind turbines operating at maximum sound power output (107 dB—corrected April 6, 2010) and
- all wind turbines operating under moderate downwind conditions simultaneously.

It is the reviewer's opinion, compliance measurements should not be required.

Very conservatively predicted operating sound levels are well below the standard limits even with an inclusion of tonal and SDRS penalties, which are not expected. Operating

sound measurements attempted for sound levels near or below predominate ambient levels (nearby traffic, water flow, and foliage rustling) would be indistinguishable.

All future sound measurements for LURC/MDEP submission associated with any project should be accompanied by local meteorological measurements [Chapter 375.10 H(2)(2.4)(f)].